



UNIVERSITEIT VAN PRETORIA  
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**IMPLEMENTATION AND EVALUATION OF A CLINICAL PATHWAY FOR  
NON-INVASIVE VENTILATION IN CRITICAL CARE: A PERSON-CENTRED  
PRACTICE DEVELOPMENT APPROACH**

by

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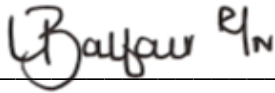
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**Co-supervisor: Prof. T Heyns**

**Date: February 2020**

## DECLARATION

I declare that the thesis titled: **"IMPLEMENTATION AND EVALUATION OF A CLINICAL PATHWAY FOR NON-INVASIVE VENTILATION IN CRITICAL CARE: A PERSON-CENTRED PRACTICE DEVELOPMENT APPROACH"** which I hereby submit for the degree Doctor of Philosophy in Nursing Science at the University of Pretoria is my own work and has not previously been submitted by me for a degree to any other university.



\_\_\_\_\_  
Signature of student

Liezl Balfour

**31 January 2020**

Date

## ABSTRACT

**Introduction:** Non-invasive ventilation (NIV) is an alternative method for providing safe mechanical ventilatory assistance to adult patients presenting with acute respiratory failure. Internationally the utilisation of NIV has increased by 400% during the past decade. The clinical pathway for NIV was collaboratively developed by the multidisciplinary team in the critical care unit in 2012, but implementation into practice did not realise as anticipated. As the burden of chronic disease rises in South Africa, the healthcare system is under pressure to provide evidence-based and cost-effective care to more patients. Avoiding endotracheal intubation reduces the patient's risk of complications which lengthens the hospitalisation period and the cost of hospitalisation. The utilisation of clinical pathways in the South African context is limited.

**Aim:** The overall aim of the study was implementation and evaluation of the outcomes of a person-centred clinical pathway for non-invasive ventilation in the critical care unit.

**Research methodology:** Mixed method design through a person-centred practice development approach utilising emancipatory action research. Several data collection methods are used throughout the phases of the study. A critical realist worldview was held which incorporated the principles of a person-centred approach through collaboration, inclusion and participation. The study was conducted in three interdependent and interrelated phases. During Phase 1, the culture of the critical care units was assessed using a validated 37-item questionnaire to establish the perceptions of the critical care nurses related to evidence implementation. A total of twenty-three registered nurses participated. Additionally, the content of the clinical pathway was adapted following a rigorous literature review in collaboration with the internal facilitators and validated via a Delphi with critical care experts. Phase 2 was dedicated to the collaborative development of an

implementation strategy for the implementation of the clinical pathway in the critical care unit. During Phase 3, the outcomes of the implementation of the clinical pathway for NIV was evaluated.

**Findings:** The collaborative utilisation of a person-centred practice development approach for the implementation and evaluation of the clinical pathway for NIV, aided the researcher in identifying moral injury amongst critical care nurses, which inhibits the implementation of research evidence into practice.

**Keywords:** *Burnout, clinical pathways, critical realism, emancipatory action research, implementation research, moral injury, non-invasive ventilation, person-centredness, practice development*

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*Teamwork is the ability to work together toward a common vision. The ability to direct individual accomplishments toward organisational objectives. It is the fuel that allows common people to attain uncommon results”*

- Andrew Carnegie

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---

## DEDICATION

*If you want to run fast, run alone; if you want to run far, run together.*

*(African proverb)*

### **I wish to dedicate this work to:**

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<b>TABLE OF CONTENT</b>	
	<b>Page</b>
Abstract	iii
Acknowledgements	v
Dedication	vi
Table of contents	vii
List of tables	xxiv
List of figures	xxviii
List of annexures	xxxiv
List of abbreviations	xxxiii

<b>CHAPTER 1 – OVERVIEW OF THE STUDY</b>		
		<b>Page</b>
<b>1.1</b>	<b>INTRODUCTION</b>	<b>1</b>
<b>1.2</b>	<b>BACKGROUND TO THE STUDY</b>	<b>2</b>
	<b>1.2.1</b>	<b>Purposively selected critical care units</b>
		<b>8</b>

<b>CHAPTER 1 – OVERVIEW OF THE STUDY</b>			
			<b>Page</b>
	<b>1.2.2</b>	<b>Gaining access</b>	10
<b>1.3</b>	<b>PROBLEM STATEMENT</b>		15
<b>1.4</b>	<b>SIGNIFICANCE</b>		16
	<b>1.4.1</b>	Nurses and nursing practice	16
	1.4.2	Patients	17
	1.4.3	Organisational significance	18
	1.4.4	South African health care system	19
<b>1.5</b>	<b>RESEARCH QUESTION</b>		20
<b>1.6</b>	<b>RESEARCH AIM AND OBJECTIVES</b>		21
<b>1.7</b>	<b>FOUNDATIONAL UNDERPINNINGS OF THE STUDY</b>		21
	<b>1.7.1</b>	<b>Definition of key terms</b>	22
	<i>1.7.1.1</i>	<i>Acute respiratory failure (ARF)</i>	22
	<i>1.7.1.2</i>	<i>Clinical pathway</i>	22
	<i>1.7.1.3</i>	<i>Non-invasive ventilation (NIV)</i>	23
	<i>1.7.1.4</i>	<i>Nurse</i>	23
	<i>1.7.1.5</i>	<i>External facilitator</i>	24
	<i>1.7.1.6</i>	<i>Internal facilitator</i>	25



<b>CHAPTER 1 – OVERVIEW OF THE STUDY</b>			
			<b>Page</b>
	<i>1.7.1.7</i>	<i>Health care professional</i>	25
	<i>1.7.1.8</i>	<i>Participants</i>	26
	<i>1.7.1.9</i>	<i>Practice development and action research</i>	26
	<i>1.7.1.10</i>	<i>Person-centredness</i>	27
<b>1.8</b>	<b>RESEARCH METHODOLOGY</b>		29
<b>1.9</b>	<b>ETHICAL CONSIDERATIONS</b>		35
	<b>1.9.1</b>	<b>Ethical approval</b>	35
	<b>1.9.2</b>	<b>Ethics in research</b>	36
	<b>1.9.3</b>	<b>Informed consent and voluntary participation</b>	36
	<b>1.9.4</b>	<b>Confidentiality and anonymity</b>	38
	<b>1.9.5</b>	<b>Protection from harm</b>	40
	<b>1.9.6</b>	<b>Role of the researcher</b>	41
	<b>1.9.7</b>	<b>Exploitation</b>	41
<b>1.10</b>	<b>UNIQUE CONTRIBUTIONS OF THE STUDY</b>		41
<b>1.11</b>	<b>SUMMARY</b>		42

<b>CHAPTER 2 – CONTEXT</b>		
		<b>Page</b>
<b>2.1</b>	<b>INTRODUCTION</b>	43
<b>2.2</b>	<b>NATIONAL CONTEXT</b>	43
	<b>2.2.1</b>	<b>General context</b>
	<b>2.2.2</b>	<b>Population and disease profile</b>
	<b>2.2.3</b>	<b>Health care administration</b>
	<b>2.2.4</b>	<b>Human resources</b>
	<i>2.2.4.1</i>	<i>Health care professionals</i>
	<i>2.2.4.2</i>	<i>Critical care nursing resources</i>
	<b>2.2.5</b>	<b>Non-invasive ventilation (NIV) underutilisation</b>
<b>2.3</b>	<b>POLICY CONTEXT</b>	62
<b>2.4</b>	<b>STAFFING AND NURSING SKILL MIX</b>	64
<b>2.5</b>	<b>ORGANISATIONAL CONTEXT</b>	69
<b>2.6</b>	<b>PROFESSIONAL CONTEXT</b>	73
<b>2.7</b>	<b>SUMMARY</b>	74

<b>CHAPTER 3 – PARADIGM AND CONCEPTUAL FRAMEWORK</b>		
		<b>Page</b>
<b>3.1</b>	<b>INTRODUCTION</b>	76
<b>3.2</b>	<b>RESEARCH PARADIGM AND DESIGN</b>	76
	<b>3.2.1</b>	<b>Critical realism</b>
	<b>3.2.2</b>	<b>Characteristics of research paradigms</b>
<b>3.3</b>	<b>CONCEPTUAL FRAMEWORK</b>	91
	<b>3.3.1</b>	<b>The i-PARiHS framework</b>
	<i>3.3.1.1</i>	<i>Innovation</i>
	<i>3.3.1.2</i>	<i>Facilitation</i>
	<i>3.3.1.3</i>	<i>Context</i>
	<i>3.3.1.4</i>	<i>The ‘recipient’ construct</i>
<b>3.4</b>	<b>PRACTICE DEVELOPMENT</b>	112
	<b>3.4.1</b>	<b>Practice development as facilitator of change</b>
<b>3.5</b>	<b>PERSON-CENTREDNESS</b>	115
<b>3.6</b>	<b>EVIDENCE-BASED PRACTICE IMPLEMENTATION</b>	118

<b>CHAPTER 3 – PARADIGM AND CONCEPTUAL FRAMEWORK</b>		
		<b>Page</b>
<b>3.7</b>	<b>ASSUMPTIONS</b>	120
	<b>3.7.1</b>	<b>Ontologic assumptions</b>
	<b>3.7.2</b>	<b>Epistemological assumptions</b>
	3.7.2.1	<i>The interaction of the researcher with those being researched</i>
	3.7.2.2	<i>Promoting critical consciousness in participants to achieve emancipation</i>
	3.7.2.3	<i>Knowledge creation is a collaborative, inductive process</i>
	<b>3.7.3</b>	<b>Methodologic assumptions</b>
	3.7.3.1	<i>The methodology is a flexible and emergent design</i>
	3.7.3.2	<i>Values the importance of patient experiences, local information and clinical experiences of participants</i>
	3.7.3.3	<i>The researcher acts as an external facilitator and encourages participants to become ‘partners’ in the implementation process</i>

<b>CHAPTER 3 – PARADIGM AND CONCEPTUAL FRAMEWORK</b>			
			<b>Page</b>
	<b>3.7.4</b>	<b>Axiological assumptions</b>	<b>125</b>
<b>3.8</b>	<b>SUMMARY</b>		<b>125</b>

<b>CHAPTER 4 – THEORETICAL UNDERPINNINGS</b>			
			<b>Page</b>
<b>4.1</b>	<b>INTRODUCTION</b>		<b>128</b>
<b>4.2</b>	<b>IMPLEMENTATION SCIENCE</b>		<b>128</b>
<b>4.3</b>	<b>EMANCIPATORY PRACTICE DEVELOPMENT AS A CHANGE PROCESS</b>		<b>131</b>
	<b>4.3.1</b>	<b>Correlation between emancipatory practice development, i-PARiHS framework and action research</b>	<b>140</b>
<b>4.4</b>	<b>CLINICAL PATHWAYS</b>		<b>144</b>
	<b>4.4.1</b>	<b>Clinical pathway development process</b>	<b>150</b>
	<b>4.4.2</b>	<b>Clinical pathway challenges identified</b>	<b>153</b>

<b>CHAPTER 4 – THEORETICAL UNDERPINNINGS</b>		
		<b>Page</b>
<b>4.5</b>	<b>SUMMARY</b>	156

<b>CHAPTER 5 – RESEARCH METHODOLOGY</b>		
		<b>Page</b>
<b>5.1</b>	<b>INTRODUCTION</b>	158
<b>5.2</b>	<b>OVERVIEW OF THE THREE PHASES</b>	158
<b>5.3</b>	<b>METHODOLOGY</b>	159
	<b>5.3.1</b>	<b>Action research and practice development</b>
		159
<b>5.4</b>	<b>RESEARCH DESIGN</b>	161
<b>5.5</b>	<b>RESEARCH METHODS</b>	167
	<b>5.5.1</b>	<b>PHASE 1 – Baseline data</b>
		168
	<i>5.5.1.1</i>	<i>Population</i>
		168
	<i>5.5.1.2</i>	<i>Sample and sample size</i>
		170
	<i>5.5.1.3</i>	<i>Sampling</i>
		171
	<i>5.5.1.4</i>	<i>Data collection</i>
		176
	<i>5.5.1.5</i>	<i>Data analysis</i>
		184

<b>CHAPTER 5 – RESEARCH METHODOLOGY</b>			
			<b>Page</b>
	5.5.1.6	<i>Rigor</i>	187
	<b>5.5.2</b>	<b>PHASE 2 - Implementation</b>	188
	5.5.2.1	<i>Population</i>	188
	5.5.2.2	<i>Sample and sampling</i>	189
	5.5.2.3	<i>Data collection and analysis</i>	189
	5.5.2.4	<i>Rigor</i>	189
	<b>5.5.3</b>	<b>PHASE 3 – Outcomes of evaluation</b>	189
	5.5.3.1	<i>Population</i>	190
	5.5.3.2	<i>Sample and sampling</i>	190
	5.5.3.3	<i>Data collection and analysis</i>	190
	5.5.3.4	<i>Rigor</i>	190
<b>5.6</b>	<b>RIGOR</b>		191
	<b>5.6.1</b>	<b>Credibility</b>	193
	5.6.1.1	<i>Researcher credibility</i>	193
	5.6.1.2	<i>Reflective diaries and field notes</i>	193

<b>CHAPTER 5 – RESEARCH METHODOLOGY</b>			
			<b>Page</b>
	5.6.1.3	<i>Prolonged engagement</i>	194
	5.6.1.4	<i>Audio recordings</i>	194
	5.6.1.5	<i>Triangulation</i>	194
	5.6.1.6	<i>Member checking</i>	195
	<b>5.6.2</b>	<b>Transferability</b>	195
	5.6.2.1	<i>Comprehensive field notes</i>	196
	5.6.2.2	<i>Data saturation</i>	197
	5.6.2.3	<i>Reliability</i>	197
	5.6.2.4	<i>Documenting quality enhancement strategies</i>	198
	5.6.2.5	<i>Thick description</i>	198
	<b>5.6.3</b>	<b>Confirmability</b>	198
	<b>5.6.4</b>	<b>Dependability</b>	201
	<b>5.6.5</b>	<b>Validity</b>	202
	5.6.5.1	<i>Pre-tested and validated questionnaires</i>	202
<b>5.7</b>	<b>THREATS TO VALIDITY</b>		204



<b>CHAPTER 5 – RESEARCH METHODOLOGY</b>		
		<b>Page</b>
<b>5.8</b>	<b>SUMMARY</b>	207

<b>CHAPTER 6 – PHASE 1: BASELINE DATA</b>			
		<b>Page</b>	
<b>6.1</b>	<b>INTRODUCTION</b>	208	
<b>6.2</b>	<b>OVERVIEW OF PHASE 1 – BASELINE DATA</b>	209	
	<b>6.2.1</b>	<b>Gaining access</b>	210
	<b>6.2.2</b>	<b>Induction of internal facilitators</b>	212
	<i>6.2.2.1</i>	<i>Role clarification</i>	215
	<i>6.2.2.2</i>	<i>Ground rules</i>	216
	<i>6.2.2.3</i>	<i>Values and beliefs</i>	217
<b>6.3</b>	<b>DATA COLLECTION PHASE 1 – OBJECTIVE 1: Assess unit culture and context to identify barriers and enablers to implementation of the clinical pathway for NIV in the critical care unit</b>	223	

<b>CHAPTER 6 – PHASE 1: BASELINE DATA</b>			
			<b>Page</b>
	<b>6.3.1</b>	<b>Proteas – Intervention Group</b>	226
	<b>6.3.2</b>	<b>Daisies – Control Group</b>	228
	<b>6.3.3</b>	<b>Disseminating the CAI results (Focus group sessions)</b>	229
<b>6.4</b>	<b>DATA COLLECTION PHASE 1 – OBJECTIVE 2: Adapt and validate the clinical pathway for NIV</b>		236
	<b>6.4.1</b>	<b>Reviewing the existing clinical pathway for NIV</b>	240
	<b>6.4.2</b>	<b>Adaptation process</b>	250
	<i>6.4.2.1</i>	<i>Assessment</i>	251
	<i>6.4.2.2</i>	<i>Planning</i>	253
	<i>6.4.2.3</i>	<i>Implementation</i>	255
	<i>6.4.2.4</i>	<i>Evaluation</i>	257

<b>CHAPTER 6 – PHASE 1: BASELINE DATA</b>			
			<b>Page</b>
	<b>6.4.3</b>	<b>Non-invasive ventilation utilisation in acute respiratory failure</b>	262
	6.4.3.1	<i>Modes of non-invasive ventilation</i>	262
	6.4.3.2	<i>Chronic obstructive pulmonary disease (COPD)</i>	264
	6.4.3.3	<i>Cardiogenic pulmonary oedema</i>	266
	6.4.3.4	<i>Immune-compromised patients</i>	268
	6.4.3.5	<i>Acute asthma</i>	269
	6.4.3.6	<i>De Novo respiratory failure</i>	270
	6.4.3.7	<i>Post-operative respiratory failure</i>	272
	6.4.3.8	<i>Chest trauma</i>	273
	6.4.3.9	<i>Post-extubation respiratory failure</i>	273
	6.4.3.10	<i>Palliative care</i>	274

<b>CHAPTER 6 – PHASE 1: BASELINE DATA</b>			
	<b>6.4.4</b>	<b>Reaching consensus</b>	275
	<b>6.4.5</b>	<b>Validating the clinical pathway – The Delphi</b>	275
	6.4.5.1	<i>Inclusion criteria for participating in the Delphi</i>	276
	6.4.5.2	<i>Delphi participant’s demographic profile</i>	276
	6.4.5.3	<i>Delphi round 1</i>	278
<b>6.5</b>	<b>SUMMARY</b>		282

<b>CHAPTER 7 – PHASE 2: IMPLEMENTATION &amp; EVALUATION</b>			
			<b>Page</b>
<b>7.1</b>	<b>INTRODUCTION</b>		285
<b>7.2</b>	<b>OVERVIEW OF PHASE 2 – IMPLEMENTATION AND EVALUATION</b>		286
	<b>7.2.1</b>	<b>Person-centred approach</b>	287
	<b>7.2.2</b>	<b>Applying the principles of practice development (PD)</b>	291

<b>CHAPTER 7 – PHASE 2: IMPLEMENTATION &amp; EVALUATION</b>		
		<b>Page</b>
<b>7.3</b>	<b>DEVELOPING THE IMPLEMENTATION STRATEGY</b>	295
<b>7.4</b>	<b>IMPLEMENTING THE CLINICAL PATHWAY FOR NIV</b>	298
	<b>7.4.1</b>	<b>Step 1 – Creating awareness (February 2019)</b>
	<b>7.4.2</b>	<b>Step 2 – Patient assessment</b>
	<b>7.4.3</b>	<b>Step 3 – Implement the clinical pathway for NIV</b>
	<b>7.4.4</b>	<b>Step 4 – Evaluate the outcomes of the clinical pathway for NIV</b>
	<i>7.4.4.1 Patient outcomes</i>	
	<i>7.4.4.2 Nurses’ outcomes (internal facilitators)</i>	
	<b>7.4.5</b>	<b>The impact of context on evidence-based practice</b>
	<i>7.4.5.1</i>	<i>Evidence</i>

<b>CHAPTER 7 – PHASE 2: IMPLEMENTATION &amp; EVALUATION</b>			
			<b>Page</b>
	<i>7.4.5.2</i>	<i>Facilitation</i>	313
	<i>7.4.5.3</i>	<i>Recipient</i>	316
	<i>7.4.5.4</i>	<i>Innovation</i>	318
	<i>7.4.5.5</i>	<i>Context</i>	319
	<b>7.4.6</b>	<b>Evaluating the outcomes of the implementation of the clinical pathway for NIV</b>	325
	<i>7.4.6.1</i>	<i>Context assessment index (CAI) questionnaire</i>	325
	<i>7.4.6.2</i>	<i>Reflective conversations with Proteas</i>	326
<b>7.5</b>	<b>REFLECTING ON THE FINDINGS</b>		341
	<b>7.5.1</b>	<b>Pre-requisites</b>	343
	<b>7.5.2</b>	<b>Care environment</b>	349
	<b>7.5.3</b>	<b>Person-centred care processes</b>	360
<b>7.6</b>	<b>SUMMARY</b>		367

<b>CHAPTER 8 – PHASE 3: OUTCOMES OF EVALUATION</b>		
		<b>Page</b>
<b>8.1</b>	<b>INTRODUCTION</b>	369
<b>8.2</b>	<b>OVERVIEW OF PHASE 3 – OUTCOMES OF EVALUATION</b>	370
<b>8.3</b>	<b>OUTCOMES OF EVALUATION</b>	370
	<b>8.3.1</b>	<b>Key learnings from internal facilitators</b>
		371
<b>8.4</b>	<b>DISCUSSION OF OUTCOMES</b>	373
	<b>8.4.1</b>	<b>Evidence-based practice</b>
		373
	<b>8.4.2</b>	<b>Teamwork</b>
		374
	<b>8.4.3</b>	<b>Disillusionment</b>
		375
	<b>8.4.4</b>	<b>Workplace culture</b>
		376
<b>8.5</b>	<b>DEVELOPING A CONCEPTUAL FRAMEWORK OF CURRENT WORKPLACE CULTURE</b>	387
	<b>8.5.1</b>	<b>External facilitator’s key learnings</b>
		387
	<i>8.5.1.1</i>	<i>Facilitation of change</i>
		387

<b>CHAPTER 8 – PHASE 3: OUTCOMES OF EVALUATION</b>			
			<b>Page</b>
	<i>8.5.1.2</i>	<i>Dysfunctional health care system</i>	389
	<i>8.5.1.3</i>	<i>Effective leadership</i>	391
	<b>8.5.2</b>	<b>Researcher’s conceptual framework of current workplace culture</b>	392
<b>8.6</b>	<b>SUMMARY</b>		396

<b>CHAPTER 9– CONCLUSIONS, CONTRIBUTIONS, IMPLICATIONS &amp; LIMITATIONS</b>			
			<b>Page</b>
<b>9.1</b>	<b>INTRODUCTION</b>		398
<b>9.2</b>	<b>CONCLUSIONS</b>		398
	<b>9.2.1</b>	<b>Objective 1:</b> Assess unit culture and context to identify barriers and enablers to implementation of the clinical pathway for NIV in the critical care unit.	398
	<b>9.2.2</b>	<b>Objective 2:</b> Adapt and validate the clinical pathway for NIV.	400



<b>CHAPTER 9– CONCLUSIONS, CONTRIBUTIONS, IMPLICATIONS &amp; LIMITATIONS</b>			
		<b>Page</b>	
	<b>9.2.3</b>	<b>Objective 3:</b> Adopt a person-centred practice development approach to collaboratively design and implement a strategy for implementing the clinical pathway for NIV in the critical care unit.	400
	<b>9.2.4</b>	<b>Objective 4:</b> Evaluate the outcomes of the implementation of the NIV clinical pathway in the critical care unit.	402
<b>9.3</b>	<b>CONTRIBUTIONS</b>		402
	<b>9.3.1</b>	<b>Theoretical contribution</b>	402
	<b>9.3.2</b>	<b>Methodologic contribution</b>	406
	<b>9.3.3</b>	<b>Nursing profession</b>	407

<b>CHAPTER 9– CONCLUSIONS, CONTRIBUTIONS, IMPLICATIONS &amp; LIMITATIONS</b>		
		<b>Page</b>
<b>9.4</b>	<b>IMPLICATIONS FOR PRACTICE</b>	408
	<b>9.4.1</b>	<b>Implications for policy makers</b>
		409
	<b>9.4.2</b>	<b>Implications for nursing practice</b>
		410
	<i>9.4.2.1</i>	<i>Team cohesion</i>
		410
	<i>9.4.2.2</i>	<i>Supportive leadership</i>
		411
	<i>9.4.2.3</i>	<i>Training</i>
		414
	<b>9.4.3</b>	<b>Implications for nursing education</b>
		415
	<b>9.4.4</b>	<b>Implications for future research</b>
		416
<b>9.5</b>	<b>LIMITATIONS</b>	417
<b>9.6</b>	<b>CONCLUSION</b>	418
	<b>LIST OF REFERENCES</b>	421

<b>LIST OF TABLES</b>		
		<b>Page</b>
Table 1.1	Comparison of critical care units in both hospitals	10
Table 1.2	WHO goals for person-centred health care	19
Table 1.3	Principles of action research and application to the study	30
Table 1.4	Summary of the three phases of the study	32
Table 2.1	Private hospital groups in South Africa	46
Table 2.2	Rate of active TB cases in South Africa, per 100 000 population, 2007-2015	50
Table 2.3	Distribution of HIV infection per age group and gender, per 100 000 population, 2018	50
Table 2.4	Critical care resources in South Africa	52
Table 2.5	Annual licence fees per category of nurse	57
Table 2.6	Nursing skill mix, roles and functions in critical care units	65
Table 2.7	Ranking of critical care units	70

<b>LIST OF TABLES</b>		
		<b>Page</b>
Table 2.8	Ideal nursing skill mix per critical care unit	71
Table 3.1	The research onion - applied	81
Table 3.2	Summary of the characteristics of a research paradigm and application to the study	85
Table 3.3	Researcher's view of the research paradigm of the study	88
Table 4.1	Interventions to overcome barriers	137
Table 4.2	Application to the study	141
Table 4.3	Advantages and disadvantages of clinical pathways	147
Table 5.1	Application of the characteristics of qualitative inquiry	166
Table 5.2	Similarity of samples	170
Table 5.3	Advantages and disadvantages of purposive sampling and mitigating actions	174
Table 5.4	Principles of focus groups	181

<b>LIST OF TABLES</b>		
		<b>Page</b>
Table 5.5	Summary of the application of the aspects of rigor	192
Table 5.6	Strategies to enhance transferability	196
Table 5.7	Databases, criteria and keywords	197
Table 5.8	Strategies to enhance confirmability	199
Table 5.9	Enhancing dependability	201
Table 5.10	Instrument validity	203
Table 5.11	Threats to internal and external validity	204
Table 6.1	Summary of activities during Phase 1 – Baseline data	210
Table 6.2	Internal facilitator’s characteristics	212
Table 6.3	Common themes related to values and beliefs	220
Table 6.4	Characteristics of CAI participants per hospital	224
Table 6.5	Summary of barriers and possible solutions	234
Table 6.6	Criteria for literature search	238

<b>LIST OF TABLES</b>		
		<b>Page</b>
Table 6.7	Current NIV utilisation in South Africa	245
Table 6.8	Mitigating the barriers to implementation	248
Table 6.9	Indications for NIV	252
Table 6.10	Absolute and relative contraindications for NIV	253
Table 6.11	Complications associated with NIV	256
Table 6.12	Predictors of NIV failure	258
Table 6.13	Non-invasive ventilation (NIV) risk factors	260
Table 6.14	Delphi participant's demographic profile	277
Table 6.15	Evaluation of the adapted clinical pathway for NIV	278
Table 7.1	Overview of Phase 2 - Implementation	286
Table 7.2	Applying the principles of practice development	292
Table 7.3	Exclusions from NIV	306
Table 7.4	Summary of themes, sub-themes and categories from interview data	309

<b>LIST OF TABLES</b>		
Table 7.5	Themes, sub-themes and categories from individual interviews	331
Table 8.1	Summary of key learnings of internal facilitators	372
Table 8.2	Signs and symptoms of moral injury	380
Table 8.3	Linking barriers to person-centredness and moral injury	384
Table 8.4	Summary of external facilitator's key learnings	388
Table 8.5	Concepts of researcher's conceptual framework	394
Table 9.1	Shared leadership, person-centredness and moral reconciliation	412

<b>LIST OF FIGURES</b>		
		<b>Page</b>
Figure 1.1	Phases of the study	31
Figure 2.1	Map of South African provinces and provincial capitals	45

<b>LIST OF FIGURES</b>		
		<b>Page</b>
Figure 2.2	Population numbers per province	47
Figure 2.3	Leading causes of death in South Africa, 2015-2016	49
Figure 2.4	Mandate of the South African Nursing Council (SANC)	56
Figure 3.1	Application of the research onion	80
Figure 3.2	The original PARiHS framework	93
Figure 3.3	The i-PARiHS framework	95
Figure 5.1	Transformative, sequential mixed methods design	164
Figure 6.1	Phase 1- Baseline data	208
Figure 6.2	Flowchart of Phase 1 – Baseline data	209
Figure 6.3	The ‘Order of Change’ certificates	215
Figure 6.4	‘Goody bags’ for internal facilitators	215
Figure 6.5	Values and beliefs exercise with Proteas and Daisies	219



<b>LIST OF FIGURES</b>		
		<b>Page</b>
Figure 6.6	Analysis of the Proteas' CAI	226
Figure 6.7	Elements of the CAI - Proteas (intervention group)	226
Figure 6.8	Elements of the CAI - Daisies (control group)	228
Figure 6.9	Example of data extraction table	239
Figure 6.10	Clinical pathway adaptation process	240
Figure 6.11	NIV mask	241
Figure 6.12	Existing clinical pathway for NIV in a critical care unit	244
Figure 6.13	Validated clinical pathway for NIV	280
Figure 7.1	Phase 2 – Implementation	285
Figure 7.2	Proteas' implementation strategy for the clinical pathway for NIV (intervention group)	296
Figure 7.3	Two participants' impression of current workplace	329

<b>LIST OF FIGURES</b>		
		<b>Page</b>
Figure 7.4	A participant's impression of a flourishing workplace	334
Figure 7.5	The Person-centred Framework	343
Figure 7.6	Evaluation of actions to support evidence implementation	366
Figure 8.1	Phase 3 – Evaluation	369
Figure 8.2	Researcher's conceptual framework of current workplace culture	393

<b>LIST OF ANNEXURES</b>	
<b>ANNEXURE A - ETHICS</b>	
Annexure A1	Medical approval notice – University of Pretoria
Annexure A2	Hospital A and B permission letter
<b>ANNEXURE B – GAINING ACCESS</b>	
Annexure B1	Presentation at hospitals
Annexure B2	Invitation (Flyer) Proteas and Daisies
Annexure B3	Phases of the study
<b>ANNEXURE C - PHASE 1: BASELINE DATA</b>	
Annexure C1	Participant information and consent document – Internal Facilitator
Annexure C2	Ground rules
Annexure C3	Values & Beliefs exercise – Internal facilitators
Annexure C4	Participant information and consent document – CAI participants
Annexure C5	Analysis of CAI
Annexure C6	CAI Feedback to hospital management
Annexure C7	Example of a reflective diary
Annexure C8	Order of Change certificate

<b>LIST OF ANNEXURES</b>	
<b>ANNEXURE D – CLINICAL PATHWAY</b>	
Annexure D1	Original clinical pathway for NIV
Annexure D2	Data extraction table
Annexure D3	Participant information and consent document – Delphi
Annexure D4	Example of Delphi participant’s feedback
Annexure D5	Adapted and validated clinical pathway for NIV
<b>ANNEXURE E – PHASE 2: IMPLEMENTATION &amp; EVALUATION</b>	
Annexure E1	Implementation plan
Annexure E2	Participant information and consent document – patient
Annexure E3	Extract of WhatsApp group communications
Annexure E4	Breakfast invitation to internal facilitators
<b>ANNEXURE F – PHASE 3: EVALUATION</b>	
Annexure F1	Interview schedule
Annexure F2	Participants’ impression of current workplace

<b>LIST OF ANNEXURES</b>	
<b>ANNEXURE F – PHASE 3: EVALUATION</b>	
Annexure F3	Transcription of a reflective conversation
Annexure F4	CAI post-intervention Hospital A
Annexure F5	CAI post-intervention Hospital B
Annexure F6	Researcher’s conceptual framework
Annexure F7	Extract of focus group transcription
<b>ANNEXURE G – DECLARATIONS</b>	
Annexure G1	Safekeeping of data
Annexure G2	Editor’s declaration

<b>LIST OF ABBREVIATIONS</b>	
ARF	Acute respiratory failure
ATS	American Thoracic Society
CAI	Context assessment index
CCU	Critical care unit
COPD	Chronic obstructive pulmonary disease
EPA	European Pathway Association
ERS	European Respiratory Society
HIV	Human immunodeficiency virus
HPCSA	Health Professions Council of South Africa
i-PARiHS	Innovation - Promoting Action on Research Implementation in Health Services
NIV	Non-invasive ventilation
PARiHS	Promoting Action on Research Implementation in Health Services
SANC	South African Nursing Council
TB	Tuberculosis
WHO	World Health Organization

# Chapter 1

## Orientation to the study

### 1.1 INTRODUCTION

Non-invasive ventilation (NIV) refers to the delivery of assisted breaths and positive airway pressure without the necessity of an invasive endotracheal tube. Non-invasive ventilation (NIV) has shown to have the same physiological improvements as invasive mechanical ventilation and is no longer considered only as a means of weaning a patient from invasive mechanical ventilation. Research evidence supports the use of NIV in patients with acute respiratory failure (ARF) of different aetiologies, and the only true contraindications for using NIV were identified as pregnancy, recent upper gastro-intestinal surgery, total airway obstruction, facial trauma, and acute myocardial infarction (Digby, Keenan, Parker, Sinuff, Burns, Metha et al. 2015:331; Mas & Masip 2014:838; Berkus, Sundh, Nilholm, Fredrikson & Walther 2013:312; Cross 2012:37; Masclans, Perez, Almirall, Lorente, Socias, Vidaur et al. 2013:249; Endorf & Dries 2010:217).

The benefits of non-invasive ventilation include a reduction in airway injuries, reduced ventilator associated pneumonia (VAP), reduced length of hospitalisation, reduced costs, and enhanced patient comfort (Peng, Ren, Liu, Zhang et al. 2016:24; Popat & Jones 2016:347; Terzano, Di Stefano, Conti, Di Nicola et al. 2012:3; Endorf & Dries 2010:217). The patient receiving non-invasive ventilation is also able to eat, drink and communicate freely, reducing the incidence of adverse gastro-intestinal effects (Mas & Masip 2014:843; Terzano et al. 2012:3; Endorf & Dries 2010:217). Moreover, the patient is less likely to suffer feelings of isolation and anxiety since normal communication with

relatives, and the multidisciplinary teams are not impeded (Mas & Masip 2014:843; Terzano et al. 2012:3; Endorf & Dries 2010:217).

Avoiding endotracheal intubation reduces the patient's risk of complications (Zhu, Huang, Wei & Shi 2016:1; Mas & Masip 2014:837; Burns, Meade, Premji & Adhikari 2014:E112-22; Antonelli, Pennisi & Conti 2003:65s). The use of NIV for acute exacerbations of chronic obstructive pulmonary disease (COPD) and acute cardiogenic pulmonary oedema has increased by 400% since 2000 and has an associated reduction in the need for endotracheal intubation of 42%. Consequently, NIV has become the first-line treatment for hypercapnic respiratory failure (Popat & Jones 2016:347; Zhu et al. 2016:1; Lindenauer, Stefan, Shieh, Pekow et al. 2015:408; Mas & Masip 2014:837). Although studies have confirmed the safety and efficacy of NIV for acute hypercapnic respiratory failure, the application of NIV in ARF of various aetiologies has shown to be beneficial by avoiding the complications associated with invasive mechanical ventilation and preserving the patient's comfort and dignity (Popat & Jones 2016:347; Zhu et al. 2016:1).

Alternative applications include hypoxemia, post-operative support for cardio-thoracic surgery patients, immuno-compromised patients, community-acquired pneumonia and palliative care (Popat & Jones 2016:349; Zhu et al. 2016:1; Digby, Keenan, Parker et al. 2015:335; Lindenauer et al. 2015:408; Mas & Masip 2014:840; Walkey & Wiener 2013:14; Berkus et al. 2013:313-318; Brochard et al. 2002:719). The benefits of NIV might be lost due to the widespread variability of use (Peng et al. 2016:24; Digby et al. 2015:331).

## **1.2 BACKGROUND TO THE STUDY**

Non-invasive ventilation (NIV) refers to the delivery of assisted breaths and positive airway pressure without the necessity of an invasive



endotracheal tube. Oxygen is delivered under positive pressure to the patient via a facemask that forms an airtight seal around the face. The absence of an artificial airway preserves the functions of the upper respiratory tract, the cough reflex, speech and swallowing (Toft-Petersen, Torp-Pedersen, Weinreich & Rasmussen 2017: e0171713; Popat & Jones 2016:347; Cross 2012:35; Penuelas, Frutos-Vivar & Esteban 2007:1211).

Acute respiratory failure (ARF) occurs due to the inability of the pulmonary system to maintain adequate gas exchange because of alterations in the transport of oxygen across the alveolar surface in the lung, alterations in cardiac output, or alterations in carbon dioxide clearance. Acute respiratory failure is diagnosed when a patient's arterial blood gas analysis shows a partial oxygen pressure of 50mmHg or less accompanied by a partial carbon dioxide pressure of 50mmHg or more along with alteration in the arterial pH value. Hypercapnic ARF is associated with chronic obstructive pulmonary disease and acute pulmonary oedema, whereas hypoxic ARF is associated with conditions, such as tuberculosis and pneumonia (Parrilo & Dellinger 2019:614; Bersten & Handy 2019:363; Mas & Masip 2014:838).

Mahomed and Asmall (2015:2) state that as the burden of chronic disease rises in South Africa, the healthcare system is under pressure to provide affordable and cost-effective care to large numbers of patients. In the South African context, respiratory infections related to tuberculosis (TB) and HIV infection affect many patients and was the leading cause of death for the year 2017. Up to 60% of HIV-positive persons in South Africa are co-infected with TB according to the World Health Organisation Global Health Observatory data (2017:np) and the WHO Global Tuberculosis Report (2018:204-205). Immune compromised patients are at higher risk for acquiring opportunistic infections in the healthcare setting. Non-invasive ventilation (NIV)

should be considered for patients requiring ventilator support, because avoiding endotracheal intubation reduces the patient's risk of complications which lengthen the hospitalisation period and the cost of hospitalisation (Burns, Meade, Premji & Adhikari 2014: E112-22; Antonelli, Pennisi & Conti 2003:65s). Additionally, Digby et al. (2015:334) state that the use of NIV is associated with a significant reduction in complications and a reduction in the mortality rate.

Economic and systematic analyses of randomised clinical trials conducted in Europe in 2003 showed that the cost of non-invasive ventilation (NIV) was significantly less compared to traditional methods of ventilation (Lightowler, Wedzicha, Elliott & Ram 2003:3; Plant, Owen, Parrott & Elliott 2002:3). Private sector hospitals in South Africa are under pressure to provide quality, cost-effective care to an ever-expanding population (Mahomed & Asmall 2015:2). The demand for critical care services in South Africa far exceeds the supply of critical care resources (Mahomed & Asmall 2015:2). South Africa is currently experiencing a severe shortage of critical care resources to provide adequate care for patients, including a shortage of critical care beds in hospitals, critical care qualified physicians, and critical care qualified nurses. Resource limitations contribute to a possible delay in treating the patient who requires advanced airway management (Rose 2012:5). Although the multidisciplinary team has the necessary evidence related to the use of non-invasive ventilation, the knowledge is not translated into clinical practice, and the patients are not receiving the benefits of NIV (Berkus et al. 2013:312; Cross 2012:37; Masclans et al. 2013:249; Endorf & Dries 2010:217).

After recognising the need for an alternative to invasive mechanical ventilation for patients presenting with ARF who are at risk of developing ventilator associated complications, the researcher, in collaboration with the multidisciplinary team in the critical care unit, developed a clinical pathway for NIV (Balfour, Coetzee & Heyns

2012:107-114) (see Annexure D1). The researcher assumed the clinical pathway would be translated into clinical practice by the same multidisciplinary team members, who collaborated in the development of the clinical pathway, yet this did not materialise and to date the reason for this is unknown. However, the influence of doctor preferences regarding patient management has a significant impact on patient treatment plans in the South African context, and specifically in private sector health care settings, which contributes to the variances in patient care and clinical pathway acceptance (see Chapter 2 for full discussion).

The existing clinical pathway for NIV includes assessment of alterations in arterial blood gas values, level of consciousness, and haemodynamic status as criteria for the commencement of NIV for patients presenting with ARF (see Annexure D1). To address the gap between evidence-based practice and the implementation of evidence into clinical practice, Balfour, Coetzee and Heyns (2012:107) collaborated with multidisciplinary team members, including critical care nurses, attending doctors, pulmonologists, physiotherapists and respiratory specialists from one private sector hospital to develop a clinical pathway for NIV, under the assumption that it would be implemented in the ICU.

The development and implementation of the clinical pathway for NIV was aimed at providing an alternative to invasive ventilation to reduce ventilator associated pneumonia (VAP) complication rates, shorten the patients' length of stay and assist critical care nurses in commencing appropriate advanced airway support and mechanical ventilation timeously to reduce delays in treatment for patients, according to the scope of practice and standards determined by the South African Nursing Council (SANC). The South African Nursing Council (SANC) is the statutory, professional body responsible for setting and maintaining the standard of nursing practice in South Africa and is currently

operating under the provisions of the Nursing Act, 33 of 2005. The regulatory functions of the South African Nursing Council are discussed in chapter 2.

The SANC has published specific competencies related to critical care nurses which are aligned to the Scope of Practice, and professional competencies (Nursing Act, 33 of 2005). Sections 2.1.1 and 2.1.6 of Domain 2 state that the critical care nurse is responsible for implementing comprehensive, evidence-based care of the patient, through early detection of potential adverse patient reaction and the implementation of appropriate interventions with urgency to improve patient outcomes. The critical care nurse is deemed competent to initiate airway maintenance according to the patient's health needs through appropriate technological support, including intubation, mechanical ventilation, and continuous positive airway pressure, including NIV.

The aim of a person-centred practice development approach to implementation of a clinical pathway is to empower the critical care nurse to be proactive in reducing adverse critical patient events in collaboration with the multidisciplinary team to improve patient outcomes. The translation of the evidence-based clinical pathway into clinical practice did not realise, however, and the reasons for this are currently unknown. The researcher is of the opinion that due to the hierarchical nature of nursing in South Africa, critical care nurses are not allowed to practise to the full extent of their Scope of Practice, for example commencing NIV for qualifying patients. The role of the critical care nurse is prescribed by the preferences of attending doctors and the organisation or hospital group in which they practise. For example, in the purposively selected critical care units, doctor's protocols are documented such as the doctor's preferred size of nasogastric tube to be used on all their patients, and nursing are expected to comply with these preferences without questioning the doctor.

The clinical pathway for non-invasive ventilation was developed in collaboration with the multidisciplinary teams working in the purposively selected critical care units. For this reason, the researcher deemed it appropriate to include the same participants for the purpose of this study. The purposively selected critical care units are classified as general critical care units, where both medical and surgical patients are admitted in the same unit. The patient mix in these units consists of 20% ICU and 80% high care patients. ICU patients are considered severely ill, with a high level of professional dependency on the specialty trained nurse, who should be competent to manage advanced, sophisticated equipment to sustain life, whereas high care patients are less dependent on equipment and specialty trained nurses to provide nursing care (The Hospital Group, 2107:np). Consensus was reached by the internal facilitators at both hospitals to use pseudonyms to refer to each hospital, namely Proteas for Hospital A and Daisies for Hospital B.

**Please note:** From this point forward, the pseudonyms will be used to refer to the hospitals.

Using a person-centred practice development approach affirms the invaluable contributions of nurses in developing nursing knowledge for the benefit of the patient, through creating a context and culture which embraces research evidence in practice and empowers continuous improvement to sustain exacting standards of care (McConnell, McCance & Melby 2016:39). Previous attempts at implementing evidence into clinical practice used a top-down approach which was met with resistance and inconsistent implementation. Practice development focuses on a 'bottom-up' approach by involving the nurses in every step of the implementation process. A person-centred 'bottom-up' approach has been found to increase the participation and collaboration within the multidisciplinary team to achieve consistent and

improved patient outcomes in the critical care unit (Laird, McCance, McCormack & Gibben 2015:1461; Hauck, Winsett & Kuric 2012:665; Aarons, Hurlburt & McCue Horwitz 2011:13).

### **1.2.1. Purposively selected critical care units**

The study was conducted in two hospitals of one private hospital group in Gauteng. The purposively selected critical care units had a bed capacity of eight (8) and ten (10) beds, respectively. Both hospitals were in similar geographic locations approximately 30km apart, and situated in sub-urban, industrial areas surrounded by lower-income residential areas. Poor municipal service delivery further predisposes the residents to chronic airway diseases.

On admission, approximately 50% of the patients require ventilator support for conditions ranging from respiratory failure secondary to respiratory infections such as tuberculosis, pneumonia, and exacerbations of chronic obstructive airway disease. The shortage of beds for new admissions was a daily challenge. Based on a situational analysis conducted in 2017, the nursing skill mix of the two selected units indicated a dire shortage of registered nurses – both critical care qualified and experienced - as well as enrolled Nurses. The deficit is addressed by using temporary nurses from nursing agencies, but the national shortage of nurses impacts heavily on the availability of adequately trained nurses to fill the gap. Table 2.9 compares the purposively selected critical care units.

Nursing labour hour norms are defined by the individual hospital groups and reflect the number of hours a nurse is required to care for the patient based on the acuity level of the patient. For example, a patient with a high dependency on nursing intervention requires a nurse to be at the bedside for a minimum of 18 out of 24 hours. The remaining time is spent on additional nursing tasks and activities in the

unit (Hospital Patient Acuity Guidelines, 2018). Nurses work 12-hour shifts from 06:45 to 19:00 for day shift and 18:45 to 07:00 for night shift.

Nurses are required to rotate between day and night shift every two months. Typically, a day shift nurse will work three shifts followed by two rest days, then two shifts followed by three rest days. A night shift nurse generally works five shifts, followed by two rest days and then two shifts followed by five rest days. The current staffing model allows for a ratio of one nurse per patient based on the acuity score of the individual patient, meaning that a patient receiving mechanical ventilation is allocated to one nurse. In the interest of continuity of care, the current practice is to allocate the same nurse to the same patient for a minimum of two consecutive 12-hour day shifts and two consecutive 12-hour night shifts. The staffing model allows for a flexible component, which means that more nurses can be utilized if the patient acuity level requires it, and the additional nurses are placed by agencies who specialize in short term placements of nursing staff (Hospital, Staffing Guidelines, 2018).

During the admission process when the patient arrives in the critical care unit, the doctor is often not immediately available due to a shortage of critical care qualified physicians. The initial patient assessment and interpretation of arterial blood gas values and chest X-ray is done by the critical care qualified nurse, in terms of the Scope of Practice of the critical care nurse. The SANC critical care competencies published in 2014 (SANC 2014:1-6) state that the critical care nurse is deemed competent to initiate life-sustaining measures such as placement of an advanced airway and commencing mechanical ventilation. The researcher observed that the lack of immediate access to a physician delays the treatment of a patient requiring ventilator assistance or advanced airway management, which in turn can influence the patient outcome negatively. Implementing the

clinical pathway for NIV in the critical care unit might improve patient outcomes, because the patient will receive ventilator assistance without delay and simultaneously avoid the complications associated with invasive mechanical ventilation.

### 1.2.2. Gaining access

Gaining access to the purposively selected critical care units is described in Chapter 6. The researcher was well known to the hospital management teams of both hospitals and the nurses in the selected critical care units. The researcher was previously employed as a critical care qualified registered nurse, shift leader and unit manager in the respective hospitals. The researcher therefore had an emic perspective of the organisational context and the unit context of the hospitals. The researcher's role was defined and described in Section 1.7.1.5.

During the implementation phase of the study, the Proteas (Hospital A) were the intervention group, where the researcher provided ongoing support for the internal facilitators to implement the clinical pathway according to the collaboratively developed implementation plan (see Chapter 6 for discussion of the researcher's role). The Daisies (Hospital B) acted as the control group for the study (see description in Chapter 6). A comparison of the purposively selected critical care units is presented in Table 1.1.

**Table 1.1: Comparison of critical care units in both hospitals**

Criteria	Proteas (hospital A)	Daisies (hospital B)
<b>Geographic location</b>	Sub-urban, industrial area Low-cost housing with poor basic services	Sub-urban, industrial area Low-cost housing with poor basic services



**Table 1.1: Comparison of critical care units in both Hospitals**

Criteria	Proteas (hospital A)	Daisies (hospital B)
<b>Disease prevalence</b>	Tuberculosis, pneumonia, COPD	Tuberculosis, pneumonia, COPD
<b>Lead doctor/intensivist</b>	Yes	Yes
<b>Number of beds</b>	8 licensed beds	10 licensed beds
<b>Registered Nurses, - Critical care qualified</b>	4	2
<b>Registered nurses, experience in CC</b>	1	3
<b>Enrolled nurses</b>	2	8
<b>Enrolled nursing assistants</b>	0	2
<b>Average bed occupancy rate</b>	85%	90%
<b>Average length of stay of invasively ventilated patients</b>	5.6 to 10 days	5.6 to 10 days
<b>Current use of mechanical ventilation</b>	40% of patients requiring ventilatory support	30% of patients requiring ventilatory support
<b>Current NIV as a first line treatment option</b>	<10% utilisation	<10% utilisation

**Source: Statistics (Hospital Group, 2017:np)**

Table 1.1 shows the variable use of NIV in two similar hospitals in one private Hospital Group in Ekurhuleni, Gauteng, South Africa. Non-invasive ventilation is only considered as a treatment option for 1 in every 10 patients. There are no formal guidelines for the initiation of NIV available in the critical care units at present. Implementing a clinical pathway for NIV has the potential to improve patient outcomes and shorten the length of stay, thereby increasing the number of beds available for critically ill patients (Popat & Jones 2016:349; Zhu et al.

2016:1; Digby, Keenan, Parker et al. 2015:335; Lindenauer, Stefan, Shieh, Pekow et al. 2015:408; Mas & Masip 2014:838).

This study required the participation of the multidisciplinary team to provide valuable input regarding the content and implementation of the clinical pathway. Examining the content of the clinical pathway and providing evidence-based input to ensure that the content was relevant required the multidisciplinary team's collaboration. For the purposes of this study the multidisciplinary team included specialist physicians, critical care nurses, physiotherapists, and other specialists in the field of pulmonary diseases. Members of the multidisciplinary team who were involved in the development of the existing clinical pathway were approached to participate in reviewing and adapting the clinical pathway (Balfour et al. 2012:107). Consecutive sampling was employed for the verification of the content of the clinical pathway through a Delphi technique to gain consensus on the final clinical pathway to be implemented as suggested by Frey (2018:480).

The use of NIV for patients presenting with ARF of various aetiologies has proven to reduce the incidence of adverse events such as ventilator acquired pneumonia (VAP) which increases the length of stay. An increased length of stay leads to an increase in the cost of hospitalisation and reduces the availability of critical care resources. The average length of stay for a patient who received invasive mechanical ventilation ranged from 5.6 to 10 days in the purposively selected units, which was consistent with international benchmarks for invasive ventilation (Klompas, Kleinman & Karcz 2012:635). Although best practice guidelines for the prevention of VAP have been implemented, the emergence of new antibiotic resistant micro-organisms, such as *Candida auris*, leads to a significant increase in VAP rates, further increasing the length of stay and costs of hospitalisation in invasively ventilated patients.

Avoiding endotracheal intubation significantly reduces the risk of VAP. Internationally, the use of NIV for patients presenting with acute exacerbations of COPD and acute cardiogenic pulmonary oedema has increased by 400%, thereby reducing the incidence of endotracheal intubation by 42%, and ultimately reducing the length of stay and costs of hospitalisation (Popat & Jones 2016:347; Zhu et al. 2016: 1; Lindenauer et al. 2015:408; Mas & Masip 2014:837). To the contrary, NIV was used in less than 10% of patients in the purposively selected critical care units. The lack of a well-documented guideline for implementing NIV leads to variability in use, and the benefits of NIV are not reaching the patients (Digby, Keenan, Parker et al. 2015:335; Lindenauer et al. 2015:408; Berkus et al. 2013:313 -318; Brochard et al. 2002:719).

The clinical pathway for NIV was intended to address the underutilisation of this mode of ventilation in the South African context, to enable effective collaboration of the multidisciplinary team and critical care nurses to provide evidence-based care to qualifying patients. The rising burden of chronic disease in South Africa puts a significant strain on the availability of critical care resources for an ever-expanding population. Implementing and evaluating the outcomes of an existing clinical pathway for NIV might reduce the incidence of adverse patient events, thereby reducing the length of stay, which would ultimately result in cost-effective treatment for patients presenting with ARF. Shortening the length of stay might increase the availability of critical care beds to a larger number of patients. Implementing and evaluating the outcomes of the clinical pathway for NIV might enable critical care nurses and the multidisciplinary team to effectively translate research evidence into clinical practice for the benefit of the patients, their families and critical healthcare services.

Translating research evidence into clinical practice presents many challenges (Walsh, Kitson, Cross, Thoms, Moss, Campbell et al.

2012:75; Kontos & Poland 2009:2; Fineout-Overholt, Melnyck & Schultz 2005:342). Barriers and enablers that impact on the implementation of evidence-based practice need to be identified and addressed. Potential barriers to implementing research evidence include a lack of access to research evidence, lack of time to engage in research-related activities, and lack of knowledge to critically appraise research evidence (Rankin, Butow, Thein, Robinson, Shaw, Price et al. 2015:4; Majid, Foo, Luyt, Zhang, Theng, Chang et al. 2011:230). The findings of international studies might not apply fully in the South African nursing context. Research evidence has been used mainly by organisations and policy-makers to influence nursing practice in a linear 'top-down' approach, which has caused resistance from nurses to implement evidence as part of daily patient care (Hauck, Winsett & Kuric 2012:665; Aarons, Hurlburt & McCue Horwitz 2011:13).

Emancipatory practice development adopts a person-centred approach, which enables nurses to identify and address perceived barriers in the clinical setting and empowers nurses to change current practice to improve patient outcomes (McConnell et al. 2016:39; Laird, McCance, McCormack & Gribben 2015:1455; Brekke, Phillips, Pancake, Lewis & Duke 2009:594). Non-invasive ventilation reduces the risk of complications that inevitably lead to a longer hospitalisation period for the patient. Using a person-centred practice development approach might realise the benefits of NIV for the patient, improve multidisciplinary collaboration and improve clinical patient outcomes such as a reduction in mortality rates. At the same time, the nurse would be empowered to change current practice through implementing research evidence in clinical practice. The effective use of the clinical pathway for NIV for qualifying patients would not only benefit patients by avoiding the complications of invasive endotracheal ventilation, but also make critical care facilities available to more patients. The multidisciplinary team, particularly nurses, would be emancipated from rigid, culture-based practices to embrace innovation and equipped to

become truly evidence based and enhance person-centred patient outcomes (Laird et al. 2015:1461; Hauck et al. 2012:665; Aarons et al. 2011:13).

### **1.3 PROBLEM STATEMENT**

In the South African context, current practice in private sector health care organisations is greatly determined by doctor preference, which means the patients have limited involvement in their treatment options and patient treatment goals are often disregarded (Young 2016; Jobson 2015; Econex 2013). Private sector health care depends on the support of the doctors to sustain their business goals, which contributes to the hierarchical culture and the perception that the doctor has the sole authority to make all clinical decisions regardless of best practice guidelines (Young 2016; Jobson 2015; Econex 2013) Similar challenges were identified internationally (He & Yang 2015:394; Rankin, Butow, Thein, Robinson et al. 2015:6 of 8).

The critical care nurses are caught in the middle and feel that they are not empowered to contribute to patients' person-centred care and must abide by doctor preferences. Clinical pathways are viewed as restrictive and dismissed by doctors due to a lack of understanding of the key role clinical pathways play in ensuring optimised patient care and aligning patient care with patient expectations (Wilberforce, Challis, Davies, Kelly, Roberts & Clarkson 2017:87; McConnell, McCance & Melby 2016:39; Balch 2016:SP179). Person-centred approaches have been shown to be effective in altering restrictive culture-based practices to improve patient outcomes, and the time has come to use this new strategy to implement evidence-based clinical pathways at the bedside.

Clinical pathways are patient-centred, which means that the patient is actively involved and participates in the decision-making process along

with the multidisciplinary team (Lawal, Rotter, Kinsman, Machotta et al. 2016:35). Internationally, person-centred clinical pathways have been implemented with great success since the 1980s (Grimsmo, Løhre, Røsstad, Gjerde, Heiberg & Steinsbekk 2018:152; Shabaninejad, Alidoost & Delgoshaei 2018:4; He & Yang 2015:395). However, in the South African context the utilisation of clinical pathways has not received much attention or been implemented in clinical practice. This could be attributed to a lack of consensus among members of the multidisciplinary team, poor communication within the multidisciplinary team regarding patient outcome goals and a poor understanding of the role of clinical pathways in optimizing patient care (Rochweg, Brochard, Elliott, Hess, Hill, Naval et al. 2017; Kneyber, De Luca, Calderini, Jarreau et al. 2017:1766; Popat & Jones 2016:346; Mas & Masip 2014:838; Digby et al. 2015:331; Walkey & Wiener 2013:13).

#### **1.4 SIGNIFICANCE OF THE STUDY**

In the South African context the utilisation of clinical pathways has not received much attention, despite evidence to support the use of clinical pathways to optimize patient care (Rochweg, Brochard, Elliott, Hess, Hill, Naval et al. 2017; Kneyber, De Luca, Calderini, Jarreau et al. 2017:1766; Popat & Jones 2016:346; Mas & Masip 2014:838; Digby et al. 2015:331; Walkey & Wiener 2013:13). The significance of the implementation of the clinical pathway for non-invasive ventilation is discussed in the sections that follow.

##### **1.4.1 Nurses and nursing practice**

Non-invasive ventilation offers an alternative to invasive mechanical ventilation for patients presenting with ARF. Research evidence supports the utilisation of NIV for patients with ARF of various aetiologies (Rochweg et al. 2017; Kneyber, De Luca, Calderini, Jarreau et al. 2017:1766; Popat & Jones 2016:346; Mas & Masip

2014:838; Digby et al. 2015:331; Walkey & Wiener 2013:13). However, the lack of a well-documented guideline for use in the South African context, limits the use of NIV in qualifying patients as evidenced by the limited utilisation in the purposively selected critical care units. Adopting a person-centred approach aims to translate the benefits of research evidence into clinical practice enables the multidisciplinary team members and nurses to challenge current practice and may lead to improved patient outcomes. Successful implementation of the clinical pathway will provide the multidisciplinary team and the critical care nurses with the skills and knowledge to assist them in implementing research evidence in clinical practice and equip them to make a positive change in patient outcomes (Wilberforce et al. 2017:86; McConnell et al. 2016:38). Person-centred approaches are flexible, respond to the needs of the healthcare consumer and have a positive impact on patient outcomes (Wilberforce et al. 2017:86; McConnell et al. 2016:38).

#### **1.4.2 Patients**

The aim of this study was to implement the clinical pathway for NIV and limiting the implementation to a specific group of patients such as COPD patients would merely duplicate international findings. The researcher's clinical experience as well as the literature reviewed indicate that the benefit of NIV for ARF due to various aetiologies improves patient outcomes by avoiding complications associated with invasive mechanical ventilation (Popat & Jones 2016:347; Zhu et al. 2016:1; Lindenauer et al. 2015:408; Mas & Masip 2014:837). In the South African context, current practice is determined greatly by doctor preference, which means that patients have limited involvement in their treatment options and patient treatment goals are often disregarded (Young 2016; Mohamed & Asmall 2015:2; Jobson 2015; Econex 2013). Clinical pathways are viewed as restrictive and dismissed by doctors due to a lack of understanding of the key role clinical pathways play in

ensuring optimised patient care and aligning patient care with patient expectations (Wilberforce et al. 2017:87; McConnell et al. 2016:39).

Patients might benefit from receiving the best evidence-based care, which in turn might benefit the healthcare organisation through improved clinical patient outcomes and patient satisfaction rates because patients actively participate in the treatment process (McConnell et al. 2016:43; Schwind, Lindsay, Coffey, Morrison & Mildon 2014:1170; Rangachari, Rissing & Rehtemeyer 2013:118; Curran, Bauer, Mittman, Payne & Stetler 2012:217; Seers, Cox, Crichton, Edwards et al. 2012:2; Squires, Reay, Moralejo, Le Fort et al. 2012:293). Schwind et al. (2014:1170) emphasise that the nurse is an integral part of the delivery of quality person-centred care to patients through knowledge development.

### **1.4.3 Organisational significance**

The translation of research evidence into clinical practice stands to improve patient outcomes in the critical care unit. Traditionally, in the South African private sector health care context, the decision-making processes were driven by doctor preference, and private sector health care organisations aim to sustain their business goals by maintaining the status quo (Gray & Vawda 2016:4). This placed the critical care nurse in the difficult position of being caught between what is known as best practice and maintaining the status quo for the sake of organisational growth, doctor satisfaction and quality patient care delivery. A new approach is needed to change this culture. The collaborative development of a practice development approach for implementing the clinical pathway for NIV aims to identify and address the perceived barriers to implementation by using a person-centred approach. Getting nurses and multidisciplinary teams involved in the process might assist nurses in moving away from the tradition of 'how things are done here' to become truly evidence informed (Wilberforce,



Challis, Davies et al. 2017:87; Titler, Wilson, Resnick & Shever 2013:S41; Dalheim, Harthug, Nilson, Nortvedt et al. 2012:2; Gonzalez-Torrente, Pericas-Beltran, Bennasar-Veny, Adrover-Barcelo et al. 2012:1). This study wished to improve multidisciplinary collaboration to enhance patient outcomes in the critical care unit through a person-centred 'bottom-up' approach. Using a person-centred approach and internal facilitators from the critical care team to drive the implementation process would have the potential to improve the uptake of research evidence in clinical practice, thereby improving patient outcomes and operational efficiencies within the health care organisation.

#### 1.4.4 South African health care system

Successful implementation of the clinical pathway for NIV might promote the adoption of person-centred health care which would enhance the adoption of the goals for integrated health care centred on the needs of the health care consumers rather than the goals of the World Health Organization (WHO 2016:4) (see Table 1.2).

**Table 1.2: WHO goals for person-centred health care**

<b>WHO Goals for person-centred health care (WHO 2016:4)</b>	<b>Potential benefit from this study</b>
<p><b>Equity in access:</b> For everyone, everywhere to access the quality health services they need, when and where they need them.</p>	<p>Clinical pathways are evidence-based blueprints of effective treatment options which aim to address the health needs of the patient in a specific timeframe. Adoption of clinical pathways would enhance the availability of critical care beds to patients in need.</p>

**Table 1.2: WHO goals for person-centred health care**

WHO Goals for person-centred health care (WHO 2016:4)	Potential benefit from this study
<p><b>Quality:</b> Safe, effective, and timely care that responds to people’s comprehensive needs and are of the highest possible standards.</p>	<p>The clinical pathway for NIV is evidence-based, meaning that the patient receives the best possible care at the right time to enhance patient outcomes</p>
<p><b>Responsiveness and participation:</b> Care is coordinated around people’s needs, respects their preferences, and allows for people’s participation in health affairs.</p>	<p>The clinical pathway is person-centred, meaning that it affords the patient the opportunity to be involved in the clinical decision-making process. In addition, the clinical pathway provides a clear evidence-based plan for the critical care nurse to commence advanced airway and ventilatory support to the patient thereby reducing delays in treatment for patients presenting with acute respiratory failure</p>
<p><b>Efficiency:</b> Ensuring that services are provided in the most cost-effective setting with the right balance between health promotion, prevention, and in- and-out patient care, avoiding duplication and waste of resources.</p>	<p>Research supports the use of NIV for acute respiratory failure of various aetiologies, thereby promoting the effective utilisation of available critical care resources in South Africa</p>
<p><b>Resilience:</b> Strengthening the capacity of health actors, institutions and populations to prepare for, and effectively respond to, public health crises.</p>	<p>Using an emancipatory practice development approach strengthens the capacity of critical care nurses to improve patient outcomes by equipping and empowering them with the knowledge and skills required to implement evidence-based practice in the clinical setting</p>

## 1.5 RESEARCH QUESTION

Based on the problem statement, the study **aimed** to answer the following question:

**What are the outcomes of the implementation of a clinical pathway for NIV in the critical care unit?**

## **1.6. STUDY AIM AND OBJECTIVES**

The aim of the study was to implement and evaluate the outcomes of an existing clinical pathway for NIV using a person-centred practice development approach. To achieve the aim, the objectives were based on the three pillars of the i-PARiHS framework, (see Chapter 3 for discussion). Accordingly, the four objectives were to:

**Objective 1:** Assess unit culture and context to identify barriers and enablers to implementation of the clinical pathway for NIV in the critical care unit.

**Objective 2:** Adapt and validate the clinical pathway for NIV.

**Objective 3:** Adopt a person-centred practice development approach to collaboratively design and implement a strategy for implementing the clinical pathway for NIV in the critical care unit.

**Objective 4:** Evaluate the outcomes of the implementation of the NIV clinical pathway in the critical care unit.

## **1.7 FOUNDATIONAL UNDERPINNINGS OF THE STUDY**

The study was underpinned by the philosophy of critical realism, which advocates multiple methods of enquiry to enhance credibility and answer the research question. The constructs of the integrated-PARiHS framework, and the principles of emancipatory practice development and action research guided the objectives. The foundational underpinnings of the study, including the paradigm,

assumptions, conceptual framework and theoretical framework are discussed in Chapter 3 and Chapter 4 respectively. Key terms related to this study are defined in Section 1.7.1.

### 1.7.1. Definition of key terms

For the purposes of this study, the following key terms were used as defined below.

#### 1.7.1.1. *Acute respiratory failure (ARF)*

*Acute respiratory failure (ARF)* refers to a severe deterioration in gas exchange associated with malfunction of various crucial organ systems, which often requires mechanical ventilatory assistance (Vilaça, Aragão, Cardoso, Dias & Cabral-Campello 2016:4; Terzano et al. 2012:1; Antonelli, Pennisi & Montini 2005:98). Acute respiratory failure is characterised by a reduction in respiratory drive, decreased muscle strength, decreased chest wall elasticity, reduced lung capacity for gas exchange, increased airway resistance and an increased metabolic oxygen demand, which causes impaired gas exchange and leads to hypoxemia or hypercapnia (Parrilo & Dellinger 2019:614; Bersten & Handy 2019:363). In this study, the definition also included **adult** patients who show **no alteration in the level of consciousness**, and who can **maintain their airway**.

#### 1.7.1.2. *Clinical pathway*

A *clinical pathway* is defined as a sequence of well- defined interventions by health care professionals with the implicit goal of improving risk-adjusted patient outcomes, promoting patient safety, increasing patient satisfaction, and optimizing the use of resources as well as the inclusion of the patient in a mutual decision-making process (Kinsman, Rotter, James, Snow and Willis 2010:31; Deneckere et al. 2012:47). In this study, a *clinical pathway* referred

to the sequence of events to be followed for adult patients presenting with ARF and who qualify for NIV as stipulated in the existing clinical pathway for NIV developed by Balfour, Coetzee and Heyns (2012:109).

#### **1.7.1.3. Non-invasive ventilation (NIV)**

*Non-invasive ventilation (NIV)* refers to the delivery of assisted breaths and positive airway pressure without the necessity of an invasive endotracheal tube. Oxygen is delivered under positive pressure to the patient via a facemask that forms an airtight seal around the face. The absence of an artificial airway preserves the functions of the upper respiratory tract, the cough reflex, speech and swallowing (Popat & Jones 2016:347; Cross 2012:35; Penuelas et al. 2007:1211). In this study, NIV referred to the delivery of oxygen and assisted breathing **without** the use of an endotracheal tube to adults presenting with ARF, and who show **no alteration in the level of consciousness** and who **can maintain their airway**.

#### **1.7.1.4. Nurse**

The Nursing Act, 33 of 2005, section 30 (1) defines a registered nurse as “a person who is qualified and competent to independently practice comprehensive nursing in a manner and to the level prescribed and who is capable of assuming responsibility and accountability for such practice”. The regulations pertaining to nursing practice in South Africa are Regulation 2598 – Scope of Practice of the Registered Nurse, and Regulation 387 – Acts and Omissions. These provide professional nurses with guidelines for the practice of their profession. The competencies of critical care nurses published by the SANC state that the nurse is responsible for providing for the oxygenation needs of the patient and can commence NIV or intubate the patient if needed to sustain life. In this study, a *nurse* referred to a person who is registered with the

South African Nursing Council, and who is directly involved in patient care in the critical care unit.

#### **1.7.1.5. External facilitator**

Facilitation refers to a technique whereby one person provides support to another to make a process of change easier. Squires et al (2012:296) describe facilitation as an enabling process that “sparks and guides the change process”. Gerrish, Nolan, McDonnell, Todd et al. (2011:34) and Fixsen, Naoom, Blasé, Friedman and Wallace (2005:28-29) describe facilitation as a core component for successful implementing of evidence in clinical practice. Empowering the clinical nurse increases the possibility of successful implementation of the clinical pathway for NIV. Williamson et al. (2012:128) define the role of the researcher or *external facilitator* as that of a skilled facilitator working collaboratively with the participants to achieve the desired outcomes.

Facilitation is an intentional, skilled act which underpins both individual and group learning (Williamson, Bellman & Webster 2012:127). The external facilitator (researcher) works actively along with those being facilitated (Reason & Bradbury 2008:42). In this study, the researcher was responsible for collecting and analysing all data collected during the study.

The aim of this study was the implementation and evaluation of the outcomes of a clinical pathway for NIV in the critical care unit using a person-centred practice development approach. The researcher acted as an external facilitator. In this study, then, the term *external facilitator* referred to the researcher, who facilitated the utilisation of a person-centred practice development approach for the implementation and evaluation of the outcomes of a clinical pathway for NIV. The external facilitator was responsible for all data

collection, data analysis and the dissemination of the findings of the study (Reason & Bradbury 2008:42).

#### **1.7.1.6. Internal facilitator**

The term *internal facilitator* referred to the nurses currently working in the critical care unit, and who voluntarily participated in the study. To be included in the study, the internal facilitators had to be

- Permanent employees of the Hospital.
- Nurses with a post-basic qualification in Critical Care Nursing Science, or a minimum of three (3) years' critical care experience.
- Nurses working in the critical care unit with knowledge of the private sector hospital and critical care practices.

The role of the internal facilitators was to collaboratively develop the practice development programme for implementing and evaluating the outcomes of the clinical pathway for NIV. The internal facilitators were responsible for driving the implementation process in the critical care unit as well as collaborating with the members of the multidisciplinary team currently working in the critical care unit.

#### **1.7.1.7. Health care professionals**

The term *health care professionals* referred to members of the multidisciplinary team including doctors, medical specialists, physiotherapists, dieticians and allied health professions who are registered and licensed to practise, with the Health Professions Council of South Africa (HPCSA). The HPCSA is the governing body which regulates the legal and ethical practice of health care professionals in South Africa (see chapter 2 for discussion of the role and functions of the HPCSA). In this study, the term *health care professional* referred to members of the multidisciplinary team who are members of the HPCSA and excluded nurses.

### **1.7.1.8. Participants**

The term *participants* referred to the members of the multidisciplinary team working in the critical care unit and who were directly involved in caring for patients receiving NIV, and who voluntarily participated. The participants included specialist physicians, clinical nurses, physiotherapists, and other specialists in the field of pulmonary diseases. The role of the participants was to assist in the review and adaptation of the existing clinical pathway for NIV to ensure that the clinical pathway was relevant and included all current literature related to the use of NIV in the critical care unit.

### **1.7.1.9. Practice development and action research**

Manley, McCormack and Wilson (2008:196) state that the term *practice development* is directly linked to ongoing quality improvement initiatives aimed at providing excellent healthcare to patients. This can be attributed to many factors, including rising patient dissatisfaction, the perceptions of a decline in the quality of healthcare delivery by consumers resulting in a lack of confidence in healthcare professionals, nursing professionals and members of the multidisciplinary team, and changes in the healthcare systems. Practice development supports the improvement of quality by emphasising person-centred care (Manley, McCormack & Wilson 2008:196).

Person-centred care focuses on working collaboratively by including the patient in the decision-making process, being sympathetic, and providing for the patient's physical needs (Wilberforce et al. 2017:86; McConnell et al. 2016:38; Schwind et al. 2014:1170; Manley et al. 2008:196). Practice development is aimed at attaining excellence in practice in all areas of healthcare delivery by using a 'bottom-up' approach to change the current methods of practice, and placing the patient at the centre of the process (Rolfe, Jasper &



Freshwater 2011:296; Manley et al. 2008:196). Practice development is a method aimed at encouraging individuals, teams and organisations to question their current practice, and to change their practice through innovation. This change can only be effective and sustained through collaborative multidisciplinary teamwork (Manley, McCormack & Wilson 2008: 120,121). Practice development is a systematic process which is meticulously evaluated to establish whether the intended changes have occurred (McCormack, McCarthy, Wright, Slater & Coffey 2009:33; Manley, McCormack & Wilson 2008:165).

The aim of the study was implementation and evaluation of the outcomes of a clinical pathway for NIV by involving the multidisciplinary team. Using a person-centred practice development approach required internal facilitators within the multidisciplinary team to drive the process in the critical care unit. The collaboration, participation and inclusion of the members of the multidisciplinary team assisted the team to collaboratively identify the barriers to and enablers of the adoption of the clinical pathway and decide what methods they would use to overcome the perceived barriers. In addition, the person-centred practice development approach assisted the multidisciplinary team in recognising the importance of acknowledging the value of patient experiences and preferences in healthcare delivery.

#### **1.7.1.10. Person-centredness**

McCormack and McCance (2010:13) define *person-centredness* as “an approach to practice established through the formation and fostering of therapeutic relationships between all care providers, service users and others significant to them in their lives. It is underpinned by values of respect for persons, individual right to self-determination, mutual respect and understanding. It is enabled by cultures of empowerment that foster continuous approaches to

practice development.” Heyns, Botma and Van Rensburg (2017:105) and Manley and Jackson (2015) add further that practice development is a continuous process of developing person-centred, evidence-informed cultures which considers the influences of values and beliefs about nursing practice and facilitates changes to sustain improvements in patient outcomes. From this definition, person-centredness describes standards of care which places persons at the centre of the care delivery process.

Person-centred care requires the multidisciplinary team to move away from preconceived notions about patient care to an approach focused on building relationships, and providing holistic, collaborative care to the patient (Wilberforce et al. 2017:86; McConnell et al. 2016:39; Laird et al. 2015:1455). The Person-centred Practice Framework consists of four (4) domains, namely prerequisites (attributes of the nurse), the care environment (the context of care delivery), person-centred processes (care delivery through a range of activities) and expected outcomes (the results of effective person-centred nursing) (McCormack & McCance 2010:13).

In 2016 the World Health Organisation (WHO) convened with health authorities from developing countries, including Brazil, Russia, India and South Africa, to examine and define what constitutes person-centred health care services. People-centred care was described as an approach to care that consciously adopts individuals’, carers’, families’ and communities’ perspectives as participants in, and beneficiaries of, health systems that are planned around the comprehensive needs of people rather than individual diseases, with respect for individual social preferences. People-centred care also requires patients to be educated and supported to assist them to participate in the decision-making process about their own health

(WHO 2016:2). The WHO (2016:2) further states that “...people-centred care is broader than patient- and person-centred care, encompassing not only clinical encounters, but also attention to the health of people in their communities and their crucial role in shaping health policy and health services”.

The aim of this study was implementation and evaluation of the outcomes of a clinical pathway for NIV in the critical care unit, using a person-centred practice development approach. Implementation of the clinical pathway might improve the delivery of person-centred patient care through the collaboration, inclusion, and participation of the multidisciplinary team, and simultaneously improve patient clinical outcomes in the critical care unit.

## **1.8. RESEARCH METHODOLOGY**

The researcher selected emancipatory practice development (ePD) as a research methodology for this study. Emancipatory practice development and action research abide by the same principles regarding research design. A mixed methods approach was used to collect and analyse data. Gobo and Mauceri (2014:241) describe mixed methods research as an approach which uses both qualitative and quantitative data in a single study, as the two sets of data complement each other in understanding the phenomenon under investigation more deeply.

Smith (2015:145) describes action research as a definitive means for transforming practice to improve outcomes but emphasizes that this knowledge-building journey is heavily laid with complex contexts. Transformation requires surrendering individual control and acknowledging the values and beliefs of others. Table 1.3 summarises the principles of action research and their application to the study.

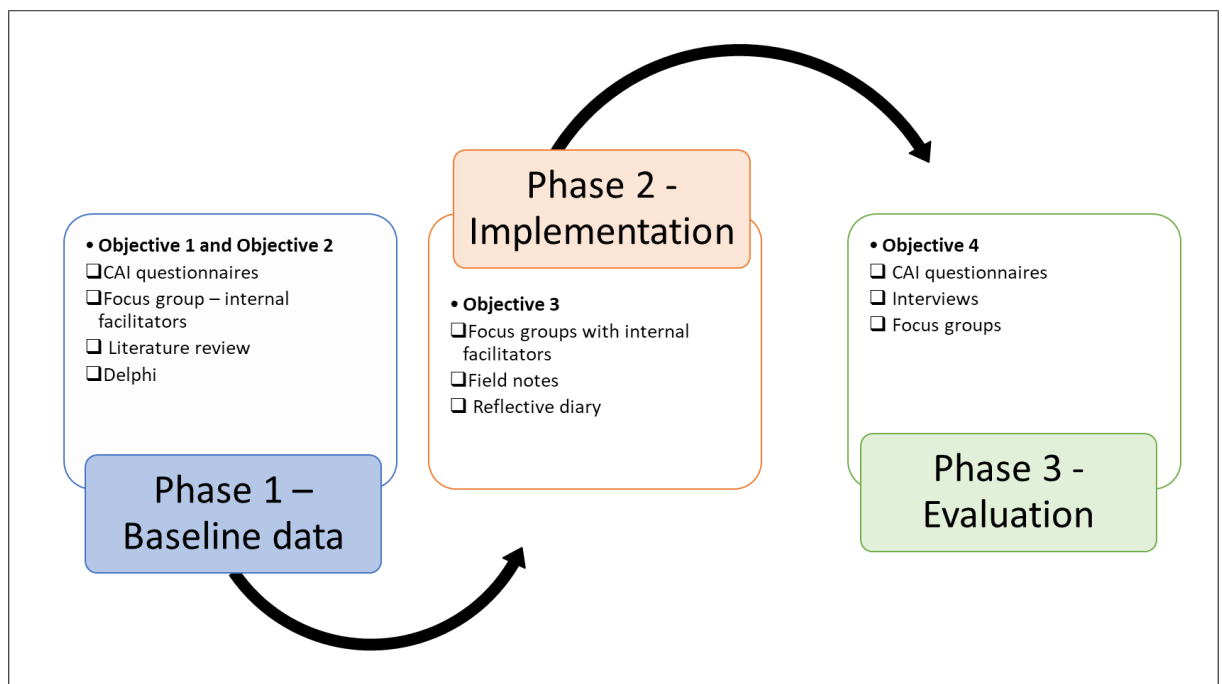
**Table 1.3: Principles of action research and application to the study**

<b>Principles</b>	<b>Application to the study</b>
Collaboration	Action research is collaborative. The research was undertaken by members of the multidisciplinary team with a common goal: to improve patient outcomes.
Inclusion	Participants were equals. The researcher acted as facilitator to bring about change through consultation with participants regarding the process of change and the measures that would be evaluated at each stage.
Participation	Action research required participation from the multidisciplinary team in the critical care unit to generate knowledge and bring about change and improve patient outcomes through critical reflection about their current practice. Participation generated practical and innovative solutions to problems experienced in the critical care unit.
Contribution to body of knowledge	Knowledge was generated at the point of care in the critical care unit and used for improving practice and patient outcomes in the critical care context.
Change to clinical practice	Action research promotes change to clinical practice through collaboration and reflective action and evaluation based on evidence gathered from the clinical setting. The study was conducted in the purposively selected critical care units who participated in the development of the existing clinical pathway for NIV to reflect on current practice and develop an innovative implementation plan for using the clinical pathway in the critical care unit.

**Adapted from: Mackay (2016:13) and Koshy, Waterman & Koshy (2011:10)**

Table 1.3 provides a summary of the application of the principles of action research to this study.

This study consisted of three interdependent and interrelated phases, namely baseline data (phase 1), implementation (phase 2) and evaluation (phase 3). The phases of the study, including the objectives, population, data collection and data analysis of each phase, are summarised in Table 1.4 (see Chapter 5 for full discussion of the research design and methodology).



**Figure 1.1: Phases of the study**

The phases of the study are discussed in detail in Chapters 6, 7, and 8. Each phase will be colour coded as reflected in Figure 1.1.

Table 1.4 provides a summary of the phases of the study.

**Table 1.4: Summary of the three phases in which the study was conducted**

	Phase 1 – Baseline data		Phase 2- Implementation	Phase 3 - Evaluation
Objectives	<b>Objective 1:</b> Assess unit culture and context to identify barriers and enablers to implementation of the clinical pathway for NIV in the critical care units.	<b>Objective 2:</b> Adapt and validate the clinical pathway for NIV	<b>Objective 3:</b> Adopt a person-centred practice development approach to collaboratively design and implement a strategy for implementing the NIV clinical pathway in the critical care units.	<b>Objective 4:</b> Evaluate the outcomes of the implementation of the NIV clinical pathway in the critical care units.
Research design	Action research	Action research	Action research	Action research
Population	Nurses working in the critical care units	Internal facilitators Multidisciplinary team Experts (Critical care medicine)	Internal facilitators Multidisciplinary team	Internal facilitators Multidisciplinary team Patients Nurses working in critical care units

**Table 1.4: Summary of the three phases in which the study was conducted**

	Phase 1 – Baseline data		Phase 2- Implementation	Phase 3 - Evaluation
<b>Sample and sampling</b>	<p>Purposive sampling of critical care units</p> <p>Convenience sampling – CAI questionnaire</p> <p>Purposive sampling – Selection of internal facilitators for the units</p>	<p>Purposive sampling – Internal facilitators</p> <p>Purposive sampling – Experts to validate clinical pathway</p>	<p>Purposive sampling: Internal facilitators and members of multidisciplinary team working in critical care units</p>	<p>Purposive sampling: Internal facilitators, Members of multidisciplinary team, patients who received NIV in the critical care unit</p> <p>Convenience sampling: Nurses working in critical care units to participate in second round of CAI questionnaires</p>

**Table 1.4: Summary of the three phases in which the study was conducted**

	Phase 1 – Baseline data		Phase 2- Implementation	Phase 3 - Evaluation
Data collection	Quantitative data: CAI Questionnaire Qualitative data: Focus groups, field notes, reflective diary	Quantitative data - Delphi: see Annexure D4 Qualitative data : from focus groups with internal facilitators	Focus groups and field notes	Quantitative data: CAI questionnaires, key indicators (length of stay, NIV failure rates) Qualitative data: Interviews
Data analysis	Quantitative data: Statistical analysis of CAI responses Qualitative data: Content analysis	Quantitative data: Statistical analysis Qualitative data: Content analysis	Qualitative data: Content analysis	Quantitative data: Statistical analysis Qualitative data: Content analysis
Rigour	Validated questionnaire (CAI) analysed as per author's guideline Peer review	Multiple methods of data collection Member checking Transcriptions of audio recordings Triangulation Peer review	Multiple methods of data collection Member checking Transcriptions of audio recordings	Content validity of CAI Member checking Triangulation



Table 1.4 provided a summary of the phases of the study. The interrelated and interdependent phases of the study addressed the key aspects of the i-PARiHS framework, namely innovation, facilitation, recipients and context (Harvey & Kitson 2016:33; Rycroft-Malone et al. 2013:28; Seers et al. 2012:2). A full discussion of each phase follows in Chapters 6, 7 and 8. Figure 1.1 depicts the phases to illustrate the process flow of the study.

## **1.9. ETHICAL CONSIDERATIONS**

Ethics deals with matters of right and wrong. When human subjects are used as study participants, care must be taken in ensuring that their rights are protected. It is the responsibility of the researcher to protect participants from undue harm (Iphofen & Tolich 2018:220).

### **1.9.1. Ethical approval**

All research involving human subjects must be reviewed by one or more ethical committees to determine the merit and acceptability of the proposed research, and the research may not be commenced without the explicit consent of the ethics committees (Israel 2015:39; Williamson et al. 2012:157). The proposal for this study was submitted to the Research Ethics Committee of the University of Pretoria for review. Written ethical approval was subsequently granted (see Annexure A1 for letter of approval).

Transformation requires surrendering individual control and acknowledging the values and beliefs of others. Keeping this in mind the process of gaining entry to the research sites was undertaken once ethical approval was obtained from the Research Ethics Committee of the University of Pretoria (see Annexure A2 for permission letters).

### **1.9.2. Ethics in research**

Ethics in research can be defined as a set of moral values concerned with the degree to which research procedures adhere to the professional, social and legal protection of the participant. There are ethical implications for each stage of the research process (Brink, Van der Walt & Van Rensburg 2018:28; Iphofen & Tolich 2018:220; Heggen & Guillemin 2012:468; Bourgeault, Dingwall, & De Vries 2010:595; Botma et al. 2010:56). The provisions of the Nuremberg Code reflect the basic principles for the protection of research participants, and include autonomy, beneficence and justice (Brink et al. 2018:28; Chonody & Teater 2018:266; Israel 2015:35-38; Williamson et al. 2012:157). The researcher has the responsibility to ensure that the participants are protected from harm during each phase of the research study. Heggen and Guillemin (2012:466) suggest that the researcher look at each data collection and data analysis method during the study to prevent unintentional harm to the participants. Furthermore, any research involving human participants requires the researcher to take extreme care in protecting the confidentiality of the participants always (Heggen & Guillemin 2012:468).

### **1.9.3. Informed consent and voluntary participation**

Obtaining informed consent from participants for voluntary participation in a research project formalises the protection of their right to autonomy and protection from harm (Brink, Van Der Walt & Van Rensburg 2018:31; Israel 2015:31). Obtaining informed consent includes providing the participants with adequate information about the research and the proposed activities as well as what the researcher aims to do with the collected information. The participant should be able to comprehend the content of the informed consent document to make a cognitive decision about their participation (Brink et al. 2018:31; Allen 2017:705; Israel 2015:80; Williamson, Bellman & Webster 2012:157).

The participant information and consent document (PICD) used to obtain consent from the participants in this study complied with the requirements of the Research Ethics Committee of the University of Pretoria, to ensure that all relevant information had been included (see Annexure C1).

The principle of respect for persons holds that the participant is an individual with the right to autonomy and self-determination (Allen 2017:706; Heggen & Guillemin 2012:468). Each participant has the right to decide regarding their participation in a research study. This aligned with the principles of person-centredness in which the person is involved in the decision-making process. The practice of informed consent provides participants with adequate information to make an informed decision about their potential participation. All participation is completely voluntary. In this study, each participant received an information leaflet which outlined the details of the proposed study (see Annexure C1, C4, D3 and E2). The Participant Information and Consent Document (PICD) clearly outlined the researcher's expectations as well as the participants' roles and responsibilities. Annexure C4 was related to the participants who voluntarily completed the CAI questionnaire. The role of the internal facilitators required more effort and involvement from the purposively selected participants and was outlined in Annexure C1. Once the participant had completed the PICD it constituted their consent to participate in the research study. To determine the patients' experience regarding NIV, a structured interview was conducted with qualifying patients once they were discharged from the unit. To enhance the transparency of the interview, the interview schedule was provided to each patient along with a PICD. The patient was then free to make an informed decision about voluntary participation in the study (see Annexure E2).

The principle of justice refers to the fair treatment of research participants and includes contractual fairness. The provisions of the

participant information and consent document were considered as a contract with the participants, and the stipulations of the participant information and consent document were upheld. Fair treatment includes honouring the right of participants to withdraw from the study at any time without penalty or prejudice.

#### **1.9.4. Confidentiality**

Confidentiality is part of the fundamental principle of justice (Brink et al. 2018:30; Allen 2017:706; Israel 2015:37; Williamson et al. 2012:157). The researcher protected the personal information collected from the participants, and the participants had the right to determine how much personal information was provided to the researcher for inclusion in the research data. Confidentiality refers to the protection of the participants' privacy and identity in a research study and goes beyond simply assigning nom de plumes to participants. Although the use of pseudonyms is the first step in protecting participants' identities, this aspect of ethical behaviour needs to be reassessed for each data collection and data analysis method. Focus group sessions are typically audio-recorded along with detailed written recordings of the group dynamics, including data related to seating arrangements and each member's participation. The researcher must take extreme care not to disclose any identifying data that could potentially expose the participant following the research study (Allen 2017:706; Heggen & Guillemin 2012:468).

The participants need to be made aware of the implications of disclosing information shared during the focus group session and the potential harm disclosure of confidential information could have. The researcher is responsible for discussing the protection of confidentiality with the participants at the onset of the study to ensure adequate understanding amongst participants. The participants need to understand the implications of waiving their right to confidentiality,

should they decide to participate in co-authoring and publication of academic articles (Allen 2017:706; Heggen & Guillemain 2012:468). Interview data is typically transcribed into text to allow for the use of extracts of data. The confidentiality of the persons participating in the interviews needs to be protected. To maintain the confidentiality of the patients who participated in the interviews, the researcher did not make use of any identifying patient data, but numbered the interviews using the date on which each interview was conducted and allocated an alphabetical denominator for filing purposes; for example, 20180801/A. No identifying patient information, such as age, names, or attending doctor, was used. Patients who wished to participate also completed the associated participant information and consent document which clearly explained the procedure to be followed as well as the pre-set interview questions (see Annexure E2).

Confidentiality of the internal facilitators *cannot* be fully guaranteed, as their participation in focus group sessions does not allow it (Brink et al. 2018:31). The implications of their participation were disclosed to the participants as part of the participant information and informed consent document (see Annexure C1). The participants agreed that they were comfortable with using their own names during the focus group sessions as well as the audio recording of the sessions for the purposes of data collection and analysis. However, the transcriptions of the audio recordings did not include their full names, but merely referred to the participants as P1, P2 and so on.

Based on the consensus reached with the internal facilitators as indicated in Section 1.2, the pseudonyms for each hospital will be utilised. Hospital A (intervention group) will be referred to as 'Proteas' and hospital B (control group) will be referred to as 'Daisies'. This is in keeping with a person-centred approach. Furthermore, the researcher committed to keeping all research data at a secure location according to the declaration included in Annexure G1. The participants were

made aware of the fact that the researcher would be required to publish the data in the form of a manuscript to the University of Pretoria as well as the publication of academic articles in an accredited journal (Brink et al. 2018:31; Williamson et al. 2012:157). The participants agreed that they were comfortable with this and would be keen to be included as co-authors of academic articles. The participants were made aware that this would require them to waive their right to confidentiality, and all agreed (see Annexure C1).

#### **1.9.5. Protection from harm**

The principle of beneficence is related to protecting the participants from harm. In addition to doing no harm, the research should also be beneficial to the participants and bring about positive change in current practice (Brink et al. 2018:29; Israel 2015:36,124; Williamson et al. 2012:157). The researcher is responsible for protecting research participants from harm by ensuring that research activities do not have a harmful or even fatal outcome for the participants. Harm can be described as physical, psychological, or emotional injury as well as social, financial and legal harm (Brink et al. 2018:29; Israel 2015:124). The risk-benefit ratio of the research needs to be clearly conveyed to the participants. As a rule, the potential benefits of the study should outweigh the potential harm to participants. Part of the informed consent process is to inform the participants of the risks and benefits of participation in the study (Israel 2015:80). The PICD used in this study explained these concepts to the participants (see Annexures C1, C4, D3 and E2). The aim of this study was to increase the body of knowledge regarding non-invasive ventilation, nursing practice development, person-centred care delivery and improve clinical patient outcomes in the South African context.

### **1.9.6. Role of the researcher**

Role clarification was done as part of the introductory session with the internal facilitators. This provided an opportunity for the participants to ask questions about their involvement and what the researcher expected from them. The participant information and consent document outlined the expectations of the internal facilitators (see Annexure C1). The participants' roles were defined in section 1.10. The role of the researcher included data collection, data analysis and dissemination of the findings.

### **1.9.7. Exploitation**

The internal facilitators were informed of the researcher's intent to publish the research findings in a manuscript as part of the degree requirements of the University of Pretoria, as well as in academic publications following the completion of the study. Brink et al. (2018:31), Israel (2015:36,80) and Williamson et al. (2012:157) state that participants need to consent to waiving their confidentiality as co-authors of the publication to gain acknowledgement for their unique contributions to the body of knowledge. The participants provided written consent (see Annexure C1).

## **1.10. UNIQUE CONTRIBUTION OF THE STUDY**

The unique contribution of this study included improving the body of knowledge regarding non-invasive ventilation, nursing practice development, person-centred care delivery and improving clinical patient outcomes in the South African context. Brink et al. (2018:10) point out that all research conducted should make a unique contribution to the body of knowledge. The unique contributions of this

study include theoretical, methodologic, and nursing practice contributions (see Section 9.3).

### **1.11. SUMMARY**

This chapter provided an overview of the study as well as the unique contribution of this study related to the utilisation of NIV in the critical care setting. Chapter 2 discusses the context of the study.



## Chapter 2

# Context of the study

### 2.1 INTRODUCTION

Chapter 1 outlined the background to and problem, aim and objectives, research design and methodology, and ethical considerations of the study. This chapter discusses the context in which the study was conducted, with reference to the national, policy, professional, and organisational context. The aim is to provide the reader with a picture of the South African health care system and the various role players that influence health care services in South Africa.

### 2.2. NATIONAL CONTEXT

This section describes the health care system in South Africa with reference to general information, population, health care administration, human resources and non-invasive ventilation (NIV) utilization.

#### 2.2.1. General context

South Africa is situated at the southern tip of Africa, and forms part of the greater Sub-Saharan region of Africa which is deemed a third world country. Third world countries are defined as underdeveloped, the least developed or developing countries compared to the developed world, and include Africa, Asia and Latin America. The common denominator in third world countries is their shared colonial history, which after gaining independence led to slower rates of development compared to

other countries. Third world countries constitute an estimated 75% of the world population, and represent the poorest world populations, based on their slow rate of industrialisation, low levels of economic growth and per capita income, low levels of literacy with excessively high levels of population growth and poor health care and transport infrastructure (Smith 2013:3-11; Escobar 2012:21-39). The democratic election of a new government in 1994 marked the end of the apartheid era in South Africa, with hopes of greater economic growth and access to health care for all (Jobson 2015:5).

During the apartheid era, health care services were severely fragmented. One example of this is the implementation of medical aid schemes which ensured that privately insured paying individuals received better health care services in a private sector hospital (Young 2016:3; Jobson 2015:7). The majority of the population who could not afford to be members of medical aid schemes had to rely on the public sector for health care services.

The provision of health care services to other population groups was not deemed a priority during the apartheid era (Jobson 2015:8). However, the democratic election of the African National Congress (ANC) as the ruling party in 1994 brought about multiple changes in health care administration to promote equal access to health care; for example, building more primary care facilities in rural areas, changes to health care legislation, strategic plans for implementing a National Health Insurance (NHI) programme, and implementation of the Medical Schemes Act, 131 of 1998 to prevent discrimination against other population groups (Jobson 2015:8).

South Africa was divided into nine provinces (see map in Figure 2.1). Each province is governed by several local authorities or municipalities who are responsible for maintaining growth and development, local infrastructure and essential health care services aligned to the national

strategic plan issued by Government (National Strategic Plan 2017:7-10).



**Figure 2.1: Map of South African provinces and provincial capitals**

Source: Stats SA (2018:3)

There are 376 public sector hospitals in South Africa, of which 143 are in urban areas and 233 in rural areas. There are 3 824 primary health care (PHC) clinics, which provide health care services to vast numbers of people. It is estimated that each PHC clinic provides services to more than 13 000 people, which greatly exceeds the World Health Organisation guidelines by 10 000 people per clinic (Jobson 2015:3; WHO 2017:3-5). A total of 217 private sector hospitals are available in South Africa, which account for approximately 63% of private hospital beds in the country (Dell & Khan 2017:1100; Young 2016:3).

Gauteng province is the most densely populated province with an estimated 14 717 040 people occupying 18 178 km<sup>2</sup>, which equates to a population density of more than 809.6 people km<sup>2</sup> (Maynard 2018:np; Stats SA 2018:1). Gauteng also has the highest number of private sector hospitals in the country: a total of 85 hospitals with 14 326 beds. This means that there are 417 beds per 100 000 of the insured population (Dell & Khan 2017:1102). The private healthcare sector is dominated by three large private hospital groups, namely the Mediclinic group, Life Healthcare and Netcare. Table 2.1 indicates the market share of each group. The remaining 27% consists of smaller independent private hospitals.

**Table 2.1: Private hospital groups in South Africa**

Group	Market share	Number of beds
Netcare	28%	9 444
Life Healthcare	23%	8 768
Mediclinic	22%	7 885
Total number of beds		<b>26 097</b>

**Source: Competition Commission Health Market Enquiry (2018:8) and Econex (2013:24)**

There are 3 533 critical care beds available in the private sector, which means that there is one critical care bed for every 2 547 patients (1:2547), which is not nearly adequate considering that the number of admissions for chronic disease has increased by more than 47% since 2013 and that the average length of stay has increased by 14.5%. Implementing the evidence-based clinical pathway for NIV has the potential to decrease the average length of stay, thereby increasing the availability of critical care beds and resources for qualifying patients by discharging patients from the critical care unit much sooner.

Gauteng province has 111 public sector hospitals with a total of 14 855 beds, which means that there are 155 beds per 100 000 of the uninsured population (Dell & Khan 2017:1101-1102). This illustrates the grave shortage of public sector beds, bearing in mind that the uninsured population using public sector health care services comprise 84% of the population. The health care system in South Africa is under extreme pressure to provide cost-effective services to the growing population. Implementing the evidence-based clinical pathway for NIV has the potential to decrease the average length of stay, thereby increasing the availability of critical care beds and resources for qualifying patient by discharging patients from the critical care unit sooner.

### 2.2.2. Population and disease profile

South Africa has a population of approximately 57 million people occupying nine (9) provinces (Stats SA 2018:1). Figure 2.2 illustrates the population numbers per province.

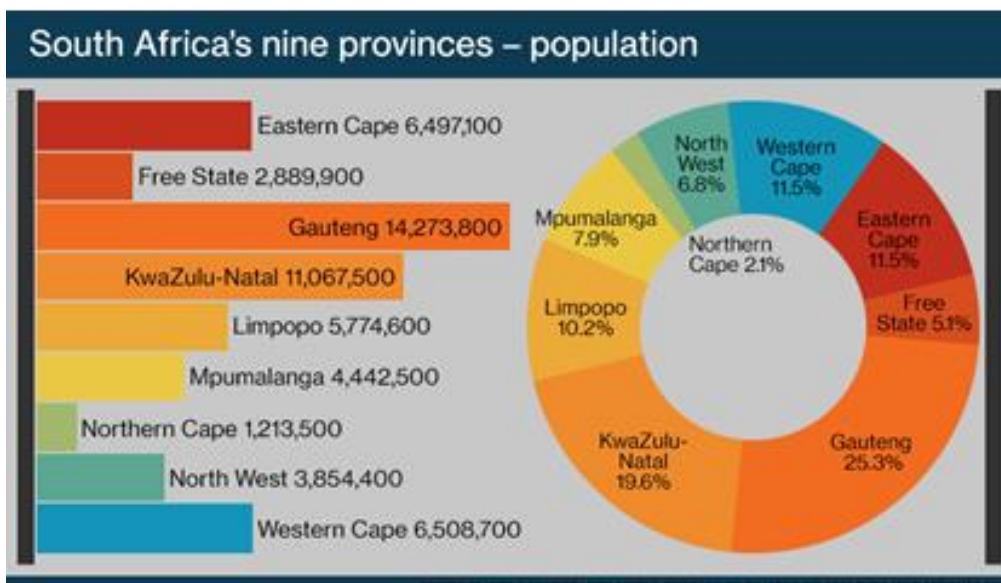
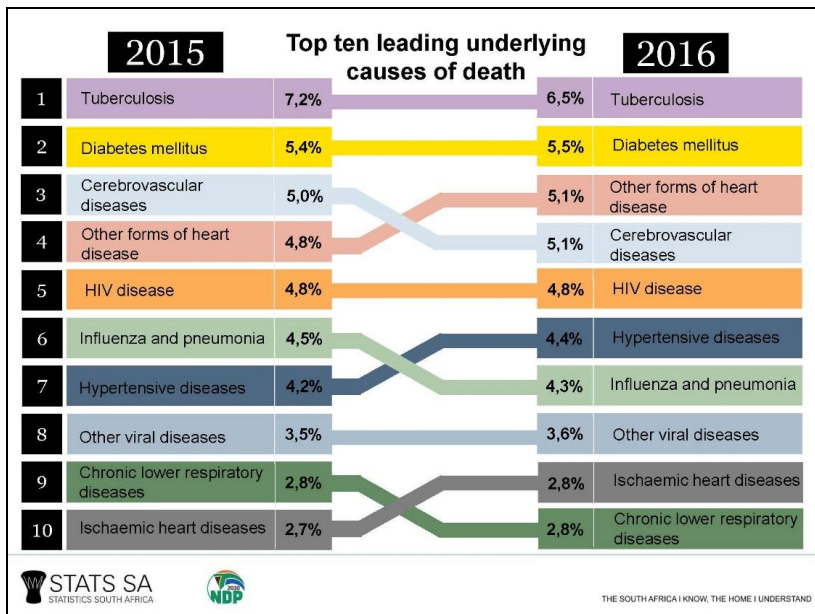


Figure 2.2: Population numbers per province Source: Stats SA (2016:16-23)

As the burden of chronic disease rises in South Africa, the healthcare system is under pressure to provide affordable and cost-effective care to larger numbers of patients (Mahomed & Asmall 2015:2; Naidoo, Singh & Lalloo 2013:751-753). It is estimated that only 9 million members of the population can afford private health care services, which equates to approximately 16% of the total population (Dell & Khan 2017:1099; Jobson 2015:4). The public sector therefore provides healthcare services to approximately 84% of the South African population (Young 2017:3; Jobson 2015:6).

In considering options to address the shortage of health care services, the Department of Health indicated that the implementation of the National Health Insurance (NHI) scheme would improve access to health care services for the South African public by allocating more critical care beds in health care facilities (National Department of Health 2016:9). As pointed out by Naidoo et al. (2013:751-753) however, this did not address the root cause of extended length of hospitalisation and costly health care services. It would only worsen the current situation, because patient outcomes would remain poor due to a lack of evidence-based care (Naidoo et al. 2013:751-753). The rising burden of chronic disease in South Africa puts a significant strain on the availability of critical care resources for an ever-expanding population. The statistics on the leading causes of death indicate a high prevalence of respiratory diseases in South Africa (see Figure 2.3).



**Figure 2.3: Leading causes of death in South Africa, 2015-2016**

Source: Stats SA (2017:33)

Patients who are prone to opportunistic infections often remain ventilated for extended periods, leading to poor outcomes. Prevalent respiratory diseases in South Africa include Tuberculosis (TB) and HIV (Human immuno-deficiency virus) associated respiratory infections. The World Health Organisation (WHO 2018:27) classified South Africa as one of the top 30 countries with the worst TB burden in 2017.

The rate of infection remains high and has been associated with the increasing incidence of HIV infections, because immune-compromised patients are more susceptible to opportunistic infections and an estimated 80% of the South African population have latent TB. Table 2.2 depicts the rate of active TB cases per year from 2007, calculated as a proportion of the population per 100 000.

**Table 2.2: Rate of active TB cases in South Africa per 100 000 population, 2007-2015**

Year	2015	2014	2013	2012	2011	2010	2009	2008	2007
SA	520	593	649	690	762	718	832	753	608

**Source: World Health Organisation (2018:204)**

According to the WHO (2018:204) South Africa had an estimated TB/HIV co-infection rate of 60%, indicating a direct link between the country's TB epidemic and the incidence and prevalence of HIV. Table 2.3 depicts the rate of HIV infection per age group and gender.

Overall, the highest prevalence of HIV was in the 30-34-year age group for women and the 35-39-year age group for men. This affected the work force in South Africa, including the nursing work force, as these people were often sick and required extended periods off work, leading to a loss in income for their families. The extended absenteeism related to chronic disease also negatively impacted on operational efficiencies and had financial implications for employers who needed to substitute temporary staff for workers on a regular basis. Tuberculosis was the primary cause of death for HIV-positive people in South Africa in 2017 (Stats SA 2017:33).

**Table 2.3: Distribution of HIV infection per age group and gender, per 100 000 population, 2018**

Age	0-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+
Male	2.3	0.7	5.1	17.3	25.6	28.8	15.8	13.4	15.5	5.5	4.6
Female	2.4	5.6	17.4	28.4	36.0	31.6	208.	19.7	14.8	9.7	2.4

**Source: National Department of Health (2012:25) and Stats SA (2011:46)**



Considering these statistics, these high-risk patients should be protected from additional sources of infection that could negatively impact their hospitalisation outcomes. Avoiding endotracheal intubation reduces the risk of further infections and complications. Non-invasive ventilation should be considered as a potentially safer, cost-effective alternative for patients with acute respiratory failure. Avoiding opportunistic infections during endotracheal intubation could potentially decrease the patient's length of stay in hospital and prove more cost-effective. In short, the implementation of a clinical pathway for NIV would have far-reaching implications for all sectors of the health care system in South Africa, including health care consumers who would benefit from innovative evidence-based care, which would align with the National Department of Health goals for improving health care for all (National Department of Health 2012:15).

### **2.2.3. Health care administration**

The South African healthcare system is divided into two sectors (see Section 2.1). The public sector is funded by the National Treasury and Government. The estimated total health care expenditure in public sector hospitals is ZAR 122bn per annum, equal to ZAR 3 332 per patient, considering there are 1 186 public sector critical care beds available. The private sector is reimbursed by the medical schemes, which are funded by their members. The average annual expenditure per patient in the private sector is ZAR 142bn which is equal to ZAR 1 600 per patient, with approximately 3 533 critical care beds. This is a stark contrast – the perceived superior care provided in the private sector seems cheaper than the public sector care per patient (Dell & Khan 2017:1099; Jobson 2015:4).

The average bed occupancy rate in public sector hospitals is estimated at 65-77% (Dell & Khan 2017:1100). Patients in public sector hospitals

are mostly from lower economic groups who cannot afford membership to medical schemes. According to a survey conducted in 2011, there was a total of 4 168 critical care beds in South African hospitals and 4 584 nurses involved in direct patient care in these units. The public sector consists of 376 hospitals, of which 23% (91 hospitals) have ICU/High care facilities. This is in stark contrast with the 217 private sector hospitals, of which 99% (216 hospitals) have critical care facilities. In 2013, Naidoo, Singh and Lalloo (2013:751-753) conducted an analysis of the critical care services in South Africa and found that a total of 4 719 critical care beds were available which equated to 1 bed for every 10 000 people (1:10 000).

The access to critical care beds in some provinces is extremely limited, for example in Limpopo, North West, Mpumalanga and Northern Cape which have less than 150 beds allocated to critical care services. Apart from the infrastructure resource shortages facing the South African health care system, the lack of human resources also has a significant impact on the provision of health care services throughout the country. Table 2.4 summarises the shortage of critical care resources in the South African health care system.

**Table 2.4: Critical care resources in South Africa**

Resources	Public sector	Private sector
Public sector: Private sector patients	84%	16%
Annual health care expenditure (Rand value)	ZAR 122bn	ZAR 142bn
Annual health care expenditure per person (Rand value)	ZAR 3 332	ZAR 1 600
Total number of beds	86 774	34 572

**Table 2.4: Critical care resources in South Africa**

Resources	Public sector	Private sector
Total number critical care beds	4 719	3 533
Bed: Population ratio	1:10 000	1:2 547
Percentage critical care beds	25%	75%
Prevalence of respiratory diseases	80%	
HIV/AIDS disease burden	12.6% of population (7 182 000 people)	

**Adapted from: Naidoo, Singh and Lalloo (2013:751-753) and Econex (2013:25)**

Hospitals in South Africa are under pressure to provide quality, cost-effective care to an ever-expanding population (Mahomed & Asmall 2015:3). The demand for critical care services far exceeds the supply of critical care resources. South Africa has a severe shortage of critical care resources to provide adequate care for patients, including a shortage of critical care beds in hospitals, shortage of critical care qualified physicians, and a growing shortage of critical care qualified nurses. As per SANC (2017:np) a total of 6515 critical care qualified nurses were registered in South Africa. This means that there should be 1 critical care nurse for every 2 patients. However a large number of critical care qualified nurses are working in managerial positions, removing them from the bedside. Resource limitations contribute to a possible delay in treating the patient who requires advanced airway management (Rose 2012:5; Naidoo et al 2013:751-753).

#### **2.2.4. Human resources**

In South Africa, different governing bodies regulate the practice of health care professionals such as doctors, and the practice of nurses.

The Health Professions Council of South Africa (HPCSA) governs the practice of doctors and allied health professionals, such as dietitians and physiotherapists. The South African Nursing Council (SANC) governs nursing practice.

#### **2.2.4.1. Health care professionals**

The Health Professions Council of South Africa (HPCSA) is the professional body governing the legal and ethical practice of all doctors and allied health professionals in South Africa. The HPCSA governs twelve professional boards to determine the standards of professional registration, education, and training as well as setting and maintaining the standards of professional and ethical practice in South Africa. To practise as a doctor in South Africa requires registration with the HPCSA as stipulated in the Health Professions Act, 56 of 1974, Section 17, which states that registration with the HPCSA is a prerequisite for any health professional who is engaged in “(i) the physical or mental examination of persons; (ii) the diagnosis, treatment or prevention of physical or mental defects, illnesses or deficiencies in humankind; (iii) the giving of advice in regard to such defects, illnesses or deficiencies; or (iv) the prescribing or providing of medicine in connection with such defects, illnesses or deficiencies”.

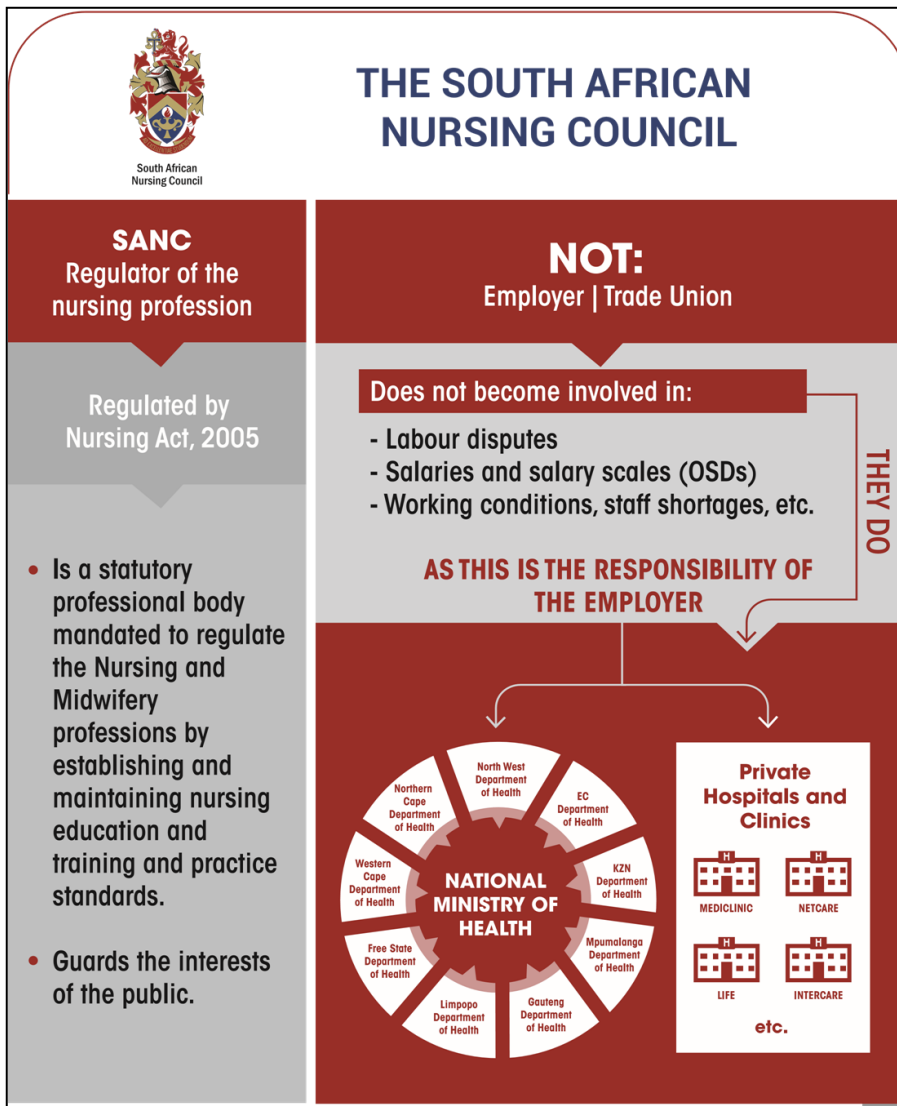
In 2018, 46 091 medical doctors were practising in South Africa, and most doctors were in private practice, which increased the shortage of doctors in the public sector hospitals significantly Figure 2.2 illustrates the population numbers for each province. The estimated ratio of doctors to patients in the public sector is one medical doctor to every 4 000 patients (1:4 000) as reported by the HPCSA (HPCSA 2018 (<https://www.hpcsa.co.za/Publications/Statistics>)).

In addition to the shortage of medical doctors, there is a growing shortage of critical care qualified nurses in the country.

#### **2.2.4.2. Critical care nursing resources**

The South African Nursing Council (SANC) governs nursing practice in South Africa. Nursing practice is further governed by the Nursing Act, 33 of 2005 and several regulations pertaining to clinical practice. Regulation 2595 as amended by Regulation 786 (SANC 2013:5), stipulates the scope of practice of a registered nurse, and Regulation 387 indicates the acts and omissions of a nurse that could lead to disciplinary action. As the governing body, the SANC is tasked with the development and implementation of safe standards of nursing for all nursing disciplines, as well as maintaining records and registers of all the nurses practising in South Africa. Figure 2.4 depicts the mandate of the SANC.

There are currently three (3) categories of nurses practising in South Africa, namely registered nurses, enrolled nurses, and enrolled nurse assistants (see Section 2.3). According to the 2017 SANC statistics, there were 142 488 registered nurses practising in South Africa, of which only 6 515 obtained an additional qualification as a critical care nurse (SANC 2017: 1-j). Many of these nurses were in the 40-59 years old age group and nearing retirement, which adds to the growing shortages (SANC 2017:np).



**Figure 2.4: Mandate of the South African Nursing Council**

Source: #SANCNews, (2018:4)

All practising nurses are required to pay an annual licence fee to maintain their registration and practise nursing. The annual licence certificate is issued to the nurse upon payment of the annual fees and is required to be employed in a health care facility. Annual licence fees are determined based on the category of nurse (see Table 2.5). Special discounted annual licensing fees apply to nurses over the age of 65 years, who are still practising, and those who wish to maintain their registration after retirement.

**Table 2.5: Annual licence fees per category of nurse**

Category	2018 Annual license fee
Registered Nurse and Midwife	ZAR 640.00
Enrolled Nurse	ZAR 380.00
Enrolled Nurse Assistant	ZAR 270.00

**Source: SANC Circular 4/2018 (2018:1)**

The SANC is also responsible for review and approval of nursing education institutions and curriculum development. All nursing education institutions in South Africa are licensed to operate based on the criteria established by the SANC for each type of institution. For example, post-basic training courses for critical care nursing may only be presented at nursing education institutions who are certified as higher education institutions and who meet the criteria for this course (R.173 of 1993). To ensure high levels of training and competence of nursing students, the SANC has published core competencies, aligned to the National Core Standards for health care which outline the basic competencies required by nurses to practise in their area of specialisation (see Section 2.3 for discussion).

The core competencies of a critical care nurse encompass the interpretation of patient data and the use of technology to implement life-sustaining treatment for the patient, which includes commencing mechanical ventilation to support cardiac and respiratory functions as stated in sub-domain 2.4.2 (SANC 2014:10). In 2017, there were 401 543 registered nurses practising in South Africa, of which only 4 421 had obtained an additional qualification in critical care nursing science (SANC 2017:1 j). This represented a ratio of one nurse to every 142

patients (1:142) in general. However, not all nurses who have obtained the additional qualification are working in the critical care units.

### **2.2.5. Non-invasive ventilation (NIV) underutilisation**

Invasive mechanical ventilation is still considered the 'gold standard' for the management of patients presenting with acute respiratory failure (ARF), despite the established high complication rates associated with invasive ventilation, such as ventilator acquired pneumonia, airway injuries and a lengthy hospitalisation period (Zhu et al 2016:1; Mas & Masip 2014:837). The critical shortage of doctors and critical care nurses contributes to delays in treatment for patients presenting with ARF of various aetiologies. Often when the patient presents to the hospital, there is no access to a medical doctor to initiate advanced airway management and mechanical ventilation, and this delay impacts on the patient's outcomes and long-term survival. Although the initiation of mechanical ventilation forms part of the scope of practice of the critical care nurse, a shortage of critical care qualified nurses further increases the delay in treatment of the patients (Rauf, Blitz, Geysers & Rauf 2008:43).

In their study at a large academic hospital in Tshwane, Rauf et al (2008:43) found that waiting times for patients to be seen by a doctor ranged from 200 to 1200 minutes, depending on whether the patient was deemed 'stable' or 'unstable' by the triage nurse. A study in Kwa-Zulu Natal found that patients admitted to a primary care facility waited up to 39 minutes to be seen by a doctor after the nurse had taken the first set of vital signs (Egbujie, Grimwood, Mothibi-Wabafor, Fatti, Tshabalala, Allie, Vilakazi & Ojebanji 2018:313). Recognizing and addressing the need for an alternative, safer method of providing faster access to ventilator support for patients presenting with ARF would decrease the delays in treatment and improve clinical patient outcomes



such as avoiding ventilator associated complications, airway injuries and an increased length of stay.

One example that might decrease the length of stay of patients admitted to the ICU is NIV. Non-invasive ventilation has proven to have the same physiological benefits as invasive mechanical ventilation. Avoiding endotracheal intubation reduces the risk of airway injuries and ventilator associated infections (Zhu et al 2016:1; Mas & Masip 2014:837; Burns, Meade, Premji & Adhikari 2014:E112-22; Antonelli, Pennisi & Conti 2003:65s). Implementing a clinical pathway for NIV has the potential to reduce the length of stay, improve patient outcomes and enhance the availability of critical care beds and resources (Beaulieu 2013:705; Lawal, Rotter, Kinsman, Machotta et al 2016:35).

The application of NIV for acute respiratory failure of various aetiologies is supported by research evidence. Avoiding endotracheal intubation reduces the patient's risk of complications which lengthens the hospitalisation period and the cost of hospitalisation (Burns et al 2014:E112-22; Antonelli, Pennisi & Conti 2003:65s). Additionally, Digby et al (2015:334) state that the use of NIV is associated with a significant reduction in complications and a reduction in the mortality rate. The successful implementation of the clinical pathway for NIV has the potential to reduce the mortality rate of patients admitted to the critical care unit with respiratory failure and improve their survival and quality of life. Implementing and evaluating the outcomes of a clinical pathway for NIV might reduce the incidence of adverse patient events, thereby reducing the length of stay, which would ultimately result in cost-effective treatment for patients presenting with acute respiratory failure.

Shortening the length of stay might increase the availability of critical care resources to a larger number of patients. The lack of a well-documented guideline for implementing NIV leads to variability in use,

and the benefits of NIV do not reach the patients (Digby et al 2015:335; Lindenauer et al 2015:408; Berkus et al 2013:313-318; Beaulieu 2013:705; Brochard et al 2002:719). The clinical pathway for NIV was intended to address the underutilisation of this mode of ventilation in the South African context, to enable effective collaboration of the multidisciplinary team and critical care nurses to provide evidence-based care to qualifying patients (Balfour et al.2012:107). The prevalence of respiratory disease in South Africa remains high (see Figure 2.3).

The researcher recognised this need whilst working as an ICU qualified registered nurse in 2010 and embarked on a journey to improve the utilisation of NIV for qualifying patients in collaboration with the multidisciplinary team. The result was the clinical pathway for NIV as seen in Annexure D1, which was published in 2012 (Balfour et al.2012:107). However, the implementation of the clinical pathway for NIV into clinical practice did not materialise, which means that the patients, the multidisciplinary team and the health care system in South Africa are not reaping the benefits of NIV. Although the multidisciplinary team has the necessary evidence related to the use of NIV, the knowledge is not translated into clinical practice, and patients are not receiving the benefits of NIV. Internationally the benefits of using NIV have reduced need for endo-tracheal intubation by 42% (Berkus et al 2013:312; Cross 2012: 37; Masclans et al 2013:249; Endorf & Dries 2010:217).

Attempting to address the gap between evidence-based practice and the implementation of evidence into clinical practice, Balfour, Coetzee and Heyns (2012) collaborated with the multidisciplinary team to develop a clinical pathway for NIV, under the assumption that it would be implemented by the same multidisciplinary team who developed it. The translation of the evidence-based clinical pathway into clinical practice did not materialise, however, and to date the reasons for this

are unknown, but possible contributing factors include doctor preferences (see Chapter 7 for discussion).

The implementation of clinical pathways has been found to reduce variations in treatment plans, improve clinical outcomes, and reduce complications when aligned to international best practice guidelines (Elliott, Hemmelgarn, Manns, Tonelli, Jun & Donald 2017:839; Digby et al. 2015:331).

An increased length of stay leads to an increase in the cost of hospitalisation and reduces the availability of critical care resources. The average length of stay for a patient who receives invasive mechanical ventilation ranges from 5.6 to 10 days in the purposively selected critical care units of the Hospital Group. Although best practice guidelines for the prevention of VAP have been implemented, the emergence of new antibiotic resistant micro-organisms, such as *Candida auris*, leads to a significant increase in VAP rates, further increasing the length of stay and costs of hospitalisation. Additionally, avoiding endotracheal intubation reduces other associated risks such as tracheal stenosis and pressure injuries of the airways.

Internationally, the utilisation of NIV for patients presenting with acute exacerbations of COPD and acute cardiogenic pulmonary oedema has increased by 400%, thereby reducing the incidence of endotracheal intubation by 42%, and ultimately reducing the length of stay and costs of hospitalisation (Popat & Jones 2016:347; Zhu et al 2016:1; Lindenauer, Stefan, Shieh, Pekow et al 2015:408; Mas & Masip 2014:837). However, in the South African context the utilisation of NIV is restricted to approximately 10% as evidenced by the NIV utilisation figures from the Hospitals included in this study (see Table 1.1). Underutilisation effectively translates into higher infection risks and extended length of stay in the critical care unit. Patient outcomes are influenced by multiple factors, including doctor preferences and

decision-making practices (He & Yang 2015:394; Rankin, Butow, Thein, Robinson et al. 2015:6 of 8).

## 2.3 POLICY CONTEXT

Policy context in relation to the critical care unit refers to nurses and other healthcare professionals' boundaries of practice and decision-making regarding patient care. Clinical decision-making by nurses depends greatly on their level of education, qualifications, knowledge and skills in critical care settings, as described in Chapter 2, Section 30 of the Nursing Act (Act 33 of 2005). Nursing practice is governed by the Nursing Act, 33 of 2005, which defines the scope of practice of nurses. Three categories of nurses currently practise under the Nursing Act, namely Registered Nurses (RN), Enrolled Nurses (EN) and Enrolled Nurse Assistants (ENA) as outlined in Chapter 2, Section 30 of the Nursing Act.

Training programmes are presented at both public and private nursing education institutions. A registered nurse is an independent practitioner in terms of Section 30(1) of the Nursing Act, 33 of 2005. Registered nurses are qualified and competent to practise comprehensive nursing care and accept accountability and responsibility for their practice. To obtain a qualification as a registered nurse requires successful completion of a four-year study programme at a higher education facility such as a university. On completion the nurse is referred to as a General Registered Nurse. Additional qualifications are obtained through further study at an accredited institution, and include Midwifery, Community Health, and Psychiatric Nursing as stipulated in the Nursing Act, 50 of 1978, as amended, specifically Regulation 212.

A registered nurse who wishes to specialise in critical care nursing is required to complete a two-year programme at a university, and then obtains an additional qualification in critical care nursing science. Upon

successful completion of the prescribed training programme, the registered nurse is then referred to as an ICU qualified registered nurse. The SANC determines the extended scope of practice and essential competencies required for nurses with an additional specialty qualification.

An enrolled nurse, also referred to as a staff nurse, is a person who has completed the two-year training programme as prescribed by the SANC. Enrolled nurses have a limited scope of practice and are required to practise under the direct and/or indirect supervision of the registered nurse as stipulated in their scope of practice (Regulation 1649). The limited scope of practice of enrolled nurses therefore limits their ability to practise in a critical care unit. For example, an enrolled nurse will not be allocated to care for an unstable ventilated patient, due to the risks to patient safety, lack of training and lack of knowledge of critical care nursing. Enrolled nurses are mainly used in a high care setting where patients are deemed to be healthier and are less dependent on the professional competencies of a registered nurse and require less complex nursing interventions. In an attempt to train more registered nurses, the SANC subsequently revised the qualifications framework for nurses in South Africa and announced that the two-year enrolled nurse course as well as the two-year bridging course would be discontinued in 2019. Instead, a three-year national diploma course will be presented, leading to registration as a general registered nurse, with an associated broader scope of practice. At the time of this study, the curriculum and revised scope of practice had still to be published.

Enrolled Nurse Assistants are nurses who have completed one year of training and are able to deliver basic nursing care to patients, such as taking of vital signs, feeding and bathing of patients. Enrolled nurse assistants are not taught to interpret patient data, but merely report their findings to the registered nurse. Enrolled nurse assistants practise under the direct supervision of the registered nurse. The scope of

practice of an enrolled nurse assistant is limited to providing basic nursing care and therefore enrolled nurse assistants are never used to provide direct patient care in the critical care environment. The functions of an enrolled nurse assistant in the critical care unit are limited to assisting the registered nurse with patient care activities, such as turning of patients, bathing of patients, emptying of catheter bags, and urine testing as per their scope of practice (Nursing Act, 33 of 2005, Chapter 2, Section 30:25).

#### **2.4. STAFFING AND NURSING SKILL MIX**

The staffing and nursing skill mix of a critical care unit depend on the number of patients as well as their acuity level. Nursing skills mix refers to the number of each category of nurse required to deliver safe, quality patient care. A study in European hospitals to determine the nursing skill mix found that some countries who had higher levels of professional nurses in their hospitals had better patient outcomes with lower complication rates and lower mortality rates, compared to hospitals who used larger numbers of lower category nurses. Higher numbers of professional nurses are associated with better patient outcomes and better-quality nursing care delivery (Aiken, Sloane, Griffiths, Rafferty, Bruyneel et al 2017:560).

Acuity levels reflect the complexity of care and professional dependence of the patient on complex nursing interventions required during a 12-hour period. Typically, in South African hospitals, patients admitted to a critical care unit or intensive care unit (ICU) require more complex nursing care, and nurses are allocated on a 1:1 ratio (one nurse to one patient). Patients with lower acuity levels, who require less complex nursing interventions, may be allocated on a 1:2 ratio (one nurse to two patients). Patients who require mechanical ventilation – invasive or non-invasive – are typically nursed by one nurse (1:1) due to the complexity of care required by the patient. Unlike

hospitals in Europe and the United States of America, the care of the ventilated patient is the sole responsibility of the critical care nurse. The South African healthcare system does not utilise respiratory care teams who oversee and maintain the respiratory care of the ventilated patient. Table 2.6 outlines the average critical care unit skill mix for a 12-hour shift.

**Table 2.6: Nursing skill mix, roles, and functions in critical care units**

Category	Number per shift	Role	Function
Unit Manager (registered nurse critical care /ICU qualified)	1 (works flexi-hours according to operational requirements)	Supervisor/charge nurse	Overall supervision and management of unit operations
Registered nurse – critical care (ICU) qualified	1	Shift leader Reports to unit manager	Clinical supervision of all patients and nurses in the unit Administrative tasks Doctor rounds
Registered nurse – critical care (ICU) qualified	Varies according to number of high acuity patients and availability of ICU qualified nurses	Direct patient care Reports to shift leader	Allocated to high acuity patient who requires complex nursing interventions and specialised skills
Registered nurse – critical care (ICU) experienced	Varies according to number of patients and individual patient acuity	Direct patient care Reports to shift leader	Allocated to patient based on level of experience and clinical competence and complexity of nursing interventions required

**Table 2.6: Nursing skill mix, roles, and functions in critical care units**

Category	Number per shift	Role	Function
Enrolled nurse	Varies according to number of patients and individual patient acuity	Direct patient care Reports to shift leader	Allocated to patient based on level of experience and clinical competence
Enrolled Nurse Assistant	Varies according to number of patients	Basic nursing care functions Reports to shift leader	Assisting with basic nursing care, e.g. emptying of urine bags

**Source: The Hospital Group (2017)**

Table 2.6 outlines the typical nursing skill mix and staffing of the critical care unit. Since 2009, the burden of added accountability and responsibility has also contributed to the loss of critical care qualified registered nurses from the bedside. Many are employed in management positions or have completely left the clinical field to pursue academic careers or to provide professional services to pharmaceutical companies. Retention of ICU qualified nurses remains a challenge therefore nurse leaders need to act to ensure quality service delivery at all levels of the healthcare system.

Nursing practice in South Africa remains hierarchical and decision-making regarding the implementation of research evidence into clinical practice is left to nurse leaders, who are often not involved in direct patient care and form part of the hospital management team. Unit-specific work procedures have traditionally been developed by policy



makers and nurse managers, and may be based on tradition, doctor preferences and clinical experience, and lack scientific rigor.

Research evidence has mainly been used to develop policies and procedures, which have been implemented in clinical practice with varying levels of success. This can be attributed to the traditional 'top-down' approach used by nurse leaders (Florczak 2016:109; Filmater, Van Eeden, De Kock, McCormack, Coetzee, Rossouw & Heyns 2015:2; Hauck, Winsett & Kuric 2012:664). This strategy has led to inconsistent implementation of clinical and research evidence, which resulted in poor, inconsistent or immeasurable patient outcomes. The clinical pathway for NIV is a prime example of this phenomenon. Even though the clinical pathway was collaboratively developed by the multidisciplinary team of the critical care unit, and included in the work procedure and guideline file, it was not implemented at the bedside.

This means that qualifying patients are not benefitting from the evidence-based pathway for NIV, nurses are not challenging conventional practice to improve patient outcomes, and communication within the multidisciplinary team has remained unchanged. This study wished to address the key factors that prevented the implementation of the clinical pathway for NIV, and simultaneously enhance multidisciplinary communication and person-centred care delivery through using a new, 'bottom-up' person-centred practice development approach (Florczak 2016:109; Filmater, Van Eeden, De Kock et al 2015:2; Hauck, Winsett & Kuric 2012:664).

In an environment where an individual is valued as a member of the team who can provide valuable input, the chances of successful evidence implementation are significantly improved (Mekki, Øye, Kristensen, Dahl et al 2017:7; Florczak 2016:109). Transformational leadership is crucial to the successful implementation of change in clinical practice. Transformational leaders can engage meaningfully

with the nurses by recognising the unique contributions of each team member. They can inspire their nursing teams to have a shared vision of the intended outcome and move their teams toward success through enabling them to make changes to current practice through education, teaching and knowledge sharing, and participation in daily activities, in a non-threatening environment (Ward, Baloh, Zhu & Stewart 2017:8; Hill, Guihan, Hogan, Smith et al 2017:8; Florczak 2016:110).

The South African Nursing Council (SANC) governs nursing practice in South Africa and has published the expected core competencies of the ICU qualified nurse (SANC 2014:1-6). The core competencies of an ICU qualified nurse encompass the interpretation of patient data and the use of technology to implement life-sustaining treatment for the patient, which includes commencing mechanical ventilation to support cardiac and respiratory functions (Nursing Act, 33 of 2005, Section 30). Despite having the knowledge and skills to initiate life-sustaining treatment for the patient presenting with ARF, the hierarchical structure in South Africa's health care system prevents the ICU qualified nurse from acting, because the attending doctor has all the decision-making authority and often disregards the professional opinions of ICU qualified nurses (see Chapter 7 for discussion).

Interdisciplinary collaboration and communication are stifled by the perceived doctor-only authority in the critical care units. In Australia, ICU nurses manage and care for critically ill patients without the assistance of allied healthcare professionals such as respiratory therapists to manage ventilator support (Chamberlain, Pollock & Fulbrook 2017:293). The ICU qualified nurse manages all the patient care as well as the associated equipment required to sustain life, similar to the scope of practice for ICU qualified nurses in South Africa. However, Australian ICU nurses are required to obtain advanced degrees to be able to practise in the critical care environment (Chamberlain et al. 2017:293). In South Africa, this is not the case, as

hospitals rely on filling the skills gap with general, experienced registered nurses and enrolled nurses, adding to the burden of the ICU qualified nurses who are accountable and responsible for the patients in the unit as well as the allocated nurses. For this reason, the inclusion criteria for participants in this study required the nurse to be an ICU qualified nurse, or an ICU experienced nurse with more than three years' experience in the critical care environment. However, the care of a critically ill patient requires a multidisciplinary approach to ensure the best outcome for the individual patient. The final decision regarding the care of the patient still lies with the attending doctor.

## **2.5. ORGANISATIONAL CONTEXT**

Organisational context refers to the environment or setting where consumers use healthcare services and where the change is to be implemented that might influence the outcome of the intervention (Squires, Hayduk, Hutchinson, Mallick, Norton, Cummings & Estabrooks 2015:2). Organisational context expands beyond the characteristics of leadership, culture and evaluation to include aspects such as organisational structure, work attitudes, and inter-organisational domains (Squires et al. 2015:2). In the South African context, the healthcare system is divided into public and private sector hospitals (see Section 2.1).

Gauteng province has 111 public sector hospitals with a total of 14 855 beds, which means that there are 155 beds per 100 000 of the uninsured population (Dell & Khan 2017:1101-1102). This illustrates the grave shortage of public sector beds, bearing in mind that the uninsured population using public sector health care services comprise 84% of the population.

The selected critical care units in the study are part of one of the three major private hospital groups. To enhance patient safety and

operational efficiencies, the group has defined unit-specific criteria to rank their critical care units, based on patient acuity rates, admission rates, staffing complement, and the availability of 24-hour specialist medical doctors in the units, based on ICU models implemented in Europe (Intensive Care Society of Ireland [ICSI] 2014:18-20; Aiken, Sloane, Griffiths et al. 2017:559-568).

The aim is to ensure that patients requiring critical care services are directed to the appropriate health care setting, with appropriate resources, including nursing resources. Table 2.7 outlines the ranking of the units based on patient population and the patient acuity expressed as a percentage of ICU vs High care admissions. The hospital group has 64 acute care hospitals in South Africa, with 14 acute care hospitals in Gauteng. The purposively selected critical care units are situated in two (2) of the 8 hospitals in the east region of Gauteng. There are 149 critical care beds in the east Gauteng region.

**Table 2.7: Ranking of critical care units**

Ranking criteria	% ICU patients	% High care patients
Level 1 – Medium risk general or surgical patients requiring consistent monitoring for potential complications; 100% high care patients	0%	100%
Level 2 – High and medium risk, general or surgical patients in the same unit with medium to high professional dependency requiring supportive equipment	40%	60%
Level 3 – High risk, specialist medical <u>or</u> surgical patients completely dependent on professional nurse intervention and fully dependent on specialised equipment	80%	20%

**Table 2.7: Ranking of critical care units**

Ranking criteria	% ICU patients	% High care patients
Level 4 – High risk, specialist medical <u>or</u> surgical patients completely dependent on professional nurse intervention, fully dependent on sophisticated equipment and specialised monitoring and staff	90%	10%

**Source: The Hospital Group (2017)**

Table 2.8 lists the type of patient admitted to each critical care unit according to the level of patient care they can safely provide, and the staffing complement of these critical care units is determined accordingly to ensure safe nursing skill mix and optimised patient care. The ideal nursing skill mix required for each level is indicated and the hospital group aspires to ensure quality patient care in the hospitals. However, challenges in recruitment, training and retention of nursing staff remain a problem, and impact greatly on adherence to the nursing skill mix in the group’s hospitals.

**Table 2.8: Ideal nursing skill mix per critical care unit**

Type of unit	%Registered Nurses – Critical care qualified	%Registered Nurses – experienced	% Enrolled Nurses	% Enrolled Nurse Assistants
Level 1 (mostly high care)	23%	32%	30%	15%
Level 2 (intermediate)	45%	25%	20%	10%

**Table 2.8: Ideal nursing skill mix per critical care unit**

Type of unit	%Registered Nurses – Critical care qualified	%Registered Nurses – experienced	% Enrolled Nurses	% Enrolled Nurse Assistants
Level 3 (intensive care)	60%	25%	10%	5%
Level 4 (specialised intensive care)	85%	0%	0%	15%

**Source: The Hospital Group (2017)**

Nursing practice in South Africa remains hierarchal, with nurse managers taking responsibility for the development and implementation of evidence-based nursing practice through a ‘top-down’ approach. The nurse managers are not involved in direct patient care and often have not been in clinical practice for extended periods of time.

This authoritarian ‘top-down’ approach has led to resistance and varied levels of implementation of evidence-based nursing practice at the bedside. Organisational factors that could enhance the uptake of research evidence in practice include availability of specialised services, access to resources (human resources, equipment), availability of senior management support, effective leadership, continuity in management, and social interaction (Squires et al 2015:2).

Several studies support a ‘bottom-up’ approach to enhance the participation of the nurses involved in direct patient care delivery to improve patient outcomes and enhance operational efficiencies. The person-centred practice framework pays specific attention to the context in which patient care delivery takes place (Wilberforce et al 2017:95; McConnell et al 2016:39; Laird et al 2015:1455). To address

the gap in research implementation in clinical practice, the researcher identified the need to alter the current ‘top-down’ approach by using nurses from the critical care unit as facilitators of change.

## **2.6. PROFESSIONAL CONTEXT**

Context refers to the setting where evidence-based practice is to be implemented (Florczak 2016:110). In addition, Hauck et al (2012:665) state that the creation of a culture that encourages evidence-based practice and fulfils the professional expectations of the nurse is the responsibility of nurse leaders. Nurse leaders therefore are responsible for engaging nurses and effectively communicating with them for successful evidence-based practice (Florczak 2016:110; Titler et al 2013:S43; Hauck et al 2012:665). In terms of developing a context that is conducive to change, the influence of characteristics such as culture, leadership and evaluation needs to be considered (Florczak 2016:110).

The culture in the unit or the organisation can be linked to the paradigm as this will identify dominant beliefs and established ways of work. In 2016, the World Health Organisation (WHO) published strategic directions to strengthen nursing towards the Health 2020 goals and for the implementation and utilisation of nurse-led clinical pathways to improve patient outcomes and delivery of high-quality patient care by the year 2020. However, this requires nurse leaders and members of the multidisciplinary team to collaborate effectively to change the hierarchical context in the South African health care service (WHO 2016:4).

Plowright (2011:161) states that the professional context considers aspects related to the security and confidentiality of the data gathered, codes of practice within the setting and professional associations. The clinical pathway for NIV was developed by a multidisciplinary team of the critical care unit, under the assumption that the same

multidisciplinary team would implement the clinical pathway in clinical practice. However, this did not transpire as expected and to date the reasons for non-implementation are not known. The researcher's clinical experience as well as the literature reviewed indicate that the benefit of NIV for ARF due to various aetiologies improves patient outcomes by avoiding complications associated with invasive mechanical ventilation (Popat & Jones 2016:347; Zhu et al 2016:1; Lindenauer et al 2015:408; Mas & Masip 2014:837).

The aim of the study was to implement and evaluate the outcomes of an existing clinical pathway for NIV using a person-centred practice development approach. To achieve the aim, the objectives were based on the three pillars of the PARIHS framework, and McCormack and McCance's (2010) person-centred practice framework (see Section 1.6).

## **2.7. SUMMARY**

The increasing disease burden in South Africa requires a new innovative approach to solve the growing shortage of critical care resources. Increasing the number of critical care beds alone will not solve the problem, as there are too few skilled ICU qualified nurses who are able to effectively use research evidence at the bedside to improve patient outcomes. The hierarchical context of the South African health care system needs to change, and the World Health Organisation (WHO 2015:8) supports the use of nurse-led clinical pathways in clinical practice to improve patient outcomes. The meaningful engagement of nurses and members of the multidisciplinary team to address the hierarchical context of patient care in South Africa requires collaboration, inclusion and participation at all levels to bring about sustainable contextual change. The implementation of the clinical pathway for NIV is a small but significant





step in this direction, which aims to benefit the patient, the nurse, the multidisciplinary team and the health care organisation at large.

This chapter discussed the context of the study. Chapter 3 describes the conceptual framework of the study.

# Chapter 3

## Conceptual Framework

### 3.1. INTRODUCTION

The previous chapter provided an overview of the context of the study. The following section provides an overview of the conceptual framework of the study, and includes the paradigm, assumptions, conceptual framework, and the application to this study.

### 3.2. RESEARCH PARADIGM AND DESIGN

The design of a research study begins with the selection of a paradigm of inquiry. The paradigm forms the basis of the research and refers to the entire framework of beliefs, values and the methods employed in the research (Brink, Van der Walt & Van Rensburg 2018:19; Offredy & Vickers 2010:28; Andrew & Halcomb 2009:17).

#### 3.2.1. Critical realism

Critical realism assumes that the real world is a multi-dimensional open system which does not necessarily follow a set order. Phenomena arise due to the interaction between social structures, mechanisms and individuals (Vincent & O'Mahoney 2018:201; Marshall & Broome 2017:8; Dalheim et al. 2012:1 of 2; Parlour & McCormack 2012:309; Kitson, Harvey & McCormack 1998:149). The impact of the mechanisms on individual behaviour depends on the environment in which the phenomenon occurs (Vincent & O'Mahoney 2018:201; Marshall & Broome 2017:8; McConnell et al. 2016:44; Laird, McCance, McCormack & Gibben 2015:1456; Angus & Clark 2012:2; Parlour & McCormack

2012:310). According to Coghlan and Brydon-Miller (2014:220), Cruickshank (2012:77), Clark, Lissel and Davis (2008:E67-E69) and Angus, Miller, Pulfer and McKeever (2006:E68) knowledge development is a social process relative to the perceptions of the individual.

The work of critical theorist Jurgen Habermas, indicated three levels of enquiry based on the typology of interest, namely technical interest, practical interest and emancipatory interest. The latter describes forms of enquiry which aim to transform current situations, to provide opportunities for growth and advancement through the development of critical knowledge by exposing the impact of barriers and enablers in an environment (Oliveira 2018:9; Marshall & Broome 2017:8; Modell 2015:774; Coghlan & Brydon-Miller 2014:220).

When new practices are implemented in the clinical setting it is natural for nurses to be resistant to change. Reverting to 'how things have always been done' creates an environment which is not conducive to quality improvement through innovation. Expanding the knowledge and skills of the nurses in the unit, and empowering them to be practice development facilitators, through collaboration, inclusion and participation, implementing the clinical pathway for NIV and the transition to person-centred care, can be facilitated.

Marshall and Broome (2017:8) state that nurse leaders have a responsibility to engage nurses and create an environment conducive to change, however the distribution of power and decision-making rights remain unequal in the healthcare sector This is consistent with the views of Kelly (2018:188) and Coghlan and Brydon-Miller (2014:564) who state that action is collaborative action is required to bring about change. Collaboration between nurses and members of the multidisciplinary team are crucial for improving patient outcomes, but that the valuable role of the nurse has been marginalised to that of a physician's helper (Coghlan & Brydon-Miller 2014:564). Nurses are comfortable relaying

vital biomedical patient information to aid the physician in clinical decision making, but often they do not feel comfortable voicing their own opinion (Risjord 2009:70).

Critical realism refers to a type of emergent research paradigm which aims to challenge conventional wisdom with regards to knowledge and research methodology (Vincent & O'Mahoney 2018:201; Coghlan & Brydon-Miller 2014:219; Cruickshank 2012:74; Botma et al. 2010:43). Critical realism plays a significant role in identifying and addressing the challenges associated with implementing of research evidence into clinical practice, as it actively engages participants to challenge their dominant beliefs and ways of thinking (Vincent & O'Mahoney 2018:201; Coghlan et al. 2014:563; Botma et al.2010:43-47; Kontos & Poland 2009:5) The overall aim of the study was implementing the clinical pathway for NIV in the critical care unit and evaluating the outcomes of the implementation process.

### **3.2.2. Characteristics of research paradigms**

A paradigm refers to a shared set of beliefs as to how a discipline is supposed to function, and this includes how knowledge is generated, by whom it is generated, and what is considered as knowledge (Brink, Van der Walt & Van Rensburg 2018:19; Offredy & Vickers 2010:28; Andrew & Halcomb 2009:17). This is also consistent with the view of Polit and Beck (2017:9) and Botma, Greeff, Malaudzi and Wright (2010:39,40). In addition, Rolfe, Jasper and Freshwater (2011:13,189), Salkind (2010:993), Roberts and Priest (2010:18) and Bowling (2009:129) define a paradigm as an interpretive framework that is guided by beliefs and feelings about the world and how it should be understood.

Risjord (2009:195) stated that Kuhn's original concept of a paradigm defined in 1962 constitutes the entire collection of beliefs, values, and methods of a group of researchers within the same discipline, and that

the paradigm is closely related to the theory, ontology, methods, and standard problems within the discipline that require investigation as well as the standards for acceptable solutions to the problems. However, this argument is not entirely suited to nursing research.

Nursing researchers investigate complex, multidimensional phenomena and the use of a single paradigm, theory, method or ontology could be detrimental to the development of nursing knowledge and practice by preventing nurse researchers from meaningful engagement, collaboration and participation in research activities (Kelly 2018:193; Risjord 2009:202). To ensure a meaningful contribution to nursing practice, the use of multiple methods of enquiry is advised (Kelly 2018:194; Risjord 2009:202).

The research onion described by Saunders and Tosey (2013:np) states that the selection of a philosophy that is fit-for-purpose guides the researcher in selecting the most appropriate approaches to research design, data collection and analysis to sufficiently answer the research question. The research onion as applied to this study, is depicted in Figure 3.1.



**Figure 3.1: Application of the research onion (Saunders & Tosey 2013:np)**

The research onion provides the rationale for the research paradigm selected for this study, based on the concepts of philosophy, approach, methodological choices, strategies, time horizons, techniques and procedures outlined in table 3.1.

**Table 3.1: The research onion – applied**

Concept	Application
<p><b>Research philosophy – <i>Critical realism</i></b> <i>Critical realism challenges conventional methods of knowledge creation and is concerned with emancipating groups of people to allow for growth and progress through transformation of the current situation (Vincent &amp; O’Mahoney 2018:203).</i></p>	<p>The researcher included the members of the multidisciplinary team who originally participated in the development of the clinical pathway for NIV, in the study. Collaboration, inclusion and participation, which is aligned with the goals of emancipatory practice development and action research fits the aims of critical realism – to emancipate individuals from perceived constraints to achieve a common goal.</p>
<p><i>Critical realism supports the fact that reality is co-constructed by individuals and that finding the ‘reality’ is only possible through continuous research. The researcher acknowledges the fact that reality is co-constructed by the individuals who are engaged in the environment, and that knowledge generation is a social process (Vincent &amp; O’Mahoney 2018:203)</i></p>	<p>The internal facilitators were purposively selected from the nurses working in the purposively selected critical care units – who participated in the development of the clinical pathway for NIV. Identification of the perceived barriers to implementation was only possible due to the inclusion and participation of the nurses working in the purposively selected critical care units – an investigation of their ‘reality’. Data collection was collaboratively done with the internal facilitators working in the unit.</p>

**Table 3.1: The research onion – applied**

Concept	Application
<p><i>Critical realism supports the use of multiple methods of enquiry to answer the research question (Vincent &amp; O'Mahoney 2018:206)</i></p>	<p>Mixed methods of data collection were used and integrated during the three phases of the study. During Phase 1 quantitative data (CAI questionnaire) was collected and analysed to inform the activities in Phase 2 and Phase 3 of the study. Data collection during Phase 2 &amp; 3 consisted of qualitative data. Data was utilised in a cyclical process which is consistent with the principles of action research to inform the next step (see Section 7.2)</p>
<p><b>Approach - Deductive approach</b></p> <p><i>The aim of critical realism is to empower teams to challenge their conventional ways of thinking and working. The utilisation of a new approach to the implementation of evidence in the clinical setting improves the adoption of evidence to improve patient outcomes and emancipate nurses from rigid culture-based practices. The researcher postulated that the non- implementation of evidence is related to a lack of facilitation of the implementation process as well as environmental factors (unit culture) such as changes in management, perceptions of the doctor and multidisciplinary teams (Kennedy 2018:50; Kelly 2018:195).</i></p>	<p>The original clinical pathway for NIV was developed by the multidisciplinary team working in the critical care unit, but never implemented in clinical practice. The researcher attributes this non-implementation to the traditional 'top-down' approach utilised to implement evidence. The lack of facilitation of the process contributed to the non-implementation of the clinical pathway after it was published (Balfour et al. 2012).</p>



**Table 3.1: The research onion – applied**

Concept	Application
<p><b>Methodological choice</b> <i><b>Mixed Methods- Transformative, sequential</b></i> <i>Critical realism supports the use of mixed methods research to understand complex problems and find innovative solutions (Morse 2017; Bledsoe, Mertens, Sullivan &amp; Wilson 2010)</i></p>	<p>The study was conducted in three interdependent and interrelated phases. A transformative, sequential design was employed: The quantitative data collected in Phase 1 was utilised to inform the activities in Phase 2 of the study and integrated into Phase 2 and Phase 3 (see Section 6.2).</p>
<p><b>Strategies - Action Research</b> <i>Engages all participants of an organisation to bring about change. Change is only sustainable through collaboration, participation and inclusion of the members of the multidisciplinary team. The utilisation of action research cycles allow for a collaborative learning process which focused on consideration for individual knowledge inclusion, the facilitation of learning and promoting changes in clinical practice (Coghlan &amp; Shani 2015:47; Falkembach &amp; Carillo 2015:79; Nicolaides &amp; Raymaker 2015:170)</i></p>	<p>The cycles of action research combined with the principles of emancipatory practice development allows for the collection and analysis of data which informs the next step in the study. The data collected during Phase 1 was analysed and discussed with the internal facilitators, to provide them with an opportunity to develop innovative ways to overcome the perceived barriers to implementation in their unit. The process was facilitated by the researcher who acted as an external facilitator (see Section 7.2.2).</p>

**Table 3.1: The research onion – applied**

Concept	Application
<p><b>Time horizons - <i>Cross-sectional</i></b>  <i>Cross-sectional studies collect information about the present situation with relation to the phenomenon of interest (Nishishiba, Jones &amp; Kraner 2014:50)</i></p>	<p>The clinical pathway for NIV was developed but not implemented in clinical practice. Conducting a cross-sectional study using the CAI questionnaire provided insight into the current barriers to implementation in the critical care unit as well as the factors that will enable implementation of research at the bedside. The participants who completed the CAI questionnaire are all nurses working in the unit as per the eligibility criteria (see Section 5.5.4). The results from the CAI were shared with the internal facilitators to enable them to collaboratively find solutions for overcoming barriers (see Annexure C5).</p>
<p><b>Techniques and Procedures (Data collection and analysis) – <i>Mixed methods</i></b>  <i>Critical realism advocates the use of multiple methods of enquiry.</i></p>	<p>The quantitative data collected during Phase 1 of the study informed the activities during Phase 2 of the study. The quantitative data provided a departure point for discussions during focus groups with the internal facilitators. The content validity of the adapted clinical pathway was obtained through a Delphi with experts in the field of critical care medicine and critical care nursing (see Chapter 6). Other methods included questionnaires, focus groups, delphi and interviews.</p>

**Adopted from Saunders, Lewis and Thornhill (2019:130)**

Eikeland (2015:381) states that three major research paradigms inform the research design and methods, namely quantitative, qualitative and mixed methods. Quantitative research relies primarily on the collection and analysis of statistical data whereas qualitative research relies on narrative data. Mixed methods research however, utilises both qualitative and quantitative data to answer the research question. A summary of the characteristics of the research paradigms and the application to the study is presented in Table 3.2.

**Table 3.2: Summary of the characteristics of a research paradigm and application to the study**

Quantitative	Qualitative	Mixed methods	Application
Collection of quantitative data or statistical data	Collection of qualitative data – lived experiences / narratives (participants)	Collection of both qualitative and quantitative data	A transformative sequential design was utilised – the collection and analysis of quantitative data in Phase 1 informed the activities during Phase 2 of the study
Uses confirmatory scientific methods	Uses exploratory scientific methods	Utilises exploratory methods which can be confirmed by scientific methods	The researcher utilised a validated questionnaire to obtain statistical data regarding the context which explored workplace culture in the unit, including barriers and enablers to implementation.

**Table 3.2: Summary of the characteristics of a research paradigm and application to the study**

Quantitative	Qualitative	Mixed methods	Application
Assumes cognition and behavior are predictable and explainable	Believes human behavior is fluid, dynamic, and changes over time	Richer understanding of complex processes in the critical care environment	The utilisation of both quantitative and qualitative data provides a richer understanding of a complex process – the influence of individual participant’s behaviour provides insight into the workplace culture in the critical care unit
Focuses on one or a few factors at a time	Examines behavior as it occurs naturally in all of its detail	Combines various methods of enquiry to enhance the validity of findings	Phase 1 focused on exploration of the current workplace culture using quantitative data collection methods to identify factors that influence workplace culture include leadership, evaluation and the individual behaviour and interactions in the unit which contribute to workplace culture. Data was used to inform actions in Phase 2.

**Table 3.2: Summary of the characteristics of a research paradigm and application to the study**

Quantitative	Qualitative	Mixed methods	Application
Observers remain neutral and objective	Observers want to "get close" to their objects to understand them better	The researcher acts as a facilitator to enhance the learning experiences of the participants	The researcher utilises facilitation techniques to enhance innovative problem solving by allowing the participants to 'learn from doing' which enhances the successful uptake of research evidence
Reduces measurement to numbers and statistics	Conducts observations and in-depth interviews which are reported in words	Quantitative and qualitative data are integrated at some stage during the research to provide a deeper understanding of the phenomenon under investigation	The aim is to understand why the clinical pathway for NIV was not implemented by identifying the barriers to implementation in the unit. This was achieved through the CAI questionnaire. Finding innovative solutions to overcome the barriers was achieved through conducting focus group sessions and interviews with participants.

**Adapted from Eikeland (2015:381)**

Considering the multiple concepts associated with research paradigms, the researcher believes that the paradigm should fit the purpose of the study in addition to just answering a research question. Table 3.3. summarises the researcher's view of the importance of the research paradigm.

**Table 3.3: Researcher’s view of the research paradigm of the study**

Concept	Application
<p><b>A shared set of beliefs about nursing and how it is supposed to function</b> -<i>The researcher believes that the core of nursing practice is to provide the best possible evidence-based care to every patient to optimize their health goals and outcomes. The role of the nurse is that of active patient advocate, who acts in the best interest of the patient rather than blindly following physician’s orders. The needs of the patient and their family and the individual wishes of the patient needs to be acknowledged in planning their treatment – ‘death is an acceptable outcome’ – and the nurse should be able to advocate for the patient in collaboration with the multidisciplinary team to enhance person-centred care.</i></p>	<p>This view is shared by the nurses working in the critical care unit. A shared set of beliefs provides the departure point for this study. The same group of nurses were part of the development of the original clinical pathway for NIV. However, changes in the critical care unit such as the appointment of a new physician, members of the nursing team resigning or retiring from the team, and personal challenges influenced the ability and drive of the team to implement the clinical pathway for NIV in the unit (refer to Chapter 6). Clarification of values and beliefs create a strong sense of a shared purpose, and helps team view their differences and how to overcome difference to achieve a shared goal. The values and beliefs clarification that was done at the onset of the study can be viewed in Annexure C3.</p>
<p><b>By whom knowledge is generated</b> - <i>Nursing practice has historically depended on other disciplines to generate knowledge for clinical practice. Utilising a new approach that acknowledges the invaluable contributions of the nurse stands to enhance the uptake of evidence in clinical practice to improve patient outcomes.</i></p>	<p>The researcher is a member of the nursing team working in the critical care unit. This creates a sense of ownership and trust amongst the nurses – ‘one of us is doing something to improve our situation’. The nurses are more likely to participate whole-heartedly in the research activities in the unit.</p>

**Table 3.3: Researcher’s view of the research paradigm of the study**

Concept	Application
<p><b>How knowledge is generated and by what is considered knowledge</b> - <i>Clinical knowledge and experience provides a rich source of practical information – ‘what has worked before and what we do everyday’ – however lacks empirical evidence. The researcher believes that there is a great deal of nursing knowledge lost because there is no empirical evidence that supports it. This rich source of nursing knowledge can be effectively utilised for the implementation of evidence-based practice by engaging with the nurses to obtain their collaboration and participation to contextualise evidence for implementation at the bedside to benefit the patients under their care</i></p>	<p>Utilising a person-centred approach allows for the inclusion of the nurses in the research process and secures their buy-in because they feel valued as professional team members who can make a difference in the patient’s outcome. The ‘bottom-up’ approach challenges the conventional methods of evidence implementation and secures the support of the nurses involved through collaboration, inclusion and participation. Nurses can share their knowledge and experience to contextualise the evidence for local purposes, which reduces the risk of variation in implementation and immeasurable results. I have always believed that once a person understands what they must do, why they must do it, and what the consequences of their actions are, they are more likely to cooperate and sustain the changes.</p>
<p><b>By whom knowledge is generated</b> - <i>Nursing practice has historically depended on other disciplines to generate knowledge for clinical practice. Utilising a new approach that acknowledges the invaluable contributions of the nurse stands to enhance the uptake of evidence in clinical practice to improve patient outcomes.</i></p>	<p>The researcher is a member of the nursing team working in the critical care unit. This creates a sense of ownership and trust amongst the nurses – ‘one of us is doing something to improve our situation’. The nurses are more likely to participate whole-heartedly in the research activities in the unit.</p>

**Table 3.3: Researcher’s view of the research paradigm of the study**

Concept	Application
<p><b>Kuhn’s original concept that a paradigm is related to theory, ontology methods and standardised problems and standards for acceptable solutions - <i>Nursing is a dynamic profession and faces complex problems, because nursing is not about inanimate objects and number. The art of nursing is in caring for patients and their families – this equates to lived experiences in the real world – where every interaction influences another person’s well-being.</i></b></p> <p><i>Using one method of enquiry will not solve the complex, person-related challenges and problems in the critical care environment. The traditional ‘top-down’ approach used by nurse leaders will not have the desired outcomes for patients, nurses and the multidisciplinary team or healthcare in South Africa.</i></p>	<p>The hierarchical structure of nursing in South Africa contributes to the traditional ‘top-down’ approach and it’s less than desirable outcomes – resistance from nurses to implement best practice, or variations in implementation and inaccurate outcomes measures.</p> <p>Therefore, a new approach is needed, and utilising a person-centred practice development approach might change the current status quo to become evidence-based in the interest of improved patient outcomes, multidisciplinary team collaboration and improved nursing care delivery.</p>

**Adopted from Brink, Van der Walt & Van Rensburg (2018:19), Eikeland (2015:381), Offredy & Vickers (2010:28) and Andrew & Halcomb (2009:17)**



The researcher believes that the use of a single method of enquiry is insufficient to answer the research question, since the research was conducted in a real-life setting where the behavior and interactions of the participants with each other and the environment contributed to finding a solution to a real-world problem.

The contributions of the participants lead to innovative solutions to everyday challenges. Utilising a new approach – from the ‘bottom-up’ – secured the collaboration, participation and buy-in of all the participants in the study. The use of combined methods of inquiry, to ensure that the research question is satisfactorily answered and maintains credibility is strongly supported by critical realism (Vincent & O’Mahoney 2018:208; Kelly 2018:195; Clark et al. 2008:E67).

Williamson, Bellman and Webster (2012:9) and Kontos and Poland (2009:5) describe critical realism as a “...sophisticated understanding of context.” Critical realism offers an alternative perspective on traditional methods of human inquiry through the combination of qualitative and quantitative methods to provide a richer understanding of complex processes involved in nursing theory, research and practice and provide for more innovative solutions (Vincent & O’Mahoney 2018:208; Kelly 2018:187; Parlour & McCormack 2012:309; Angus & Clark 2012:1), which means that critical realism is particularly suited to nursing research as it facilitates the use of multiple methods of inquiry to support the understanding of complex processes involved in nursing theory, research and practice (Kelly 2018:187; Parlour & McCormack 2012:309).

### **3.3. CONCEPTUAL FRAMEWORK**

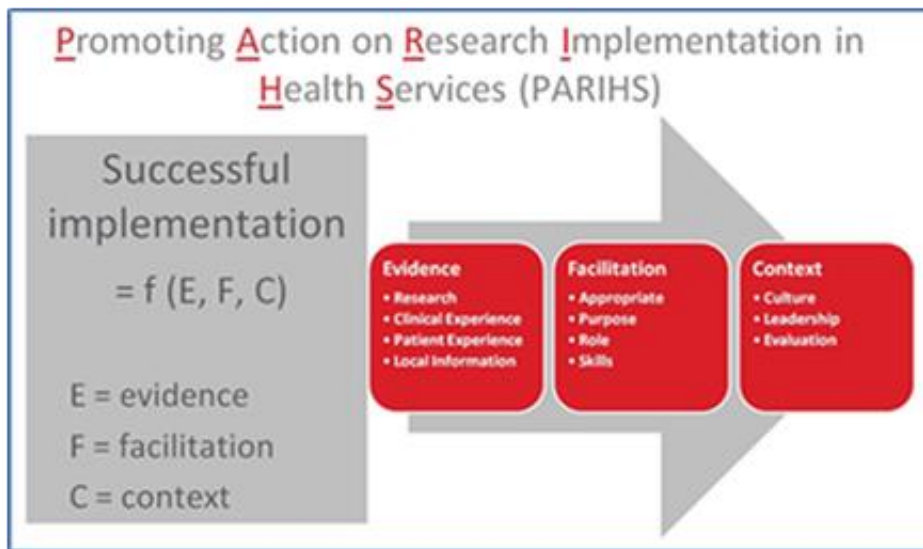
The conceptual framework chosen at the inception of this study was the original PARIHS (Promoting Action on Research Implementation in

Health Services) framework, and subsequently the revised i-PARiHS or integrated-PARiHS framework as described in Section 3.3.1. Kelly (2018:187), Howell (2013:188), Parlour and McCormack (2012:310) and Kontos and Poland (2009:5) believe that, the root of critical realism is not in whether certain interventions are effective in a generalisable manner, but in identifying what works in a specific setting at a specific time. Considering this, the i-PARiHS (integrated- Promoting Action on Research Implementation in Health Services) framework provides a guideline for the implementation of research evidence into practice.

### **3.3.1. The i-PARiHS framework**

Ward, Baloh, Zhu and Stewart (2017:3) describe the PARiHS framework as a distinctly useful method for measuring the implementation of quality improvement strategies in the clinical setting. The original PARiHS framework was expressed as a simple equation, namely that successful implementation is the sum of the three core elements – evidence, facilitation and context, as seen in Figure 3.2.

Each of the three core elements play a distinct role in the successful implementation of research evidence into clinical practice. The three primary components of the original PARiHS framework identifies the predictors of successful implementation of research evidence into clinical practice, which are interdependent factors that influence the outcome of an intervention (Ward et al. 2017:3).



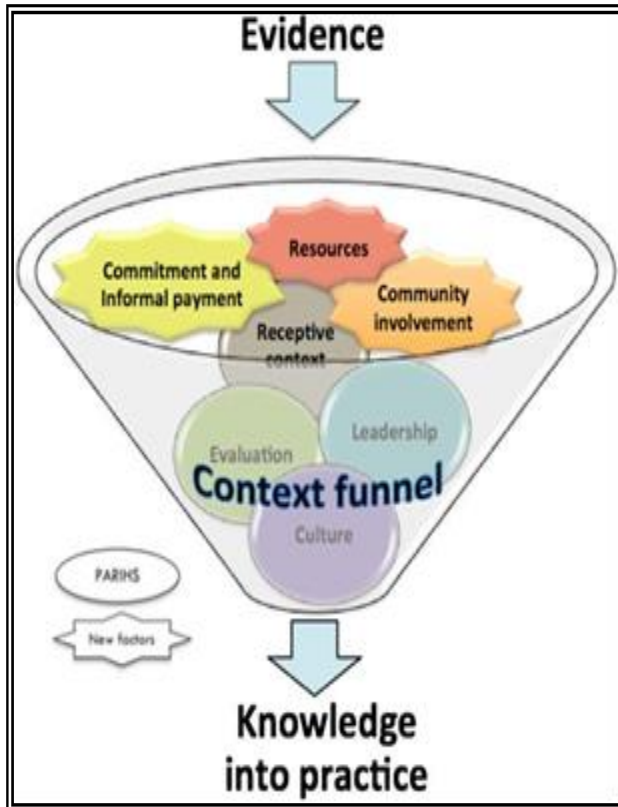
**Figure 3.2: The original PARIHS framework (Seers et al.201:2)**

Mekki, Øye, Kristensen, Dahl, Haaland, Nordin et al. (2017:2) state that the PARIHS framework provides a theoretical basis for the implementation of research evidence into clinical practice by taking into consideration the three vital elements that predict successful implementation, namely evidence, facilitation and context, although the relationship between these elements differ between sites and might not be fully understood. Kitson, Harvey and McCormack (1998:149) state that the successful implementation of research into clinical practice is the result of the ‘... interplay and interdependence of many factors...’

This is consistent with the views of Ward et al. (2017:3), Mekki et al. (2017:9) and Dalheim et al. (2012: 1-2), who also stated that the implementation process is complex and dependent on conditions within the organisation (Ward et al. 2017; Rycroft-Malone et al. 2013; Seers et al. 2012:2; Squires et al.2012:294; McCormack, McCarthy, Wright, Slater & Coffey 2009:33). However, the original PARIHS framework did not consider the influences of individual participants on the implementation of evidence and lacked a clear description of what constitutes successful implementation.

Harvey and Kitson (2016:33) reviewed the application of the original PARIHS framework for the implementation of evidence into clinical practice and found that the original framework did not consider the aspects of innovation, and the recipients as part of the implementation process. Furthermore, for any change in clinical practice to be sustainable, innovation is paramount. New knowledge generation is the essence of innovation and sustainable change (Harvey & Kitson 2016:33). The framework was revised to incorporate the two new constructs.

Successful implementation is defined as the ‘... achievement of agreed implementation goals...’. The successful implementation of change is dependent on engaging individuals, teams and stakeholders to take ownership of the implementation and internalise the innovative changes to practice. For this reason, successful implementation is defined as the achievement of implementation goals because of facilitating innovation in practice with the recipients in their local context (Harvey & Kitson 2016:33). The authors found that the application of the revised framework for implementing evidence into practice reduces the risk of variation related to context across implementation sites (Harvey & Kitson 2016:33). Figure 3.3 illustrates the revised i-PARIHS framework and the dynamic relationship between the constructs (Harvey & Kitson 2016:33).



**Figure 3.3: The i- PARIHS framework (Adopted from Bergström et al. 2012).**

Figure 3.3 broadly outlines the constructs of the i-PARiHS framework. Milat and Li (2017:e:2711704) concluded that utilisation of the i-PARiHS framework in nursing research considers all contextual factors that influence evidence implementation into practice and therefore supports nurse researchers to fully understand the range of factors that impact on research implementation to assist them in bridging the gap between nursing research and nursing practice.

The dynamic relationship between the constructs of the i-PARiHS framework influence the successful translation of knowledge into practice (Bergström, Peterson, Namosoko, Waiswa & Wallen 2012:117). A discussion of the major constructs of the i-PARiHS framework and their realisation in this study follows in the next section.

### **3.3.1.1. Innovation**

Ward et al. (2017:3) define evidence as the information or data that warrants the implementation of a specified intervention into practice. Squires et al. (2012:294) describe evidence as the information and knowledge used to inform clinical decision making, and have identified three strands of evidence, namely research, clinical experience, and patient preference. For the successful uptake of research evidence into clinical practice, all three these strands need to be strong (Florczak 2016:110). Evidence according to the i-PARiHS framework is based on knowledge that can be utilised for clinical decision making and is congruent with the view of Squires et al. (2012:294) and Orton, Lloyd-Williams, Taylor-Robinson, O’Flaherty & Capewell (2011:8).

Stetler, Damschroder, Helfrich and Hagedorn (2011:4) described the following sub-elements of evidence to be considered, namely, research, clinical experience, patient experience, and information from local context, that all impact on the successful implementation of an intervention. Research evidence will only be considered valuable if the team participates in the generation and co-construction of the evidence through a well-structured, social interactive process. The clinical pathway was developed by multidisciplinary teams working in the critical care unit and the researcher was under the impression that the clinical pathway would be implemented by the same team who participated in developing the clinical pathway, however this was not the case. Exploring the factors that influence the non-implementation of the clinical pathway in the critical care unit would provide insight into the reasons for non-implementation.

The person-centred approach emphasizes the importance of collaboration and participation in this respect. The commitment of the team to the implementation of evidence is reinforced through collaboration, inclusion and participation (Rycroft-Malone et al. 2016:2; Rosenthal et al. 2015:7). The original PARiSH framework focused on

evidence as a core component of successful implementation. The revised i-PARiHS framework extended the original concept of evidence to include evidence generated from other sources for example practice-based knowledge. The authors indicated that evidence is gathered and utilised in various ways, and rarely implemented verbatim. Adapting evidence to suit the local context is part of practice development and incorporates evidence in many ways. The construct of evidence was then renamed as innovation.

As a newly qualified ICU registered nurse working in a level 2 critical care unit, the researcher realised that finding an alternative to invasive ventilation will significantly improve the quality of care delivered to the patients in our unit. Even though the hospital is a private sector hospital, resource constraints were a reality – particularly finding competent nurses to work in the unit. The patients admitted to the unit often required advanced airway management. The geographical location of the hospital is of such a nature that nurses from the bigger city areas are often unable or unwilling to travel to rural hospitals to work sessional shifts. Finding competent nurses to safely care for mechanically ventilated patients was a daily challenge. Non-invasive ventilation has proven to have the same physiological benefits as invasive ventilation, but without the associated risks. This prompted the researcher to collaborate with the multidisciplinary team to develop the clinical pathway for non-invasive ventilation.

Clinical experience is related to the clinical judgment utilised by the physician or nurse based on the clinical evidence identified through patient assessment, which will inform clinical decision-making. The value of tacit knowledge and the complexities of the real-world clinical setting should not be dismissed, because when the evidence to be implemented is congruent with the clinical experiences of the participants it stands to strengthen the potential of a successful outcome (Kelly 2018:188; Stetler et al. 2011:5 of 10). Utilising participants who were involved in

developing the clinical pathway for NIV (Balfour et al. 2012:107) to participate in developing an implementation strategy, means that they already have a vested interest in the clinical pathway as well as extensive clinical experience with non-invasive ventilation in the critical care unit, which might contribute to the successful implementation of the clinical pathway. The researcher believed that utilising person-centred principles for the development of the clinical pathway, it would be implemented into clinical practice immediately, however this was not the case and to this day it has remained a pretty poster in the unit's procedure file and the patients are not benefitting from the best evidence-based care available. To identify the barriers to implementation of the clinical pathway in the critical care unit, the researcher embarked on a practice development journey, to collaborate with the multidisciplinary team and nurses in the unit to implement and evaluate the outcomes of the clinical pathway for NIV.

However, tight work schedules and geographical separation meant that we had to find innovative ways of communication. We collaboratively agreed to create a WhatsApp group for the internal facilitators which enabled the team to communicate freely, despite being on opposite shifts. We originally planned to have our focus group sessions in the hospital boardroom, once per week from 12:00 to 13:00. However, operational requirements limited the participation of the internal facilitators in the focus group. The group collaboratively decided that the best way forward was to have our weekly focus group sessions off-site at a coffee shop – this way there would be no interference with our discussions.

Unfortunately, each of the Proteas was allocated to a separate shift, and it would be impossible for all four facilitators to attend at the same time. The internal facilitators collaboratively agreed that the group activities would carry on if at least three of the internal facilitators were present. I would then visit the internal facilitators one-on-one in the unit to continue



with the research activities. In addition, a closed WhatsApp group was created to ensure continued communication with the internal facilitators, as some of them were now working night duty and were not able to attend the focus group sessions.

Although all three strands of evidence have equal weighting, the value of patient preference is often overlooked or dismissed. A possible explanation for devaluing patient preferences in clinical decision making is the lack of empirical evidence to support them. In addition, evidence-based practice guidelines serve to inform clinical practice and guide clinicians rather than patients (Florczak 2016:109; Stetler et al.2011:4 of 10). A lack of sound evidence regarding patient preference creates feelings of fear and anxiety about including patients in clinical decision making, which could possibly be associated with the lack of implementation of the clinical pathway for NIV in the clinical setting.

Collaborating with the multidisciplinary team might change their perceptions of clinical pathways to include the patient in the decision-making process and deliver person-centred care. Kelly (2018:188) and Stetler et al. (2011:4) also include information related to the local context as critical for the successful transfer of knowledge into clinical practice. Because the multidisciplinary team was involved in the development of the clinical pathway and possess invaluable information related to the current utilisation of NIV in the critical care unit, acknowledging their unique contributions would strengthen their commitment to implementation of the clinical pathway for NIV.

The internal facilitators utilised the latest research evidence to adapt and validate the existing clinical pathway. I realized that a lack of access to information and lack of skill to critically appraise research information influenced the participation of the internal facilitators in the process of updating the clinical pathway. A session was dedicated to teaching the internal facilitators how to search for appropriate research evidence and

how to extract vital information (see Chapter 6). The adapted clinical pathway was then distributed to the multidisciplinary team and other experts in critical care science for validation (see Annexure D5).

The ability to critically appraise research works and their value to clinical practice is one area that seems to be lacking in current nursing education programmes. Sun et al (2017:413) and Majid et al (2011:230) highlighted this as a barrier to the implementation of evidence-based practice. Nurses do not possess the necessary skills to implement research evidence into clinical practice at the patient bedside. The lack of access to search for research findings was also highlighted (Sun et al 2017:413; Majid et al 2011:230).

Although introductory research methodology is taught during basic nursing training, not all nurses necessarily possess the knowledge and skills to access research findings using the available technology. When information is urgently needed in practice, nurses often turn to colleagues for information – reverting to clinical experience instead. The value of tacit knowledge should not be overlooked, but empirical evidence to support clinical findings should be sought to provide an evidence-base for clinical decision making (Squires et al. 2012:294).

A lack of time during working hours to engage in discussions regarding evidence-based practice was also highlighted as an important factor. Nurses are overwhelmed with the current workload due to the shortage of nursing practitioners in the clinical setting which contributes to a lack of interest in seeking research evidence to inform practice. Majid et al (2011:235) emphasised the availability of adequate time for learning about evidence-based practice and the implementation thereof, as crucial for successful implementation (Majid et al. 2011:230; Jensen 2011; Wallen, Mitchell, Melnyck, Fineout-Overholt, et al.2010: 2761-2771; Spenceley et al. 2007:967). Apart from the access to research findings and knowledge, and the perceived shortage of time to engage in

research activities, there are other important aspects to include when establishing evidence to be implemented into clinical practice.

Traditionally, the main focus was on the role of the facilitator related to implementation, and did not acknowledge the contributions of patient preferences, the clinical experience of the nurse and the social (behavioural) aspects of the unit (Seers et al. 2012:2,3; Wallen et al. 2010:2761– 2771). Harvey and Kitson (2016:33) and Kontos and Poland (2009:4) state that, the likelihood of successful implementation of evidence into clinical practice is enhanced in settings where the evidence is consistent with the tacit knowledge of the nurse and patient experiences. This is consistent with the findings of Kelly (2018:194), Ward et al. (2017:110) and Rycroft-Malone et al. (2016:2).

When there is a high level of consensus among nurses, this strengthens clinical experience (Squires et al. 2012:294) which contributes to the degree of implementation success. Tacit or practice-based knowledge is very persuasive and stands to reinforce the value of scientific evidence (Dalheim et al. 2012:9; Rycroft-Malone et al 2016: 7). When research evidence matches the practitioner's clinical experience, the possibility of uptake in clinical practice is improved (Hill, Guian, Hogan, Smith, LaVela, Weaver, et al. 2017:99; Wilkinson et al. 2012:198; Rycroft-Malone et al. 2004:85; Kitson et al.1998:150).

The first stage of implementation serves to explore the potential match between the evidence to be implemented and the specific needs of the target population, and to adapt the planned intervention to their specific needs (Kelly 2018:194; Fixsen et al. 2005:15). Kelly (2018:195) and Panisset, Koehlmoos, Alkhatib, Pantoja, Singh, Kengey-Kayando et al. (2012:2) claim that it is well established that the implementation of research findings has the potential to improve healthcare systems and patient outcomes. Hill et al. (2017:100) state that the role of the nurse is crucial for the adoption and advancement of evidence-based practice

and places the nurse in a healthy position to close the theory –practice gap and ensure the delivery of high quality patient care, but nurse leaders have the responsibility to facilitate the process.

The clinical pathway for NIV was developed by the multidisciplinary team in 2012, but the implementation in clinical practice did not realise. The aim of this study is to utilise the multidisciplinary team who collaboratively developed the clinical pathway to develop a strategy to implement the clinical pathway into clinical practice. Utilising the same multidisciplinary team who developed the clinical pathway, stands to improve the uptake of the evidence into clinical practice, because the three strands of evidence appear strong within the multidisciplinary team and the clinical setting of the intervention group (Proteas).

Considering that the clinical pathway for NIV was developed and published in 2012 (Balfour et al. 2012:107), the information might be outdated. Rosenthal, Tsuyuki and Houle (2015:2) state that successful implementation of evidence requires optimisation of the evidence to align with the tacit knowledge and experience of the multidisciplinary team, therefore the researcher will assist the multidisciplinary team in obtaining the latest research evidence related to the application of NIV to adapt and validate the existing clinical pathway. A detailed discussion related to the process follows in Chapter 6.

### **3.3.1.2. Facilitation**

When nurses in the critical care unit are confronted with a clinical problem, they tend to rely on experiential knowledge of senior nurses. Although experiential knowledge is valuable, it lacks scientific appraisal. For nursing practice to be truly evidence-based, the nurse needs to be emancipated from the rigid culture of ‘...how we do things here’, to embrace research evidence and empowered to improve patient outcomes. Utilising the knowledge and skills of the nurses in the unit, and empowering them to be practice development facilitators, through

collaboration, inclusion and participation, the translation of knowledge into clinical practice can be facilitated. Utilising a person-centred practice development approach, might assist in overcoming perceived barriers to improve person-centred patient outcomes.

Kitson, Harvey and McCormack (1998:152) defined facilitation as a technique whereby one person provides support to another to make a process of change easier. Florczak (2016:111) and Squires et al. (2012:296) describe facilitation as an enabling process to assist individuals to alter their ways of thinking and working to improve patient outcomes. Facilitation is a core component for successful implementation of evidence in clinical practice. Ward et al. (2017:3) and Nicolaidis and Raymaker (2015:172) describe facilitation as a deliberate process and technique utilised by one person to assist other in changing their behaviour, attitude and skills to improve the likelihood of successful implementation of an intervention.

The facilitator must be well equipped with the required skills, knowledge and interpersonal communication attributes to make the process of change easier for the participants. Mekki et al. (2017:9), Squires et al. (2012:295) and Risjord (2009:71) acknowledge the fact that not all nurses have the desire to take direct action to improve current clinical practice and patient care, and therefore the successful implementation of evidence requires a skilled facilitator to assist in driving the process. Shared leadership between nurse leaders and nurses provides an avenue for nurse leaders to empower nurses, thereby increasing the odds of successful implementation of evidence into clinical practice (Mekki et al. 2017:9; Risjord 2009:71). This is consistent with the views of Rosental et al. (2015:2) who state that effective translation of knowledge requires expert facilitation to enhance the acceptance of changes in clinical practice.

Facilitation is aimed at improving the process of adopting evidence into clinical practice (Nicolaidis & Raymaker 2015:173). The first step in facilitation should be focused on acknowledging the training needs of the nurse with regards to evidence-based practice. Adequate training will provide nurses with the skills and confidence to implement evidence-based practice (Rycroft-Malone et al.2013; Dalheim et al. 2012 :9; Majid et al. 2011:233; Fixsen 2005:29). The valuable contributions of nurses cannot be neglected in facilitating the implementation of evidence-based practice. Gaining their opinions and expertise is invaluable in optimising the process of implementation (Mekki et al 2017:7; Risjord 2009:71).

An important aspect of facilitation of the implementation process is to provide a support structure to the nurse during and after the implementation of evidence-based practice guidelines (Rosenthal et al. 2015:2; Staggers, Iribarren, Guo & Weir 2015:900; Jeffs, Nincic, White, Hayes & Lo 2015:270; Gerrish et al. 2011:34). The role of the facilitator as described by Mekki et al (2017:7) is to provide support and guidance to ensure the collaborative sharing of knowledge and skills. The role of the facilitator is to enable the change process through collaboration, participation and inclusion, rather than enforcing change in clinical practice through rigid hierarchal structures (Mekki et al 2017:7; Florczak 2016:111; Rosenthal et al. 2015:2). Filmlalter et al. (2015:3) state that the role of the facilitator is not to force their ideas of how to change practice in the critical care unit upon the multidisciplinary team, but rather guiding the multidisciplinary team towards finding their own solution by providing structured support. The role of the external facilitator is therefore defined as an enabler of change. The facilitator works closely with the team and provides continuous support throughout to ensure consistency in implementation for measurable outcomes.

Facilitators are considered essential for the successful implementation of research evidence. Nurse's behaviour is often influenced by their colleagues who are deemed to have educational influence (Hill et al.

2017:102; Squires et al. 2012:295; Bhattacharyya et al 2009:497; Fixsen et al 2005:15). Providing all nurses with a sense of power to improve their clinical practice, nurse leaders stand a greater chance to succeed at implementing research evidence into routine practice (Squires et al. 2012:295; Gonzalez-Torrente et al 2012:6; Risjord 2009:69).

Establishing a relationship where there is mutual trust and respect encourages the adoption of evidence into clinical practice (Florczak 2016:110; Rosenthal et al 2015:2). Facilitators need to be able to purposefully engage with nurses in the clinical setting to support them effectively and create an environment conducive to change (Rosenthal et al. 2015:2; Seers et al. 2012:5; Hauck et al.2012:665; Gerrish et al. 2011:35). As stated by Harvey and Kitson (2016:33) the process of facilitation requires the facilitator to be flexible and to adapt their approach to accommodate the participants and the local context. To achieve this the facilitator needs to possess the skills to develop strategies and actions to enable facilitation of the process.

The researcher was a skilled facilitator and would be responsible for developing the strategies and actions in collaboration with the internal facilitators to enhance successful uptake of research evidence into clinical practice. The researcher will function as an external facilitator who will guide and teach facilitation skills to the internal facilitators. Utilising internal facilitators from the local context enhances the possibility of successful implementation.

Therefore, the internal facilitators involved in this study were nurses who were working in the critical care unit. The internal facilitators involved in this study were members of the nursing team in the selected critical care unit. Utilising nurses from the specific nursing team in the critical care unit would enhance the collaboration, participation and inclusion of the members of the nursing and multidisciplinary team in bringing about change, due to their emic perspective and tacit knowledge of their team.

The internal facilitators were regarded as experts in their field with clearly defined roles (Hill et al 2017:102). Role clarification was done at the onset of the planned intervention to ensure effective facilitation takes place as suggested by Stetler, Damschroder, Helfrich and Hagedorn 2011:10.

Role clarification defines what is expected of facilitators and what their specific role in the implementation process is as well as the expected outcome. Stetler et al (2011:4) concluded that a holistic facilitation approach should be considered if the expected outcome of the intervention is to bring about transformation on several levels, for example, individual change and organisational change. Holistic facilitation requires facilitators to fulfil an enabling role through building sustainable partnerships with participants. Enabling participants and empowering participants to act and assume responsibility for their own professional development and learning is far more effective than merely handing evidence over and expecting participants to implement it. This reiterates the failed implementation of the clinical pathway for NIV – although the multidisciplinary team collaborated and participated in the development of the clinical pathway, no attempt at facilitating its implementation was made, and therefore it has remained unutilised.

Holistic facilitation requires facilitators skilled in coaching, critical reflection and who can authentically engage with participants (Stetler et al 2011:4). The researcher will act as an external facilitator, who provides support to the internal facilitators through co-coaching, critical reflection and sustained engagement with the internal facilitators. The external facilitator was skilled in academic searches and supported, coached and assisted the internal facilitators to acquire the necessary skills to critically search and appraise research evidence. To achieve this the researcher will agree scheduled focus group sessions with the internal facilitators on a weekly basis. During these focus group sessions, the aim was to enable the internal facilitators to reflect on their



current practice in a non-threatening environment, which encouraged them to share their findings with the group and develop innovative solutions to identified barriers. Internal facilitators were issued with a reflective diary to record their interactions and findings in the unit to assist them in keeping accurate records of the implementation process and deviations that might occur. These provided valuable insights to the researcher, who included the findings as part of data collection and analysis.

By utilising a ‘bottom-up’ approach in collaboration with the members of the multidisciplinary team, and providing the nurses with the needed guidance and facilitation, the process of implementing the clinical pathway for NIV in critical care units should be more successful (Nicolaides & Raymaker 2015:173). Purposively selected internal facilitators who voluntarily participate in the study, will be available to assist the nurses in the process of implementing the clinical pathway in the critical care unit of the intervention group in Hospital A. Hospital B will serve as the control group, and therefore will have no support from the external facilitator (researcher) to implement the clinical pathway. The process related to facilitation is described in Chapters 5-8.

### **3.3.1.3. Context**

The traditional structure of nursing leadership in South Africa strengthens the hierarchical ‘top-down’ culture that exists today (Marshall & Broome 2017:7; Nicolaides & Raymaker 2015:171). Moving away from this restrictive paradigm requires nurse leaders to transform their thinking to include the unique knowledge and skills of nurses and collaborate to change cultures and nursing practice to become evidence based. Florczak (2016:110) and Nicolaides and Raymaker (2015:172) states that organisational culture can be viewed as a paradigm. The culture refers to the set of shared beliefs and a dominant way of thinking within an organisation which is influenced by the leadership. When these

dominant ways of thinking and doing tasks is challenged it evokes multiple emotions and even resistance to change.

According to Florczak (2016:110) and Nicolaidis et al.(2015:173) the successful implementation of change in any organisation requires an organisational culture where individuals feel valued as team members and a high level of trust in the leadership exists, which in turn will facilitate the process of change. Furthermore, the sustainability of practice change needs to be evaluated as part of the implementation process to establish the impact thereof on nursing practice and clinical patient outcomes. Reed (2017:260) suggests that the paradigm of enquiry should represent a well-defined, clear perspective about how nurses view patients, health and illness, their environment and their nursing practice.

A holistic approach is needed to translate nursing theory to clinical nursing practice. Developing a culture of shared decision-making and collective accountability requires a new approach to transform nursing practice in the South African context. This paradigm shift is facilitated by the utilisation of a person-centred practice development approach which is underpinned by critical realism (Marshall & Broome 2017:8; Wilberforce et al. 2017:86; McConnell et al. 2016:38; Schwind et al. 2014:1170; Manley et al. 2008:196).

Originally the PARIHS framework focused on context as the immediate setting where the intervention is to be implemented for example the unit and the health care organization. The revised i-PARIHS framework distinguishes between the inner and outer context. The inner context refers to the immediate local setting which includes the unit, and the health care organization as before. The outer context includes aspects related to policy and legislation and regulatory bodies which underpin health care practice.

○ ***Inner context***

Stetler et al. (2011:10) identified four sub-elements of context that need to be considered when utilising the i-PARiHS framework for the implementation of evidence into clinical practice. These elements include receptiveness to change, culture, leadership, and evaluation. Context also refers to the setting where the intervention is to be implemented. To ensure that the setting is receptive to change, the participants must be involved in determining their degree of participation. Roles and expectations should be clearly defined (Filmlalter et al. 2015:4). To address this element, the researcher shared powerpoint presentations with the respective hospital management teams to obtain written consent to conduct the study in the hospitals (see Annexure B1). The presentation outlines the scope of the study as well as the expected outcome of the study. This study also compliments the strategic growth goals of the hospital group which enhanced the receptiveness of the hospital for change.

Organisational and unit culture play a vital role in the successful implementation of evidence at the bedside. The organisational culture is based on values related to empowering people and sustained growth through innovation (Nicolaidis et al. 2015:173). Although the critical care units conform to the organisational culture and values, there is also an element of unit culture. To determine the individual nurses' views and beliefs related to evidence-based practice and evidence implementation, the researcher administered the Context Analysis Index (CAI) questionnaire to all the nurses working in the critical care units. The CAI was developed and tested by Manley and McCormack (2009) as a 37-item questionnaire to determine individual nurses' views related to evidence-based practice. The researcher has obtained permission from the authors to utilise the questionnaire via the University of Pretoria. The results of the CAI questionnaires were shared with the internal facilitators to assist them in identifying perceived barriers to evidence - based practice implementation and challenge them to develop

innovative solutions to overcome the barriers. The researcher realised that the inner context should also apply to the individual recipients – their own emotional experiences that influence their participation in research activities. During the study the severely traumatic personal experiences of some of the internal facilitators impacted on their active participation and delayed the research progress. However, the emotional support gained from the other members were invaluable in providing emotional relief for the affected participants.

Leadership influences the culture of the hospital and the unit. The unit managers of both critical care units were well known to the researcher and welcomed quality improvement initiatives. Both unit managers supported the researcher in this endeavour. The unit managers were expected to make the internal facilitators available for group discussions and grant them the time required to engage in research activities. This was negotiated with the unit managers and agreed before the commencement of any research related activities. The unit managers were also involved in determining how often feedback on the performance of the participants was required, as well as what feedback they wish to have. The key determinants of change were negotiated by the internal facilitators and communicated with the management and multidisciplinary teams. Evaluating the process of implementation forms part of the primary outcomes of the study, therefore the CAI administered to participants during Phase 1 of the study will be repeated during Phase 3 of the study. The CAI results from phase 1 will serve as a comparative baseline of the impact of the person-centred approach has had in the critical care units.

- ***Outer context***

Harvey and Kitson (2016:33) describe the outer context as the entire health care system in which the inner context is embedded, and includes the policy, national regulatory bodies and infrastructure which surrounds the inner context. The outer context of this study is discussed in-depth in

Chapter 2. The increasing disease burden in South Africa, along with limited access to health care services is reason for concern. Finding innovative solutions to improve the current situation is the responsibility of nurse leaders and nurse researchers. The successful implementation of the clinical pathway for NIV stands to improve the current situation by reducing the length of stay of the patient, improving clinical patient outcomes and operational efficiencies. An improvement in any of these three core outcomes will have a ripple effect on the others.

#### **3.3.1.4. The 'recipient' construct**

The construct of the recipient was added to the i-PARiHS framework, to acknowledge the impact that individuals and teams have on the adoption of evidence into clinical practice. The construct of the recipient highlights the impact of the personal beliefs and values of team members that could enable or constrain the uptake of research evidence into clinical practice. The facilitator is responsible for identifying and addressing perceived barriers to implementation. Recipients are not only the multidisciplinary teams at unit level but extend to include the patient, individual nurses, and management teams. Factors that could impact on the response of recipients to innovation include motivation, values and beliefs, personal and professional goals, skills and knowledge, resources (time, money), support structures, collaboration and teamwork, power and authority figures and other perceived boundaries (Stavor et al. 2017:56; Mudd, Leu, Sloand & Ngo 2015:13).

The recipients involved in this study include patients who have received NIV in the critical care unit, the nurses working in the critical care unit, the multidisciplinary team and the hospital management teams. Each of the recipients have been addressed at some stage during the research. During Phase 1 (Baseline data) the researcher collected data from critical care nurses regarding their perceptions of evidence-based practice using the CAI (Context Analysis Index) questionnaire. The data was key in determining perceived barriers to implementation and was

shared with the internal facilitators. The internal facilitators under the guidance of the researcher (external facilitator) developed an implementation strategy to address the identified barriers. During Phase 2 (Implementation phase)\_the patient as a recipient was addressed. The researcher conducted structured interviews with patients who had received NIV in the critical care unit to elicit their experiences. The data was shared with the internal facilitators, who then incorporated the new evidence in altering the implementation plan accordingly. The CAI was administered to the critical care nurses again to compare the results with the findings from Phase 1. A detailed discussion is presented in Chapter 8. The findings of the research were shared with the management teams of the Hospitals. As recipients the management teams were free to utilise the new information to sustain quality improvement in the critical care units.

### **3.4. PRACTICE DEVELOPMENT**

Manley, McCormack and Wilson (2008:196) state that the term practice development is directly linked to ongoing quality improvement initiatives aimed at providing excellent healthcare to patients. This can be attributed to many factors, including rising patient dissatisfaction, the perceptions of a decline in the quality of healthcare delivery by consumers resulting in a lack of confidence in healthcare professionals, nursing professionals and members of the multidisciplinary team, and changes in the healthcare systems. The South African healthcare system is under pressure to provide cost-effective quality care to growing numbers of patients (Mahomed & Asmall 2015:2).

Practice development supports the improvement of quality by emphasizing person-centred care, which is consistent with the views of Manley, McCormack and Wilson (2008:196). Person-centred care focuses on working collaboratively by including the patient in the decision-making process, being sympathetic and providing for the

patient's physical needs (Wilberforce et al. 2017:86; McConnell et al. 2016:38; Schwind et al. 2014:1170; Manley et al. 2008:196).

Practice development is a methodology aimed at encouraging individuals, teams and organisations to question their current practice, and to change their practice through innovation. This change can only be effective and sustained through collaborative multidisciplinary teamwork (Manley, McCormack & Wilson 2008:120,121). Practice development is a systematic process which is meticulously evaluated to establish whether the intended changes have occurred (McCormack, McCarthy, Wright, Slater & Coffey 2009:33; Manley, McCormack & Wilson 2008:165).

#### **3.4.1. Practice development as a facilitator of change**

The aim of the study is to involve the multidisciplinary team and critical care nurses in collaboratively developing a strategy for implementing the clinical pathway in the critical care unit, by utilising internal facilitators within critical care unit to drive the process. A comprehensive discussion related to this process follows in Chapter 7. The critical care nurses and multidisciplinary team will collaboratively identify the barriers and enablers to the adoption of the clinical pathway and decide what methods they will utilise to overcome these perceived barriers – a person-centred approach.

Practice development supports the improvement of quality by emphasizing person-centred care, which is consistent with the views of Manley, McCormack and Wilson (2008:196). Utilising a person-centred practice development approach, might assist in improving the uptake of research evidence in the critical care unit, and simultaneously liberating nurses from the rigid culture-based practices, to embrace research evidence and improve patient outcomes.

The authors agree that practice development is aimed at attaining excellence in practice in all areas of healthcare delivery by using a 'bottom-up' approach to change the current methods of practice and placing the patient at the centre of the process (McCormack & McCance 2017:41; Rolfe 2009:296; Manley et al 2008:196). Practice development utilises change agents who help to facilitate the introduction of the research findings to the team. This is a systematic process which is meticulously evaluated to establish whether the intended changes have occurred (Manley et al. 2008:165).

Critical realism is the philosophy which underpins practice development (Manley et al. 2008:95) and can be described as, a means to frame enquiry, with the explicit aim of liberating groups from constraints or barriers that interfere with balanced participation in social interaction (Kelly 2018:187; Maxwell & Mittapalli 2010:146).

Williamson et al. (2012:240) describe emancipation as the process of freeing oneself from a situation or condition which is oppressive or unjust, where the balance of power needs to change (Newhouse, Bobay, Dykes, Stevens & Titler 2013:S32; Bhattacharyya et al. 2009:494; Risjord 2009:69). Fixsen et al. (2005: 5) further describe implementation as "...a specified set of activities designed to put into practice an activity or program of known dimensions." Newhouse et al. (2013:S39) state that implementing research evidence is the link between the effective implementation of interventions in practice and improving patient outcomes. Utilising a practice development approach, involving nurses in the implementation process, might assist in improving the adoption of the clinical pathway for NIV in the critical care unit (Sun et al 2017:412). A detailed discussion of the process to adapt and validate the clinical pathway for NIV follows in Chapter 6.



### 3.5. PERSON-CENTREDNESS

McCormack and McCance (2017:41) define person-centredness as “an approach to practice established through the formation and fostering of therapeutic relationships between all care providers, service users and others significant to them in their lives. It is underpinned by values of respect for persons, individual right to self-determination, mutual respect and understanding. It is enabled by cultures of empowerment that foster continuous approaches to practice development”. From this definition, person-centredness describes standards of care which places persons at the centre of the care delivery process. Person-centred care requires the multidisciplinary team to move away from preconceived notions about patient care to an approach which is focused on building relationships, and providing holistic, collaborative care to the patient (Wilberforce, Challis, Davies, Kelly, Roberts & Clarkson 2017: 86; McConnell et al. 2016:39; Laird et al. 2015:1455). The Person-centred Practice Framework consists of four (4) domains, namely prerequisites (attributes of the nurse), the care environment (the context of care delivery), person-centred processes (care delivery through a range of activities) and expected outcomes (the results of effective person-centred nursing) as described by McCormack and McCance (2017:60).

Carl Rogers, the founder of the person-centred care approach, described person-centredness as the absence of theories and dogmas to become fully engaged in the processes of building meaningful experiences (Louw, Marcus & Hugo 2017:4). The absence of theory and dogma therefore translates to the absence of preconceived ideas of how a system or person should function. Person-centredness is founded on four basic concepts, namely personalised care, which is supported, coordinated and enabling, and ensures that patients are treated with dignity, respect and compassion. The negative effects of personal

biases of the healthcare professionals are reduced through self-awareness to enhance patient outcomes (Louw et al 2017).

Person-centred processes focus on the delivery of care by means of a range of activities (McConnell et al 2016:39) to promote the delivery of healthcare services in response to the specific needs of the individual patient with consideration for the patient's abilities, healthcare goals, lifestyle and personal preferences (Louw et al 2017:5; Ogden, Barr & Greenfield 2017:780). These also form the cornerstones of the South African Patient Rights Charter which stems from the South African Constitution (Act No 108 of 1996), and which is promoted as part of ethical practice by the Health Professions Council of South Africa (HPCSA 2016:2). The HPCSA guideline for ethical practice Section 2.2 states that the patient has the right to be part of the decision-making process regarding their own health matters. Yet these concepts are not presently observable in the South African healthcare system and could be attributed to a lack of standardised care processes and the personal preferences of healthcare providers, that obscure the delivery of person-centred evidence-based care to the patients who need it.

In nursing research, utilising a person-centred approach therefore requires the researcher to engage with the participants without having pre-set ideas about how to collect, generate, analyse and implement evidence in clinical practice. The nurses will serve as the primary sources of information about what works in their context and what does not. Simply including the multidisciplinary team to collaboratively develop the clinical pathway did not secure implementation in clinical practice (Filmlalter, Van Eeden, De Kock, McCormack, Coetzee, Rossouw & Heyns 2015:2). By adopting a person-centred approach, the benefits of this study might impact positively on patient outcomes, improve multidisciplinary collaboration and improve operational efficiencies within the healthcare system.

The patient might benefit from receiving the best evidence-based care, which in turn might benefit the healthcare organisation through improved clinical patient outcomes, and patient satisfaction rates because the patient is actively participating in the treatment process (McConnell et al. 2016:43; Schwind, Lindsay, Coffey, Morrison & Mildon 2014:1170; Rangachari, Rissing & Rehtemeyer 2013 :118; Curran, Bauer, Mittman, Payne & Stetler 2012:217; Seers, Cox, Chrichton, Edwards, et al .2012 :2; Squires et al. 2012 :293).

Schwind et al. (2014:1167) state that the nurse is an integral part of the delivery of quality person-centred care to patients through knowledge development. Person-centred approaches are flexible and respond to the needs of the healthcare consumer and have a positive impact on patient outcomes (Wilberforce, Challis, Davies, Kelly et al 2017:86; McConnel et al 2016:38). The translation of research evidence into clinical practice stands to improve patient outcomes in the critical care unit. The utilisation of a practice development approach to collaborative develop a strategy for implementing the clinical pathway for NIV, aims to identify and address the perceived barriers to implementation, by using a person-centred approach. Getting nurses, and multidisciplinary teams involved in the process might assist nurses in moving away from the tradition of 'how things are done here' to become truly evidence informed (Wilberforce et al. 2017:87; Coghlan & Brydon-Miller 2014:564; Titler, Wilson, Resnick & Shever 2013:S41; Dalheim, Harthug, Nilson, Nortvedt et al. 2012:2; Gonzalez-Torrente, Pericas-Beltran, Bannasar-Veny, Adrover-Barcelo, et al. 2012:1). Lawal et al. (2016:35) state that clinical pathways form an integral part of quality improvement through the reduction of care variations, optimising patient outcomes and improving operational efficiencies.

McCormack (2003:202) stated that the success of person-centredness in clinical practice is closely tied to the concepts of patient values and

beliefs, nurse values and beliefs and the context where nursing care is delivered, which gave rise to the development of the person-centred framework. The aim of this study is implementing the clinical pathway for NIV in the critical care unit to promote person-centred care delivery and possibly improve patient outcomes through the collaboration, inclusion and participation of the nurses in an emancipatory practice development programme.

### **3.6. EVIDENCE-BASED PRACTICE IMPLEMENTATION**

Nursing expertise exceeds beyond the realms of clinical and biomedical knowledge to include the family and social circumstances of the patient, which allows the nurse to have meaningful conversations with the family members and the patient regarding expected patient outcomes (Coghlan & Brydon-Miller 2014:564; Risjord 2009:71). Valuing the contributions of nurses in person-centred care is paramount to the successful implementation of new evidence into clinical practice (Coghlan & Brydon-Miller 2014:564; Risjord 2009:73). Expanding the knowledge and skills of the nurses in the unit, and empowering them to become practice development facilitators, through collaboration, inclusion and participation, the adoption of clinical pathway for NIV the critical care unit can be facilitated. Successful implementation is dependent on the interplay of factors such as individual nurses' perceptions, the unit culture and organisational culture and the relationships between these constructs that impact on implementation of evidence at the bedside (Vincent & O'Mahoney 2018:201; Pawson 2018: 209; Marshall & Broome 2017:8).

Critical realism offers an alternative perspective on traditional methods of human inquiry through the combination of qualitative and quantitative methods to provide a richer understanding of complex processes involved in nursing theory, research and practice and provide for more innovative solutions, which means that critical realism is particularly

suitable to nursing research as it facilitates the use of multiple methods of inquiry to support the understanding of complex processes involved in nursing theory, research and practice (Vincent & O'Mahoney 2018:208; Parlour & McCormack 2012:309; Angus & Clark 2012:1).

It is further stated that critical realism is committed to identifying structures which constrain and enable individual action in response to the environment (Coghlan & Brydon-Miller 2014:219). The bespoke need for focused, clinical nursing research to enhance evidence-based practice in Southern and Eastern Africa is emphasized by Sun, Dlamini, Maimbolwa, Mukonka, Nyamakura, Omoni, et al. (2017:399). Although there is a distinct lack of efforts from governing bodies and policy makers to support nursing research and implementation. The most significant barriers to research and evidence implementation that local nurse researchers face was identified as lack of support from nurses, nurse leaders, organisational healthcare structures, and the multidisciplinary team. The overwhelming nursing workload, a lack of nurse-led protocols and a lack of empowerment to affect practice change also impacts on the ability to effectively conduct nursing research activities. Additionally, financial constraints significantly hamper traditional nursing research efforts (Sun et al 2017:413). Innovative methods must be employed to overcome these barriers.

Successfully implementing the clinical pathway for NIV, is dependent on the interplay of factors such as individual nurses' perceptions, the unit culture and organisational culture. Utilising a person-centred practice development approach, might elicit perceived barriers to implementation, and assist in overcoming these barriers to improve patient outcomes. Considering the views of Coghlan and Brydon-Miller (2014:222), Reed (2016:260), Florczak (2016:110) and Risjord (2009:202) the paradigm of enquiry suited to this study is critical realism. The section that follows is focused on the philosophical assumptions related to the study.

### 3.7. ASSUMPTIONS

Vincent and O'Mahoney (2018:204), Howell (2013:94), DeForge and Shaw (2012:83-95), define assumptions as a set of beliefs or principles that are accepted as being true based on logic or reason without empirical evidence. The paradigms of inquiry are categorised according to the ways they respond to the four basic philosophical questions (Vincent & O'Mahoney 2018:204; Howell 2013:94; Salkind 2010:993). A discussion of the assumptions is provided in Section 3.7.1 to 3.7.4.

#### 3.7.1. Ontologic assumption

The philosophical question relevant to the ontologic assumption is "What is the nature of reality?". Traditionally, three domains of 'self' are addressed namely the empirical, the real and the actual domains. The empirical domain is concerned with *what* the participant has observed or experienced in relation to the phenomenon under investigation (Vincent & O'Mahoney 2018:204; Coghlan & Brydon-Miller 2014:219-222; DeForge & Shaw 2012:83-95; Bourgeault, Dingwall & De Vries 2010:129). The multidisciplinary teams of the purposively selected critical care units collaboratively developed the existing clinical pathway for NIV, however the translation of the clinical pathway into clinical practice did not realise as expected. Obtaining insights from the participants related to their experiences when utilizing NIV elicited the suspected reasons for non-implementation of the clinical pathway.

Exploring the experiences of the participants related to NIV in the critical care unit required the use of multiple methods of data collection. The first data was collected from the Context Analysis Index (CAI) questionnaire which focused on their perception of the organizational and unit culture related to evidence-based practice (see Annexure C5). Data collected from focus group sessions with internal facilitators

provided rich data related to their experiences about the use of NIV and the non-implementation of the clinical pathway for NIV.

The *real* domain is concerned with underlying influences or challenges experienced by the participant. The data gathered from the CAI questionnaire provided valuable information to the researcher regarding what the underlying barriers to implementation in the critical care units were, but also provided an opportunity to identify enabling factors that would potentially strengthen the adoption of the clinical pathway into clinical practice. The third domain or the *actual* domain is concerned with what really happens in clinical practice (Angus & Clark 2012:3; Cruickshank 2012:71). Current practice remains hierarchal – nurse leaders are required to implement quality improvement initiative at unit level – a traditional ‘top-down’ approach. This is met with varying levels of resistance from nurses in the critical care setting and leads to inconsistent implementation of quality improvement initiatives. Patient outcomes are measured but the results are skewed due to variations in adoption and implementation.

Person-centred practice development approaches are founded on the concepts of collaboration, participation and inclusion to bring about positive change in the clinical practice environment, supported by evidence (Nicolaidis & Raymaker 2015:173; Rycroft-Malone et al. 2013: 13; Rosenthal et al. 2011:6). Using a ‘bottom-up’ approach where the critical care nurses are actively collaborating with the multidisciplinary team and nurse leaders through participation in research activities will change current practice to be truly person-centred and enhance the adoption of evidence into clinical practice. Creating an environment where the nurses feel valued as members of the health care team, is the responsibility of the nurse leaders (McConnell et al. 2016:39; Laird, McCance, McCormack & Gribben 2015:1455; Brekke, Phillips, Pancake, O, Lewis & Duke 2009:594).

Critical realism is an emergent methodology that challenges conventional wisdom, by actively engaging participants to question their way of thinking and dominant beliefs (Vincent & O'Mahoney 2018:204; Coghlan & Brydon-Miller 2014:219-222; DeForge & Shaw 2012:83-95; Bourgeault, Dingwall & De Vries 2010:129). The researcher believed that the nurses in the critical care unit could be empowered to improve patient outcomes by challenging conventional practices. This could be achieved by collaborating with the nurses and multidisciplinary team to develop an implementation plan for the clinical pathway using a person-centred approach. The implementation of the clinical pathway might improve the patient outcomes by reducing the risks associated with invasive mechanical ventilation, and simultaneously improve multidisciplinary collaboration and emancipation and empowerment of the nurses to bring about evidence-based change in practice.

### **3.7.2. Epistemological assumption**

The epistemological assumption is concerned with the relationship of the researcher with those being studied and the researcher's knowledge of the reality under study (Brink et al 2018:19; Coghlan & Brydon-Miller 2014:221; DeForge and Shaw 2012:83-95; Botma et al 2010:44-47). Critical realism considers the following aspects:

#### ***3.7.2.1. The interaction of the researcher with those being researched***

The researcher is well known to the internal facilitators and considered as academically sound. This enhanced the trust relationship between the researcher and the participants and encouraged collaboration and participation in the research activities. The researcher was always available to the internal facilitators, through various platforms such as face-to-face consultation, telephonic consultation and the WhatsApp group, which further strengthened the support provided to the internal facilitators during the implementation of the clinical pathway for NIV.



Critical realism is based on the assumptions that knowledge generation is a collaborative social activity tailored to the needs of the participant. Scheduled focus group sessions were negotiated with the internal facilitators to accommodate their specific needs, which made them feel valued and added to valuable participation. The researcher utilised expert facilitation techniques and skills to guide the participants to finding innovative solutions to identified challenges.

### ***3.7.2.2. Promoting critical consciousness in participants to achieve emancipation***

The researcher is an experienced facilitator, and utilised facilitation techniques such as ice-breaker games to engage the participants in the focus group sessions. Rather than providing participants with research evidence to support the implementation of the clinical pathway, the researcher engaged and taught the internal facilitators how to search for credible research evidence and critically appraise the evidence. This was achieved during Phase 1 of the study which included review and validation of the existing clinical pathway. A detailed discussion is provided in Chapter 7. This assisted the participants in acknowledging that they have the power to utilise research evidence to promote person-centred care and evidence-based practice in the clinical setting.

### ***3.7.2.3. Knowledge creation is a collaborative, inductive process***

The researcher acts as an external facilitator during research activities and provides ongoing support and guidance to the practice development facilitators to identify and overcome perceived barriers to the implementation of the clinical pathway for NIV. The input of the internal facilitators was valued, and this created a sense of worth, which provided the nurses with knowledge and confidence to bring about positive change in the clinical setting. The scheduled focus group sessions provided a platform for internal facilitators to share their experiences and ideas, and to collaborate on the development of an

implementation strategy that is suited to their specific needs Refer to Chapter 8.

### **3.7.3. Methodological assumptions**

Methodological assumptions are concerned with the best methods for generating evidence, that are acceptable and would answer the research question satisfactorily (Brink et al 2018:19; Coghlan & Brydon-Miller 2014:221; DeForge & Shaw 2012:83-95; Botma et al. 2010:44-47). In this respect critical realism focuses on the following aspects of data collection and analysis:

#### ***3.7.3.1. The methodology is a flexible and emergent design***

A collaborative, inclusive, and participative approach was taken. Participants who volunteered to become internal facilitators and who met the eligibility criteria, were purposively selected to participate. Internal facilitators were members of the multidisciplinary team working in the critical care unit, and were utilised to drive the implementation process, using a 'bottom – up' approach (Nicolaidis & Raymaker 2015:172-173).

#### ***3.7.3.2. Values the importance of patient experiences, local information, and clinical experiences of participants***

Emancipatory practice development is based on the principles of collaboration, inclusion, and participation. The process of change is facilitated by change agents or practice development facilitators. For the purposes of this study, the practice development facilitators were the nurses working in the critical care unit. The internal facilitators worked together as a team to facilitate the implementation the clinical pathway for NIV in the critical care unit according to the implementation strategy they collaboratively developed (see Chapter 7).

### **3.7.3.3. *The researcher acts as external facilitator and encourages the participants to become ‘partners’ in the implementation process***

The role of the researcher as external facilitator is defined and described in Section 1.7.1.5. The researcher acted as an expert resource and experienced facilitator to guide the internal facilitators to address the challenges met during the implementation of the clinical pathway for NIV in the critical care unit.

### **3.7.4. Axiological assumption**

Axiological assumptions are concerned with the role of personal values and their influence in the investigation at hand (Brink et al. 2018:19; Coghlan & Brydon-Miller 2014:222; DeForge & Shaw 2012:83-95; Botma et al. 2010:44-47). Critical realism acknowledges the impact of personal values and beliefs on the research outcomes and requires the researcher to be aware of this. Practice development also recognises the impact of personal beliefs on participation in research activities. To address this important aspect, the researcher engaged the internal facilitators in an exercise to verbalise their own beliefs related to evidence-based practice. This provided a common starting point for the internal facilitators to depart from – they realised that they shared the same values and beliefs related to clinical practice. This process is described in detail in Chapter 6. Annexure C3 is an example of the outcome of the process which occurred during the first workshop with the internal facilitators (De Forge & Shaw 2012:83-95; Bourgeault et al 2010:129).

## **3.8. SUMMARY**

Practice development is crucial for the continued expansion of evidence-based nursing practice and quality improvement in the clinical setting.

Practice development stands to reiterate the importance of evidence-based practice in delivering high quality, safe nursing care at the bedside. The role of the nurse in the development and transfer of knowledge is of crucial importance. Utilising the i-PARiHS framework for implementing the clinical pathway for NIV in the critical care unit enhances the possibility of successful uptake of research evidence into clinical practice, as it recognises the vital role of the nurse and multidisciplinary team in providing evidence-based care, as well as the organisational factors that influence research implementation at the bedside. The facilitation of change by utilising internal facilitators from the clinical setting to explain the value of the intervention and provide support for the multidisciplinary team also enhances the possibility of successful implementation and sustained improvements in clinical practice (Hill *et al.* 2017:104).

Collaboration and participation are not enough to bring about change in clinical practice. The existing clinical pathway for NIV is a prime example of failure to implement research evidence into clinical practice using traditional methods of implementation. Utilising a new approach, by involving nurses in the designing the implementation strategy, might assist in improving the adoption of the clinical pathway for NIV in the critical care unit. The aim is to free nurses from the rigid culture-based practices in the critical care unit, to embrace innovation and improve patient outcomes and operational efficiencies. One unique contribution of this study will serve to adapt and validate the existing clinical pathway for NIV to ensure clinical relevance and include the latest research evidence, as well as to implement the clinical pathway in collaboration with the multidisciplinary team and nurses in the critical care unit. The evaluation of the implementation process will provide a comparative baseline to establish whether the intended changes in unit culture have taken place. The additional contributions of this study are discussed in Chapter 1.

This chapter provided a discussion related to the conceptual framework of the study. Chapter 4 is an in-depth discussion related to the theoretical underpinnings of the study.

# Chapter 4

## Theoretical underpinnings

### 4.1 INTRODUCTION

The previous chapter provided an overview of the conceptual framework of the study. This chapter provides an in-depth discussion related to the theoretical perspectives relevant to the implementation of the clinical pathway in clinical practice, with reference to implementation science, practice development, the utilisation of clinical pathways and non-invasive ventilation.

### 4.2 IMPLEMENTATION SCIENCE

Implementation science is the term used to refer to research related to the methods and strategies that are utilised to promote the uptake of clinical interventions into routine clinical practice, for the promotion of effective health care (Livet, Haines, Curran, Seaton, Ward, Sorenson & McClurg 2018:491; Monks 2016:81; Bauer, Damschroder, Hagedorn, Smith & Kilbourne 2015:32). The aim of implementation science is to close or minimise the gap between what is known as best practice and what routinely happens in the clinical setting, by delivering evidence-based interventions to the patients (Livet et al. 2018:491; Bauer et al. 2015:32; Harvey, Marshall, Jordan & Kitson 2015:1506).

Bridging the gap between research and practice is a time-consuming and labour-intensive process. Bauer, Damschroder, Hagedorn, Smith and Kilbourne (2015:32) estimated that for research evidence to be incorporated into routine clinical practice could take as long as 17

years. Implementation science aims to bridge the research-to-practice gap as well as enhance the adoption of evidence-based practice interventions by focusing on the ‘what’, ‘where’, ‘when’ and ‘how’ to implement evidence into practice and finding the strategies or methods that are most likely to enable successful and sustained implementation in a particular context (Livet et al. 2018:493). Utilising implementation science in the process of implementing new research evidence into clinical practice, allows the researcher and the participants to identify key learnings and processes that aide in sustaining clinical practices to ensure that the intended benefits or outcomes are achieved (Livet et al. 2018:494).

Implementation science supports evidence-based policy making to ensure that robust health care interventions are delivered to all patients (Livet et al. 2018:490). The researcher needs to be cognisant of the factors that influence the successful implementation of evidence or interventions in the clinical setting. These factors include but are not limited to the type of intervention, the context and the engagement of the stakeholders. The implementation of interventions that are evidence-based into clinical practice will be influenced by the behaviour of the multidisciplinary team as well as the specific organisation. The successful implementation of interventions into clinical practice therefore requires the collaboration, participation and inclusion of the multidisciplinary team, as well as the support of the health care organisation in driving the implementation process (Livet et al. 2018:496; Bauer et al. 2015:33; Ward, Baloh, Zhu & Stewart 2017:3; Stetler, Damschroder, Helfrich & Hagedorn 2011:1).

Bauer et al. (2015:33) define an implementation strategy as “...an integrated set, bundle, or package of discreet implementation interventions ideally selected to address specific identified barriers to implementation success”. The focus of this study is on evaluating the implementation

process, and the impact of the implementation of the clinical pathway for non-invasive ventilation on clinical practice. To this point, Bauer et al (2015:33) state that the revised i-PARiHS framework compliments the efforts of researchers to implement evidence into practice by addressing the barriers to implementation related to the constructs of evidence, context and the facilitation in clinical practice (see Section 3.3.1). This is congruent with the views of Ward, Baloh, Zhu and Stewart (2017:3) and Stetler, Damschroder, Helfrisch and Hagedorn (2011:3). Peters, Tran and Adam (2013:8) state that implementation science allows for the analysis of real-world problems that impede or strengthen the implementation of research evidence, in real-time situations.

Although the utilisation of the i-PARiHS framework provides the researcher with a useful guideline of constructs to consider during the implementation process, Stetler et al. (2011:2) state that the lack of well-defined instruments and evaluation measures is a potential limitation of the framework coupled with the perceived lack of recognition of related elements such as the behaviour of individual participants, which could be detrimental to successful implementation of an intervention.

The PARiHS-framework has been associated with two main types of research implementation in practice based on the intent of the intervention. Task-orientated implementation is focused on the implementation of a specific intervention such as a new care process, whereas organisational implementation is focused on changing the broader organisational context to be more receptive to adopting evidence-based practice interventions (Livet et al. 2018:496; Stetler et al. 2011:3). For this reason, the researcher opted to utilise the i-PARiHS framework. The aim of the study was to implement the clinical pathway for non-invasive ventilation and evaluate the outcomes of the implementation process, but to simultaneously address factors that



influence the adoption of evidence into clinical practice, meaning the prevailing culture of the critical care unit as well as the organisation.

Exploring and addressing elements related to aspects of unit culture, leadership and evaluation is consistent with the aims of emancipatory practice development which focuses on empowering teams to challenge their conventional ways of thinking and care delivery to become truly evidence-based (Livet et al. 2018:496; Coghlan & Brydon-Miller 2014:222; Parlour & McCormack 2012:311; Stetler et al. 2011:3). Exploring the prevailing unit culture and the team's views related to the leadership structures and the value of evaluating practice, required the use of the Context Assessment Index (CAI) – a 37-item structured questionnaire developed to identify perceived barriers to the implementation of research evidence in clinical practice, based on the individual participant's observation of their environment (Parlour & McCormack 2012:312). This is congruent with the aims of emancipatory practice development which aims to free nurses from their rigid culture-based practices to embrace evidence-based interventions to improve patient outcomes (Livet et al. 2018:498; Coghlan & Brydon-Miller 2014:222). The discussion related to the Context Assessment Index is presented in Chapter 6.

### **4.3 EMANCIPATORY PRACTICE DEVELOPMENT AS A CHANGE PROCESS**

Emancipatory practice development is described by Manley, McCormack and Wilson (2008:1) and McCormack and McCance (2017:44) as the interrelated and interdependent relationships between knowledge generation and the development of appropriate skills to facilitate the adoption of research evidence into clinical practice to achieve the outcomes of evidence-based person-centred nursing practice. Emancipatory practice development defines the critical concepts that influence the adoption of evidence-based practice into

routine clinical practice and focuses on the aspects related to quality improvement in health care, namely to develop individual health care professionals and nurses within the cultures and contexts where they practice, achieving scientifically defensible and sustainable changes to clinical practice.

The roots of emancipatory practice development are embedded in critical social science, specifically critical realism, which states that knowledge generation is a social process influenced by the perceptions and behaviours of individuals, and that a true understanding of practice can only be gained by critical reflection and observation (Smith 2015:658; Coghlan & Brydon-Miller 2014:222). The aim of emancipatory practice development is thus to empower nurses to challenge their current practice, and to develop innovative solutions to complex problems in the real-world context (McCormack & McCance 2017:4; Smith 2015:665-670; Coghlan & Brydon-Miller 2014:222; Manley et al. 2008:45).

Evidence-based practice and emancipatory practice development work collaboratively to improve clinical patient outcomes, however, bridging the research-to-practice gap remains a significant challenge for nurses in the clinical setting (Hung, Phinney, Chaudbury, Rodney, Tabamo & Bohl 2018:1). Evidence-based practice is rooted in science with the explicit aim to develop and implement the most effective clinical interventions. Evidence-based practice translation depends greatly on the implementation of evidence through training and capacity-building to ensure effective implementation takes place (Fairbrother, Cashin, Mekki, Graham & McCormack 2015:2). However, translating research into clinical practice presents a different set of challenges.

The core principles that underpin emancipatory practice development are collaboration, inclusion, and participation. The emphasis is removed from developing rigid policies and procedures aimed at

addressing a single aspect of ineffective care delivery, by including and collaborating with all the relevant members of the multidisciplinary team at the point of care delivery. This approach improves the participation of the entire multidisciplinary team by securing their buy-in to improve patient outcomes in the critical care unit. Literature suggests that there is a positive correlation between enhanced participation in research activities and the empowerment of participants to bring about sustainable change in the clinical setting (Lykes & Scheib 2015:134-135; Manley, O’Keefe, Jackson, Pearce & Smith 2014:3; McCormack et al. 2013:7).

In the South African context, research evidence is mainly utilised by nurse leaders and policy makers to develop procedural guidelines for nursing practice, which is then implemented in a linear (top-down) manner, which often leads to nurses being disengaged in the process. This is consistent with the findings of Hung et al. 2018:2. Meaning that the information is merely passed on to the nurse in the clinical setting, who is then expected to implement said procedural guidelines without adequate facilitation of the process.

Fairbrother, Cashin, Mekki, Graham and McCormack (2015:2) state that emancipatory practice development and evidence-based practice are co-dependent to achieve change in the clinical setting, although their core purposes are quite different. Evidence-based practice is considered a ‘material science’ and is mainly concerned with the generation of research evidence and the implementation thereof to promote the patient outcomes in the clinical setting. The implementation of evidence-based practice relies on training to ensure implementation of evidence into clinical practice in the form of practice guidelines. The authors describe emancipatory practice development as a ‘social science’, concerned with transformation and the development of context-specific cultures to enable the uptake of research evidence into clinical practice, through action-oriented

processes. The aim of emancipatory practice development is to merge technical skill and practical knowledge to bring about a positive change in workplace culture to improve clinical practice and patient outcomes by liberating teams from their rigid culture-based practices (Fairbrother et al. 2015:4). This is achieved through a cyclical process which allows participants to collaboratively assess their practice, make changes and track their progress using reflective processes to determine what worked and what didn't work in their unit, and plan for the next phase (Manley, O'Keefe, Jackson, Pearce & Smith 2014:3).

Having knowledge of evidence-based practice is insufficient to bring about change, or to drive and sustain the process of bridging the gap between research and clinical practice. A new collaborative process is required to encourage individuals and teams to challenge their conventional ways of thinking to enable the effective utilisation of research evidence at the bedside. The lack of action to bring about change can be attributed to a lack of meaningful engagement between members of the multidisciplinary team to generate and implement evidence-based practice (Hung, Phinney, Chaudhury, Rodney, Tabamo & Bohl 2018:2; Bauer, Damschroder, Hagedorn, Smith & Kilborne 2015:32). Manley et al. (2014:3) state that "... practice development is a complex intervention that integrates the systematic development of practice with empowerment of practitioners and cultural change that sustains specific outcomes".

Emancipatory practice development as described by McConnell et al. (2016:39) focuses on the unique attributes of the participants, the context (environment), and care processes, as well as the unique relationships between these constructs that impact on expected outcomes (Smith 2015:658; Falkembach & Carillo 2015:79; Peters, Tran & Adam 2013:6). The specific roles of the researcher (external facilitator) and the internal facilitators are defined in Section 1.7.1.5 and 1.7.1.6. Williamson, Bellman and Webster (2012:7), Bourgeault,

Dingwall and De Vries (2010:434), and Polit and Beck (2010:276) describe action research as a programme to bring about practical improvements, and best practice change through collaborative, and critical self-enquiry. Kimmis et al. (2015:5) state that action research provides the foundation for creating change in practice by creating the platform for individuals and groups to interact (participation), share ideas (inclusion), and construct solutions to meet their needs in times of change (collaboration).

Participation allows participants to identify ineffective practices and develop innovative solutions to improve current practice. MacDonald (2012:34) states that the purpose of action research is to explore and describe the phenomenon of interest rather than to predict and control outcomes, and the focus of the research is on participation. Participants take ownership of the problem, as well as finding a solution to the problem through teamwork. Emancipatory action research follows a cyclical process of (i) strategic planning, (ii) implementing the plan, (iii) observation, evaluation and self-evaluation, (iv) critical reflection on the results, and (v) making decisions for the next cycle of actions based on the observations and reflections of the previous cycle (Bourgeault, Dingwall & De Vries 2010:434). This study is divided into three interrelated and interdependent phases.

McConnell et al. (2016:39), indicated the importance of the unique attributes of the participants, the context (environment), care processes and their impact on expected outcomes. Smith (2016:np), MacDonald (2012:34) and Zuber-Skerrit and Wood (2013:2) state that emancipatory action research is a programme to bring about practical, sustainable improvements, and best practice change through collaborative and critical self-enquiry.

The process of change, through utilising emancipatory practice development as a methodology, requires collaboration, inclusion and

participation from all the relevant stakeholders, including the nurse, multidisciplinary team members and organisational management teams to develop workplace cultures which encourage and embrace improvement. Practice development methodology develops workplace cultures where team members take ownership, have shared values and beliefs about the outcomes to be achieved, develop agreed behaviours, and mutual decision-making is central to the process of development (Manley et al. 2014:3).

Barriers and enablers that impact on the implementation of evidence-based practice need to be identified and addressed. Rankin, Butow, Thein, Robinson, Shaw, Price et al. (2015:4) and Majid, Foo, Luyt, Zhang, Theng, Chang et al. (2011:230) identified potential barriers to implementing of research evidence that describe why nurses are resistant to implementing evidence as part of daily patient care, which is supported by the findings of Cheng, Broome, Feng and Hu (2017:5104), Hauck, Winsett and Kuric (2012:665) and Aarons, Hurlburt and McCue-Horwitz (2011:13). The barriers to implementation found in the literature, mirrors the findings in the South African context (Stavor, Zedreck-Gonzalez & Hoffmann 2017:56–61; Williams, Perillo & Brown 2015:e34-e41; Rankin et al. 2015: 4; Majid et al 2011:230). This was evidenced by the feedback received from the internal facilitators in the purposively selected critical care units.

#### 4.3.1. Research design

The study was divided into three interrelated and interdependent phases. The information collected during Phase 1 (Baseline data) of the study was vital in determining the implementation strategy during Phase 2, as depicted in Figure 5.2. The data was used to describe the creative solutions developed by the internal facilitators to overcome the identified barriers. The internal facilitators implemented their solutions and the outcomes were evaluated.

Based on the findings, this data was included in planning the next steps of the implementation strategy. The internal facilitators discussed what they did, how they did it and whether the actions were successful or not and used this data to determine the next steps to achieve the desired outcomes. The data was used in a cyclical process as suggested by Smith (2016:np) and McConnel et al. (2016:39).

The researcher was tasked with guiding the internal facilitators in identifying barriers to implementation and facilitating the process of finding innovative solutions to overcome perceived barriers. Table 4.1 is a summary of the interventions utilised to overcome perceived barriers to implementation in this study.

**Table 4.1: Interventions to overcome barriers**

Perceived barrier	Mitigation
Lack of access to research evidence (Stavor, Zedreck-Gonzalez & Hoffmann 2017:56–61; Williams, Perillo & Brown 2015:e34-e41)	Each of the purposively selected hospitals have dedicated computers for nurses to use to access the internet. Permission was obtained from the management teams to allow the internal facilitators to access the computers to search for academic literature. In addition, the researcher provided printed copies of the literature as well as PDF versions via email to the internal facilitators for review, ahead of the planned focus group sessions.
Lack of time and increased workload (Stavor, Zedreck-Gonzalez & Hoffmann 2017:56–61; Williams, Perillo & Brown 2015: e34-e41; Mudd, Leu, Sloand & Ngo 2015:15)	The researcher negotiated with the hospital management teams to allow the internal facilitators on-duty time to engage in the research activities including the focus group sessions every week as well as time to search for academic literature. The internal facilitators indicated that they would like to engage in the planned focus group sessions in their own time, because there were too many interruptions during the sessions at the hospital – they opted for a venue away from the hospital.

**Table 4.1: Interventions to overcome barriers**

Perceived barrier	Mitigation
Lack of knowledge (Stavor, Zedreck-Gonzalez & Hoffmann 2017:56–61; Williams, Perillo & Brown 2015: e34-e41)	The researcher dedicated sessions to describe the process of searching for relevant literature as well as how to critically appraise the literature. Following this session, the internal facilitators independently searched for literature and brought their findings to the next session for discussion.

**Adapted from Stavor et al. (2017:56–61), Williams et al. (2015:e34-e41) and Mudd et al. (2015:15)**

Simply including the clinical pathway for NIV as part of the unit's protocol and procedures was ineffective at supporting implementation of the clinical pathway at the bedside, and therefore it has remained nothing more than an underutilised procedure in a file (Hung, Phinney, Chaudhury, Rodney, Tabamo & Bohl 2018:7). A new approach to evidence implementation is required, to engage nurses to act. Emancipatory practice development utilises a person-centred approach, which enables nurses to identify and address perceived barriers in the clinical setting and empowers nurses to change current practice to improve patient outcomes (McConnell et al. 2016:39; Laird, McCance, McCormack & Gribben 2015:1455; Brekke, Phillips, Pancake, Lewis & Duke 2009:594).

Conversely, the influence of other constructs on the successful implementation of evidence into practice cannot be overlooked. The i-PARiHS-framework refers to the constructs of context, evidence, innovation, and the recipient (nurse) as equally important to success. Understanding the context in which nursing care is delivered requires the researcher to have an in-depth understanding of the context, which includes the unit and organisational culture, and the perceived or associated barriers to implementation in their context. Identifying and



addressing perceived barriers stands to provide for the development of innovative solutions to overcome barriers and empower the individual nurse to make a positive change to clinical practice and patient outcomes (Manley, McCormack & Wilson 2008:45).

Emancipatory practice development approaches aim to identify opportunities for improvement and changes in clinical practice by empowering and encouraging nurses to act and to learn from the process of taking action to improve nursing practice (Smith 2015:660; Manley et al 2008:45). Emancipatory practice development therefore drives the process of change and development through understanding the complex social processes in the clinical context (Fairbrother, Cashin, Mekki, Graham & McCormack 2015:1). Considering the critical-realist roots of emancipatory practice development it is only apt that the processes of emancipatory practice development are action-orientated and cyclical in nature (Hung et al 2018:3; Fairbrother et al 2015:5).

De Brün, O'Reilly-De Brün, O'Donnell and MacFarlane (2016:366) and Merriam and Tisdell (2016:25) state that the complex nature of organisational culture in the healthcare context require a flexible approach to promote successful implementation of research findings into practice and therefore action research is most suitable. This is consistent with the aims of emancipatory practice development approaches described by Smith (2016:np), Rycroft-Malone et al. (2013:np), Kimmes, McTaggart and Nixon (2013:5), Manley et al (2008:196) and Kitson et al. (1998:152). The context also refers to the setting where data will be collected for the study, which is the critical care unit. Utilising nurses from the purposively selected critical care units to participate in the study, means that the participants are currently working in the critical care unit and can provide meaningful insights to their current practice (De Brün et al. 2016:366).

The person-centred practice framework is an integral part of practice development as described by McConnell, McCance and Melby (2016:39), and focuses on the unique attributes of the participants, the context (environment), care processes and expected outcomes. These constructs are aligned with the constructs represented in the i-PARiHS framework for implementation, namely, context, evidence, recipient and innovation which supports the utilisation of the i-PARiHS framework for emancipatory practice development initiatives which aim to improve patient outcomes (Fairbrother et al. 2015:6; Smith 2015:660)

#### **4.3.1. Correlation between emancipatory practice development, i-PARiHS framework and action research**

The basic principles of emancipatory practice development (EPD) and action research as described by McCormack and McCance (2017:168) were considered in the design of this study. Table 4.2 outlines how the concepts of emancipatory practice development, the i-PARiHS framework and the principles of emancipatory action research complement and support one another in this study. The concepts of the i-PARiHS framework were described in detail in Chapter 3, and only listed in Table 4.2.

**Table 4.2: Application to the study**

EPD	i-PARiHS framework	Action research	Application
Person-centred, evidence-based care	Acknowledges the recipient as crucial to implementation success	Acknowledges the nurse as the recipient and contributor to implementation outcomes	The recipients (nurses) have their own beliefs related to implementation of research evidence – it is not their priority and viewed as abstract and an additional task
Workplace culture of effectiveness	Addresses the context – inner and outer context	Acknowledges that workplace culture impacts on evidence-based practice and implementation of evidence	Rigid culture and marginalised role of the nurse negatively impacts on implementation activities; Physician preference is a major factor in private sector health care. Inner context should include the personal aspects of the individual which enhances or restrains their motivation to act and influences job satisfaction

**Table 4.2: Application to the study**

EPD	i-PARiHS framework	Action research	Application
Directed at micro-systems but requires support from interrelated mezzo- and macro systems	Context	Cyclic use of data to provide feedback to change behaviour	The culture of the critical care unit (micro) is supported by management, which influences change in clinical practice
Focus on active learning, integrates workplace learning, to improve care delivery	Context Recipient Facilitation	Cyclic use of data to provide feedback to change behaviour	Unit culture is dominant. The unit culture determines the behaviour of the management when supporting research activities.
Integrates and encourages development of evidence from practice and use of evidence in practice	Facilitation Context Recipient	Utilisation of learnings from the previous cycle to inform the next steps in the process	Implementation is consistently encouraged by collaborative inclusive and participative decision-making between internal facilitators

**Table 4.2: Application to the study**

EPD	i-PARiHS framework	Action research	Application
Encourages creativity and human flourishing by allowing practitioners to free their thinking	Context Recipient	Utilisation of learnings from previous cycle to inform the next steps in the process. Participants are challenged to ‘think outside the box’	Nurses are motivated to think outside the box to enhance adoption of evidence into practice and overcome perceived barriers
Complex methodology that includes all stakeholders across the health care spectrum	Context Recipient	Feedback on findings provided to all stakeholders to inform the next cycle of action	Collaboration with the multidisciplinary team is key to successful implementation, therefore the inclusion and participation is encouraged
It is associated with a set of processes that includes skilled facilitation	Facilitation	The researcher is an external facilitator to guiding internal facilitators to find innovative solutions to barriers	Facilitation needs to be consistent and face-to-face. Technology can’t replace the value of direct verbal communication. Face-to-face interaction with internal facilitators encourages continued engagement
Integrates evaluation approaches that are inclusive, participative and collaborative	Facilitation	Feedback on findings is provided to all stakeholders to inform the next cycle of action	A collaborative approach encourages participation and inclusion to bring about change

**Adapted from McCormack and McCance (2017:168)**

## 4.4 CLINICAL PATHWAYS

Clinical pathways, also referred to as care pathways or care maps, are defined as evidence-based road maps that describe a sequence of events for the diagnosis and treatment of specific groups of patients. The aim of a clinical pathway is to optimise patient care to improve patient outcomes (Grimsmo, Løhre, Røstad, Gjerde, Heiberg & Steinsbekk 2018:152; Lawal, Rotter, Kinsman, Machotta, Ronellenfitsch et al. 2016:35; He & Yang 2015:394). To achieve the aims of a clinical pathway, four common goals characterise clinical pathways.

The common goals are to reduce fragmented care delivery, improving cost effectiveness and cost saving, enhancing patient throughput and improving collaboration with families and patients in the anticipated care programme. In addition, clinical pathways can optimise operational efficiencies by decreasing variations in treatment plans and clinical practice (Grimsmo et al. 2018:153; Elliott, Gil, Hemmelgarn, Manns, Tonelli, Jun & Donald 2017:838; Singh, Shelton, Greenberg & Starner 2017:175; Hipp, Abel & Weber 2016:416).

Over the past two decades clinical pathways have been developed and successfully implemented in first world countries to reduce variations in care and treatment plans based on the individual physician's personal preference, thereby enhancing the delivery of evidence-based care to patients. Curbing inappropriate care contributes to healthcare efficiency and cost savings. Hipp, Abel and Weber (2016:416) reported a saving of US\$316 billion during 2009 to 2013 through the effective implementation of clinical pathways. Lauck, Wood, Cheung, Cook, Dvir, Lempereur, et al. (2014:B217) concluded that the implementation of clinical pathways allows for risk stratification of patients leading to individualised treatment plans supported by the multidisciplinary team

led to excellent patient outcomes, optimised length of stay and improved operational efficiencies.

Singh, Shelton, Greenberg and Starner (2017:180) reported that the implementation of a clinical pathway for the treatment of cystic fibrosis based on objective assessment criteria, lead to more uniform treatment administration and enhanced multidisciplinary adherence to evidence-based person-centred care plans, with a subsequent improvement in patient outcomes. Zhang, Zhang, Yu, Mao and Zheng (2015:C138) concluded that the implementation of a clinical pathway for patients with ST-elevation myocardial infarction significantly reduced the treatment time of the patient from admission to treatment, and therefore improved patient outcomes by improving left ventricular function, reducing the risk of cardiac arrhythmias and decreasing the hospitalisation period, compared to patients who were not placed on the STEMI-pathway. In addition, the authors noted that patients placed on the pathway showed a significant increase in compliance to medication regimes and had enhanced quality of life.

Similarly, Zhou, Ye, Huang, Jiang, et al (2016:C90) indicated that the utilisation of a clinical pathway for patients with an acute ST-Elevation myocardial infarction significantly reduced the time from admission to cardiac catheterisation and thereby significantly decreased the mortality rate of this group of patients and improved their quality of life after having a myocardial infarction. An evaluation of a clinical pathway for the prevention and management of acute catheter-related venous thrombosis in paediatric patients with chronic cardiac disease, found that having a clear, well-documented clinical pathway for the prevention and management of venous thrombosis improved patient outcomes significantly – bleeding risks were reduced and 80% of patients diagnosed with venous thrombi had effective resolution of the thrombi (Petrosa, Raffini, Blumenstein, Pappas, Veneziale, Murphy, Li, Giglia 2016: np). Likewise, Nakaseko, Ohdiara, Yoshida, Katajima and

Suzuki (2018:23) indicated that a standardised clinical pathway for initiating early oral intake post-gastric surgery significantly reduced post-operative complication rates and that 86.5% of patients effectively completed the pathway without further complications arising.

Clinical pathways are person-centred, meaning the patient has the right to be part of the decision-making process regarding their care options, and to be presented with the best evidence-based care options available to assist the patient in making an informed decision about their healthcare needs (Lawal *et al.* 2016:36). The National Institute for Health and Care Excellence (NICE 2019:online) has developed a clinical pathway for patients with motor neuron disease, and state that NIV is to be considered as a first-line treatment for patients with motor-neuron disease requiring respiratory support and that the decision to initiate or discontinue NIV should be a collaborative process which involves the multidisciplinary team and the patient. The advantages and disadvantages of utilising clinical pathways is outlined in Table 4.3.



**Table 4.3: Advantages and disadvantages of clinical pathways**

Element	Advantages	Disadvantage
Clear sequence of diagnostic and therapeutic interventions	The planned sequence of events are clearly documented to minimise the risk of performing unnecessary interventions	Doctors may view this as restrictive and prescribing – reducing their autonomy in developing treatment plans for their patients
Evidence-based care delivery	Clinical pathways are researched and include the best evidence to produce effective interventions that improve patient outcomes	
Variance in treatment plans	<p>Clinical pathways are developed with bespoke treatment plans for patients to reduce variances in treatment plans e.g. the utilisation of surgical interventions for a defined group of patients who meet eligibility criteria.</p> <p>Patients who deviate from the pathway can be recognised early to prevent complications during their hospitalisation</p>	<p>Extensive consultation with doctors and multidisciplinary teams is needed to ensure that they understand the aims of the clinical pathway and obtain their ‘buy-in’ to support the implementation of the clinical pathway</p> <p>Extensive training of the multidisciplinary team and nurses is required to ensure that variances are recognised timely and acted upon appropriately</p>

**Table 4.3: Advantages and disadvantages of clinical pathways**

Element	Advantages	Disadvantage
Comprehensive approach to patient care delivery	Clinical pathways require a collaborative multidisciplinary approach to achieve the desired outcomes, therefor improving multidisciplinary communication and collaboration	Unclear roles and responsibilities might lead to conflict within the multidisciplinary team – clarification of roles and responsibilities is required
Collaboration between patients, families, and health care teams	Clinical pathways are person-centred, and the patient and their family are included in the decision-making process to determine their personal health goals and outcomes. This results in improved patient satisfaction rates.	No documented disadvantage found
Transparency	Clinical pathways provide doctors with a clear guide to discuss the treatment plan for the individual patient and provides the patient with the most appropriate course of action and expected outcomes. This approach can assist in managing realistic expectations of the patient and family e.g. full recovery of the patient	No documented disadvantage found

**Table 4.3: Advantages and disadvantages of clinical pathways**

Element	Advantages	Disadvantage
Expected outcomes and treatment goals	Outcomes are discussed and documented and the multidisciplinary team, the patient, and their family all work toward a common goal	No documented disadvantage found
Cost effectiveness	Clinical pathways allow for the collection of data related to cost of treatment which can be analysed for continuous improvement of treatment options which are cost effective	No documented disadvantage found

**Adopted from Homagk, Jarmuzek, Homagk, and Hofmann (2019:np), Elliott et al. (2017:838), Singh et al. (2017:175), Hipp et al. (2016:416)**

Although person-centred clinical pathways are utilised extensively in first world countries, the concept remains foreign in the South African healthcare system (Lawal et al. 2016:36). The attending doctor's preferences still have a major influence on the treatment provided to patients (Kelly 2018:188; Coghlan et al.2014:563). In the South African context, doctors regard clinical pathways as restrictive and a means to inhibit their autonomy in prescribing treatment for patients. This perception increases variances in treatment plans, inappropriate expenditure, inefficiency, and variances in patient outcomes, and is consistent with international findings as described by Hipp, Abel and Weber (2016:420).

#### **4.4.1. Clinical pathway development process**

Grimsno et al. (2018:153), Bjurling-Sjöberg, Jansson, Wadensten, Engström and Pöder (2014:48) and Kinsman, Rotter, James, Snow and Willis (2010:31) state that the criteria for developing a clinical pathway as defined by the European Pathway Association include:

- A structured multidisciplinary care plan
- Used to translate evidence into local structures
- Has detailed sequence of events in a course of treatment
- Has intervention timelines and steps to manage deviations if criteria are not met
- Aims to standardise care for a specific clinical problem, procedure, or episode for a specific group of patients.

Non-invasive ventilation has been extensively used for the management of patients presenting with acute respiratory failure related to exacerbations of chronic obstructive pulmonary disease (COPD) in South Africa. However, internationally the use of NIV is not limited only to patients with acute exacerbations of COPD and reported good patient outcomes and cost-effective treatment (Kneyber, De

Luca, Calderini, Jarreau, et al. 2017:1766; Popat & Jones 2016:346; Mas & Masip 2014:838).

After realising the need for an alternative to invasive ventilation for the management of patients presenting with acute respiratory failure, Balfour et al. (2012:107-114) developed the existing clinical pathway for NIV in collaboration with the multidisciplinary team in the critical care unit. To meet the criteria stipulated by the European Pathway Association for the development of a clinical pathway, a collaborative multidisciplinary approach was used. The researcher included participants working in the critical care unit who had experience with non-invasive ventilation and included nurses, doctors, pulmonologists, and respiratory therapists.

The evidence related to the utilisation of non-invasive ventilation at the time of the clinical pathway development was utilised to develop the content suitable to the South African context and based on the steps of the scientific nursing process, namely assessment, diagnosis, planning, implementation, evaluation and record keeping (Nettina 2013:6). The participants collectively agreed that the nursing process would be an appropriate framework for the clinical pathway to ensure adequate assessment, observation and monitoring of the patient's progress.

A detailed description was then developed for each of the steps which included the specific outcomes for each step. A time frame was allocated to each of the steps to ensure the safe management of the patient through each phase. For example, when to repeat arterial blood gas samples and what the next step should be if the criteria for non-invasive ventilation were not met, e.g. to place an endotracheal tube and commence mechanical ventilation (see Annexure D1).

Considering the principles of action research, namely collaboration, inclusion and participation, the researcher decided to collaborate with, and included the members of the multidisciplinary team, namely the nurses, doctors, pulmonologists and respiratory therapists working in the critical care units. The participants were invited to participate in a brainstorming session to collaboratively develop the content of the clinical pathway for NIV. The participants were randomly assigned to one of four work groups and allowed time to discuss the relevant content for inclusion in the clinical pathway. Following this, each group was asked to present their content to the rest of the group for discussion.

A skilled facilitator was tasked with leading the discussion to establish the relevant themes, sub-themes and categories. Each concept was discussed and once the participants reached consensus that the content is relevant for inclusion, this was noted and documented. This process continued until data saturation was reached and the participants were satisfied that all the relevant concepts were included. Data collected from the brainstorming session was then analysed by the researcher and included in the draft clinical pathway for non-invasive ventilation. The researcher conducted an in-depth literature review to support the findings from the brainstorming session. The draft clinical pathway was then distributed to the participants for review and comment. Consensus was reached by the participants that the draft clinical pathway for non-invasive ventilation was complete and relevant after a period of four (4) weeks.

The draft clinical pathway for non-invasive ventilation was then distributed to independent experts in the field of critical care for validation. The validation was done via a Delphi. The validated clinical pathway for non-invasive ventilation was then redistributed to the participants who developed the clinical pathway, for implementation under the assumption that it would be implemented into practice, by the

same multidisciplinary team who developed it. However, despite collaborative efforts and inclusion of the multidisciplinary team, the clinical pathway has remained nothing more than a work procedure in a policy and procedure file, clearly denying patients the best evidence-based care available. The reasons for non-implementation were unknown and required further investigation. The researcher assumed that the lack of implementation was due to the lack of a clear implementation strategy, and from experience that the ‘top-down’ strategy originally used, was ineffective.

#### **4.4.2. Clinical pathway challenges identified**

The South African health care sector is divided into public and private sector hospitals as described in Chapter 2. The public sector serves the majority (84%) of the South African public and is buckling under severe pressure as the burden of disease increases (Dell & Khan 2017:1100; Young 2016:3). The private sector health care providers are also under pressure to provide cost-effective, evidence-based care to patients, however treatment plans in the private sector hospitals are greatly influenced by doctor preference, which leads to variances in care delivery and patient outcomes (Dell & Khan 2017:1099-1105). This is consistent with the findings of Elliott, Gil, Hemmelgarn, Manns, Tonelli, Jun and Donald (2017:839) and Digby et al. (2015:331). This division in the South African health care system, coupled with the impact of doctor preferences when prescribing treatment plans for patients, impacts on the effective development and implementation of clinical pathways in the South African context.

Clinical pathway information and research evidence is mainly utilised to develop individual care systems within each of the health care sectors and branded for their own use – sharing of research findings and information is not widely accepted in the competitive South African health care sector. Private sector groups have gleaned research

evidence over the past decade to develop patient management toolkits for in-house use, such as the Cardiac Excellence and Stroke Excellence programmes, which are based on the clinical pathways developed internationally by the National Institute for Health and Care Excellence (2013:online). Although research evidence is utilised by both sectors, there is a lack of clinical pathway experts in South Africa who can contextualise the existing evidence for use in our health care sector, and it seems that neither sector is willing or able to provide the resources – human resources, time and money - required to develop, implement and sustain clinical pathways.

Additional challenges identified in the implementation of clinical pathways include a lack of consensus among healthcare professionals and nurses about the importance of clinical pathways in clinical practice. Clinical pathways are viewed as prescribing and restrictive and often poorly received by doctors and nurses (Goulart 2016:SP174; Balch 2016:SP179). In addition, Goulart (2016:SP175) contributes the lack of clinical pathway adoption to a lack of understanding – understanding how the clinical pathway was developed, by whom it was developed and how the clinical pathway should be implemented, and state that health care professionals need to have confidence in the content and processes related to a clinical pathway to implement it into routine clinical practice. Professional societies such as the American Society of Clinical Oncology employed a dedicated task force to develop and implement clinical pathways for oncology patients which aims to standardise care and treatment plans, reduce variations in care and improve cost-efficiencies and evaluate patient outcomes (Zon 2016:SP162).

The Hospital Group monitors compliance to clinical pathways such as the acute myocardial infarction programme by monitoring clinical patient outcomes and data related to treatment times and pharmacological agent utilisation. Compliance varies throughout the



group and this variance can be linked with doctor preference. Data related to compliance by nurses to the prescribed pathways indicate greater adherence to the guidelines, for example 100% compliance with the administration of aspirin on admission to the emergency room for patients presenting with chest pain (Source: The Hospital Group).

Considering the statements from the American Society of Clinical Oncology (Goulart 2016:SP174), the inclusion of the doctors working in the purposively selected critical care units should have enhanced the adoption of the clinical pathway for NIV in the clinical setting, however this was not the case. The attending doctor at the intervention group (Proteas) believed the clinical pathway will lead to the mismanagement of patients by nurses in the critical care unit and clearly indicated that she will not support any efforts to implement the clinical pathway as she knows what is best for her patients. Efforts to include her in the validation of the clinical pathway (see Chapter 6) was met with resistance and a blunt denial of the potential value of the clinical pathway for NIV, and a refusal to participate. Doctors in the Control Group (Daisies), sited that they agree with the clinical pathway in principle but that they would feel more comfortable in implementing the clinical pathway if they were directly involved in the development of the clinical pathway for their own critical care unit, and that for now they will reserve the right to use the clinical pathway based on their own clinical judgement of the suitability of the patient for NIV.

Inclusion of the doctors in the collaborative development and validation of the clinical pathway was not enough to ensure the implementation of the clinical pathway into clinical practice. It is the researcher's opinion, from engaging in conversations with the doctors that they do not value the roles of clinical pathways, let alone a clinical pathway developed by a nurse. The global incidence of the divide between the professions and a lack of multidisciplinary team collaboration led to the marginalised role of the nurse which is painfully apparent in the South

African context. This is consistent with the findings of Landman, Annestad, Smoldt and Cortese (2014:199). The researcher believed that the contributions of clinical nurse researchers are overlooked in favour of the perceived superior knowledge and skills of the doctors, and it is the responsibility of the nurse leaders and professional nursing associations and governing bodies to change this perception. To achieve this, multidisciplinary collaboration needs to take place at all levels – hospitals, training and education institutions, research associations and professional bodies representing nurses and doctors.

Nurses need to act to preserve their professional status and restore their place as a member of the multidisciplinary team and should not allow their role in providing evidence-based patient care to be dismissed or relegated to that of a ‘doctor’s assistant’ (Smith 2015:665). Nurses in South Africa need to be emancipated from this rigid belief system to move forward as a respected profession. Nurse leaders at all levels of the nursing profession need to join hands in this effort. It will take more than one nurse to change this and change needs to start from the foundations of nursing education to teach young nurse leaders that they are vital in providing evidence-based, person-centred, cost-effective care to patients, and that they have the power to improve patient outcomes.

#### **4.5. SUMMARY**

Collaboration, inclusion, and participation are not enough to bring about change in clinical practice. The existing clinical pathway for NIV is a prime example of failure to implement research evidence into clinical practice using traditional methods of implementation. Utilising a new approach, by involving the multidisciplinary team and the nurses working in the unit, in the designing the implementation strategy, might assist in improving the adoption of the clinical pathway for NIV in the critical care unit. The aim is to free nurses from the rigid culture-based

practices in the critical care unit, to embrace innovation and improve patient outcomes and operational efficiencies. The unique contribution of this study will serve to update the existing clinical pathway for NIV to ensure clinical relevance and include the latest research evidence, as well as to implement the clinical pathway in collaboration with the multidisciplinary team and nurses in the critical care unit. The evaluation of the implementation process will provide a comparative baseline to establish whether the intended changes in unit culture have realised.

This chapter provided a discussion related to the theoretical underpinnings of the study. Chapter 5 is an in-depth discussion related to the research methodology of the study.

# Chapter 5

## Research Methodology

### 5.1. INTRODUCTION

Chapter 4 provided an overview of the theoretical underpinnings of the study. This chapter discusses the research design and methods employed in the study to answer the research question. The discussion is guided by the three phases in which the study was conducted: Phase 1: Baseline data, Phase 2: Implementation and Phase 3: Evaluation.

### 5.2. OVERVIEW OF THE THREE PHASES

The study was conducted in three interdependent and interrelated phases as illustrated in Figure 5.1 (also see Annexure B3).

Bringing about change in the clinical setting requires a collaborative approach which led the researcher to seek alternative research designs and methods to answer the research question. The process of change through utilising emancipatory practice development as a methodology requires collaboration, inclusion and participation from all the relevant stakeholders, including the nurse, multidisciplinary team members and organisational management teams to develop workplace cultures which encourage and embrace improvement.

Emancipatory practice development methodology develops workplace cultures where team members take ownership, have shared values and beliefs about the outcomes to be achieved, develop agreed behaviours

and mutual decision-making is central to the development process (Manley, O'Keefe, Jackson, Pearce & Smith 2014:3).

The researcher identified practice development as an ideal approach to bring about change in the interest of quality patient care, improved collaboration amongst the members of the multidisciplinary team, and improve person-centred cultures to provide for the needs of the patient (Lykes & Scheib 2015:134-135; Manley et al 2014:3; McCormack & McCance 2017:44). This approach is explained in detail in the following sections.

### **5.3. RESEARCH METHODOLOGY**

Research methodology is the plan for how the study will be structured and data will be collected and analysed systematically but is not related to any definitive method of data collection or type of data (Polit & Beck 2017:743; Bradbury 2015:15; Burns, Grove & Gray 2013:264). The researcher selected emancipatory practice development, a type of action research for this study.

#### **5.3.1. Action research and practice development**

Gustavsen and Plshaugen (2015:415) state that action research is the mechanism that bridges the gap between theory and practice by developing an understanding of current practice, the challenges experienced by the persons working in the setting, and collaboratively taking responsibility for finding innovative solutions to overcome the challenges of evidence implementation. The action research design and cyclical use of data allow for deeper understanding and opportunities to adapt to challenges to achieve outcomes

Emancipatory action research is used for the development and implementation of evidence in clinical practice, includes reflection,

critique, action spirals, and collaboration with stakeholders, and is characterised by participation, inclusion and collaboration (Filmlalter, Van Eeden, De Kock et al 2015:3; Fetterman, Kaftarian & Wandersman 2015:238; Manley et al 2014:3; Manley, McCormack & Wilson 2008:99). Emancipatory action research follows a cyclical process of (i) strategic planning, (ii) implementing the plan, (iii) observation, evaluating and self-evaluating, (iv) critical reflection on the results, and (v) making decisions for the next cycle of actions based on the observations and reflections of the previous cycle (Eikeland 2015:382; Bourgeault, Dingwall & De Vries 2010:434).

Action research is a programme to bring about practical improvements and best practice change through collaborative critical self-enquiry, which sustains change through collaborative learning (Williamson et al 2012:7; Bourgeault et al 2010:434; Pedler & Burgoyne 2017:122). Practice development leans toward a flexible research design which allows for the utilisation of multiple methods of data collection to better understand the complexity of the phenomenon under investigation (Fairbrother, Cashin, Mekki et al 2015:4; Coghlan & Brydon-Miller 2014:563; Offredy & Vickers 2010:28).

Emancipatory action research encourages the development of the practitioner as well as the generation of evidence in practice (Fairbrother et al. 2015:6; Coghlan & Brydon-Miller 2014:563; Manley et al. 2014: 24; Manley, McCormack & Wilson 2008:100). The use of an approach that is collaborative, inclusive and participative aims to liberate groups from tradition, self-deception, and coercion. Smith (2016:np) and Lykes and Scheib (2015:141) describe emancipatory action research as a programme to bring about practical, sustainable improvements, and best practice change. Practitioners take ownership of the problem, and find a solution to the problem through teamwork thus fulfilling the aims of emancipatory practice development (Smith 2016:np; Fairbrother et al.

2015:8; Rycroft-Malone, Seers, Chandler et al. 2013:5; Manley, McCormack & Wilson 2008:196; Kitson et al. 1998:152).

McConnell, McCance and Melby (2016:39) emphasise the importance of the unique attributes of the participants, the context (environment), care processes, and their impact on expected outcomes. The study was divided into three interrelated and interdependent phases. The data collected during Phase 1 (baseline) of the study was vital in determining the implementation strategy during Phase 2. The data was used to describe the creative solutions developed by the internal facilitators to overcome the identified barriers. The internal facilitators implemented their solutions and evaluated the outcomes. Based on the findings, this data was included in planning the next steps of the implementation strategy. The internal facilitators discussed what they did, how they did it and whether the actions were successful or not and used this data to determine the next steps to achieve the desired outcomes – a cyclical process (Smith 2016:np; McConnell, McCance & Melby 2016:39).

#### **5.4. RESEARCH DESIGN**

The research design is the overall plan for answering research questions and the logical structure of the enquiry (Brink et al 2018:104; Burns et al 2013:195; Botma et al 2010:199; Andrew & Halcomb 2009:10; Clark, Lissel & Davis 2008:E67). The researcher selected a mixed method research design for this study. Mixed method research uses a combination of qualitative and quantitative data collection and analysis methods in a single study to describe the purpose of the research, and integrates the data at some stage of the study (Plano Clark & Ivankova 2016:31; Sandelowski 2014:3; Offredy & Vickers 2010:28; Morse 2017:477; Andrew & Halcomb 2009:9).

Mixed methods research designs use both qualitative and quantitative data in a single study, as the two sets of data complement each other in

understanding the phenomenon under investigation more deeply, and integrate the data at some stage during the research process (Gobo & Mauceri 2014:241). The phenomenon under investigation in this study was to the non-implementation of the clinical pathway for NIV in the critical care units. The researcher was under the impression that using a person-centred approach and the principles of action research, namely inclusion, participation and collaboration, the multidisciplinary team who participated in the development of the clinical pathway for NIV, would also implement the clinical pathway in the clinical setting. However, this did not realise as expected, and the clinical pathway and NIV remained underutilised. To establish the reasons for non-implementation of the clinical pathway, the researcher utilised a transformative, sequential mixed method design.

Plano Clark and Ivankova (2016:137) describe transformative mixed methods designs as “an approach in which researchers integrate quantitative and qualitative methods within a social justice theoretical framework to enhance the application of research for addressing a social justice agenda”. The researcher considered a transformative design appropriate for this study because the aim was to emancipate the nurses in the critical care units from their rigid culture-based practices to transform nursing care delivery through the implementation of evidence at the bedside. Transformative designs require researchers to collect and analyse both quantitative and qualitative data to answer the research question. How and when the data is collected and analysed as well as how the data will be integrated during each cycle of the research process determine the type of design (Plano Clark & Ivankova 2016:33- 35).

In sequential designs, researchers collect and analyse data in sequence and use the data to inform subsequent data collection. For the purpose of this study, the researcher collected, analysed and critically evaluated quantitative data first, from a validated and pre-tested questionnaire to establish baseline data regarding the workplace culture (see Section 6.3). The quantitative data was then integrated into the subsequent cycles of



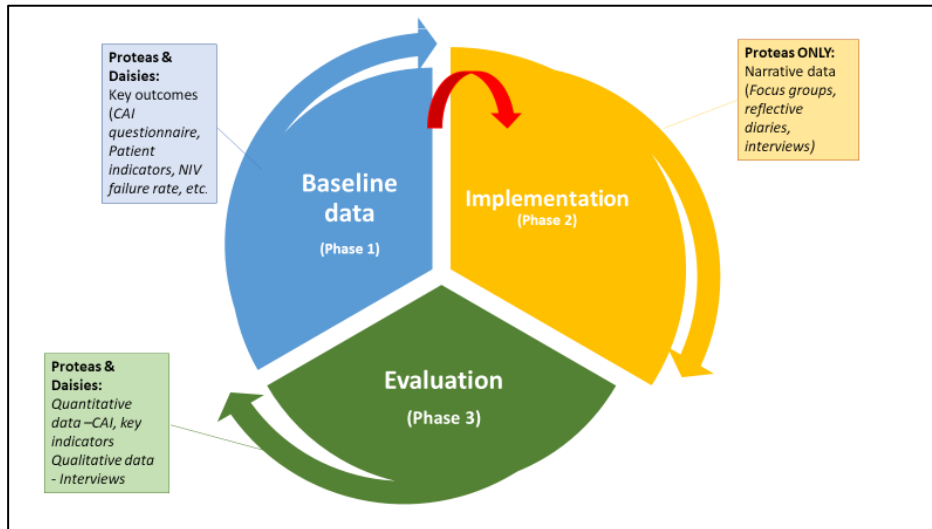
the study to explain, interpret and support the qualitative data (Plano Clark & Ivankova 2016:41).

The integration of data is the foundation of mixed methods designs which illustrates the interconnected and interrelated relationships between data to gain a deeper understanding of the phenomenon under investigation (Plano Clark & Ivankova 2016:42). For the purpose of this study the phenomenon under investigation was facilitation of the implementation of the clinical pathway for NIV in the critical care unit. Heyvaert, Hannes and Onghena (2017:4) state that the pure quantification of the effectiveness of clinical interventions is insufficient to determine what really works in clinical practice and how, and that the influence of individuals' behaviour, experiences and preferences, and the interactions between persons and their environment impact on the outcomes of evidence implementation in clinical practice. The qualitative data provides insight into the appropriateness and meaningfulness of clinical interventions (Heyvaert et al. 2017:4). For this reason, the inclusion of qualitative data must be considered to explain and support findings. Qualitative data was used to support the reasons for the non-implementation of the clinical pathway for NIV in the critical care unit.

This study was conducted in three interdependent and interrelated phases (see Annexure B3), namely baseline data (phase 1), implementation (phase 2) and evaluation (phase 3). The data was analysed and integrated into the next cycle of the study which required the collection and analysis of qualitative data obtained from focusgroup sessions and interviews (Sandelowski 2013:6; Padgett 2012:42; Mertens, Bledsoe, Sullivan & Wilson 2010:200). Figure 5.2 illustrates how the quantitative data from phase 1 (baseline) was integrated into phase 2 (implementation) of the study.

The use of transformative, sequential mixed methods research designs requires the involvement of the community and the cyclical use of data to

inform the decisions for the next cycle of the research study (Sandelowski 2013:4; Mertens et al 2010:199). For the purposes of this study, the community referred to the nurses working in the critical care unit. The cyclical use of the data was consistent with the steps of practice development and action research.



**Figure 5.1: Transformative, sequential mixed methods design (adapted from Morse 2017:477)**

Two purposively selected critical care units were included in this study. One critical care unit served as the intervention group (Proteas) and the second as the control group (Daisies). During the baseline data collection phase (phase 1), both the Proteas and the Daisies participated in completing the Context Assessment Index (CAI) questionnaire. Internal facilitators were identified at both sites that were responsible for driving the research activities. The key difference was that the internal facilitators in the Protea group had unlimited support from the researcher (external facilitator) to implement the clinical pathway for NIV in the critical care unit.

The internal facilitators in the control group had limited support and were expected to drive the process themselves. During the evaluation phase (phase 3), the CAI questionnaire was administered to both the intervention and control groups again, the data analysed and compared to the findings

from phase 1. The key indicators related to non-invasive ventilation (NIV) were identified and consensus reached between the Proteas and the Daisies.

Qualitative data collection included data from the focus group sessions with the internal facilitators, interview data, and the content of the reflective diaries held by the external and internal facilitators. Narrative data was used to identify themes, sub-themes and categories which were subject to content analysis (Vaismoradi, Turunen & Bondas 2013:398). The data collection and analysis methods as well as the research findings in each phase are discussed in detail in the chapters that follow.

Qualitative designs are used when little is known about the phenomenon of interest, or when the boundaries and context of the phenomenon are unclear to provide in-depth investigation and description of the phenomenon (Brink et al. 2018:103; Merriam & Tisdell 2016:16). For the purposes of this study, the phenomenon of interest refers to the non-implementation of the clinical pathway for NIV in the context of the purposively selected critical care units in a private sector hospital in Gauteng. Considering this, qualitative data was collected in the form of narrative data which was analysed to identify themes, sub-themes and categories. Table 5.1 summarises the characteristics of qualitative designs.

**Table 5.1: Application of the characteristics of qualitative enquiry**

Characteristic	Application
Research is conducted in a real- life situation	The study was conducted in the purposively selected critical care units, with the members of the multidisciplinary team and nurses currently working in the units and directly involved in patient care.
Focus is more on the process and less on the product	Although the overall aim was the implementation and evaluation of the outcomes of the clinical pathway for NIV, the focus remained on the collaborative processes required to enable the implementation of evidence in clinical practice – a person-centred practice development approach.
Purpose is an in-depth description and understanding of participants’ beliefs, actions, and events in all their complexity	Phase 1 – Baseline data – focused on determining the underlying factors that impacted on the adoption of research evidence in the local context.
Is inductive in nature and encourages further research	The recommendations for further research following the study are presented in Chapter 9.

**Table 5.1: Application of the characteristics of qualitative enquiry**

Characteristic	Application
Rationale is not to generalise findings but to understand findings in this context	The i-PARiHS framework was the conceptual framework utilised for the study which addressed both the inner (local) context and the wider outer (regulatory and policy) context. The aim was to understand the findings in the South African health care context.
The researcher is seen as the main instrument and is subjectively involved in the research process	The researcher (external facilitator) was mainly responsible for the facilitation of the implementation process by equipping the internal facilitators with the necessary skills and knowledge to bring about sustainable change. In addition, the researcher was solely responsible for the collection and analysis of research data.

**Adapted from Brink et al (2018:104) and Merriam and Tisdell (2016:16)**

Table 5.1 provides a summary of the application of the characteristics of qualitative enquiry to this study.

## 5.5. RESEARCH METHODS

Research methods are the techniques utilised by researchers to structure the study, and include the population, sampling and sample, data collection, data analysis and rigor for each phase of the study (Merriam &

Tisdell 2016:106; Burns et al. 2013:195; Botma et al. 2010:199; Andrew & Halcomb 2009:10; Clark et al. 2008:E67).

The study was conducted in three (3) interdependent and interrelated phases, namely the Baseline data (phase 1), Implementation (phase 2) and Evaluation (phase 3) as illustrated in Figure 5.2. Each phase is discussed in terms of population, sample, data collection, data analysis and rigor in the sections that follow.

Phase 1 (Baseline data) and related data collection activities to achieve the identified objectives is illustrated in Figure 5.2.

### 5.5.1. PHASE 1 – Baseline data

Phase 1 of the study was aimed at establishing baseline data regarding the context in which the research was to be conducted as well as key outcomes related to the utilisation of NIV in both purposively selected critical care units. Two objectives were identified for phase 1 of the study:

**Objective 1:** Assess unit culture and context to identify barriers and enablers to implementation of the clinical pathway for NIV in the critical care unit

**Objective 2:** Adapt and validate the clinical pathway for NIV

#### 5.5.1.1. *Population*

A population refers to the complete collection of persons or subjects that the researcher is interested in studying and that comply with the inclusion criteria for participation in the study (Brink, Van der Walt & Van Rensburg

2018:116; Alvi 2016:10). The accessible population refers to the actual subjects that the researcher has access to who are willing to participate in the study (Polit & Beck 2017:746; Alvi 2016:10; Burns et al. 2013:391; Botma et al. 2010:124; Banerjee & Chaudhury 2010:61). In this study, the target population included the nurses and multidisciplinary team working in the purposively selected critical care units.

Eligibility criteria delineate the characteristics of participants required for the study to ensure that the research question is satisfactorily answered and used as a basis for deciding which participants should be included in the population of a study (Brink et al 2018:117; Milian, Hoekstra, Bucur, ten Teije, Van Harmelen & Paulissen 2015:202 ). In this study, two critical care units were purposively selected, based on the eligibility criteria, namely:

- Level 2 critical care unit (see Chapter 2) – High and medium risk, general or surgical patients in the same unit with medium to high professional dependency requiring supportive equipment and continuous monitoring
- Current utilisation of mechanical ventilation (invasive and non-invasive) for patients presenting with acute respiratory failure
- Participated in development of existing clinical pathway for NIV

Purposive sampling was used to select participants (nurses) who would become internal facilitators in the critical care units, namely:

- A permanent employee of the Hospital
- Nurse with a post-basic qualification in Critical Care Nursing Science, and/or a minimum of three (3) years' critical care experience
- Nurse working in the critical care unit with knowledge of the private sector hospital and critical care nursing practices
- Nurse involved in direct patient care – nursing patients receiving mechanical ventilation, including NIV

### 5.5.1.2. *Sample and sample size*

A sample is a smaller group of participants who are representative of the population (Alvi 2016:10). The sample for this study consisted of members of the multidisciplinary team working in the critical care unit, who met the eligibility criteria. Sample size is determined by the homogeneity of the target population, and the more homogeneous the target population, the smaller the sample required to be representative of the population, and the smaller the margin for error (Daniel 2012:240). Furthermore, the use of non-probability sampling, such as purposive sampling, does not require a specific sample size (Daniel 2012:241). Table 5.2 lists the characteristics indicating that the study samples were similar.

**Table 5.2: Similarity of samples**

Characteristics	Proteas	Daisies
Registered Nurses – Critical care qualified	4	4
% patients requiring ventilator support on admission	25%	25%
Average length of stay of ventilated patients in the unit	5-10 days	5-10 days
Occupancy	80%	>80%
Current NIV utilisation	10%	10%

**Source: The Hospital Group (2017)**

The similarity of the characteristics of the intervention group (Proteas) and the control group (Daisies) was summarised in Table 5.2. The sampling methods applicable to this study as well as the advantages, disadvantages and mitigating actions for each method are described next.



### **5.5.1.3. Sampling**

Sampling is the process of selecting a portion of the population to represent the entire population. A sample refers to a sub-set of the population, who meet eligibility criteria for inclusion in a study (Brink et al. 2018:115; Whitmeyer 2017:1379; Vehovar, Toepoel & Steinmetz 2016: 329). Non-probability sampling implies that not all the elements of the population have an equal chance of being selected for participation in the study which reduces the representativeness of the sample. However, non-probability sampling is considered a better option when the aim of a study is exploratory, with a need to target a specific element in the population and the characteristics of the population is similar (Brink et al. 2018:116; Vehovar, Toepoel & Steinmetz 2016: 330).

Non-probability sampling is most suited for research with an exploratory component as the aim is to elicit participants' experiences and does not require generalisation to a larger population (Brink et al 2018:124; Vehovar, Toepoel & Steinmetz 2016:330).

#### **○ Convenience sampling**

Convenience or availability sampling refers to a sampling technique where the participants are included in the sample based on their availability and accessibility. Although the use of convenience sampling is generally deemed a poor sampling technique due to the high risk of sampling bias, it is economically viable for the researcher, and relevant to this study (Brink et al 2018:125; Vehovar, Toepoel & Steinmetz 2016: 330).

The researcher used convenience sampling to collect adequate data from the Context Assessment Index (CAI) questionnaire and to inform the next steps of the study. The completion of the CAI questionnaire was not limited to the internal facilitators but included all the nurses working in the critical

care unit. The data collected from the CAI questionnaire was utilised to identify perceived barriers and enablers to the implementation of the clinical pathway for NIV in the critical care unit and provided a basis for the development of a person-centred practiced development approach. The risk of sampling bias was reduced by administering the same CAI questionnaire to the same participants in phase 3 of the study and using the data to compare the findings with phase 1. The utilisation of the same participants and the same questionnaire over a period reduced the possibility of sampling bias and researcher subjectivity (Brink et al 2018:83; Vehovar, Toepoel & Steinmetz 2016:330; Emmel 2013:45).

- **Purposive sampling**

In purposive sampling, subjects are selected because they are particularly knowledgeable about the phenomenon under study and make a unique contribution to knowledge generation. The multidisciplinary teams of both purposively selected units participated in the development of the existing clinical pathway for NIV in 2011. In purposive sampling researchers use their knowledge of a selected population to include participants who can actively participate in the research activities and fit the purpose of the study (Brink et al 2018:126; Vehovar, Toepoel & Steinmetz 2016:330; Emmel 2013:45).

Although the use of non-probability sampling increases the risk of sampling bias, it is mostly employed in nursing research due to accessibility of subjects and economy and convenience. In this study, the researcher used purposive sampling to select the units as well as the internal facilitators (see Section 5.5.1.2). The researcher purposively selected the two critical care units to participate since the multidisciplinary teams of both units were involved in the development of the existing clinical pathway for NIV, and therefore had a vested interest in the clinical pathway. The participants were purposively selected based on their expert knowledge of NIV. Table 5.3 presents the advantages and

disadvantages of purposive sampling as well as the researcher's attempts to mitigate the risks.

**Table 5.3: Advantages and disadvantages of purposive sampling and mitigating actions**

Advantages	Disadvantages	Mitigating actions
Control over who is included in the study	Requires greater resources (time, money, human)	Participants were selected based on their experience with NIV and their participation in the development of the existing clinical pathway for NIV. Participants who were selected as internal facilitators voluntarily participated in the research activities (see Annexure C1 – PICD).
Appropriate for research focused on a specific segment of the population	Requires up-to-date information about the population, the sites and conditions	The researcher worked closely with the participants of both critical care units and had in-depth knowledge of the population, the critical care units, and the conditions in the units.
Possibility of more comprehensive findings – allows for continued sampling until data saturation occurs (qualitative data)	Generalisability might be limited	The process evaluation in Phase 3 formed part of the primary outcomes of the study using comparative baseline results from both the intervention and the control groups, which might be generalizable to the process of future implementation initiatives.

**Table 5.3: Advantages and disadvantages of purposive sampling and mitigating actions**

Advantages	Disadvantages	Mitigating actions
Reduced selection bias	Expert sampling might lead to bias	The updated clinical pathway will be sent to additional experts in the field of pulmonology, e.g. the Critical Care Society of South Africa, who did not actively participate in the research activities, for verification to reduce the possibility of bias.
Opportunities for consecutive sampling reduces intentional/unintentional manipulation of data	Consecutive sampling may exclude seasonal variations	Data from patient records (e.g. length of stay) were collected over a six-month period to reduce the influence of seasonal variations.

Adapted from Brink et al. (2018:124), Vehovar, Toepoel & Steinmetz (2016:331) and Emmel (2013:45)

#### **5.5.1.4. Data collection**

Data was collected in the form of patient data (e.g., length of stay, number of patients requiring ventilator support, number of patients who received NIV). The data from the CAI was analysed statistically to present a 'picture' of the current unit culture. Data was collected from both the Proteas (intervention group) and the Daisies (control group). The findings are presented in Section 6.2.3.

The second objective in Phase 1 of the study was aimed at adapting and validating the existing clinical pathway for NIV. The existing pathway was published in 2012 which meant that the evidence might not be relevant at this time and the content needed to be verified and validated. Table 5.6 outlines the process to adapt and validate the clinical pathway for NIV prior to implementation. Once the clinical pathway for NIV had been adapted to include the most recent research evidence, and validated by the purposively selected clinical experts, the internal facilitators collaborated with the researcher to develop an implementation strategy (see Chapter 7 for discussion of the findings).

The quantitative data collected in Phase 1 was utilised to inform the actions required in Phase 2. The quantitative data collected in Phase 3 was compared to the quantitative data from Phase 1 to enhance the validity of the findings. Monitoring and evaluation were done throughout, and the data was used to inform the next steps in the implementation process. The quantitative data in phase 1 was collected from the Context Assessment Index (CAI) questionnaire. The analysis of the data elicited the multidisciplinary team's current perceptions of evidence-based practice and implementation of research evidence in clinical practice. The data assisted the external and internal facilitators in identifying perceived barriers to the implementation of the clinical pathway for NIV and afforded them the opportunity to develop creative solutions to overcome the barriers.

This was in keeping with the aim of practice development to guide the participants to find their own solutions to problems, rather than instructing them how to change practice – a ‘bottom-up’ approach (Vella, Page, Edward & Wand 2017:196; Filmlalter et al. 2015:4).

- **Questionnaires**

Questionnaires are a structured method of data collection using a standardised instrument with pre-set questions and a pre-set range of responses. Utilising tested and validated questionnaires avoids the risk of inconsistent measurement of variables which could lead to misinterpretation of data (Robinson 2018:739; Wurster & Tolan 2018:1799). The advantage of using questionnaires is that they can be administered to a large group of participants. The disadvantages of questionnaires include an unpredictable response rate which might skew the interpretation of data and impact on the generalisability of the findings. To mitigate the associated risks, the researcher purposively selected the critical care units to participate in the study. In addition, utilising internal facilitators who were members of the multidisciplinary team working in the critical care units enhanced the response rate of the nurses in the critical care unit. The aim of this study was to explore the nurses’ perceptions of the implementation of evidence-based practice in the clinical setting.

The Context Assessment Index (CAI) questionnaire is a 37-item questionnaire which was designed for this purpose. The question-items are designed to elicit the participants’ perceptions of their workplace, evidence-based practice as well as the organisational culture and leadership within the hospital. The CAI has been pre-tested and validated to ensure content validity and permission was obtained from the authors to use the CAI (McCormack et al 2009). The researcher and internal facilitators administered the CAI to the participants in both the intervention and the control group to establish a baseline in Phase 1 of the study. The findings are discussed in chapter 6.

Following the implementation phase (Phase 2), the same CAI questionnaire will be administered to the same participants in the intervention and control groups again in Phase 3. The data will be used for comparison to determine what changes had occurred in the clinical setting.

The participants were asked not to write their names on the questionnaires to minimise the risk of the Hawthorne effect, thereby also maintaining their anonymity. Questionnaires distributed during Phase 1 of the study were colour coded, e.g., the Proteas' (intervention group) questionnaires were printed on blue paper and the Daisies' (control group) questionnaires printed on green paper. The internal facilitators at both sites assisted the researcher to administer the questionnaires.

The researcher used an alpha-numeric system to track the questionnaires and assist in analysis of each questionnaire; for example, A1 (Proteas - Intervention group) and B1 (Daisies - control group). Annexure C5 presents the analysis of the first round of the CAI. The internal facilitators at each site only received the questionnaires for their critical care unit and were not aware of the colour coding. This minimised the risk of the Hawthorne effect on participant responses (see Section 6.4 for discussion of number of questionnaires, response rate and findings of Phase 1).

In Phase 3 (evaluation phase), the researcher planned to administer the same CAI questionnaire to the participants in both the intervention and the control group. The questionnaires were printed on white paper for both sites (to indicate the post-intervention questionnaires). Identification of the questionnaires was done by allocating the letters 'PA' in the top right-hand corner of the page for the intervention group (Proteas), and the letters 'PB' in the top right-hand corner of the page for the control group (Daisies) (see Annexure F5). The results from the post-intervention questionnaires will be analysed and compared with the results from Phase 1 (Baseline data) (see chapter 6 for discussion and findings).



- **Focus groups**

A focus group is a carefully planned and focused type of group interview in which there is a collective discussion on the phenomenon of interest (Merriam & Tisdell 2016:114; Guest & Namey 2015:456; Liamputtong 2011:32; Botma et al 2010:210). A skilled facilitator facilitates and steers the discussion to keep the focus on the particular type of information the researcher wishes to obtain (Guest & Namey 2015:456). The purpose of a focus group is to encourage self-disclosure amongst the participants to obtain information-rich data on the topic (Botma et al 2010:210). Additionally, Oates and Alevizou (2018:27) and Liamputtong (2011:4) state that the control of the social interaction in the group is placed in the participants' hands, which aligns with the aims of a person-centred practice development approach – a 'bottom-up' approach – which allows the participants to express their perspectives openly. The researcher can take advantage of the group dynamics to obtain rich information on the phenomenon of interest (Oates & Alevizou 2018:27; Merriam & Tisdell 2016:116; Padgett 2012:126). Barbour (2014:134) states that focus groups and the analysis of qualitative focus group data lend themselves to critical realism, which aligns with the theoretical underpinnings of this study.

The structure of the focus group can be tailored to meet the data requirements for answering the research question (Oates & Alevizou 2018:32; Guest & Namey 2015:456). In mixed method studies, the focus group can be combined with other data-collection methods (Botma et al. 2010:210). Focus groups are utilised when a researcher is interested in understanding the shared experiences, perceptions, and behaviour of a group in a particular setting. Focus groups have the potential to provide in-depth, rich data of the participants' experiences and attitudes to support a better understanding of their needs in the clinical setting (Plummer 2017:350).

Focus groups are also used to develop new ideas and instruments to be used in the clinical setting (Guest & Namey 2015:457; Plummer 2017:350; Botma et al 2010:210). This aligns with the aims and objectives of this study.

Focus group participants are purposively selected based on inclusion and exclusion criteria, and their potentially unique contributions to the phenomenon of interest. Oates and Alevizou (2018:27) and Botma et al. (2010:211) state that a maximum of four (4) to eight (8) participants is sufficient, thereby giving each person the opportunity to voice their opinion without feeling 'crowded'. Padgett (2012:124) states that the number of participants should be large enough to generate diverse ideas on the topic, but small enough to allow all the participants to voice their opinion. There is no hard-and-fast rule dictating the number of focus groups to be held and Botma et al. (2010:211) suggest that the process should be continued until data saturation is achieved to avoid missing any related or underlying issues, and to provide a trustworthy answer to the research question.

Oates and Alevizou (2018:42) state that the number of focus groups to be held will be dictated by the complexity of the phenomenon of interest. For the purposes of this study, a minimum of four participants were included to ensure that each 12-hour shift (day and night) had a dedicated internal facilitator on duty at any given time to provide support to the nurses during the implementation of the clinical pathway for NIV in the critical care unit. Chapter 6 discusses the data collected and the findings of the focus group sessions.

Interview schedules for focus groups should be developed using open-ended questions in a conversational style to encourage participants to engage in the discussion (Oates & Alevizou 2018:33; Padgett 2012:125; Botma et al. 2010:212). Questions should be developed to achieve rich data collection within the prescribed time frame.

Consecutive focus groups should be consistent with the initial focus group meeting. For this reason, Botma et al. (2010:211) suggest having less than ten (10) questions and that the questions are focused on the topic of discussion. The foundation of a good interview schedule for a focus group session is a thorough literature review. Table 5.4 outlines the principles that applied to the planned focus groups for this study (Guest & Namey 2015:456; Liamputtong 2011:42; Botma et al. 2010:210).

**Table 5.4: Principles of focus groups**

Principle	Action
<b>Dates and times</b>	Dates and times were planned to follow the introductory session with the participants at the purposively selected sites. Time allocated for the focus group did not exceed ninety (90) minutes per session to prevent participant fatigue. Interview schedules were sent to participants one week in advance to encourage meaningful participation from all participants.
<b>Venue</b>	The venue for the first focus group session was the boardroom at the purposively selected hospitals to ensure that all participants could attend without incurring additional travel costs. Consecutive focus groups were held at the tea garden and restaurant across the road from the hospital as agreed with the internal facilitators. The internal facilitators indicated that constant interruptions were counterproductive, and they needed dedicated time to participate in the study. Having the focus group sessions away from the critical care unit reduced the number of interruptions during the session and provided the participants with a 'neutral' venue in a relaxed atmosphere, thereby enhancing participation (Filmlalter et al 2015:2).

**Table 5.4: Principles of focus groups**

<b>Principle</b>	<b>Action</b>
<b>Media</b>	<p>The boardroom had projector facilities that were utilised with power point presentations for the initial focus group session. The power point presentation made use of an interactive facility whereby notes and alterations could be made directly on the power point presentation as the participants discussed the relevant questions. The researcher supplied flip-charts, coloured pens and paper to the internal facilitators during the sessions, and these notes were included in the data collection and analysis. Each internal facilitator was issued with a blank paged book to use as a reflective diary, which with their permission was included as part of data collection and analysis.</p>
<b>Refreshments</b>	<p>The researcher provided refreshments for the participants (e.g., cold drinks, tea/coffee and snacks) during the focus group meetings. Breaks were scheduled every 30 minutes during the focus group and lasted approximately 10 minutes</p>
<b>Ground rules</b>	<p>Ground rules were set at the beginning of the session, discussed and agreed upon by the participants. Ground rules applied to all the focus group meetings held. The ground rules were typed and sent to all participants along with the minutes of the meeting (see Annexure C2).</p>
<b>Role clarification and expectations</b>	<p>Role clarification was done at the start of the first focus group session. Participants received a printed copy of the roles of the facilitator and co-facilitator. Informed consent to participate was obtained from all the participants at this stage.</p>

**Table 5.4: Principles of focus groups**

Principle	Action
<b>Values and beliefs</b>	The researcher conducted a values and beliefs exercise during the first focus group session to guide internal facilitators to acknowledge and understand their own values and beliefs and their valuable participation in the research. This exercise also guided the internal facilitators to acknowledge that they were all working toward a common goal, thereby securing their buy-in and participation. It also created a sense of belonging and <b>camaraderie</b> amongst the team.
<b>Audio recordings</b>	The entire focus group session was audio-recorded, and the data transcribed. The data was included during data analysis.
<b>Field notes / participant notes</b>	The researcher made notes during the sessions that were included for data analysis. The participants received their own reflective diaries to make notes for the duration of the study. The participants were provided with the necessary stationery, including coloured paper, reflective diaries and pens, during the focus group discussions.

**Adapted from Guest and Namey (2015:456), Liamputtong (2011:42) and Botma et al (2010:210)**

The application of the principles of focus groups to this study was summarised in Table 5.4. A comprehensive discussion of the focus group sessions is presented in the Chapters that follow.

### **5.5.1.5. Data analysis**

Data analysis refers to the techniques employed for analysing quantitative and qualitative data in an organised and systematic manner. Data analysis refers to the actions taken by the researcher to organise and make sense of the data collected and assign meaning to the data (Brink, Van der Walt & Van Rensburg 2018:165). The quantitative and qualitative data analysis is discussed next.

#### ○ **Quantitative data**

The external facilitator (researcher) completed the procedure for the quantitative analysis of the CAI according to the guidelines provided by the authors in collaboration with her supervisors (see Annexure C5). Analysis of the CAI provided insight into the workplace culture, organisational culture as well as the nurses' attitudes to evidence-based practice. To protect the integrity of the data, the researcher was responsible for the analysis of the data according to the guidelines provided by the author. The quantitative data provided the researcher and internal facilitators with insight into the workplace culture and perceptions of the organisational culture related to evidence-based practice in the selected critical care units. The data was used to inform the next steps to be taken in the development of the implementation strategy for the clinical pathway for NIV in the critical care unit. Chapter 7 presents the quantitative data analysis and findings of Phase 1 (Baseline data).

#### ○ **Qualitative data**

In qualitative content analysis, the data are broken down in smaller units, coded and named for the content they represent (Waltz, Strickland & Lenz 2017:323; Nishishiba, Jones & Kraner 2014:286; Krippendorf 2010:233). Miles, Huberman and Saldana (2014:12) refer to this process as data condensation, which means that the data is placed into categories or themes. From these main themes, the data for each theme is then categorised and coded. It is advisable for one person to be responsible

for the coding of all the data to enhance coding consistency (Brink et al. 2018:165; Waltz et al. 2017:323).

All the qualitative data, including data collected from the scheduled focus group meetings with internal facilitators, reflective diaries, field notes and all interview data was subject to content analysis for the identification of themes, sub-themes, and categories. From these main themes, the data for each theme was categorised and coded. Again, one person should be responsible for the coding of all the data to enhance coding consistency (Brink et al. 2018:165; Waltz et al. 2017:323). The researcher was responsible for all data analysis (see Annexure G1 for the researcher's declaration of safe storage of data). The researcher collaborated with her supervisors for the coding and analysis of qualitative data.

Qualitative content analysis is a systematic method for describing the meaning of large volumes of narrative data by assigning data to categories in a coding frame (Schreier 2014:170; Vaismoradi et al. 2013:399). Content analysis allows for the qualitative analysis of narrative data as well as for the data to be quantified. The three key characteristics of qualitative content analysis include the reduction of data in a systematic and flexible manner. Reducing the amount of data requires the researcher to focus on specific aspects of the data that are directly related to the research question. Content analysis is systematic in the sense that it requires thorough investigation of each part of the data relevant to the research question. This method prevents researchers from making biased inferences based on their preconceived assumptions and enhances the quality of the data (Schreier 2014:171; Vaismoradi et al. 2013:400).

Content analysis is particularly useful for the analysis of nursing sensitive phenomena by allowing exploration in the clinical setting and providing meaningful descriptions of nursing practice (Vaismoradi et al. 2013:399).

Content analysis is aimed at placing textual data into identified themes, sub-themes and categories. Themes are defined as a unit of meaning that the reader identifies from the narrative data. Codes are developed to describe the semantic boundaries of each theme. Coding refers to the process of analyzing qualitative data and linking the data to specific codes (Brink et al. 2018:181; Guest, McQueen & Namey 2012:50). Following the sequence of steps for coding the data enables the researcher to modify the coding frame to include all the relevant data.

Content analysis requires the researcher to double-check the coding by performing a second coding of the data. The aim of the second coding process is to ensure that the same results are obtained to test the quality of the category definitions (Miles et al. 2014:14; Schreier 2014:171). The researcher was assisted by her supervisors to perform a second coding of the data. Once the researcher had completed the first round of coding and data analysis, she presented the data to her supervisors, who independently coded and analysed the data to identify themes, sub-themes and categories. The researcher and her supervisors then compared their findings from the data analysis and reached consensus on the themes, sub-themes and categories.

Content analysis combines both data-driven and concept-driven categories in a single coding frame. Using data-driven categories ensures that the data truly matches the categories and provides an accurate representation of the data. Owing to the flexibility of the qualitative content analysis approach, the data is always matched to the coding frame (Guest et al. 2012:67). Due to the relatively unknown nature of the data to be collected, the researcher developed the codes and coding frame following the initial focus group meeting with the internal facilitators. The analysis of qualitative data varies for each data collection method, namely focus groups, interviews and reflective diaries (Barbour 2014:314). The next section describes the data analysis process.



- **Focus group data**

The focus group sessions with the internal facilitators were audio recorded to allow for transcriptions (see Annexure F7) of the narrative. The researcher developed themes, sub-themes and categories from the transcriptions, and coded the data accordingly. The researcher used content analysis for the focus group data and kept field notes on the focus group and interactions with internal facilitators during the phases of the study (Oates & Alevizou 2018:76).

- **Interview data**

The researcher conducted the interviews. Narrative data from the interviews was transcribed and content analysis conducted to identify and describe themes, sub-themes and categories (see Annexure F3).

- **Reflective diaries**

Each internal facilitator was required to keep a reflective diary of the activities undertaken during the study. The data collected from the reflective diaries was subject to content analysis and the data coded as described above, with the consent of the internal facilitators (see Annexure C7).

- **Delphi**

Validation forms part of the process of seeking the objective input of experts to confirm that the content is a true representation of the best evidence available. For this reason, the internal facilitators collectively agreed that the validation should be done by external experts, and the most appropriate method was by means of a Delphi technique (see Chapter 6 for discussion).

#### **5.5.1.6. Rigor**

Trustworthiness (qualitative data) and validity (quantitative data) are the truth measure of a research study, which indicates the extent to which the data-collection methods and the data answer the research question (Allen

2017:1511; Andres 2012:115). Trustworthiness and validity refer to the extent to which a measurement accurately measures what it is supposed to measure, and whether the findings are considered authentic (Brink et al. 2018:110; Allen 2017:1511; Howell 2013:188).

Trustworthiness of qualitative data addresses the aspects of credibility, transferability, confirmability and dependability (Brink et al. 2018:111; Allen 2017:1512; Howell 2013:182). Rigor is discussed in Section 5.6.

### 5.5.2. PHASE 2 - Implementation

The implementation phase was conducted with the Proteas' internal facilitators only (intervention group) and had one objective as illustrated in Figure 5.2.

**Objective 3:** Adopt a person-centred practice development approach to collaboratively design and implement a strategy for implementing the NIV clinical pathway in the critical care unit.

The researcher collaborated with the internal facilitators in the intervention group to finalise the implementation strategy. The internal facilitators received guidance from the researcher to implement the clinical pathway for NIV. In Phase 2 narrative data was collected from focus group sessions and reflective diaries (see Chapter 7).

#### 5.5.2.1. *Population*

In the implementation phase, the population remained unchanged from the population in Phase 1 (see Section 5.6).

### **5.5.2.2. Sample and sampling**

Purposive sampling was utilised to include the internal facilitators (see Section 5.6).

### **5.5.2.3. Data collection and analysis**

Monitoring and evaluation form an integral part of mixed methods research and practice development (Creamer 2018:117; Bamberger, Rao & Woolcock 2010:616). Monitoring allows for real-time feedback to study participants who are then able to 'learn from doing' and plan their next actions accordingly. This was in keeping with the aims of practice development: participants are engaged in actively learning from their actions and able to plan their next steps to improve on the previous actions through cycles of action. The implementation strategy, cyclical use of data, and findings are discussed in Chapter 7.

Qualitative data was collected from the focus group sessions with the internal facilitators. Content analysis was utilised to code the data to identify themes, sub-themes and categories (see Chapter 7).

### **5.5.2.4. Rigor**

Aspects of rigor, including member checking, triangulation, peer review and multiple methods of data collection applicable to the implementation phase of the study are discussed in Section 5.6.

## **5.5.3. PHASE 3 – Evaluation**

The final phase of the study consisted of evaluating the outcomes of the implementation of the clinical pathway for NIV. Data was collected from the Proteas (intervention group) and the Daisies (control group). Comparisons were made with the data collected in Phase 1 of the study to

establish whether any changes had occurred and to allow inferences to be made. The objective of this phase was to:

**Objective 4:** Evaluate the outcomes of the implementation of the NIV clinical pathway in the critical care unit.

Evaluating the outcomes of implementing the clinical pathway for NIV in the critical care units included the collection of quantitative and qualitative data.

#### **5.5.3.1. Population**

The population for Phase 3 of the study included the internal facilitators, the multidisciplinary team, patients who received NIV and the nurses working in the critical care units (see Section 8.2).

#### **5.5.3.2. Sample and sampling**

Purposive sampling was utilised to include the internal facilitators in the intervention group. The eligibility criteria remained as described in Chapter 5.

#### **5.5.3.3. Data collection and analysis**

During the evaluation phase the CAI questionnaire would have been administered to the same participants who completed the CAI in Phase 1 (Baseline data) to determine if any changes in the context had occurred. In addition, statistical information related to patient indicators would have been collected and analysed to determine the utilisation of NIV in the purposively selected critical care units (intervention and control groups). Chapter 8 presents the findings of the evaluation phase.

#### **5.5.3.4. Rigor**

Aspects of rigor applicable to Phase 3 included content validity, member checking, and triangulation (see Section 5.6 for description).

## 5.6. RIGOR

Rheinhardt, Kreiner, Gioia and Corley (2018:519), Allen (2017:1511) and Andres (2012:115) describes trustworthiness and validity as the truth measure of a research study, which indicates the extent to which the data-collection methods and the data analysis answer the research question. Trustworthiness and validity refer to the extent to which a measurement accurately measures what it is supposed to measure, and whether the findings are considered authentic (Brink, van der Walt & van Rensburg 2018:110; Frey 2018:182-192; Howell 2013:188; Andres 2012:115; Suter 2012:251).

A summary of the aspects of trustworthiness applicable to this study is presented in Table 5.5. Trustworthiness addresses aspects related to the credibility, transferability, reliability, confirmability, and dependability of a qualitative study (Brink et al. 2018:111; Waltz et al. 2017:333; Howell 2013:182). The aspects related to rigor are discussed next (see Table 5.5 for summary) as well as the application to this study.

**Table 5.5: Summary of the application of aspects of rigor**

<b>Credibility: Extent to which the research methods result in confidence in the truth of the data and the interpretation of the data (Brink et al. 2018:111)</b>	
<b>Strategy</b>	<b>Application to the study</b>
<b>Researcher credibility</b>	The researcher was a trusted member of the interdisciplinary team and had previously conducted research activities in the critical care units.
<b>Reflective diary and field notes</b>	The researcher kept a reflective diary and field notes, and the content was included in the final report and shared with the participants.
<b>Prolonged engagement</b>	Prolonged engagement with the participants, built trust relationships with them and ensures authenticity of and reflection on, the data
<b>Audio recordings</b>	Audio- recording of conversations and verbatim use of data enhanced credibility with readers.
<b>Member checking</b>	Member checking was done to ensure that the interpretation of the data was a true reflection of the participants' experience.
<b>Triangulation</b>	The study was underpinned by the philosophy of critical realism, which advocates multiple methods of enquiry to enhance credibility and answer the research question. Data collection and data analysis were supported by triangulation.

**Adapted from: Billiet (2016:197), Howell (2013:182) and Suter (2012:362)**

### **5.6.1. Credibility**

Credibility refers to the extent to which research methods result in confidence in the truth of the data and the interpretation of the data. Strategies to enhance the credibility of research data include researcher credibility, reflective practice, prolonged engagement with the data, and triangulation (Frey 2018:182-192; Howell 2013:183; Suter 2012:251).

#### **5.6.1.1. *Researcher credibility***

The researcher was a trusted member of the multidisciplinary team and had previously conducted research activities in the critical care units. The researcher was well known to the members of the multidisciplinary teams and the critical care nurses. She was previously employed as a critical care qualified registered nurse, a shift leader as well as a unit manager within the respective hospitals and enjoyed support from senior management and academic staff. This assisted in gaining access to the purposively selected research sites (Frey 2018:182-192; Howell 2013:183; Suter 2012:251).

#### **5.6.1.2. *Reflective diaries and field notes***

The researcher kept a reflective diary and field notes, and the content was included in the final report and shared with the participants. Reflective diaries and field notes provided an additional source of data for the study and improved the identification of underlying themes that impacted on the adoption of evidence-based practice in clinical practice. Each internal facilitator was provided with a reflective diary to record their own experiences related to the implementation process, which encouraged sharing of data during focus group sessions to enhance innovative problem solving (Frey 2018:182-192; Howell 2013:183; Williamson, Bellman & Webster 2012:157; Suter 2012:251). See Annexure C8 for an excerpt from a reflective diary.

### **5.6.1.3. Prolonged engagement**

Prolonged engagement with the participants builds trust relationships with participants. Although the researcher was well known to the critical care teams of both hospitals, prolonged engagement with the participants enhanced the trust relationship and encouraged authentic sharing of experiences amongst the participants. The researcher negotiated weekly appointments with the intervention group at a time and place agreed with the internal facilitators – the availability and willingness of the researcher to accommodate the needs of the internal facilitators enhanced the ‘bottom-up’ approach that is promoted by emancipatory practice development. In addition, the creation of a mobile phone group (WhatsApp) for the internal facilitators enhanced the open communication amongst them and provided additional support measures for the internal facilitators who had direct access to the researcher when needed (Howell 2013:183; Williamson et al. 2012:157).

### **5.6.1.4. Audio recordings**

Audio recording of conversations and verbatim use of data enhances credibility with readers. All the focus group meetings and interviews with the internal facilitators were audio-recorded, with the permission of the participants. Transcription of the data was done which was subjected to content analysis to assist in identification of themes, sub-themes and categories. Annexure F3 is an example of an interview transcription (Waltz et al. 2017:321; De Chesnay 2015:1; Howell 2013:183).

### **5.6.1.5. Triangulation**

Critical realism is the philosophy underpinning the study and advocates multiple methods of enquiry to enhance credibility and answer research question. The Context Assessment Index (CAI) questionnaire provided insight into the critical care nurses’ views on evidence-based practice.



The questionnaire provided quantitative data which was analysed statistically to provide the critical care teams' views. Qualitative data in the form of narratives collected from focus group sessions with participants were congruent with the findings of the CAI questionnaire (De Chesnay 2015:1; Howell 2013:183). Chapter 6 discusses the findings in detail.

#### **5.6.1.6. Member checking**

Member checking provided an opportunity to ensure that the interpretation of the data was a true reflection of the participants' experience. Following each focus group session, the researcher compiled a summary of the events, which was then read back to the internal facilitators. Once all the participants agreed that the summary was a true reflection of the discussion, it was noted in the field notes as such. The participants valued the exercise at the end of the session to provide consensus on the discussion as well as a starting point for the next session (De Chesnay 2015:1; Howell 2013:183) (see Chapter 7 for full discussion).

#### **5.6.2. Transferability**

Transferability is the extent to which the findings of a study can be transferred to another setting (Rheinhardt, Kreiner, Gioia & Corley 2018: 523; Howell 2013:183). The overall aim of the study was to implement the clinical pathway for NIV in critical care units through utilising a person-centred practice development approach. The successful implementation of the clinical pathway for NIV was measured against patient outcome measures including, but not limited to, length of stay, complication rates, patient experiences, physiological parameters and mortality rates. The outcomes measures were determined according to international best practice measures related to NIV. Additional strategies to enhance the transferability of the findings included reliability, field notes, and data saturation as summarised in Table 5.6.

**Table 5.6 Strategies to enhance transferability**

<b>Transferability: Extent to which the findings of the study can be transferred to another setting (Rheinhardt et al. 2018:523)</b>	
<b>Strategy</b>	<b>Application to the study</b>
Comprehensive field notes	The researcher made comprehensive field notes.
Data saturation	Data saturation was achieved through continued focus groups and interviews with internal facilitators. Triangulation of data was achieved through literature control.
Documenting quality enhancement strategies	Clinical patient outcomes measured in the form of hard data were collected and interpreted, e.g. length of stay, ventilator associated complication rates
Thick description	Thick description of the experiences of the participants is provided

**Adapted from: Billiet (2016:197), Howell (2013:182) and Suter (2012:362)**

### **5.6.2.1. Comprehensive field notes**

Maintaining comprehensive field notes during the implementation of the clinical pathway for NIV provided clinical insight into the variations of NIV utilisation and patient outcomes in the South African context (Brink et al 2018:111; Howell 2013:183). The researcher kept comprehensive field notes and a reflective diary throughout the study.

### 5.6.2.2. Data saturation

Prior to the implementation of the clinical pathway for NIV, the researcher and the internal facilitators searched academic literature to obtain the most recent research evidence related to NIV. The data was utilised to update and validate the content of the existing clinical pathway for NIV (Brink et al 2018:82; Howell 2013:183). Table 5.7 outlines the databases utilised to obtain the relevant academic literature, as well as the criteria and key words.

**Table 5.7: Databases, criteria, and keywords**

Database	Criteria	Key words
CINAHL (Cumulative index of nursing and allied healthcare literature)	English language	Non-invasive ventilation
Ovid Medline	Full text	Mechanical ventilation in South Africa
ProQuest	Last 5 years	Respiratory failure
PubMed Central		Disease burden
BioMedical Central		Utilisation of NIV. Predictors of NIV failure

During Phase 3, data saturation was achieved through continued focus groups with the internal facilitators as well as the interviews conducted related to Phase 3 of the study.

### 5.6.2.3. Reliability

Reliability of research data refers to the consistency, stability, repeatability of the data as well as the researcher's ability to accurately collect data (Brink et al. 2018:110). Reliability therefore reflects the consistency of data collection by the researcher to maintain consistency in the process of

data analysis. To enhance the reliability of the data, the researcher analysed the quantitative data as per the CAI guidelines provided by the author. The researcher collaborated with her supervisors to ensure the reliability of the data. Following the analysis, the findings were shared with the internal facilitator, who confirmed the findings through member checking.

A summary of the relevant databases which were searched for academic literature is depicted in Table 5.7.

#### **5.6.2.4. Documenting quality enhancement strategies**

Where applicable, quality enhancement strategies were documented as part of data collection and data analysis. Chapter 6 describes the data collection and analysis of Phase 1. Chapters 7 and 8 describe data collection and analysis of Phase 2 and 3, respectively.

#### **5.6.2.5. Thick description**

The goal of using qualitative focus group data from a smaller sample is to elicit a deeper understanding of complex issues rather than making the findings generalizable. Using verbatim data from the audio-recorded focus groups enhanced credibility of the data and allowed for deep description of underlying issues that contribute to current practice in the critical care unit (Waltz et al. 2017:321; De Chesnay 2015:1; Israel 2015:212; Howell 2013:183).

### **5.6.3. Confirmability**

Confirmability is the degree to which research findings and researchers' conclusions and recommendations are supported by the data, which means that their interpretation of the data is an accurate reflection of the actual data (Brink et al. 2018:111). Table 5.8 describes the researcher's strategies for enhancing confirmability in this study.

**Table 5.8: Strategies to enhance confirmability**

Strategy	Application
Representativeness – Did the participants’ actions/behaviour change when the researcher was not present/observing – Hawthorne effect	The researcher engaged regularly at the agreed times with the intervention group. The control group had no engagement with the researcher, and a comparison of the data collected from the CAI questionnaires of both groups during both phases of the study would indicate whether their behaviour was truthful.
Triangulation	The researcher used data collected from various sources to confirm or refute findings. Table 1.3 in chapter 1 presents the data sources that were accessed. Member checking was employed during the focus group sessions as a means to enhance the confirmability of the data.
Weighing the evidence	Confirming or refuting data was sought from academic publications related to non-invasive ventilation, research implementation strategies.
Triangulation	The researcher used data collected from various sources to confirm or refute findings. Table 1.3 in chapter 1 presents the data sources that were accessed. Member checking was employed during the focus group sessions as a means to enhance the confirmability of the data.

**Table 5.8: Strategies to enhance confirmability**

Strategy	Application
Representativeness – Did the participants’ actions/behaviour change when the researcher was not present/observing – Hawthorne effect	The researcher engaged regularly at the agreed times with the intervention group. The control group had no engagement with the researcher, and a comparison of the data collected from the CAI questionnaires of both groups during both phases of the study would indicate whether their behaviour was truthful.
Weighing the evidence	Confirming or refuting data was sought from academic publications related to non-invasive ventilation, research implementation strategies.
Audit trail	To minimise the effect of the researcher’s presence on the participants’ behaviour, the researcher established a mobile WhatsApp group where all the internal facilitators could engage with each other and the researcher to discuss challenges related to the implementation of the clinical pathway. This group enhanced the communication between the internal facilitators and was also a direct access to the researcher for guidance and support. The researcher collected and saved the conversations in PDF format as part of developing an audit trail of evidence. The researcher assisted the internal facilitators to download and utilise an electronic journal on their Smart phones, which acted as a reflective diary. Electronic copies of the journal entries are saved in a PDF format and were included as part of data collection and analysis.

**Adapted from Brink et al (2018:111)**

Table 5.8 is a summary of the strategies employed to enhance confirmability of the research findings in this study.

#### 5.6.4. Dependability

Dependability refers to the process of auditing the researcher to ensure that data collection and analysis was performed consistently by means of dependable and acceptable methods (Brink et al 2018:111). Strategies for enhancing the dependability of the data utilised in this study included the accurate and detailed recording of activities in field notes, reflective diaries and the development of a detailed implementation plan (see Table 5.9). See Annexure F3 for transcriptions of interview sessions.

**Table 5.9 Enhancing dependability**

<b>Dependability: Extent to which the findings of the study can be reproduced with similar participants and in a similar context (Brink et al 2018:111)</b>	
<b>Strategy</b>	<b>Application to the study</b>
Accurate documentation of decisions Triangulation Member checking Audit	Clinical patient outcomes measured in the form of hard data were collected and interpreted, e.g., length of stay, ventilator associated complication rates

**Adapted from: Billiet (2016:197), Howell (2013:182) and Suter (2012:362)**

Table 5.9 provided a summary of the strategies to enhance dependability of the data in this study. The aspects related to validity is discussed next.

#### 5.6.5. Validity

Validity is concerned with the truthfulness of the data and whether the data represents the actual, empirical truth of the data as interpreted by the researcher (Brink et al. 2018:111; De Chesnay 2015:157). Strategies for enhancing the validity of this study included instrument validity, prolonged engagement, triangulation, and validated questionnaires (see Table 5.10)

#### **5.6.5.1. Pre-tested and validated questionnaires**

Validity is a quality criterion referring to the degree to which inferences made in the study are true and accurate; in other words, whether the effect is related to the cause (Suter 2012:362). Internal validity refers to factors within the study that could influence the outcome of the study and whether the findings of the study are a true reflection of the relationship between the variables of the study. Internal validity is thus the degree to which the measurements reflect a true value (Suter 2012:251; Botma et al. 2010:174). External validity refers to the degree to which the findings of the study can be generalised to other populations and settings, which is vital for yielding evidence related to evidence-based practice (Suter 2012:251; Botma et al. 2010:177; Bowling 2009:166; Polit & Beck 2010:248).

The Context Assessment Index (CAI) is a validated and tested instrument developed by McCormack, McCarthy, Wright and Coffey (2009:27-35). The CAI was developed to assess the contextual factors in the clinical environment that impact on the utilisation of research evidence in clinical practice, under the premise that a better understanding of the contextual factors will assist researchers in designing implementation strategies that are more likely to succeed in changing clinical practice (Kajermo, Bøe, Johansson, Henriksen, McCormack, Gustavsson & Wallin 2013:41).

The original CAI questionnaire is a 37-item questionnaire designed to test the constructs related to practice, including collaborative practice, evidence-informed practice, practice boundaries, respect for persons, and evaluation (McCormack et al 2009:34). The questionnaire was tested and re-tested in nursing practice and found to be valid and reliable. The authors reported that the questionnaire provides a framework for testing the context that is paramount in developing strategies to improve nursing practice. The questionnaire scored satisfactory levels of internal consistency ranging from 0.78 to 0.91 (McCormack et al 2009:27).



Considering that practice development in nursing research is a relatively new concept in the South African context, the original 37-item questionnaire was utilised with permission from the authors. Table 5.10 is a summary of the aspects of validity applicable to measurement instruments. The findings are presented in the chapters that follow.

**Table 5.10 Instrument validity**

<b>Validity: Refers to the extent to which the findings of the study are unbiased and if the measurements accurately measure what they are supposed to measure (De Chesnay 2015:157)</b>	
<b>Strategy</b>	<b>Application to the study</b>
Construct validity	Clinical patient outcomes measured in the form of hard data were collected and interpreted, e.g. length of stay, ventilator associated complication rates.
Content validity (CAI)	The CAI is a pretested and validated measurement instrument.
Construct validity (Clinical pathway)	An evaluation matrix based was designed based on the concepts related to the operationalisation of the clinical pathway in clinical practice, namely, clarity (user-friendly), simplicity, consistency, comprehensiveness, applicability to the setting

**Adapted from: Billiet (2016:197), Howell (2013:182) and Suter (2012:362)**

Table 5.10 provided a summary of the aspects related to instrument validity applicable to this study. Additional strategies are discussed below.

## 5.7. THREATS TO VALIDITY

Table 5.11 summarises the threats to the internal and external validity of the study as well as the preventative measures to minimise the threats.

**Table 5.11: Threats to internal and external validity**

Internal validity threats	Source	Preventative measures
<b>Research design</b>		
Population and sampling	Sampling bias  Incomplete sampling frame  Sampling technique	Using non-probability sampling methods  Ensuring adequate Sample size
<b>Measurement</b>		
Content validity Construct validity	Conceptual definitions	Clear conceptual definitions
	Instrumentation	Use of pre-tested questionnaires
	Participants	Randomisation; member checking
	Researcher bias	Literature review; data triangulation

**Table 5.11: Threats to internal and external validity**

Internal validity threats	Source	Preventative measures
<b>Measurement</b>		
<b>Data collection</b>	Participants	Randomisation; minimized Hawthorne effect;
	Researcher bias	Reliable instruments
	Intervention fidelity	Adequate training of facilitators to minimise errors during data collection  Unambiguous standards of implementation (Implementation plan)
	Context effects	CAI to identify barriers to implementation
<b>Data analysis</b>		
Statistical conclusion validity	Reliability of instruments	Use of appropriate tests; Accurate statistical analysis

**Table 5.11: Threats to internal and external validity**

External validity		
Threats	Source	Preventative measures
Generalisability	Rosenthal effect	Researcher acted as external facilitator; implementation done by internal facilitators
	Hawthorne effect	Repeated questionnaire from Step 1 to assess change in individual participants.  Comparison of field notes and interview data collected by external and internal facilitators from the same participants
	Setting	Research was conducted in the setting where it could be applied

**Adapted from Howell (2013:182), Suter (2012:362), Botma et al (2010:177)**

Table 5.11 provides a summary of the measures employed to minimise threats to internal and external validity of this study.

## **5.8. SUMMARY**

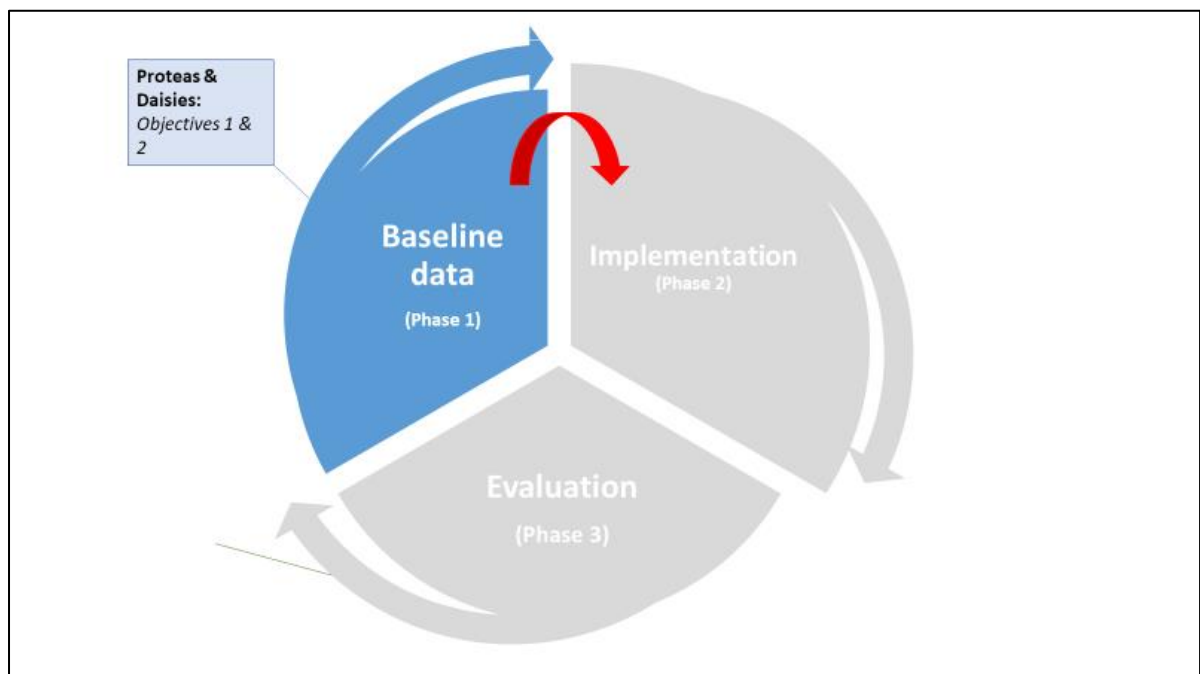
This chapter discussed the research design and methodology of the study. Chapter 6 discusses Phase 1 (Baseline data) of the study.

# Chapter 6

## Phase 1- Baseline data

### 6.1. INTRODUCTION

Chapter 5 discussed the research methodology. This chapter discusses the activities in Phase 1 of the study. The two objectives for Phase 1 are discussed individually, including the population, sampling, data collection and data analysis, to answer the research question.

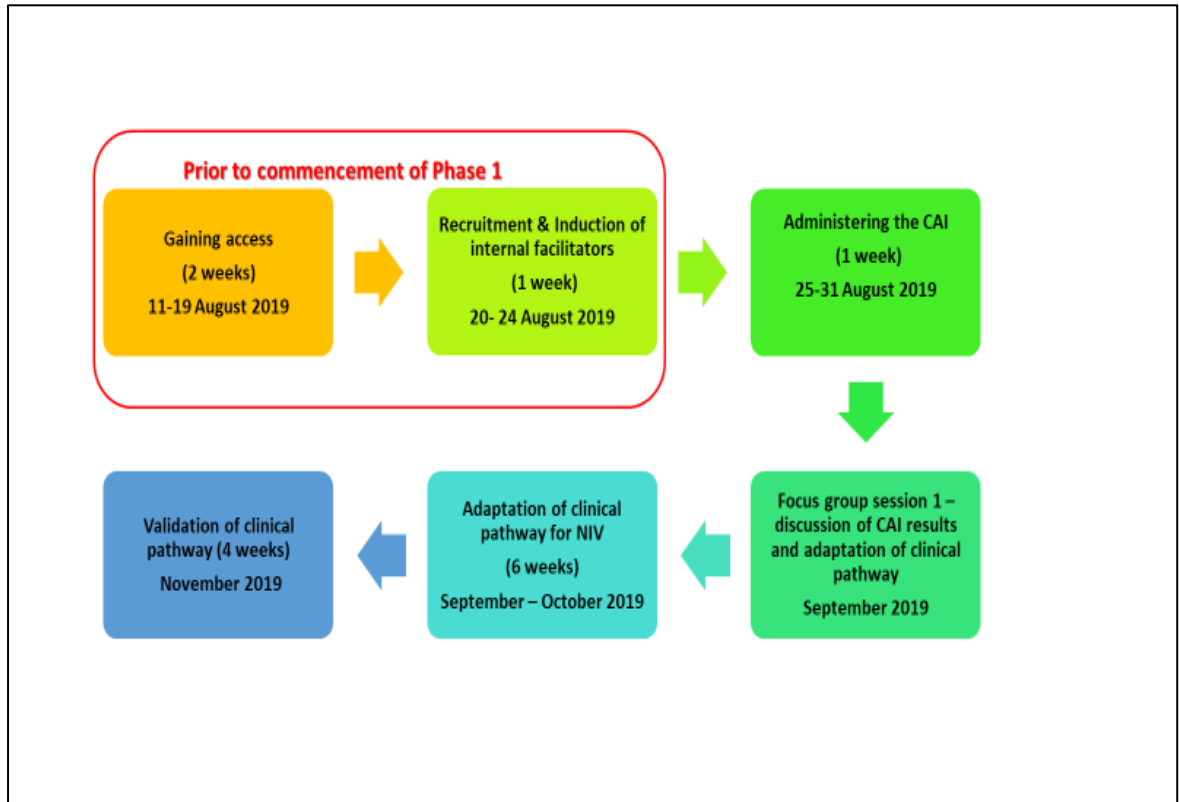


**Figure 6.1: Phase 1 – Baseline data**

Figure 6.1 illustrates the research activities during the Phase 1 - Baseline data of the study.

## 6.2. OVERVIEW OF PHASE 1 – BASELINE DATA

Gaining access and the recruitment of the internal facilitators at each hospital took place prior to the commencement of Phase 1 of the study as illustrated in Figure 6.2.



**Figure 6.2: Flowchart of Phase 1 – Baseline data**

Figure 6.2 provides a flowchart of the activities during Phase 1 (Baseline data) of the study. A summary of the timeline and associated activities is provided in Table 6.1.

**Table 6.1: Summary of activities during Phase 1 – Baseline data**

Date	Activities	Outcome	Description
<b>11-19 August 2018</b>	Gaining access and recruitment of internal facilitators	2 information sessions with Proteas. 2 information sessions with Daisies.	Section 6.2.1
<b>20-24 August 2018</b>	Induction of internal facilitators	1 interactive discussion and information session over 6 hours.	Section 6.2.2
	Role clarification	8 internal facilitators participated (intervention and control group).	
	Ground rules		
	Values & Beliefs		
<b>25 – 31 August 2018</b>	Assessing unit culture	CAI Questionnaires distributed to both Proteas and Daisies. 1 information session per hospital.	Section 6.2.3
<b>7-30 September 2019</b>	Focus Group sessions with internal facilitators	Discussion of CAI results with Proteas and Daisies: 6 sessions.	Section 6.2.4
	Adapting the clinical pathway for NIV: Literature search	3 sessions.	Section 6.3
	Validating the clinical pathway for NIV	Internal facilitators: 2 sessions. Delphi rounds: 1	Section 6.3.4

### 6.2.1. Gaining access

The researcher conducted powerpoint presentations during August 2018 to the hospital management teams of both the Proteas and the Daisies



to inform them of the scope and activities of the study (see Annexure B1). Sessions were scheduled to accommodate the hospital managers, nurse managers, critical care doctors and critical care unit managers at each hospital.

The sessions were invaluable in clarifying the significance of the study to the hospital management teams and providing them with reassurance that the research activities would not impede the activities or routine of the critical care units. However, none of the critical care doctors working in the units were able to attend the sessions. A printed copy of the presentation as well as the researcher's contact details were given to the unit managers to share with the doctors and communicate the planned research activities with them. The researcher encouraged the management teams to contact her if they needed more clarification. Following the presentations, each of the hospital management teams provided written consent for the study to take place in the critical care units (see Annexure A2).

Once written consent was obtained to enter the critical care units, the researcher developed flyers and invitations that were displayed in the tearooms of the respective critical care units (see Annexure B2). The flyers created awareness among the nurses working in the critical care units of the planned research in their unit. The same powerpoint presentation was presented to the nurses working in the critical care units at each hospital, on two separate dates to ensure that all the nurses working both day and night shift had the opportunity to attend the presentations at a time that suited them.

During these sessions the researcher invited the nurses to participate as internal facilitators in their unit for the duration of the study activities. The aim of recruiting internal facilitators was briefly discussed with them. Those who indicated that they would voluntarily participate provided their names and contact details to the researcher. The researcher purposively selected four (4) internal facilitators from each critical care unit who met

the eligibility criteria described in Section 5.5.1.1 to participate and invited them to the induction session described in Section 6.2.2.

### 6.2.2. Induction of internal facilitators

The successful implementation of evidence in clinical practice is dependent on the factors outlined in the i-PARiHS framework. A major concept of the i-PARiHS framework is the act of facilitation. To facilitate the process of implementation and promote a person-centred approach, internal facilitators were used. The internal facilitators were nurses who were working in the purposively selected critical care units and met the inclusion criteria (see Chapter 5), and voluntarily agreed to participate in the study.

A total of eight (8) internal facilitators were selected, four (4) Proteas and four (4) Daisies. The internal facilitators received a participant information and consent document to complete at the commencement of the activities (see Annexure C1). Table 6.2 lists the internal facilitators' characteristics.

**Table 6.2: Internal facilitators' characteristics**

Characteristics	Number of participants
Registered nurse – Critical care qualified	7
Registered nurse – Critical care experienced	1
Less than 3 years' critical care experience	0
More than 3 years' critical care experience	8

**Table 6.2: Internal facilitators’ characteristics**

<b>Highest qualification</b>	
Master’s degree	1
Diploma Critical Care Nursing	7
<b>Age</b>	
25-34	3
35-44	2
45-54	3
<b>Gender</b>	
Male	1
Female	7
<b>TOTAL</b>	<b>8</b>

The demographic characteristics of the eight internal facilitators is presented in Table 6.2. The participants who volunteered to become internal facilitators completed the participant information and consent documents (see Annexure C1). All the participants were registered nurses. Of the participants, 88% (n=7) had obtained an additional

qualification in critical care nursing and 12% (n=1) had obtained a master's degree in nursing education and management. One internal facilitator had enrolled to commence in the Diploma Critical Care Nursing in 2019 (n=1) but had more than 3 years' experience in the critical care environment.

Of the participants, 100% (n=8) had over 3 years' critical care experience. The age distribution of the internal facilitators indicated that 38% (n=3) were aged 25-34; 24% (n=2) were aged 35-44, and 38% (n=3) were aged 45-54. Of the participants, 87% (n=7) were females and 13% (n=1) was male. In 2017, the SANC (2018:np) found that nursing in South Africa was still a female-dominated profession, with only 9.86% of nurses registered or enrolled with the SANC being male.

To recognise the internal facilitators as pioneers in their field, they were inducted into the 'Order of Change'. Each facilitator received a certificate indicating their 'membership' and commitment to improving evidence-based practice and patient outcomes (see Annexure C8). Figure 6.3 is a photograph of the certificates prior to distributing them to the Proteas. In addition to the certificates, each internal facilitator also received a 'goody bag' which contained a blank book to be used as a reflective diary, coloured pens and pencils, fun ink stamps and some sugary treats to get them going (see Figure 6.4).

During the induction sessions, the researcher devoted time to role clarification, setting of ground rules and the clarification of values and beliefs. The researcher asked the internal facilitators to select a pseudonym for their group which would be used to refer to them in the research documentation. The internal facilitators of the intervention group (Hospital A) selected the name '*Proteas*' and the internal facilitators from the control group (Hospital B) selected the name '*Daisies*'.



**Figure 6.3: The ‘Order of Change’ certificates**



**Figure 6.4: ‘Goody bags’ for internal facilitators**

#### **6.2.2.1. Role clarification**

The researcher revisited the purpose of the study to ensure that the internal facilitators had a clear understanding of the scope of the study. Person-centred approaches require the clarification of roles and responsibilities to be discussed and documented as part of the facilitation process for the implementation of evidence into practice (Brink, Van der Walt & Van Rensburg 2018:19; Rycroft-Malone, Burton, Wilkinson, Harvey, McCormack, Baker et al. 2016:2; Eikeland 2015:381).

The researcher explained her role as external facilitator to the group. The internal facilitators agreed that they understand the role of the

researcher as external facilitator and support. The researcher referred the internal facilitators to the Participant Information and Consent Document (see Annexure C1) which outlines the responsibilities of the internal facilitators for the duration of the study. The internal facilitators were granted 10 minutes to read and discuss the roles and responsibilities outlined in the PICD and to make suggestions for changes. No changes were made, and the internal facilitators agreed to the roles and responsibilities described in the PICD. The internal facilitators then signed the PICD which was collected for safe keeping by the researcher. The key concepts related to the facilitators required during this study are discussed in Section 1.7.1.

#### **6.2.2.2. Ground rules**

The researcher explained the purpose of the session was to generate ideas related to the implementation of the clinical pathway for NIV in the critical care units. The researcher reminded the internal facilitators that this session requires the input and participation of each member to provide valuable insight related to the utilisation of NIV. Ground rules are required to ensure that each member of the group can participate fully without fear of prejudice. The collaborative selection of ground rules allows the group to define their expectations regarding their roles in the group as well as the role of the external facilitator (Liamputtong 2011:47; Wellington 2010:33).

The researcher asked the internal facilitators to provide examples of ground rules for the session. The researcher asked a participant to volunteer to write down the suggested ground rules on the white board. One of the internal facilitators was nominated by the group to record the ground rules as she had the most legible handwriting. The suggested ground rules were written down on the white board and the group were allowed time to discuss each ground rule. After a period of 15 minutes the group agreed that the ground rules must be formalised and would be carried through to each consecutive focus group session to ensure fair and free participation from everyone. The ground rules

were printed and placed on the noticeboard for the duration of the session (see Annexure C2). The researcher also provided each internal facilitator with a hard copy of the ground rules to keep with them.

### **6.2.2.3. Values and beliefs exercise with internal facilitators**

After concluding the ground rules, the researcher engaged the internal facilitators in an exercise to clarify their values and beliefs. Dewing, McCormack and Titchen (2014:17) state that the clarification of individual values and beliefs in the clinical setting influences individuals' attitudes and behaviour and that it cannot simply be assumed that individuals who share the same work environment automatically share the same beliefs related to practice.

This is consistent with the views of McCormack and McCance (2017:40; 65) and Manley, O'Keefe, Jackson, Pearce and Smith (2014:2). For this reason, the researcher conducted a session with the internal facilitators during the first formal meeting to establish their individual perceptions of evidence-based practice.

The aim of the session was to determine and document a shared goal and objectives related to the implementation of the clinical pathway for NIV in the critical care unit (Cheng et al 2017:5104; Manley et al 2014:2). The researcher provided the internal facilitators with coloured paper, pens and crayons.

The researcher explained that all nurses were unique and had their own values and beliefs that made them invaluable as a team. The internal facilitators were asked to quietly write down their answers to each of the questions projected on the board and were reminded that there were no 'right or wrong' answers.

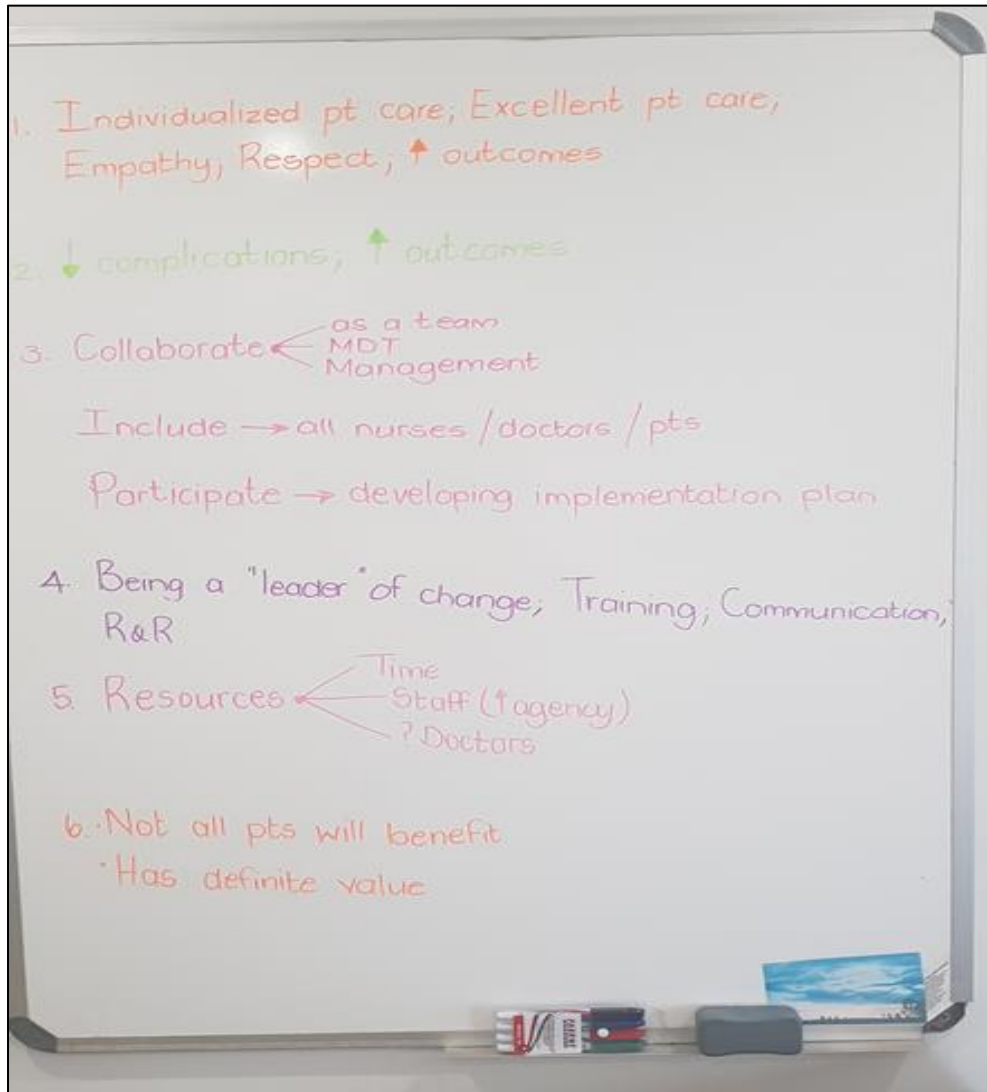
The internal facilitators were asked to write down one answer per sheet of paper, and to turn the page over when done. The questions used to facilitate the session were adopted from Dewing et al. (2014:20) as follows:

- I believe the ultimate purpose of person-centred care is ...
- I believe the ultimate purpose of implementing the clinical pathway for NIV is ...
- I believe this purpose can be achieved by ...
- I believe the factors that enable this purpose to be achieved are ...
- I believe the factors that inhibit/constrain this purpose to be achieved are ...
- Other values and beliefs that I hold to be true about non-invasive ventilation...

The group was allowed 10 minutes to write down their answers. After completion, the researcher asked the internal facilitators to share their answers with the group. The questions were projected on the white board again, one-by-one.

The internal facilitators were asked to stick their answers on the board. They then had time to discuss and communicate their contributions with each other and to reflect on the meaning of their answers. The researcher asked the internal facilitators to 'group together' the answers they thought were similar or had a similar theme. The findings from this session is listed in Table 6.3. Figure 6.5 is a photo of the white board notes made during the session (also see Annexure C3).





**Figure 6.5: Values and beliefs exercise with Proteas and Daisies**

The researcher analysed the data collected during this session and identified themes, sub-themes and categories. A summary of the findings is presented in Table 6.3.

**Table 6.3 Common themes related to values & beliefs**

Question	Themes	Number of participants	Included in agreed Values & Beliefs
1. I believe the ultimate purpose of person-centred care is to...	<ul style="list-style-type: none"> <li>○ Provide excellent patient care with empathy and respect</li> <li>○ Improve the patient's experience in hospital</li> <li>○ To improve patient's discharge outcomes</li> <li>○ To put the patient first in all we do</li> </ul>	8	Yes
2. I believe the ultimate purpose of implementing the clinical pathway for NIV is to ...	<ul style="list-style-type: none"> <li>○ To improve patient outcomes</li> <li>○ Reduce ventilator complications</li> </ul>	8	Yes
3. I believe this purpose can be achieved by ...	<ul style="list-style-type: none"> <li>○ Collaboration as a team and with members of the multidisciplinary team</li> <li>○ Inclusion of all the nurses in the critical care unit</li> <li>○ Participation in the study and developing of an implementation plan</li> </ul>	8	Yes

**Table 6.3 Common themes related to values & beliefs**

Question	Themes	Number of participants	Included in agreed Values & Beliefs
4. I believe the factors that enable this purpose to be achieved are ...	<ul style="list-style-type: none"> <li>○ Being a 'leader' of change</li> <li>○ Communication must be clear</li> <li>○ Training</li> <li>○ Teamwork</li> <li>○ Reward &amp; recognition</li> <li>○ Support from management</li> </ul>	8	Yes
5. I believe the factors that inhibit/constrain this purpose to be achieved are ...	<ul style="list-style-type: none"> <li>○ Lack of time to participate and complete research activities</li> <li>○ Lack of knowledge – agency staff might need training</li> <li>○ Some doctors might not agree</li> </ul>	8	Yes
6. Other values and beliefs that I hold to be true about non-invasive ventilation are...	<ul style="list-style-type: none"> <li>○ Might not be suitable for all patients with respiratory failure</li> <li>○ Has definite value in the critical care unit, e.g. palliative care</li> </ul>	8	Yes

Table 6.3 provided a summary of the main themes that were identified during the Values & Beliefs exercise conducted with the internal facilitators. The researcher printed a copy of the Values and Beliefs poster for each of the internal facilitators to keep, as well as a copy for them to display on the noticeboard in the critical care unit's tearoom. The aim is to provide a visual reminder of their valuable contributions to nursing practice and improving patient outcomes in the critical care unit.

From this session it was clear that the internal facilitators felt that the implementation of evidence-based practice at the bedside was crucial to improving patient outcomes in the critical care setting. However, they anticipated some barriers to the implementation process, mostly related to ineffective communication within and amongst the members of the multidisciplinary team. Although they anticipated the possible barriers to implementation, they felt that the implementation of the clinical pathway could be achieved through collaboration, enhanced communication and improved knowledge about NIV and the benefits of NIV in the critical care unit. A summary of the barriers and solutions is presented in Table 6.5.

The outcome of the session was reflected in the documented values and beliefs of the internal facilitators as provided in Annexure C3. The group seemed to have reached an awareness that they were all vital to the improvement of patient outcomes and that they shared similar values and beliefs that made them a team. The group was allowed a 15-minute tea break during which the discussion continued amongst themselves. Following the tea break, the researcher discussed the next steps in the study, namely the administration of the Context Assessment Index (CAI) questionnaire with the internal facilitators. The group agreed that the CAI questionnaires should be distributed to the nurses in the critical care units and the completed questionnaires returned to the researcher within one week for analysis. The researcher agreed to schedule a feedback session to discuss the findings with the internal facilitators as soon as the results were collated. The session was concluded and adjourned.

### **6.3. DATA COLLECTION PHASE 1 - OBJECTIVE 1: Assess unit culture and context to identify barriers and enablers to implementation of the clinical pathway for NIV in the critical care unit**

The first objective was done in collaboration with the internal facilitators, who assisted in data collection. The internal facilitators assisted the researcher (external facilitator) in distributing the Context Assessment Index (CAI) questionnaires to the nurses working in the purposively selected critical care units (see Annexure C4).

The researcher provided fifteen (15) CAI questionnaires to the internal facilitators in the intervention group (Proteas) and fifteen (15) questionnaires to the control group (Daisies). CAI questionnaires for the Proteas were printed on blue paper and those for the Daisies printed on green paper. The researcher labelled the questionnaires for each of the groups as A1, A2, A3, etc. for the Proteas and B1, B2, B3, etc. for the Daisies. The responses to each of the 37 items on the questionnaire was tabulated on an Excel spreadsheet. The analysis and interpretation of the CAI questionnaires was done as per the guidelines from the authors (see Annexure C5).

The intervention group (Proteas) returned thirteen (13) completed questionnaires which constitutes a return rate of 87%. The control group (Daisies) returned ten (10) completed CAI questionnaires – a rate of 77%. An overall return rate of 82% was observed with the highest return rate from the intervention group. Tourangeau (2018:169) points out that the response rate to surveys is impacted by respondents' comprehension of the questions. The researcher's presence in the critical care unit provided an opportunity for the participants to clarify any misconceptions, which might have contributed to the higher response rate. According to Fryrear (2015:online), internal questionnaires among employees generate a higher response rate of 30-40% while external surveys generally yield a response rate of around 10-15%.

In researcher's opinion, the higher return rate from the Proteas (intervention group) was due to my increased presence and visibility at the intervention site compared to the limited contact with the control group. The higher response rate from the Proteas could indicate a deep desire for change: the participants (nurses) wanted to feel valued and that their expertise and opinions mattered and made a difference to the outcomes of the patients in their unit.

A summary of the demographic characteristics of the nurses who completed the CAI questionnaires is provided in Table 6.4.

**Table 6.4 Characteristics of CAI participants per Hospital**

Characteristics	Proteas	Daisies	Total
Registered Nurse: Critical Care Qualified	4	5	9
Registered Nurse: General	9	5	14
<b>TOTAL QUESTIONNAIRES</b>	<b>13</b>	<b>10</b>	<b>23</b>
Less than 3 years' critical care experience	5	1	6
More than 3 years' critical care experience	8	9	17
Highest qualification: Master of Nursing Science * In addition to Registered Nurse Critical Care Qualified	1*	0	
Highest qualification: Registered Nurse Critical Care Qualified (Diploma)	4	5	9
Highest qualification: Registered Nurse General	9	5	14
Age group 25-24	2	3	5

**Table 6.4 Characteristics of CAI participants per Hospital**

Characteristics	Proteas	Daisies	Total
Age group 35-44	8	5	13
Age group 45-54	3	2	5
Gender – Female	12	7	19
Gender - Male	1	3	4

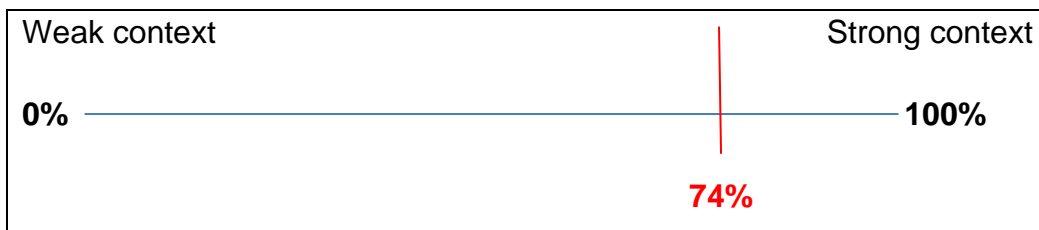
The demographic profile of the participants who completed the CAI questionnaire in Phase 1 of the study is presented in Table 6.4. Of the participants, 39% (n=9) had obtained an additional qualification in critical care nursing and 4% (n=1) had obtained a master’s degree in nursing education and management, whereas 61% (n=14) had a basic qualification as a Registered Nurse. This data supports the findings of the South African Nursing Council (SANC 2018:1-39) that there is a lack of critical care qualified nurses in the country (see Chapter 2).

Of the participants, 74% (n=17) had over 3 years’ critical care experience and 26% (n=6) had less than 3 years’ critical care experience. Of the participants, 57% (n=13) were aged 35-44; 22% (n=5) were aged 45-54, and 21% (n=5) were aged 25-34. The gender distribution of the participants is supportive of the findings of the South African Nursing Council (SANC 2018:np), that nursing in South Africa was still a female-dominated profession, with only 9.86% of nurses registered or enrolled with the SANC being male. Of the participants, 83% (n=19) were female and 17% (n=2) were male.

The data collected from the CAI questionnaires was analysed and interpreted by the researcher as described in the guidelines provided by the authors. The findings were validated by the researcher’s supervisors.

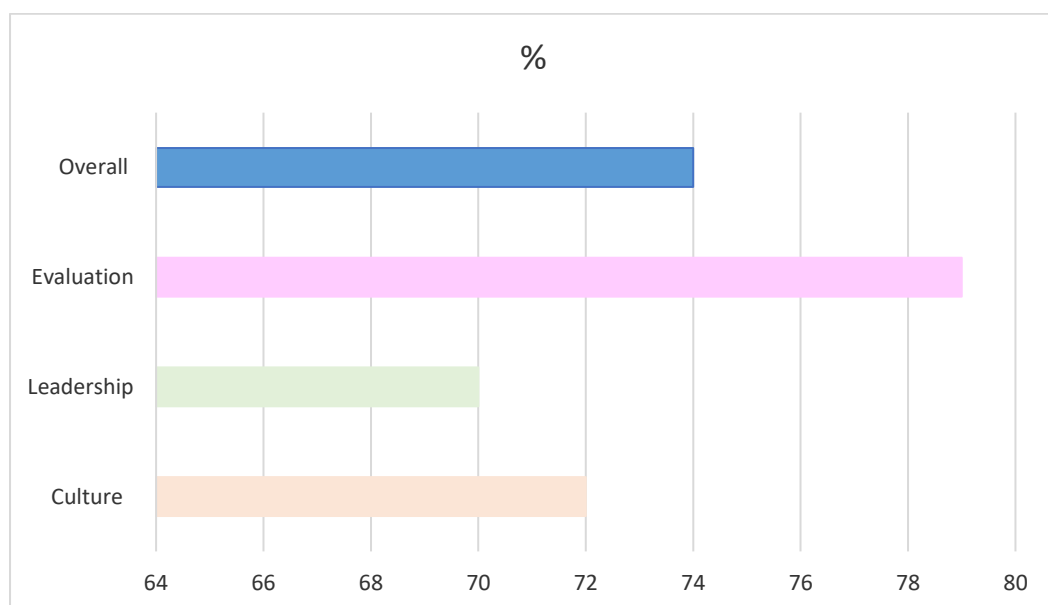
### 6.3.1. Proteas – Intervention Group

The internal facilitators distributed a total of fifteen (15) CAI questionnaires in the critical care unit. A total of thirteen (13) completed questionnaires were returned for analysis to the researcher. The overall context score for the Proteas was 74%. This indicated a strong context and that the setting was receptive to change and innovation (see Figure 6.6).



**Figure 6.6: Analysis of the Proteas' CAI**

As seen in Figure 6.6 there is a strong context present in the intervention group (Hospital A). The analysis of the individual elements of the CAI questionnaire is presented in Figure 6.7.



**Figure 6.7: Elements of the CAI - Proteas (intervention group)**



The individual elements of the CAI questionnaire are depicted in Figure 6.7. A discussion related to each element is provided in the section that follows.

The element of culture scored a total of 72%. This indicated a high sense of community amongst the nurses working in the critical care unit. As a team they prescribed to the same values and beliefs and held strongly to their beliefs on patient care and nursing practice. As a team they shared the belief that the patient was ultimately the centre of their work, and they always needed to provide the best possible care to the patient. The patient satisfaction scores for this unit reflected this, as the latest patient satisfaction report indicated an 85% overall satisfaction score (the Hospital Group, 2018). A high cultural score equated to a sense of cohesion within the group, which meant that they could influence each other's actions to improve their practice and become evidence based. A high scoring culture element indicated that the participants perceived the boundaries of practice to be clearly defined, transparent and appropriate. However, the impact of perceived authority figures, such as the attending physician, influenced their ability to change practice, as was evident from the lower leadership score. The individual CAI questionnaires revealed that some nurses felt undervalued as members of the critical care team.

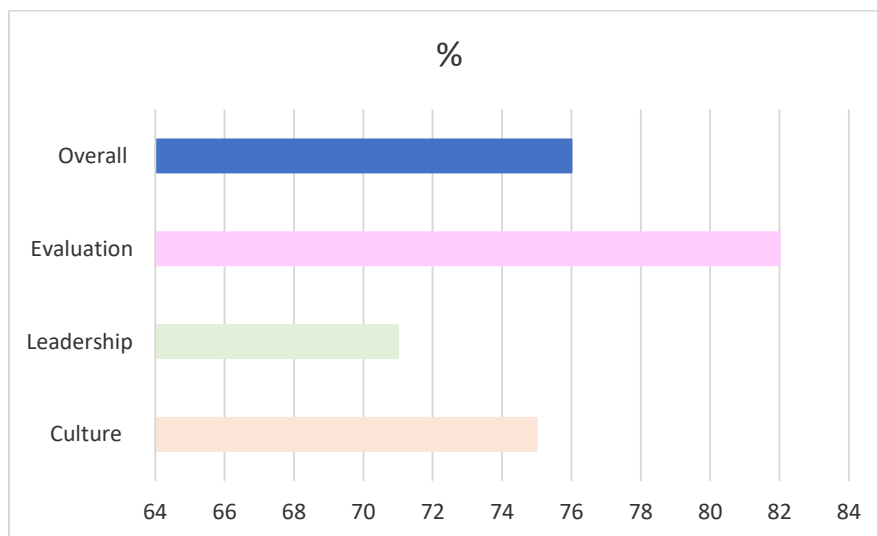
Leadership was related to the participants' perceptions of their nurse leaders and the organizational leadership structures. The overall leadership score for the Proteas was 69%. This was an indication that the participants perceived their leaders as somewhat traditional. The leadership was available to them for support, but the leaders were also subject to the influence of perceived authority figures and would tailor their decisions to protect the vulnerable relationships with physicians. The participants perceived this as a barrier to the implementation of research evidence in the clinical setting. This point was raised during a focus group session (see Section 6.3.3).

Evaluation of team performance and feedback on team performance was vital to provide a starting point for quality improvement. From the

CAI questionnaires, evaluation was a large part of clinical practice in Hospital A, with a score of 79%. This indicated that the participants felt that the organisational structures and feedback systems were appropriate and effective. Nurse leaders provide continuous feedback to the nursing teams related to their performance based on the Group targets and indicators.

### 6.3.2. Daisies – Control Group

The results from the CAI questionnaire conducted in Hospital B (control group), mirrored the perceptions of the participants in the intervention group (see Figure 6.8).



**Figure 6.8: Elements of the CAI - Daisies (control group)**

As seen in Figure 6.8 the control group participants' perception of their leadership was comparable to that of the intervention group (76%). The score for culture was marginally higher at 75% compared to the intervention group (73%).

In the researcher's view, the positive and consistent feedback from the multidisciplinary team, via the structured bedside rounds and academic rounds in the unit, contributed to the higher culture (75%) and evaluation (82%) score in this critical care unit.

### 6.3.3. Disseminating the CAI results (Focus group sessions)

The results of the CAI questionnaires were presented to the internal facilitators during a focus group session, and they were able to identify the related barriers and enablers to implementation present in their unit. Each internal facilitator also received a printed copy of the results together with the suggested questions to prompt them to examine their teams more closely (see Annexure C5). The internal facilitators were asked to use the reflective diaries provided to them to answer the questions and reflect on the results of the CAI. The internal facilitators were asked to send pictures of their diaries to the researcher via WhatsApp to indicate their progress. The planned focus group sessions with the intervention group related to the CAI questionnaire results are discussed next.

- **Session 1 (7 September 2018)**

On Friday, 7 September 2018, a focus group was planned to discuss the findings of the CAI questionnaires. However, due to operational requirements, the session had to be postponed to the following week. There were several simultaneous new admissions to the unit, and the participants felt that they needed to attend to the patients and that there would be too many interruptions to have a meaningful discussion. The team collaboratively agreed that they would read the literature and have feedback ready for the next session. It was agreed that the group would meet one week later.

- **Session 2 (14 September 2018)**

The aim of this session was to discuss the results of the CAI that was conducted in the critical care unit. The researcher arrived to find a distracted and distraught team in the unit. The tragic loss of a young patient following unsuccessful resuscitation efforts impacted significantly on their ability to focus on the task at hand. This prompted the researcher to postpone the planned activities, and rather spend time with the team to reflect on the events that occurred and allow them to debrief. This was

invaluable in providing the team with feedback and an opportunity to reflect on their actions. The group had coffee and cake and cried together. The researcher felt valued as a confidant for the team, and they felt valued because their needs were acknowledged. The session was rescheduled again.

- **Session 3 (19 September 2018)**

The Proteas contacted the researcher to inform her that they had discussed the results from the CAI amongst themselves but need guidance to interpret some of the items. The researcher met with the Proteas in the unit at approximately 20:30. The discussion related to collaboratively finding methods to overcome the barriers identified from the CAI results. The Proteas agreed that their first strategy to overcoming the ineffective communication in the unit would be to implement a new communication book that would clearly state what the treatment goals for each patient is pertaining to NIV, and that this would be used as a ‘handover’ tool during shift change.

During the session, the researcher pointed out that the clinical pathway for NIV was developed in 2012, and that it would need to be updated to include the latest evidence related to non-invasive ventilation. The researcher explained that this can be achieved through a comprehensive literature review. The researcher asked the internal facilitators to search for appropriate literature related to NIV for discussion during the next focus group session. The unit became unexpectedly busy with post-operative patient admissions. The researcher thanked the team for their participation and left them a tin of biscuits to enjoy once they had settled down for the evening. The internal facilitators agreed that the next meeting would take place within one week.

- **Session 4 (25 September 2018)**

The researcher arrived, ready for a productive session with the Proteas to discuss the plan for adapting and validating the clinical pathway for NIV. The researcher was disappointed to find that most of the staff had been sent home on flexitime and some had taken leave ahead of the

long weekend. The researcher felt frustrated and betrayed at not being informed. The researcher spoke to the unit manager who apologised for neglecting to inform her and another session was rescheduled. The researcher decided that they needed to communicate more clearly and suggested to the unit manager that they create a WhatsApp group to keep the team informed. Consensus was reached with the unit manager, to create WhatsApp group to enhance communication.

- **Session 5 (30 September 2018)**

This session started off by two Proteas informing the researcher that they would no longer be able to participate in the research. One member had received notification that his application to work abroad had been approved and he would be leaving the hospital at the end of the following month. The other member informed the researcher that she had decided not to renew her contract with the hospital and was retiring to move to her children and grandchildren.

However, the remaining participants agreed to continue with the study despite losing two members. The impact of this change meant that follow-up sessions would need to be planned carefully, as they might not all be available at the same time due to shift changes and operational requirements. The Proteas in the intervention group collaboratively agreed that the planned focus group sessions would continue if a minimum of 3 members were present.

During the session the researcher asked the internal facilitators to discuss the barriers and enablers to the implementation of the clinical pathway for NIV in the critical care units. Each of the internal facilitators mentioned what they identified as a possible barrier. One of the Daisies offered to make a list of the barriers on the white board so that the groups can compare their critical care units.

Once the barriers were listed, the groups indicated what is present in their unit, as per Table 6.5. The researcher asked the internal facilitators

to describe how they plan to overcome the barriers to implementation in their units.

Table 6.5 is a summary of the barriers identified in both the intervention group (Proteas) and the control group (Daisies), the possible solutions provided by the internal facilitators as well as the effectiveness of the solutions.

**Table 6.5: Summary of the barriers and possible solutions**

Barrier	Proteas	Daisies	Solution	Effectiveness
<p>Authoritarian physician</p> <p>The physician in Hospital A made it clear that she is not interested in participating in any research activities in the unit, and that the researcher was not ‘welcome’ in the critical care unit.</p>	Yes	No	The external facilitator (researcher) scheduled visits after the daily patient round had been completed to avoid conflict situations in the unit.	Although the researcher avoided causing conflict by being present in the unit during doctor’s rounds, the internal facilitators didn’t feel comfortable in discussing NIV as a treatment option with her.
<p>Scheduling of internal facilitators makes it difficult for all to attend the focus group at the same time – some work night shift and others are away on leave</p>	Yes	Yes	<p>Ground rules were set and agreed.</p> <p>The group would continue activities if 3 of the 4 members were present. The researcher would schedule visits to suit the availability of the internal facilitators.</p>	The researcher had to schedule individual sessions when the internal facilitators were on-duty, which proved effective.

**Table 6.5: Summary of the barriers and possible solutions**

Barrier	Proteas	Daisies	Solution	Effectiveness
Having focus group meetings during on-duty time in the unit is counterproductive – too many interruptions	Yes	Not applicable	Planned sessions were conducted off-site at the agreed venue to facilitate meaningful participation.	This action was effective in providing time for meaningful engagement with the internal facilitators.
Access to literature is difficult – not everyone has access to the internet and data costs are expensive	Yes	Yes	The researcher provided her laptop and data to enable the search for literature. Articles were printed and distributed to the internal facilitators to read.	This was effective in providing access to information to the internal facilitators.
Critical appraisal of research literature is not known to all the internal facilitators	Yes	Yes	The researcher devoted time during the session to assist and coach internal facilitators to critically search and appraise literature.	This was effective – the internal facilitators gained valuable knowledge and skills to assist them with finding appropriate literature.



Table 6.5 provides a summary of the barriers to implementing the clinical pathway for NIV in the critical care unit that were identified in collaboration with the internal facilitators and from the results of the CAI questionnaire. The agreed solutions are also included.

The internal facilitators also identified enablers to the implementation of the clinical pathway for NIV in the critical care unit. The enablers to implementing the clinical pathway for NIV in the critical care unit were:

- Supportive nurse manager and unit manager
- Unrestricted access to the researcher (external facilitator)
- Knowledge of NIV and the clinical pathway for NIV
- Readiness for change – the internal facilitators were enthusiastic about the possibility to change current practice to improve patient outcomes

- **Session 6 (13 October 2018)**

There was a two-week break after the last session with the Proteas. The researcher arrived at the critical care unit to find one patient invasively ventilated. This patient had a poor prognosis and was not expected to survive. The patient was regularly admitted to the critical care unit for exacerbations of COPD, and well known to the nurses and the physician. The internal facilitator on duty expressed her frustration with this. She informed the researcher that the patient had end-stage COPD and had been admitted via the Emergency Department (ED) the night before. The doctor on duty was not familiar with the patient and decided to intubate the patient and admit him to the critical care unit. The internal facilitator felt that the admitting doctor in the ED did not take the time to properly assess the patient or speak to the family members before intubating him. She felt that this caused undue stress for the patient and the family because they were now “...forced to watch the patient die on a ventilator, heavily sedated and unable to say a final goodbye”. The internal facilitator stated that she believed this patient and his family would have benefitted from NIV even if it was purely palliative. The

researcher and internal facilitators discussed the reasons for not initiating NIV for this patient. Consensus was reached that the possible lack of knowledge of the ED doctor and ED nurses regarding NIV contributed to the patient being intubated.

The next step was to review, adapt and validate the clinical pathway for NIV as discussed in Section 6.4.

#### **6.4. DATA COLLECTION PHASE 1 – OBJECTIVE 2: Adapt and validate the clinical pathway for NIV**

The aim of objective 2 was to review, adapt and validate the clinical pathway for NIV that was developed in 2012 (Balfour et al 2012:107-114) to include the latest relevant evidence and to validate the adapted clinical pathway prior to implementation in the critical care unit. The activities to address objective 2 are discussed next.

- **Session 7 (20 October 2018)**

The researcher planned to visit the units to discuss the process of adapting the clinical pathway. The Protea on duty informed her that the unit occupancy was currently at 97% but none of the patients required ventilator support. Most of the patients were ready for discharge to the general ward that day, which meant that the unit might be closed, and the staff sent home for the rest of the weekend. Accordingly, consensus was reached between the Proteas and the researcher to reschedule the session for 27 October 2018.

The researcher then visited the Daisies, who indicated that they would participate in the next session, as they were unable to spend time on the research activities due to high occupancy numbers in the unit.

- **Session 8 (27 October 2018)**

This session was aimed at discussing the process of adapting the existing clinical pathway for NIV. The unit manager informed the researcher that staffing the unit to maintain safe staffing levels and patient safety was becoming more challenging. She only had three critical care trained nurses employed at that time and four 12-hour shifts to cover. Legally, she needed to ensure that each shift was covered with at least one critical care trained nurse. This meant that focus group activities might be impacted, because her nurses were now split – one per shift. She volunteered to participate as an internal facilitator to ensure that there were at least two internal facilitators on duty during the day shift. The researcher assured her that this was most appreciated.

The focus group session was commenced by the researcher, who explained the aim of the session was to adapt the clinical pathway for NIV to include the most recent research evidence related to NIV. The researcher explained that this requires a thorough literature search to be done. She explained to the internal facilitators that they will be required to search for and read research articles related to NIV that are no more than five (5) years old, and that reputable databases such as PubMed should be used. The internal facilitators seemed distressed and the researcher enquired as to why.

One of the barriers identified by the internal facilitators was the lack of time to access research literature and critically appraise the content. The Proteas and Daisies indicated that they have no access to the internet at work and would not be able to search for literature. The researcher offered to make her laptop available for use to allow them to search for literature. However, the trade-off would be that the group sessions will likely last longer than originally agreed. The internal facilitators also informed the researcher that they don't know where to start searching for literature. To assist the internal facilitators in finding the most recent and relevant research data, the researcher provided them with a method for extracting the relevant literature. Table 6.6 presents an example of a criteria table that assisted them in finding appropriate literature.

**Table 6.6 Criteria for literature search**

Criteria	Include	Justification
Language	English only	No time to translate
Publication status	Full text only Electronically available Grey literature	Potential bias from abstracts No time for integrative literature review Greater depth, less publication bias
Publication date	Published after 2012	Increased clinical relevance Reduce evidence to manageable load
Geographical location	Western context	Increase clinical relevance

Table 6.6 is an example of the criteria collaboratively identified and agreed with the internal facilitators that would guide the literature search. Time was allocated to discuss the relevant criteria for finding appropriate literature. The Proteas and Daisies collaboratively decided that the format of the clinical pathway for NIV would guide their search. The literature search would start with criteria for assessment, planning, implementation and evaluation of NIV. The group discussed and agreed on the content that should be searched and developed a data extraction table based on the discussion (see Figure 6.9). Annexure D2 provides the complete data extraction table used by the internal facilitators. This method was consistent with the methods prescribed in a work procedure for updating current work procedure documents within

the Hospital Group. However, it was not facilitated at unit level and therefore not utilised in the clinical setting.

Data extraction table for NIV literature											
Component	Specific interventions	Articles									
		Zhu <i>et al.</i> (2016)	Burns <i>et al.</i> (2014)	Cross (2012)	Denecke <i>et al.</i> (2012)	Laird <i>et al.</i> (2015)	Mas <i>et al.</i> (2015)	Peng <i>et al.</i> (2016)	Lindenhauer (2015)	Rankin <i>et al.</i> (2015)	
<b>Assessment data</b>											
Vital data (HR, SpO <sub>2</sub> , BP)	Parameters to consider			x							
Arterial Blood gas values	Hypoxia / Hypercapnia	x	x	x			x	x	x		
Chest X-ray	Is it necessary?										
Indications	Who is a good candidate?	x	x				x	x	x		
Contra-indications	Who should never get NIV		x	x				x			
<b>Planning</b>											
Predictors of failure				x				x		x	
<b>Implementation</b>											
Predictors of success			x						x		
<b>Evaluation / Monitoring</b>											
Patient outcomes					x	x		x	x		
Cost implications								x			
<b>Patient-centered care</b>											
Clinical pathways					x					x	

**Figure 6.9: Example of a data extraction table**

The data extraction table utilised by the internal facilitators for the literature search is depicted in Figure 6.9. The internal facilitators agreed that they would each find and read a minimum of five relevant research articles and provide feedback within one week. The researcher also provided each of them with a hard copy article to read that would be discussed during the next session.

- **Session 9 (6 November 2018)**

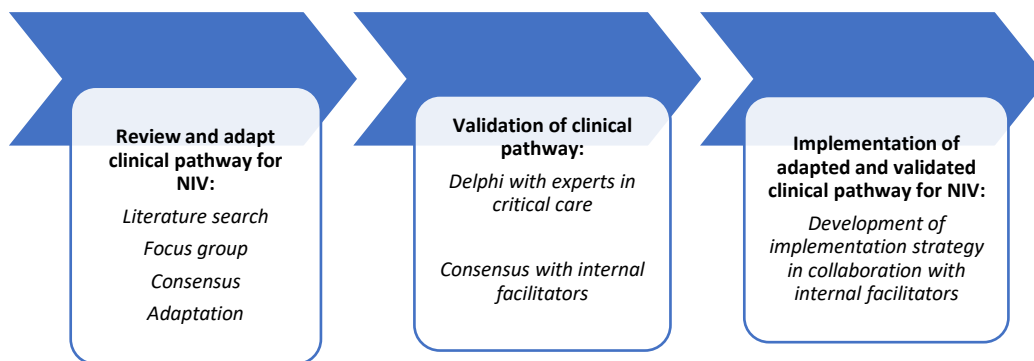
Unit activities in the Proteas' hospital had declined significantly since the physician had taken leave, and high acuity patients were referred to the nearest available physicians. The patients who required ventilator assistance were referred to the nearest critical care unit where there was a full-time physician available. The fact that most patients had depleted their medical aid funds by this time of year significantly contributed to the lower activity levels in all private sector hospitals at this time. The researcher's visit was merely a courtesy visit to avoid a loss of interest from the internal

facilitators. The internal facilitators agreed that they would continue with the literature search and provide feedback during the next sessions.

#### 6.4.1. Reviewing the existing clinical pathway for NIV

The process for the review of the clinical pathway for NIV was collaboratively agreed between the internal facilitators and the external facilitator (researcher). A literature search was conducted based on the criteria and key words agreed during the previous group session with the internal facilitators as per the data extraction table presented in Figure 6.9. The internal facilitators agreed to review the content of the literature and provide feedback. The process for reviewing and adapting the clinical pathway is presented in Figure 6.10.

**Figure 6.10: Clinical pathway adaptation process**



Non-invasive ventilation refers to the delivery of assisted breaths and positive airway pressure without the necessity of an invasive endotracheal tube (Bersten & Handy 2019:483; Lumb 2016:452). Oxygen is delivered under positive pressure to the patient via a facemask that forms an airtight seal around the face. Figure 6.11 illustrates an example of the NIV mask used in South Africa.



**Figure 6.11: NIV facemask (Source: Armstrong Medical <https://www.armstrongmedical.net/product/universal-face-mask/#productcodes>)**

Figure 6.11 is an example of the NIV mask typically utilised in the critical care units in South Africa. The absence of an artificial airway preserves the functions of the upper respiratory tract, the cough reflex, speech and swallowing (Toft-Petersen, Torp-Pedersen, Weinreich & Rasmussen 2017; Popat & Jones 2016:347; Cross 2012:35; Penuelas, Frutos-Vivar & Esteban 2007:1211).

Non-invasive ventilation brings about the same physiological improvements as invasive mechanical ventilation, without the necessity of an endotracheal tube. Non-invasive ventilation has been found beneficial for patients with acute respiratory failure as the work of breathing is reduced and muscle fatigue relieved through the addition of positive pressure. Utilising positive pressure facilitates the inflation of the lungs, improved alveolar ventilation, unloading of respiratory muscles, improved tidal volumes, improved carbon dioxide clearance and reversal of acidaemia (Bersten & Handy 2019:484; Rochweg, Brochard, Elliott, Hess et al 2017:6; Toft-Petersen, Torp-Pedersen, Weinreich & Rasmussen 2017; Popat & Jones 2016:347; Cross 2012:35; Rose 2012:6).

Positive end expiratory pressure can be added during non-invasive ventilation to improve functional residual capacity, oxygenation and to recruit collapsed alveoli. The increased intrathoracic pressure may improve cardiac output by reducing myocardial workload and oxygen consumption, reduced venous return and improved ventricular preload and afterload (Bersten & Handy 2019:484; Toft-Petersen et al 2017; Popat & Jones 2016:347; Cross 2012:35; Rose 2014:6). Because of these physiological benefits, NIV is now considered the first-line treatment for patients with acute exacerbations of chronic obstructive pulmonary disease (COPD) and acute cardiogenic pulmonary oedema (Bersten & Handy 2019:486; Popat & Jones 2016:346; Lindenauer, Stefan, Shieh, Pekow, Rothberg & Nicholas 2015:403; Mas & Masip 2014:837).

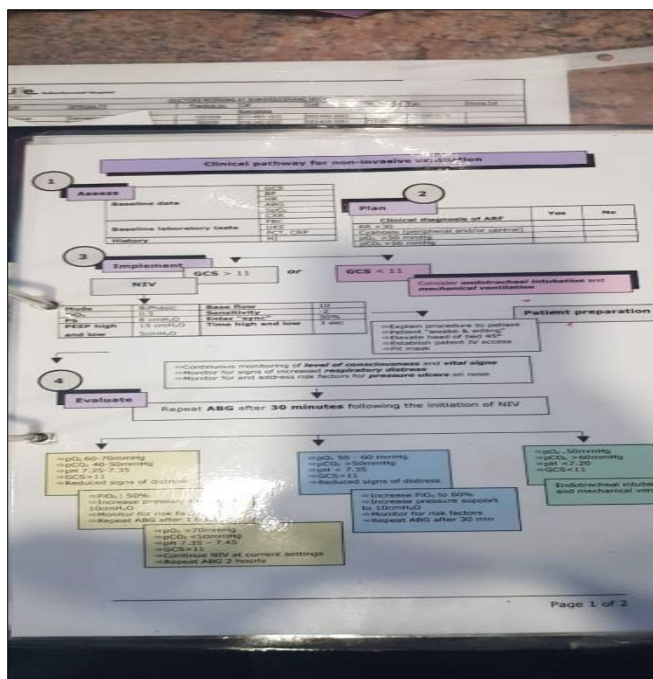
The timely application of NIV reduces the need for endotracheal intubation and reduces the mortality rate (Peng et al 2016:2; Zhu, Huang, Wei & Shi 2016:1; Digby et al 2015:334). For these reasons, the use of invasive mechanical ventilation has become less favoured, and the applications of NIV have expanded significantly (Bersten & Handy 2019: 486; Brochard, Adler, Cordioli & Akoumianaki 2016:1778; Mas & Masip 2014:837; Walkey & Wiener 2013:14; Rose 2012:6). Although NIV minimises the risks of airway injuries, ventilator-acquired pneumonia, and prolonged hospitalisation, the specific indications and contra-indications for NIV should be considered. A comprehensive discussion of the process of updating the clinical pathway for NIV is provided in Section 6.4.

After recognizing the need for an alternative method of mechanical ventilation, Balfour, Coetzee and Heyns (2012) collaborated with the multidisciplinary team to develop an evidence-based clinical pathway for NIV in the critical care unit. Even though the multidisciplinary team collaborated in the development of the clinical pathway for NIV, the implementation of the clinical pathway in practice did not realise as expected. Research evidence supports the use of NIV for patients presenting with ARF of various aetiologies and has proven to reduce the incidence of adverse events, such as ventilator-acquired pneumonia which increases the length of stay.



The average length of stay for a patient who receives invasive mechanical ventilation ranges from 5.6 to 10 days. Internationally, the utilisation of NIV for patients presenting with acute exacerbations of COPD and acute cardiogenic pulmonary oedema has increased by 400%, thereby reducing the incidence of endotracheal intubation by 42%, and ultimately reducing the length of stay and costs of hospitalisation (Popat & Jones 2016:347; Zhu et al. 2016:1; Lindenauer, Stefan, Shieh, Pekow et al. 2015:408; Mas & Masip 2014:837). The lack of a well-documented guideline for implementing NIV beyond patients with acute exacerbations of COPD and cardiogenic pulmonary oedema leads to variability in use, and the benefits of NIV are not reaching the patients (Digby, Keenan, Parker et al. 2015:335; Lindenauer et al. 2015:408; Berkus et al. 2013:313-318; Brochard et al. 2002:719).

The clinical pathway for NIV was developed in 2012 under the assumption that it would be translated into clinical practice by the same multidisciplinary team who developed it, yet this did not realise and the reason for this is currently unknown. The clinical pathway for NIV was intended to address the underutilisation of this mode of ventilation in the South African context, to enable effective collaboration of the multidisciplinary team and critical care nurses to provide evidence-based care to qualifying patients. Manley, McCormack and Wilson (2008) found that the chances of implementation of evidence is greatly enhanced when there is multidisciplinary collaboration and expert facilitation of the process. However, this did not lead to the implementation of the clinical pathway as the researcher had assumed. Although the clinical pathway was included as part of the unit specific protocol and procedures for the management of patients presenting with ARF, this did not enhance the implementation of the clinical pathway at the bedside. The clinical pathway remains a colourful poster in the procedure file (see photograph in Figure 6.12).



**Figure 6.12: Existing clinical pathway for NIV in a critical care unit**

The existing clinical pathway for NIV was found in the critical care unit’s policy and procedure file as depicted in Figure 6.12.

For the initial implementation of the clinical pathway in practice the ‘top-down’ approach that was utilised was ineffective in engaging nurses to actively participate in the implementation, hence it has remained untouched since its development in 2012 (Balfour et al. 2012:107). The utilisation of NIV in the critical care setting has remained unchanged, despite the evidence supporting the use of NIV. Patients are still invasively ventilated and suffer the consequences such as VAP and prolonged hospitalisation.

On average, an invasively ventilated patient has an ICU stay of 5.6 to 11 days (Source: The Hospital Group). The implementation of the clinical pathway for NIV would reduce the complication rates associated with VAP and therefore optimise operational efficiencies, and patient outcomes in the critical care unit (Kneyber, de Luca, Calderini,

Jarreau et al. 2017:1766; Popat & Jones 2016:346; Mas & Masip 2014:838; Digby et al. 2015:331; Walkey & Wiener 2013:13).

Table 6.7 presents a summary of the current NIV utilisation trends in South Africa, compared to the European Respiratory Society (ERS) and American Thoracic Society (ATS) 2017 guidelines for the use of NIV.

**Table 6.7 Current NIV utilisation in South Africa**

Disease/Condition	Recommend	Recommend (with caution)	Lack of evidence	South Africa (Private Hospital)	Rationale
Chronic Obstructive Pulmonary Disease (COPD)	X			√	Dependent on doctor preference; limited use
Cardiogenic pulmonary oedema	X				No data to suggest use at intervention site
Immune compromised patients		X		√	Dependent on doctor preference; limited use
Acute asthma			X		

**Table 6.7 Current NIV utilisation in South Africa**

Disease/Condition	Recommend	Recommend (with caution)	Lack of evidence	South Africa ( Private Hospital)	Rationale
De Novo respiratory failure			X		No data available in critical care unit
Post-operative respiratory failure		X		√	Dependent on doctor preference; limited use
Chest trauma (non-penetrating)		X			Dependent on doctor preference; limited use
Post-extubation respiratory failure (rescue ventilation)	X			√	Major indication if patient is not a candidate for re-intubation
Palliative respiratory support	X			√	Only if patient and their family insist and refuse endotracheal intubation

Adopted from ERS & ATS guidelines (2017:np). Source: The Hospital Group (2017)

As seen in Table 6.7 the utilisation of NIV for acute respiratory failure in the South African context is mainly dependent on physician preference.

Clinical pathways are dynamic in nature and need to be reviewed and adapted regularly as new evidence becomes available. Internationally, clinical pathways have been used for decades. For example, the Health Innovation Manchester Foundation is tasked with regular review of existing clinical pathways to ensure that the latest research evidence is included, as well as ensuring that the clinical pathway conforms to national guidelines and service specifications (Lawal, Rotter, Kinsman, Machotta et al. 2016:35). The clinical pathway for NIV was published in 2012, but never implemented (Balfour et al. 2012:107). This meant that the clinical pathway might be outdated in terms of the latest research evidence related to NIV and had to be reviewed. An overview of the process of adapting and verifying the clinical pathway as well as the relevant literature related to NIV are described next.

Translating research evidence into clinical practice presents many challenges (Walsh, Kitson, Cross, Thoms, Moss et al. 2012:75; Kontos & Poland 2009:2; Fineout-Overholt, Melnyck & Schultz 2005:342). Barriers and enablers that impact on the implementation of evidence-based practice need to be identified and addressed (Rankin, Butow, Thein, Robinson et al 2015:28; Majid, Foo, Luyt, Zhang et al 2011:230; Aarons, Hurlburt & McCue Horwitz 2011:13). Simply including the clinical pathway for NIV as part of the unit's protocol and procedures was not insufficient to support implementation of the clinical pathway at the bedside consequently it has remained nothing more than an under-utilised procedure in the file. A new approach to evidence implementation is required, to engage nurses to act. Emancipatory practice development utilises a person-centred approach, which enables nurses to identify and address perceived barriers in the clinical setting and empowers them to change current practice to improve patient outcomes (McConnell et al 2016:39; Laird, McCance, McCormack & Gribben 2015:1455; Brekke, Phillips, Pancake, Lewis & Duke 2009:594).

To validate the relevance of the content of the clinical pathway, the researcher and internal facilitators undertook a thorough literature review. The perceived barriers to implementation mirrored global findings (Stavor, Zedreck-Gonzalez & Hoffmann 2017:57; Cheng, Broome, Feng & Hu 2017:5104). The perceived lack of access to research evidence, lack of time to engage in research-related activities and lack of knowledge to critically appraise research evidence presented a challenge to reviewing and updating the clinical pathway for NIV. Addressing these perceived barriers to implementation, the researcher pre-emptively engaged with the participants at the selected hospitals, and planned activities to address the barriers. Table 6.8 outlines the researcher’s actions to address the barriers to implementation.

**Table 6.8 Mitigating the barriers to implementation**

Perceived barrier	Mitigation
Lack of access to research evidence	Each of the selected hospitals had dedicated computers for nurses to use to access the Internet. Permission was obtained from the management teams to allow the internal facilitators to access the computers to search for academic literature. In addition, the researcher provided printed copies of the literature as well as PDF versions via email to the internal facilitators for review, ahead of the planned focus group sessions.
Lack of time	The researcher negotiated with the hospital management teams to allow the internal facilitators on-duty time to engage in the research activities including the focus group sessions every week as well as time to search for academic literature. The internal facilitators indicated that they would like to engage in the planned focus group sessions in their own time, because there were too many interruptions during the sessions at the hospital and opted for a venue away from the hospital.

**Table 6.8 Mitigating the barriers to implementation**

Perceived barrier	Mitigation
Lack of knowledge	The researcher dedicated time to describe the process of searching for relevant literature as well as how to critically appraise the literature. Following the session, the internal facilitators independently searched for literature and brought their findings to the next session for discussion.

**Adapted from Stavor, Zedreck-Gonzalez and Hoffmann (2017:57) and Cheng, Broome, Feng and Hu (2017:5104)**

Table 6.8 provided a summary of the barriers to implementation of the clinical pathway for NIV in the critical care unit as well as the actions employed to mitigate the barriers.

The researcher had inaccurately assumed that the internal facilitators would be able to search and critically appraise research literature independently. However, this assumption was discredited during the focus group session. It became clear that the internal facilitators needed more guidance to commence the process. Consequently, the researcher dedicated time to facilitating the review process as discussed in the section that follows.

One of the barriers identified by the internal facilitators was a lack of time to access research literature and critically appraise the content as described in Table 6.8. Additionally, access to the computers and internet at work was not always available and they were not provided with enough time to search for the literature as the access to the computers at work was limited to 15 minutes per person. The group decided collaboratively that the researcher would make her laptop available for use to allow them to search for literature. To assist the internal facilitators in finding the most recent and relevant research data,

the researcher provided them with a method for extracting the relevant literature (see Section 6.3). Time was allocated to discuss the relevant criteria for finding appropriate literature. The group discussed and agreed on the content that should be searched and developed a data extraction table based on the discussion. Annexure D2 provides the complete data extraction table used by the internal facilitators.

#### **6.4.2. Adaptation process**

The process of adapting the clinical pathway for NIV is described in this section, and includes data collected from the literature review conducted by the researcher in collaboration with the internal facilitators.

Non-invasive ventilation reduces the risk of complications that inevitably lead to a longer hospitalisation period for the patient. Utilising a person-centred practice development approach might realise the benefits of NIV for the patient, improve multidisciplinary collaboration and improve clinical patient outcomes such as a reduction in mortality rates. Simultaneously, the nurse would be empowered to change current practice by implementing research evidence in clinical practice. In the researcher's view, the effective use of the clinical pathway for NIV for qualifying patients would not only benefit the patient by avoiding the complications of invasive endotracheal ventilation but would also make critical care facilities more cost-effective and available to a larger number of patients.

Since the patient's length of stay in the critical care unit would be reduced, more beds might be available for critically ill patients. The multidisciplinary team, particularly the nurse, would be emancipated from rigid, culture-based practices to embrace innovation and empowered to become truly evidence-based and enhance person-centred patient outcomes (Bersten & Handy 2019:58-65; Laird et al. 2015:1461; Hauck et al. 2012:665; Aarons et al. 2011:13).



- **Session 10 (11 November 2018)**

The session was conducted with the Proteas at the hospital. Three of the internal facilitators were present for the session. During the session, the internal facilitators discussed the literature that they had reviewed related to NIV. A flip chart was used to write down the concepts related to NIV and the clinical pathway, namely assessment, planning, implementation and evaluation. Each concept was written on a separate page. The internal facilitators discussed their findings from the literature under each concept and listed the items that needed to be included under each concept.

Following a discussion of the relevant data, the group reached consensus on the content that should be included in the clinical pathway for NIV. A systematic approach was used based on the nursing process and the elements of the existing clinical pathway for NIV, namely assessment, planning, implementation and evaluation. The findings are presented next.

#### **6.4.2.1. Assessment**

Although NIV is successfully used in a variety of settings for the treatment of patients with acute exacerbations of COPD and acute cardiogenic pulmonary oedema, there has been a sharp increase in the use of NIV for other causes of respiratory failure since 2005 (Rochweg et al. 2017:6; Kneyber, de Luca, Calderini, Jarreau et al. 2017:1766; Popat & Jones 2016:346; Mas & Masip 2014:838). However, the lack of a well-documented guideline for the initiation of NIV leads to under-utilisation of this mode of mechanical ventilation. The lack of consensus on the initiation of NIV for patients beyond exacerbations of COPD and cardiogenic pulmonary oedema also contributes to the reluctance of physicians to initiate NIV for patients with ARF of different aetiologies (Rochweg et al. 2017:6; Kneyber et al. 2017:1766; Popat & Jones 2016:346; Mas & Masip 2014:838; Digby et al. 2015:331; Walkey & Wiener 2013:13). Table 6.9 lists the criteria for each category.

The data on assessment and initiation of NIV was discussed and the internal facilitators collaboratively agreed that no changes were needed to this section of the existing clinical pathway. The existing clinical pathway for NIV includes assessment of the patient for the presence of contra-indications before initiation of NIV (see Annexure D1). Changes to this section of the existing clinical pathway were therefore not required. However, the internal facilitators agreed that contra-indications related to pregnancy and trauma needed to be included (see Annexure D5). Indications for the initiation of NIV are divided into two categories, namely altered gas exchange and bedside observations as per Table 6.9 (Bersten & Handy 2019:484; Ozyilmaz, Nava & Ugurlu 2014:2).

**Table 6.9 Indications for NIV**

Category	Criteria
Altered gas exchange	Acute-on-chronic ventilator failure $\text{PaCO}_2 > 45 \text{ mmHg}$ $\text{pH} < 7.35$ $\text{PaO}_2 / \text{FiO}_2$ ratio $< 200$ (caution advised in hypoxia)
Bedside observations	Moderate to severe dyspnoea Tachypnoea $> 24$ breaths per minute for obstructive diseases and $> 30$ breaths per minute in restrictive diseases Increased work of breathing Accessory muscle use Abdominal paradoxical breathing

**Adapted from Ozyilmaz, Nava and Ugurlu (2014:2)**

Table 6.9 outlined the most recent indications for NIV found (Bersten & Handy 2019:484; Ozyilmaz et al. 2014:2). These indicators were included in the assessment and planning data of the existing pathway for NIV and were comparatively unchanged (see Annexure D1). Therefore, no alterations to this part of the existing clinical pathway were required.

#### **6.4.2.2. Planning**

Contra-indications for the initiation of NIV were found in the literature (Bersten & Handy 2019:486; Mas & Masip 2014:838; Ozyilmaz et al. 2014:2). There is no consensus on what should be considered absolute contra-indications for NIV, as the applications of NIV for ARF of various aetiologies emerge in clinical practice. Absolute contra-indications refer to conditions where the use of NIV is strongly opposed. Relative contra-indications refer to conditions where the use of NIV may be considered, but it is not advised. Table 6.10 presents a list of the absolute and relative contra-indications for the initiation of NIV.

**Table 6.10 Absolute and relative contra-indications for NIV**

Absolute contra-indications	Relative contra-indications
Cardiac or respiratory arrest	Medically unstable (shock, cardiac ischaemia, arrhythmia)
Incomplete mask fit	Altered level of consciousness (GCS <10), agitation
Uncontrolled vomiting or copious upper gastrointestinal bleeding	Inability to protect and maintain airway

**Table 6.10 Absolute and relative contra-indications for NIV**

Absolute contra-indications	Relative contra-indications
Total upper airway obstruction	Airway obstruction and impaired swallowing
Facial trauma	Excessive, unmanageable secretions with high risk of aspiration
Patient refusal	Multiple organ failure
Untreated pneumothorax	Recent facial, upper airway or upper gastrointestinal surgery
Significant haemodynamic instability or acute myocardial infarction	Progressive respiratory failure
Coma	Pregnancy

**Adapted from Bersten and Handy (2019:486) and Mas and Masip (2014:838)**

Table 6.10 outlines what are considered absolute and relative contra-indications for the initiation of NIV (Bersten & Handy 2019:486; Mas & Masip 2014:838) which corresponded to the contra-indications included in the existing clinical pathway for NIV identified by the multidisciplinary team (see Annexure D1). The treatment goals for the individual patient should be taken into consideration before commencing or withholding NIV (Bersten & Handy 2019:484; Rochweg et al. 2017:11; Brochard et al. 2016:1788). The existing clinical pathway for NIV included assessment of the patient for the presence of contra-indications before initiation of NIV (see Annexure D1). Changes to this section of the existing clinical pathway were therefore not required.

### **6.4.2.3. Implementation**

Table 6.11 presents the complications associated with NIV and the potential causes of the complications. The patient requires close observation for any signs of complications that might lead to the failure of NIV and adverse patient outcomes (Lumb 2017:453; Rose 2012:9). Additionally, Bersten and Handy (2019:486) and Terzano et al. (2012:3) found that the greatest risks when utilising NIV included pressure ulcers of the face and gastric inflation. Facial abrasions and injuries occurred due to the pressure exerted by the facemask, particularly on the bridge of the nose and the chin of the patient. This complication can be mitigated by selecting the appropriate size facemask according to the manufacturer's guidelines.

The high pressure of the oxygen delivered to the patient's airway often leads to dryness of the oral and nasal mucosa resulting in nasal congestion and sinus-like headaches. Applying additional humidification reduces the drying of the mucus membranes and alleviates the associated discomfort (Brochard et al 2016:1788). There is general consensus that the final decision to initiate NIV will be made by the attending doctor, and that a thorough assessment of the risk to benefit ratio should guide clinical decision making, as most of the associated complications can be mitigated (Bersten & Handy 2019:486; Lumb 2017:453; Rose 2012:9; Matsumoto, Tomii, Tachikawa, Otsuka, Nagata et al. 2015:71).

**Table 6.11 Complications associated with NIV**

<b>Complication</b>	<b>Possible cause</b>
Pressure ulcers of face and head	Placement of tight- fitting head gear and facial mask
Irritation of the eyes and conjunctivitis Increased intra-ocular pressure	Air leaks around the mask Mostly in patients with glaucoma
Increased intra-cranial pressure	High risk in patients with brain injury
Drying of mucous membranes, nasal congestion and thickening of secretions	High flow of 'dry' medical air and oxygen
Gastric distention, aerophagia	Insufflation of air associated with high flow of air and oxygen
Claustrophobia	Tight fitting mask on face may exacerbate dyspnoea
Aspiration pneumonia	Loss of airway reflexes due to alterations in level of consciousness
Hemodynamic compromise	Increased intrathoracic pressure reduces venous return resulting in hypotension
Pneumothorax	Rare, but related to increased intrathoracic pressure

**Adapted from Bersten and Handy (2019:486), Mas and Masip (2014:838), and Rose (2012:9)**

Table 6.11 outlined the possible complications of NIV. It should be noted that the listed possible complications occur in less than 5% of patients and can be mitigated through close monitoring and preventive measures such as choosing the correct size mask for the patient according to the manufacturer's guidelines, the use of a mild sedative prescribed by the attending doctor and utilisation of humidification to prevent drying of the mucous membranes (Matsumoto, Tomii, Tachikawa, Otsuka, Nagata et al. 2015:71; Beasley, Chien, Douglas, Eastlake et al. 2015:1189).

The decision to initiate or withhold NIV rests with the attending doctor. If the benefits of initiating NIV outweigh the potential risks, it could be considered unethical to withhold NIV from a qualifying patient (Matsumoto, Tomii, Tachikawa, Otsuka, Nagata et al. 2015:71). The possible complications associated with NIV were included in the existing clinical pathway for NIV therefore no changes to this section of the clinical pathway were required.

#### **6.4.2.4. Evaluation**

Successful application of NIV can be defined in terms of the physiological improvements observed in the first 48 hours after initiation of NIV (Lemyze et al. 2014:3). Although there is evidence indicating the success of NIV, recent studies have concluded that the timing of NIV failure impacts greatly on patient outcomes such as mortality (Bersten & Handy 2019:485; Ozyilmaz et al. 2014:2). The timing of NIV failure is categorised as early, intermediate or late (see table 6.12).

**Table 6.12 Predictors of NIV failure**

Timing	Description	NIV success	NIV failure
Early	Improvement in physiological parameters within 1-2 hours of NIV therapy	Improved pH and PaCO <sub>2</sub> Reduced dyspnoea Respiratory rate <30 breaths per minute No alteration in level of consciousness	Persistent intolerance of NIV mask pH <7.25 Tachypnoea >35 breaths per minute Altered level of consciousness High severity scores, e.g. APACHE II
Intermediate	Failure of NIV 12-48 hours after initiation of therapy	Initial improvements on NIV therapy	Persistent intolerance of NIV mask pH <7.25 Tachypnoea >35 breaths per minute Altered level of consciousness High severity scores, e.g. APACHE II
Late	After 48 hours of NIV therapy  Occurs in 10-20% of patients and is associated with increased mortality rates	Initial improvements on NIV therapy	Complete respiratory collapse requiring endotracheal intubation and mechanical ventilation  Sleep disturbances  Functional limitations  Hyperglycaemia  High severity scores, e.g., APACHE II

Adapted from Bersten & Handy (2019: 486-488), Duan, Han, Bai et al. (2017:197), Lemyze, Taufour, Duhamel, Temime et al. (2014:3)



Table 6.12 listed the predictors of NIV failure within 48 hours of commencement of NIV for the management of acute respiratory failure.

It should be noted that the existing pathway recognised the potential of NIV failure and therefore defined the sequence of events to be followed, based on the patient's response to NIV therapy at specified intervals. The existing clinical pathway calls for the reassessment of arterial blood gas values after 30 minutes of NIV therapy, as part of continuous monitoring to assist the multidisciplinary team in identifying and anticipating possible NIV failure to mitigate the risk of NIV failure and adverse patient outcomes (see Annexure D1). The patient's response to NIV therapy dictates the next step in NIV therapy; for example, whether to continue NIV therapy or revert to invasive mechanical ventilation.

Non-invasive ventilation failure is defined as the need for endotracheal intubation or death (Correia, Sanches, de Morais et al. 2015:144; Ozyilmaz et al. 2014:9; Lemyze et al. 2014:3). Duan, Han, Bai, Zhou and Huang (2017:193) emphasise that the prediction of NIV failure should not be based on a single variable and that multiple factors play a role in the success or failure of NIV. Bersten and Handy (2019:485) point out that the efficacy of NIV in the clinical setting depends on the severity of respiratory failure and the underlying cause of ARF, as well as the mode of NIV selected to manage the patient.

Ozyilmaz et al. (2014:9) state that the varying rate of 5-60% of NIV failure is multifactorial, and criteria for the timely identification of NIV failure should be determined and that most critically ill patients are likely to develop ARDS within 48-72 hours therefore management of the patient with NIV might fail at a later stage. Slutsky (2016:666) states that although NIV has advantages over invasive mechanical ventilation and evidence supports the use of NIV for COPD and cardiogenic pulmonary oedema, the use of NIV for ARF of different aetiologies remains questionable.

Risk factors associated with NIV failure and adverse patient outcomes include patient-related and technical factors. Patient-related factors are directly linked to the patient's condition, such as disease severity, severity of hypercarbia, haemodynamic status, poor tolerance of the interface (mask), agitation, increased distress, and underlying diseases.

Technical factors are related to the NIV equipment, such as the type of interface selected, mode of NIV and asynchrony of the patient with the ventilator (Bersten & Handy 2019:486; Lemyze et al. 2014:3; Ozyilmaz et al. 2014:2). Brochard et al. (2016:1787) include the proficiency of the multidisciplinary team in the application of NIV as a risk for failure. Mas and Masip (2014:845) classify predictors of NIV failure into three categories, namely before the initiation of NIV, during NIV therapy and after one hour of NIV. Table 6.13 outlines risk factors that could lead to NIV failure.

**Table 6.13 Non-invasive ventilation (NIV) risk factors**

Before NIV	During NIV	After 60 minutes of NIV
Acute respiratory distress syndrome	Excessive air leakage	No improvement in respiratory rate
Altered mental status	Breathing asynchrony with the ventilator	No improvement in pH values
Shock	Poor subjective tolerance	No improvement in oxygenation
High severity scores	Neurological or underlying disease impairment	No reduction in carbon dioxide levels

**Table 6.13 Non-invasive ventilation (NIV) risk factors**

Before NIV	During NIV	After 60 minutes of NIV
Copious secretions		Signs of fatigue
Extremely high respiratory rates		
Severe hypoxemia despite high FiO <sub>2</sub>		

**Adopted from Bersten and Handy (2019:486) and Mas and Masip (2014:845)**

The risk factors for NIV failure were outlined in Table 6.13. Identifying patients who are candidates for NIV before initiation of NIV reduces the chances of failure. Patients who are at high risk for NIV failure should preferably be intubated and mechanically ventilated to avoid delays in respiratory support and prevent adverse patient outcomes. The risk of NIV failure is estimated to be 64-82% in patients who present with an arterial blood pH <7.25 and a Glasgow Coma Scale score less than 11 out of 15 (Bersten & Handy 2019:487).

The existing clinical pathway for NIV recognised the vital role of blood pH value and level of consciousness in determining the appropriateness of NIV for the patient (Balfour et al. 2012:1-7). The existing clinical pathway suggested that if the patient's level of consciousness measured on the Glasgow Coma Scale (GCS) was less than 11 out of 15, the patient should be intubated, and invasive mechanical ventilation commenced without delay. However, if the GCS was more than 11 out of 15, and the patient was able to understand instructions and tolerate the facemask, NIV should be considered.

A blood pH of less than 7.25 requires immediate endotracheal intubation and mechanical ventilation. The clinical pathway also indicated that should the blood pH decline to 7.25 after 30 minutes of NIV, the patient should be intubated, and invasive mechanical ventilation commenced immediately. Patients who show no improvement after one hour of NIV are at high-risk for NIV failure (Mas & Masip 2014:845; Ozyilmaz et al. 2014:14).

Duan et al. (2017:192-199) developed the HACOR scale based on physiological parameters to predict NIV failure in hypoxaemic patients admitted to the critical care unit. The variables included in the HACOR scale are heart rate (H), acidosis (A), consciousness (C), oxygenation (O), and respiratory rate (R). Each patient admitted to the critical care unit was scored according to the HACOR scale at specific time intervals, namely on initiation of NIV and then at 1, 12, 24 and 48 hours of NIV. The use of the HACOR scale to predict NIV failure was an effective and rapid assessment tool to determine the probability of NIV failure in patients (Duan et al. 2017:196; Thomrongpaioj, Tongyoo, Tragulmongkol & Permpikul 2017:178). The assessment criteria in the literature corresponded with the assessment criteria in the existing clinical pathway for NIV. Even though the existing clinical pathway was published in 2012, the evidence found in the literature corresponded with that of the clinical pathway for NIV, and alterations to this section of the clinical pathway were not necessary.

### **6.4.3. Non-invasive ventilation utilisation in acute respiratory failure**

This section outlines the literature related to specific disease conditions and the application of NIV as well as the relation to the existing clinical pathway for NIV.

#### **6.4.3.1. Modes of non-invasive ventilation**

The modes of ventilation used during NIV are like the modes of ventilation used for invasive mechanical ventilation. Various modes of ventilation can be applied non-invasively, such as continuous positive

pressure ventilation (CPAP), bi-level non-invasive ventilation (BiPAP) and intermittent positive pressure ventilation (IPPV). During CPAP, continuous positive pressure is applied to the airways to deliver a higher oxygen concentration to the terminal alveoli, thereby relieving the symptoms of hypercapnia and dyspnoea, and reducing cardiac preload to improve venous return (Bersten & Handy 2019:484-485; Slutsky 2016:667; Lumb 2016:453). Continuous positive airway pressure (CPAP) has been applied with great success in patients presenting with COPD and cardiogenic pulmonary oedema. With BiPAP, the ventilator alternates between two different pre-set pressures for inspiration and expiration, thereby mimicking normal respiration. The success of BiPAP and CPAP was comparatively similar. No ventilation mode is superior to another in reversing acute respiratory failure. The selection of the appropriate mode should be based on clinical presentation of the patient, the outcome of a one-hour trial of NIV and clinical judgement of the attending doctor (Bersten & Handy 2019:484-485; Rochweg et al. 2017:9; Brochard et al. 2016:1789; Cabrini, Landoni, Oriani, Plumari et al. 2015:886-887).

The existing clinical pathway for NIV favoured the use of BiPAP and recommended initiating NIV at the lowest settings to improve patient tolerance. Initiating NIV at a pressure support of 8cmH<sub>2</sub>O minimises air leaks around the facemask which improves patient tolerance and allows for incremental adjustments to sustain physiological improvements. BiPAP allows for independent PEEP (positive end expiratory pressure) settings which is more comfortable for the patient, increasing patient cooperation and tolerance. PEEP settings are incrementally adjusted according to patient response. The multidisciplinary team who developed the clinical pathway unanimously concluded that the PEEP high and low settings should be initiated at a minimum of 15 cm H<sub>2</sub>O and 5 cmH<sub>2</sub>O, respectively but the settings would be influenced by the clinical presentation and assessment data of the individual patient. Preventing patient-ventilator asynchrony further improves patient cooperation, tolerance and improvement of respiratory distress

symptoms (Bersten & Handy 2019:485; Carteaux, Lyazidi, Cordoba-Izquierdo, Vignaux et al. 2012:367). The clinical pathway suggested that ventilator synchrony be set at a minimum of 50% to reduce patient fatigue and ensure that the work of breathing is reduced to unload the respiratory muscles. Although no mode of ventilation is superior to another, the European Respiratory Society (ERS) and the American Thoracic Society (ATS) (2017) guidelines mainly focus on the delivery of NIV via CPAP or BiPAP modes. The next section describes the utilisation of NIV for ARF of various aetiologies.

#### **6.4.3.2. Chronic obstructive pulmonary disease (COPD)**

Chronic obstructive pulmonary disease (COPD) is characterised by a decrease in the elasticity of the airways leading to increased work of breathing because of damage to the parenchymal cells of the airways. The decrease in elasticity causes an obstruction of the airflow through the pulmonary airways causing dyspnoea and elevated levels of carbon dioxide in the blood (Bersten & Handy 2019:486). Reversible acute respiratory failure is considered a common complication of COPD which can be managed with NIV (Kneyber, de Luca, Calderini, Jarreau et al. 2017:1766).

Bersten and Handy (2019:489) state that the term COPD applies to patients with chronic bronchitis and emphysema and affects about 10% of the adult population over the age of 40 years, and that COPD is the fourth leading cause of death in the United Kingdom. Acute exacerbations of COPD occur due to changes in dyspnoea, cough and sputum as part of the disease progression, with mortality rates ranging from 3-26%. The utilisation of NIV has improved patient outcomes and reduced mortality rates significantly (Bersten & Handy 2019:489; Brochard et al. 2016:1784). Additionally, Brochard et al. (2016:1784) state that the success rate for treating COPD patients with NIV is as high as 80-85% in reducing the need for endotracheal intubation, reducing complications such as healthcare associated infections and mortality. From 1998 to 2008 the use of NIV for COPD exacerbations increased

and the use of invasive mechanical ventilation decreased by 42%. Brochard et al. (2016:1785) support the use of NIV as a first-line therapy for treating patients with acute exacerbations of COPD, as an efficient and cost-effective treatment modality.

The European Respiratory Society (ERS) and the American Thoracic Society (ATS) published clinical practice guidelines for the use of NIV for patients with exacerbations of COPD in 2017 (Rochwerg et al. 2017:4). The practice guidelines are based on a comprehensive meta-analysis and strongly recommend the use of bi-level NIV for patients with acute exacerbations of COPD to prevent the development of acute respiratory acidosis when the arterial CO<sub>2</sub> level and pH is normal. Bi-level (BiPAP) NIV is also beneficial in preventing endotracheal intubation and invasive mechanical ventilation in patients with mild to moderate respiratory distress and acidosis (Rochwerg et al. 2017:4). Furthermore, bi-level NIV may be considered as a safe alternative to invasive mechanical ventilation for patients with severe acidosis and respiratory distress who are not deemed candidates for invasive mechanical ventilation or patients who decline invasive mechanical ventilation. However, the guidelines caution that NIV does not demonstrate a reduction in mortality or the need for endotracheal intubation in the absence of acidosis (Rochwerg et al. 2017:4).

Hypercapnic respiratory failure accounts for approximately 20% of hospital admissions in COPD patients (Rochwerg et al. 2017:5). This group of patients have a good response to bi-level NIV within 1 to 4 hours after initiating NIV, with significant improvements in pH levels and reduction of respiratory rates. NIV significantly improves clinical patient outcomes by relieving dyspnoea and reducing the need for endotracheal intubation which contributes to a reduced length of stay in the critical care unit and improved survival rates (Rochwerg et al. 2017:5). A Canadian study found NIV significantly more cost-effective with a cost-saving of CAD3442 per patient admission to the critical care unit (Keenan, Gregor, Sibbald, Cook & Gafni 2000:2101). Keenan, Gregor,

Sibbald, Cook and Gafni (2000:2101) strongly recommend the use of NIV in ARF due to exacerbation of COPD to prevent endotracheal intubation and development of acidosis when the baseline pH 7.35, PaCO<sub>2</sub> > 45mmHg and respiratory rate 20-24 breaths per minute. In addition, bi-level NIV should be considered the first-line treatment for patients with COPD exacerbations who develop acidosis during hospitalisation. A trial of NIV was also recommended for patients with a lower pH level, although a lower pH at the initiation of NIV is associated with a greater risk of NIV failure and would require more intense monitoring during the trial period to ensure rapid intubation and mechanical ventilation when clinically appropriate (Rochweg et al. 2017:5). Current practice in the critical care environment supports the use of NIV for patients presenting with acute exacerbations of COPD, but the use varies between units and between multidisciplinary teams. The lack of an evidence-informed guideline in the critical care unit adds to the varied and limited use of NIV, potentially affecting patient outcomes and length of stay.

#### **6.4.3.3. *Cardiogenic pulmonary oedema***

Cardiogenic pulmonary oedema results from decreased compliance of the respiratory system leading to fluid collection in the lungs, due to high capillary pressure associated with left ventricular failure (Bersten & Handy 2019:486; Rochweg et al. 2017:6). Cardiogenic pulmonary oedema leads to severe but reversible acute respiratory failure. The increased work of breathing, fluid collection in the lungs and impaired gas exchange associated with cardiogenic pulmonary oedema causes hypoxic and hypercapnic respiratory failure. Delayed management of cardiogenic pulmonary oedema is associated with a high mortality rate. Bersten and Handy (2019:486) and Brochard et al. (2016:1785) found that NIV and particularly CPAP mode, which delivers continuous positive airway pressure, is the most appropriate mode of NIV for patients with cardiogenic pulmonary oedema. In addition, although the exact level of pressure has not been determined, an inspiratory pressure setting of 10cmH<sub>2</sub>O is safe and effective at improving respiratory function in most



patients. Bersten and Handy (2019:486) found further that NIV consistently showed improvements in hypoxic and hypercapnic respiratory failure and significantly reduced the need for endotracheal intubation and reduced the length of stay and mortality rate in 95% of patients. CPAP reduces the cardiac preload and afterload consistently whereas other modes of NIV may cause fluctuations in cardiac preload and afterload, thereby increasing the risk of acute myocardial infarction (Bersten & Handy 2019:484).

According to Brochard et al. (2016:1758) the successful application of NIV is influenced by the skills and knowledge of the multidisciplinary team in delivering NIV and that patients benefit greatly from NIV when the multidisciplinary team are proficient in delivering NIV. Welsh, Chu, Morrissey and Harper (2017:498) state that hypoxia is the main clinical manifestation of cardiogenic pulmonary oedema-related respiratory failure, and that the timely initiation of NIV demonstrated a reduced hospital mortality rate, reduced need for endotracheal intubation and a shortened length of stay. However, patients with a cardiac ejection fraction less than 30% are at high risk for NIV failure and patient selection should be done with caution (Ozyilmaz et al. 2014:145; Welsh et al. 2017:498).

The ERS and ATS (2017) guidelines recommend that NIV be considered the first-line treatment for patients with ARF related to cardiogenic pulmonary oedema and indicate that NIV reduces the need for endotracheal intubation, length of stay, and the associated mortality rates. However, there is no evidence to support the claim that bi-level NIV increases the risk of myocardial infarction, and the use of either CPAP or bi-level NIV for patients with cardiogenic pulmonary oedema is recommended (Rochweg et al. 2017:6). There is also limited evidence to support the use of NIV in patients with acute coronary syndrome and cardiogenic shock, therefore these patients are excluded from the recommendation (Rochweg et al. 2017:6).

Non-invasive ventilation is not used for patients presenting with cardiogenic pulmonary oedema in the current critical care units. This can be attributed to the lack of an evidence-informed guideline to assist multidisciplinary teams in providing NIV to qualifying patients, and potentially increasing the risk of infection and length of stay (Rochweg et al. 2017:6).

#### **6.4.3.4. Immune-compromised patients**

Immune-compromised patients are often admitted to critical care units with hypoxic respiratory failure associated with pneumonia, including patients receiving chemotherapy, patients with haematological diseases, human immune-deficiency virus, auto-immune diseases or inflammatory conditions requiring the use of immune suppressing medications. Bersten and Handy (2019:487) and Welsh et al. (2017:498) state that although there is evidence to support the use of NIV in these patients, an immune-compromised status should not be viewed as a contraindication for NIV. Some studies have demonstrated benefits in terms of reducing the length of stay and mortality rates. Bersten and Handy (2019:487) state that invasive mechanical ventilation is associated higher mortality and morbidity rates in immune-compromised patients with hypoxic respiratory failure, and that NIV has demonstrated improved hospital survival rates.

The mechanism related to this improvement is not clear yet, but Bersten and Handy (2019:487) suggest that a trial of NIV is a reasonable approach for patients who are not deemed suitable candidates for invasive mechanical ventilation or for those patients in whom invasive mechanical ventilation is considered futile treatment. Brochard et al. (2016:1787) reported that the use of NIV significantly reduced the need for endotracheal intubation from 70% to 20% in immune-compromised patients, and that ICU mortality was reduced by 30%, although there was no significant reduction in hospital mortality.

The ERS and ATS guidelines support the use of NIV for immune-compromised patients with ARF of various aetiologies, stating that the

use of NIV for this group of patients was associated with a reduction in mortality rates, healthcare acquired infections and length of stay (Rochweg et al. 2017:8). However, due to the limited research evidence available more studies are required to determine long-term patient outcomes. Recommendations indicated that the benefits of NIV for these patients far outweigh the potential risks and that the use of NIV is therefore justified. Brochard et al. (2016:1787) state that there is strong evidence to support the use of NIV in immune-compromised patients, but that the success of NIV depends largely on the skills and knowledge of the multidisciplinary team, cooperation of the patient and excluding patients who present with contra-indications for NIV.

The lack of a well-documented, evidence-informed guideline contributes to the limited use of NIV for immune-compromised patients presenting with ARF in the critical care unit. Clinical experience of the use of NIV for immune-compromised patients indicates that NIV can be successfully utilised for this group of patients, yet multidisciplinary teams are reluctant to initiate NIV, and the patients do not receive the benefits of NIV. A trial of NIV should be considered for qualifying patients.

#### **6.4.3.5. Acute asthma**

Asthma is defined as an inflammatory pulmonary disease characterised by increased airway resistance to airflow leading to respiratory muscle fatigue, hyperinflation of the lungs, dyspnoea and hypercapnia. Other characteristics include partial or complete obstruction of the airway which can be reversed, inflammation of the airways and increased airway responsiveness to stimuli such as allergens (Bersten & Handy 2019:450). An acute asthma attack is characterised by increased wheezing, coughing, dyspnoea, tightness in the chest and decreased expiratory airflow. An acute asthma attack is a medical emergency that can be life-threatening if treatment is delayed. Globally, asthma occurs in approximately 2-37% of the population and is most prevalent amongst children. Life-threatening asthma episodes occur in 0.5% of asthmatics

annually, with the highest incidences in Australia, New Zealand and the United Kingdom (Bersten & Handy 2019:450; Rochweg et al. 2017:7).

Conventional treatment of an acute asthma attack relies on the administration of intravenous medication, such as supplemental oxygen, beta-agonists and anticholinergics (bronchodilators), and corticosteroids to relieve the symptoms of bronchospasm and improve respiratory function – also referred to as standard therapy (Bersten & Handy 2019:454). Additionally, Brochard et al. (2016:1785) state that NIV in combination with standard therapy might be beneficial to asthma patients who do not respond to standard therapy alone or who deteriorate despite optimal standard therapy. Non-invasive ventilation relieves dyspnoea and has the potential to rapidly improve lung function.

Rochweg et al. (2017:7) indicated that the number of patients successfully treated with NIV during an acute asthma attack was relatively small, as the majority of patients admitted to critical care units for acute asthma were experiencing life-threatening episodes and required immediate endotracheal intubation and mechanical ventilation. Moreover, the available research evidence is too limited to allow inferences on the safety and efficacy of NIV in acute asthma. Therefore, using standard therapy for asthmatic patients rather than NIV is recommended (Rochweg et al. 2017:7).

#### **6.4.3.6. *De novo respiratory failure***

De novo respiratory failure is defined as respiratory failure in the absence of a chronic respiratory disease; in other words, non-COPD-related respiratory failure (Correia, Sanches, de Morais et al. 2015:144). Patients presenting with de novo respiratory failure often have significant hypoxaemia with an arterial oxygen tension/inspiratory oxygen fraction ratio less than 200, tachypnoea >35 breaths per minute and respiratory distress. The term “de novo respiratory failure” includes patients with hypoxic respiratory failure often related to community acquired pneumonia and acute respiratory distress syndrome (ARDS). Correia, Sanches, de Morais, Scarin, Silva and Barbas (2015:144) found that NIV

was 50% successful in reversing hypoxaemia and 75% successful in reversing hypercapnic respiratory failure. Patients who failed NIV were comparatively younger and had higher APACHE II severity scores on admission to the critical care unit.

Correia et al. (2015:146) concluded that the success of NIV in reversing hypoxaemia depended on the aetiology of ARF and the presence of multi-organ failure. However, NIV should not be excluded as a treatment modality for ARDS, but an NIV trial can be attempted in a critical care unit with sufficient patient monitoring to prevent adverse patient events. Ozyilmaz, Nava and Ugurlu (2014:5) state that patients with hypoxaemia with underlying community-acquired pneumonia, septic shock or ARDS cannot be safely managed with NIV due to the high failure rate requiring invasive mechanical ventilation.

Rochweg et al. (2017:9) state that the efficacy of NIV for de novo respiratory failure depends on the goals for treatment with NIV. The main goals of NIV are to decrease the work of breathing, decrease dyspnoea, improve oxygenation and ventilation, and reduce the risk of endotracheal intubation and NIV has been found to achieve these goals in hypercapnic respiratory failure. Nevertheless, because the mechanism of respiratory failure in hypoxic respiratory failure differs significantly, the success of NIV might be limited. Higher inspiratory pressures are required to reduce the work of breathing and improve oxygenation in hypoxic patients, which leads to significantly higher tidal volumes. An increased tidal volume over an extended period puts the patient at risk of acute lung injuries. The control and manipulation of tidal volumes is facilitated by endotracheal intubation and mechanical ventilation and allows for the administration of paralytic agents which allows complete control of the respiratory functions of the patient. It has also been found that when NIV is interrupted hypoxaemia returns, which could contribute to NIV failure and endotracheal intubation (Maitra, Som, Bhattacharjee, Arora & Baidya 2016:144).

A trial of NIV in hypoxic patients has not shown to have any benefit, and the delay in endotracheal intubation might be fatal. The evidence therefore suggests that patients presenting with de novo respiratory failure be excluded from NIV and that more evidence is required to support the use of NIV in hypoxaemic respiratory failure (Maitra et al. 2016:144; Brochard et al. 2016:1786).

#### **6.4.3.7. Post-operative respiratory failure**

The administration of an aesthetic agent and analgesia post-operatively increases the patient's risk of developing pulmonary complications such as atelectasis and dysfunction of the diaphragm (Welsh et al 2017:499; Brochard et al. 2016:1787). Post-operative complications related to respiratory dysfunction lead to higher reintubation rates and increased morbidity and mortality rates. Non-invasive ventilation has gained popularity as a preventive measure to avoid post-operative complications and reintubation (Brochard et al. 2016:1787).

The use of NIV pre- and post-operatively for patients undergoing thoracic surgery has shown to be beneficial in reducing endotracheal intubation rates from 50% to 21% and hospital mortality rates from 38% to 13%. Non-invasive ventilation improves spirometry and oxygenation simultaneously. However, the patient requires close monitoring to maintain airway pressures at the lowest possible pressure to prevent injury (Bersten & Handy 2019:487; Brochard et al. 2016:1787). The ERS/ATS guidelines support the use of NIV for post-operative ventilatory support stating that NIV is effective in reducing atelectasis and reducing reintubation from 10% to 1% (Rochweg et al. 2017:10). The use of NIV significantly reduces the risk of healthcare-associated infections related to invasive mechanical ventilation and therefore the use of NIV in the post-operative setting is justified (Bersten & Handy 2019:487; Thomrongpaioj et al. 2017:179; Rochweg et al. 2017:10). However, current practice excludes the use of NIV for post-operative ventilatory support, which could be attributed to the lack of an evidence-informed guideline for the initiation of NIV for post-operative management of ARF.

#### **6.4.3.8. Chest trauma**

Brochard et al. (2016:1787) state that the use of NIV to support patients with hypoxaemia following chest trauma may be beneficial provided that adequate analgesia is administered. However, there is limited evidence to support the use of NIV following chest trauma and persistent hypoxaemia and larger studies are required to establish the efficacy of NIV. Bersten and Handy (2019:487) and Rochweg et al. (2017:12) state that the use of NIV for patients presenting with chest trauma may be beneficial in reducing mortality rates, the need for endotracheal intubation, the length of stay, and the risk of healthcare-associated infections. However, the limited evidence available for this patient population precludes a definitive recommendation on the use of NIV.

The ERS/ATS guidelines suggest a trial of NIV if the hypoxaemia is not severe and adequate pain control is provided to ensure patient cooperation (Rochweg et al. 2017:12). Clinical experience with the use of NIV for patients with non-penetrating chest trauma such as flail chest has indicated that patients show the same physiological improvements with NIV when compared to invasive mechanical ventilation. However, adequate pain control is vital in maintaining adequate ventilation during the use of NIV.

#### **6.4.3.9. Post-extubation respiratory failure**

Respiratory failure following extubation is associated with poor clinical outcomes. Re-intubation rates are reportedly as high as 23.5% (Rochweg et al. 2017:12). Patients over the age of 65 years with underlying cardiac disease or pulmonary disease are considered high-risk patients for developing post-extubation respiratory failure, with increased mortality rates. The ERS and ATS guidelines recommend using NIV to prevent high-risk patients from developing respiratory failure post-extubation. However, NIV is not considered appropriate for preventing post-extubation respiratory failure in non-high-risk patients (Rochweg et al. 2017:12). The use of NIV as a 'rescue therapy' for post-extubation respiratory failure had a higher success rate compared to the

initiation of NIV immediately post-extubation to prevent respiratory failure (Rochweg et al. 2017:14; Thomrongpaioj et al. 2017:179; Brochard et al. 2016:1788). Non-invasive ventilation is currently utilised as a rescue therapy for patients who fail to maintain adequate ventilation post-extubation, and accounts for the majority of NIV utilisation in the critical care unit.

#### **6.4.3.10. Palliative care**

The initiation of NIV depends on the treatment goals for the individual patient. Dyspnoea often increases during the end-of-life period and contributes to patient discomfort and distress. The South African Department of Health's *Patients' Rights Charter* (Department of Health 2008) and core standards of patient care (Department of Health 2011) state that the patient is entitled to a comfortable and dignified death. Providing NIV to the patient at the end-of-life might alleviate the symptoms of respiratory distress and increase patient comfort.

The ERS/ATS guidelines (Rochweg et al. 2017:11) indicate that the goals of treatment with NIV in the palliative care setting need to be determined in collaboration with the patient and their family. If the goal is to provide comfort and relieve dyspnoea, NIV should be offered to the patient. Ferreira, Medeiros, Rego and Caruso (2015:1007) concluded that the appropriate use of NIV for terminally ill cancer patients in the critical care unit is able to preclude ARF, but in the presence of respiratory tract infections caution should be taken to anticipate NIV failure. Non-invasive ventilation will not prolong life indefinitely but might afford patients the opportunity to spend a few precious hours with their family to settle their affairs (Rochweg et al.2017:11; Brochard et al.2016:1788). Patients who are not considered candidates for invasive ventilation are assisted with NIV as a comfort measure during palliative care in the critical care environment. However, this practice also differs between units and between multidisciplinary teams, which could be attributed to the lack of an evidence-informed guideline.



#### **6.4.4. Reaching consensus**

Following a discussion of the relevant data during the focus group sessions, the internal facilitators reached consensus that the relevant content has been included in the clinical pathway for NIV. The adapted clinical pathway was then distributed electronically to the Proteas and the Daisies for approval (see Annexure D5). The internal facilitators were asked to share the updated clinical pathway with their multidisciplinary teams for validation. The adapted clinical pathway was electronically disseminated to the multidisciplinary team members as requested by the internal facilitators. The internal facilitators agreed that a two-week period for comment was enough to obtain expert input. Again, no comments or suggestions were received from the multidisciplinary team. When the two-week period had elapsed, the researcher met with the Proteas and Daisies to reach consensus that all relevant information according to the categories indicated in the clinical pathway (assessment, planning, implementation and evaluation), was sufficient. The Proteas and Daisies reached consensus that the clinical pathway was ready for validation by experts in critical care.

#### **6.4.5. Validating the clinical pathway – The Delphi**

Validating the adapted clinical pathway for NIV required the inclusion and participation of external experts in the field of critical care. Validation forms part of the process of seeking objective input from experts to confirm that the content is a true representation of the best evidence available. For this reason, the internal facilitators collectively agreed that the validation should be done by external experts, and the most appropriate method would be by means of a Delphi technique. External validation was therefore done by means of the Delphi technique with experts in critical care (see Section 6.3.4).

The clinical pathway for NIV was electronically distributed to purposively selected critical care experts in the field of respiratory medicine and

critical care nursing for discussion. A Delphi technique was used to validate and reach consensus on the final clinical pathway. The Delphi technique is an effective method for obtaining expert opinions on subject matter, whilst maintaining participants' anonymity (Puig & Adams 2018:480; Waltz et al. 2017:362; Botma et al. 2010:253).

#### **6.4.5.1. Inclusion criteria for participation in the Delphi**

Purposive sampling was used to select participants, namely:

- Nurse with a post-basic qualification in Critical Care Nursing Science, and/or a minimum of a master's degree in Nursing Science
- Medical doctor with specialization in critical care and / or pulmonology
- Knowledge of NIV and private sector healthcare

#### **6.4.5.2. Delphi participants' demographic profile**

The Delphi technique was used to achieve consensus on the content of the updated clinical pathway for NIV, prior to implementation (Puig & Adams 2018:480; Waltz et al. 2017:362-362; Botma et al. 2010:254). A total of six (6) critical care experts were purposively selected to participate in the Delphi.

The critical care experts who agreed to participate voluntarily consisted of four (4) medical doctors, who had all obtained post-graduate qualifications in critical care medicine, and two (2) critical care nursing experts. All the participants had more than five (5) years' critical care experience. Each participant was requested to complete the participant information and consent document (see Annexure D3). Table 6.14 presents the participants' demographic profile.

**Table 6.14 Delphi participants' demographic profile**

<b>Characteristics</b>	<b>Number of participants</b>
<b>Age (years)</b>	
30 – 39	2
40 – 49	1
>50	3
<b>Gender</b>	
Male	4
Female	2
<b>Highest Qualification</b>	
Medical doctor / Specialist	4
Master's degree (Nursing)	2
<b>Critical care experience (years)</b>	
6 – 10	1
11 – 15	5
<b>Current role / job</b>	
Physician	2
Intensivist	2
Critical care nurse	2
<b>TOTAL</b>	<b>6</b>

Table 6.14 provided a summary of the demographic characteristics of the six (6) Delphi participants.

### 6.4.5.3. Delphi Round 1

The reviewed and adapted clinical pathway for NIV was distributed to the critical care experts as either an electronic copy or a hard copy. Participant information and consent documents were sent to the experts to complete (see Annexure D3).

The clinical pathway was accompanied by an evaluation instrument which the participants had to complete (see Annexure D4). The first round of the Delphi was completed, and the findings are depicted in Table 6.15. The number of responses received for each criterion is included.

The participants were also afforded the opportunity to provide comments and suggestions. One of the experts commented that the clinical pathway for NIV is” ... *concise and user-friendly with clear indications of when to exit the pathway*”. None of the other experts made comments or suggestions.

**Table 6.15 Evaluation of the adapted clinical pathway for NIV**

Criteria	Exemplary (4)	Sufficient (3)	Marginal (2)	Unsatisfactory (1)
Clarity – user friendly	2	4		
Simplicity	2	4		
Consistency	2	4		
Comprehensiveness	4	2		

**Table 6.15 Evaluation of the adapted clinical pathway for NIV**

<b>Criteria</b>	<b>Exemplary (4)</b>	<b>Sufficient (3)</b>	<b>Marginal (2)</b>	<b>Unsatisfactory (1)</b>
Importance for nursing/critical care practice development	<b>4</b>	<b>2</b>		
Applicable to critical care units	<b>3</b>	<b>3</b>		
Other (please specify)	<b>0</b>	<b>0</b>		
<b>TOTAL</b>	<b>17</b>	<b>19</b>		

The data collected from the Delphi round was collated by the researcher (external facilitator) and shared with the internal facilitators for comment during a scheduled focus group session in November 2018 (see Session 10). The responses were graded on a scale from 1 - 4, as in Table 6.15 above. A score of 1 was deemed unsatisfactory, and a score of 4 as exemplary. Based on the feedback, 71% of the Delphi participants found the clinical pathway exemplary and 79% of the Delphi participants found the clinical pathway as sufficiently useful in clinical practice. No alternative comments or suggestions were made by the participants.

It is generally accepted that more than one Delphi round is required to gain consensus on a topic. However, the feedback from the participants indicated that they agreed on the content and applicability of the clinical pathway for NIV. The internal facilitators discussed the feedback and collaboratively agreed that the adapted and validated clinical pathway for NIV is ready for implementation in the critical care unit and that further

validation was not required. The adapted and validated clinical pathway for NIV is depicted in Figure 6.13 (see Annexure D5).

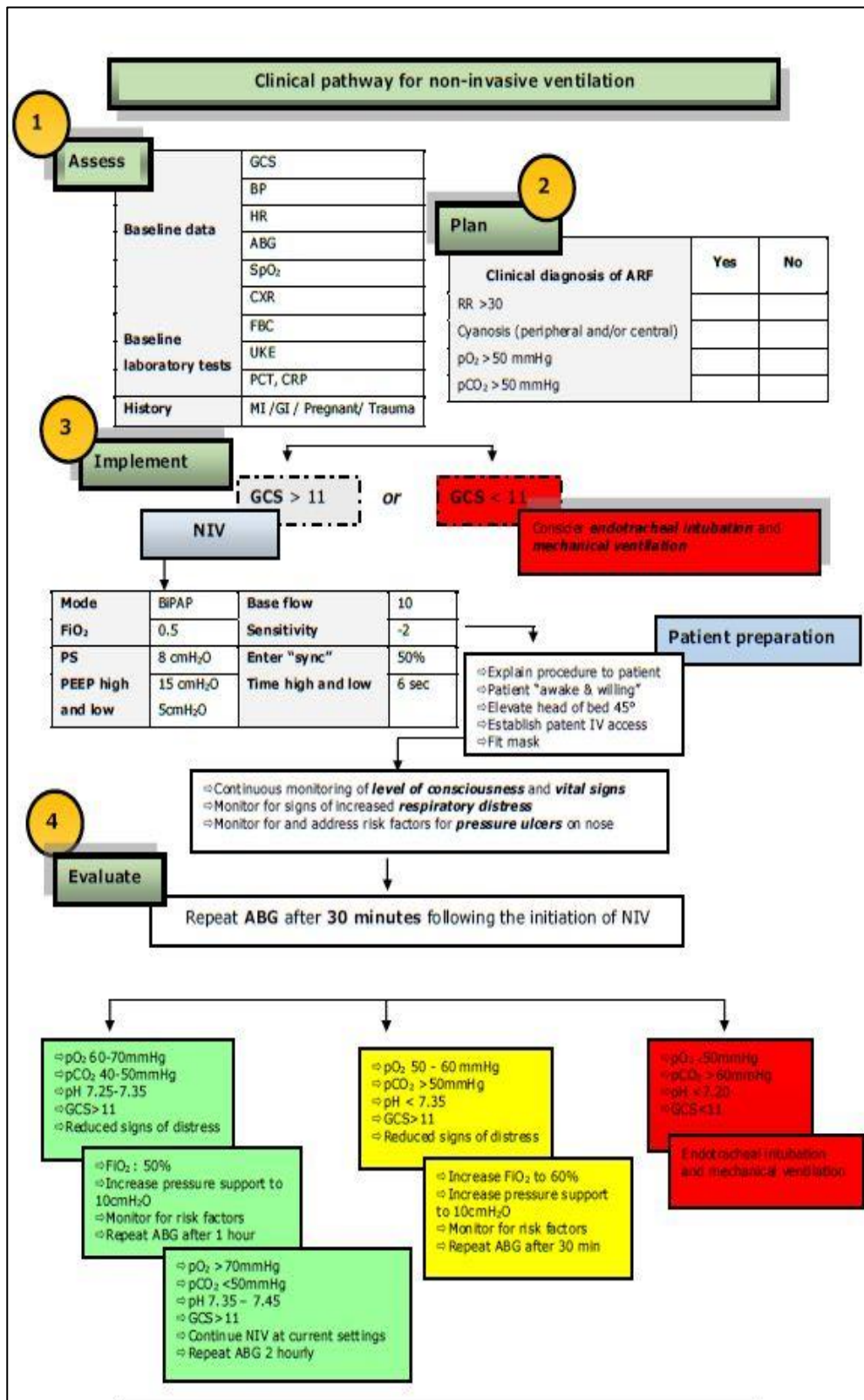


Figure 6.13: Validated clinical pathway for NIV

Figure 6.13 represents the adapted and validated clinical pathway for NIV which the internal facilitators collaboratively agreed to implement in the critical care unit during Phase 2 (implementation) of this study.

- **Session 11 (16 November 2018)**

The Proteas and Daisies reviewed the adapted and validated clinical pathway for NIV received from the external experts following the conclusion of the Delphi technique. The internal facilitators agreed that the clinical pathway was ready for implementation in the critical care unit.

The internal facilitators in both the intervention group and control group started work on the implementation strategy they would like to use for Phase 2 of the study. They had collaboratively agreed on the key outcomes that would be monitored during the implementation phase of the study. The key outcomes that would be included for evaluation were the length of stay in the critical care unit, NIV failure (need for endotracheal intubation), complication rates (VAP), and the discharge status of the patient (mortality). Feedback was provided to the hospital management team regarding their progress. The internal facilitators in the intervention group expressed concern about the lower occupancy rates in the unit which might impact on the study. The researcher reassured them that they would deal with that as it happened, and that they should celebrate the successful validation of the clinical pathway for NIV during the next planned session in December 2018.

- **Session 11 (4 December 2018)**

The aim of this visit was to thank the Proteas and Daisies for their support and effort over the past months. The members agreed that this would be their final meeting for 2018, but that they would keep in contact when patients were admitted to the unit who might be candidates for NIV. The researcher observed that the teams were tired and longed to be with their families, especially with the approaching festive season. Another life-changing event occurred at the hospital when the Proteas

unexpectedly lost a colleague due to an acute myocardial infarction unexpectedly previous week, which made the team emotional and pensive. The researcher said she would visit the unit one more time to have cake and coffee with them to end the year on a high note, and hopefully inspire them to continue with the research study in January 2019. They submitted their implementation strategy to the researcher for review (see Chapter 7 for discussion).

The researcher (external facilitator) discussed the validated clinical pathway and implementation plan with the internal facilitators in both the intervention group and the control group.

## **6.5. SUMMARY**

Conducting weekly sessions with the internal facilitators presented many challenges. The shortage of critical care trained nurses to ensure that all shifts – day and night – were covered significantly impacted on the researcher's planning. The group had to devise innovative ways of communicating with each other to continue the research activities. Therefore, the utilisation of a flexible research design was appropriate – the real world is not set in stone and planning often changes to adapt to real-world situations. The impact of operational activities on the participants was identified as a potential challenge – the effect of events that occur on a 'normal' shift influences how participants view their actions and their participation.

The traumatic event that occurred prior to a scheduled session disrupted the emotional well-being of the internal facilitators significantly – enough to change the planned activities to a debriefing session. This was apparently much needed, because they felt that their feelings and well-being were important, and this gave them a sense of purpose and relief to allow them to continue with their daily tasks. The loss of a colleague in early December 2018 was a significant blow to the emotional well-



being of the team. This further disrupted team dynamics and participation significantly so that the research activities had to be postponed for the remainder of the year.

The impact of the participants' personal attributes cannot be overemphasized. Each participant's beliefs and views impacted on the process and development of the implementation strategy. Harvey and Kitson (2016:33) adapted the i-PARiHS framework to acknowledge the concept of innovation – which proved to be a valuable insight during this phase of the study and allowed the researcher herself, as external facilitator, to adapt to the participants' needs. This was a valuable leadership lesson learnt and would support the utilisation of a 'bottom-up' approach in the facilitation of research implementation in clinical practice.

The lack of access to literature, lack of time to engage in research activities and lack of knowledge to critically appraise research evidence presented a challenge to the implementation of the clinical pathway. Pre-emptive planning reduced the resistance from nurses to participate in the study. Acknowledging the need of the internal facilitators to spend valuable time on research activities and providing for their needs reinforced their commitment to the study – they felt valued.

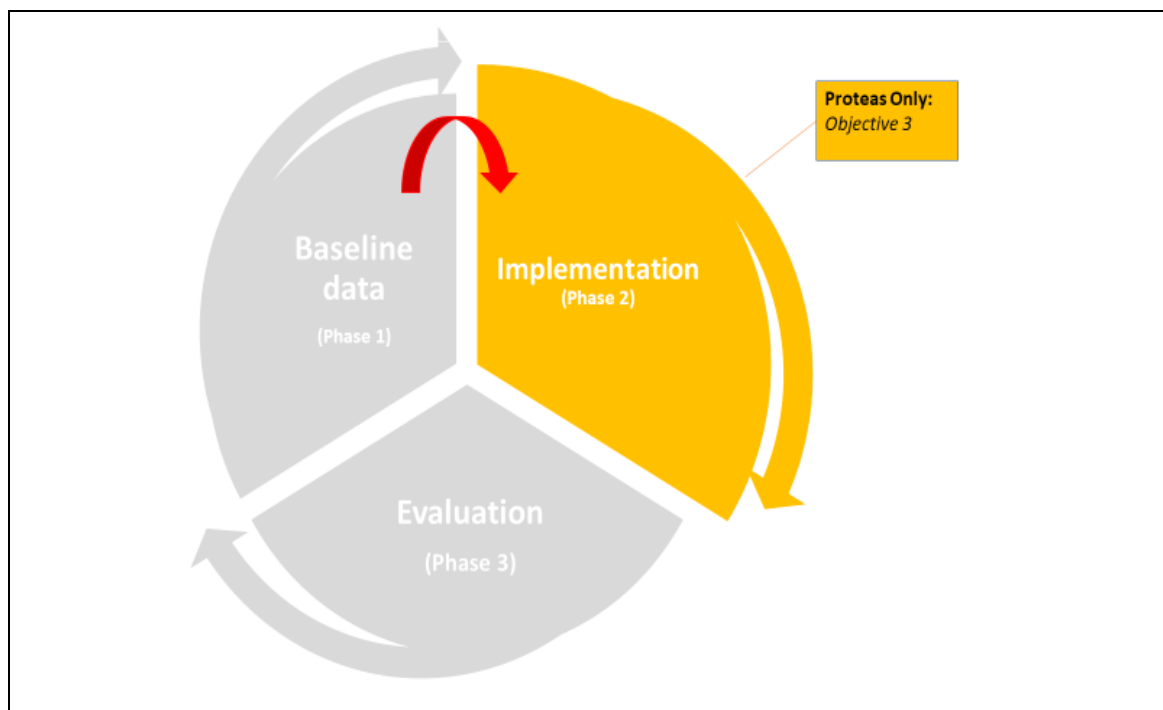
Guiding and teaching the internal facilitators to search for relevant literature and critically appraise research evidence contributed to developing their skills in accessing academic literature. The internal facilitators felt confident in engaging with the multidisciplinary team in discussions on NIV and the potential utilisation of NIV in the critical care unit. Upon conclusion of the literature review the participants agreed that no changes should be made to the existing clinical pathway, and that the development of an implementation strategy to implement the clinical pathway in critical care was the next logical step.

This chapter discussed objective 1 and objective 2 of Phase 1 of the study. Chapter 7 discusses Phase 2 – Implementation, of the study related to the clinical pathway for NIV in the critical care units.

## Chapter 7 Phase 2 – Implementation

### 7.1. INTRODUCTION

Chapter 6 provided a discussion related to Phase 1, the baseline data of the study. This chapter will provide an in-depth discussion of the specific activities during implementation (Phase 2) of the clinical pathway for NIV in the purposively selected critical care units. Figure 7.1 illustrates the activities during the implementation phase of this study.



**Figure 7.1: Phase 2 - Implementation**

The implementation phase (Phase 2) of the study and the related activities were depicted in Figure 7.1.

## 7.2. OVERVIEW OF PHASE 2 – IMPLEMENTATION AND EVALUATION

The objective of the implementation phase was to:

**Objective 3:** Adopt a person-centred approach to collaboratively implement the clinical pathway for NIV in the critical care unit.

Table 7.1 provides an overview of the activities during Phase 2 (implementation) of the clinical pathway for NIV in the critical care unit.

**Table 7.1 Overview of Phase 2 – Implementation**

Date	Activity	Outcome	Description
19 January 2019	Strategic planning workshop	Internal facilitators (Proteas): 1 session	Section 7.3
February – June 2019	Implementing the clinical pathway for NIV	Researcher and Internal facilitators (Proteas): 6 sessions	Section 7.4
February – June 2019	Step 1 – Creating awareness	Internal facilitators and ED nurses: 4 sessions (one-on-one)	Section 7.4.1
	Step 2 – Patient assessment		Section 7.4.2
	Step 3 – Implement the clinical pathway	6 sessions	Section 7.4.3
	Step 4 – Evaluating the outcomes	3 sessions	Section 7.4.4

**Table 7.1 Overview of Phase 2 – Implementation**

Date	Activity	Outcome	Description
<b>September 2019</b>	Reflecting on the findings – Making sense of the workplace culture	Expert consultation – Industrial Psychologist: 1 session (6 hours)	Section 7.5

Table 7.1 outlined the activities during Phase 2 of the study.

### 7.2.1. Person-centred approach

The barriers and enablers to implementation of research evidence into clinical practice requires insight into the perceptions of the nurses working in the critical care unit (Stavor et al 2017:57; Cheng et al 2017:5104). To assist in achieving objective 3, a collaborative person-centred approach was utilised to support the internal facilitators in the intervention group to implement the clinical pathway for NIV in the critical care unit.

McCormack and McCance (2017:41) define person-centredness as ” an approach to practice established through the formation and fostering of therapeutic relationships between all care providers, service users and others significant to them in their lives. It is underpinned by values of respect for persons, individual right to self-determination, mutual respect and understanding. It is enabled by cultures of empowerment that foster continuous approaches to practice development”. From this definition, person-centredness describes standards of care which places persons at the centre of the care delivery process. Person-centred approaches are associated with improved multidisciplinary communication, higher patient satisfaction

rates, and improved patient outcomes (McCormack & McCance 2017:41; Lor, Crooks, & Tluczek 2016:359).

Person-centred care requires the multidisciplinary team to move away from preconceived notions about patient care to an approach which is focused on building relationships, and providing holistic, collaborative care to the patient (Wilberforce, Challis, Davies, Kelly, Roberts & Clarkson 2017: 86; McConnell et al. 2016:39; Laird et al. 2015:1455). The Person-centred Practice Framework consists of four (4) domains, namely prerequisites (attributes of the nurse), the care environment (the context of care delivery), person-centred processes (care delivery through a range of activities) and expected outcomes (the results of effective person-centred nursing) as described by McCormack and McCance (2017:60). This view is consistent with the original definition of person-centredness described by Carl Rodgers who stated that a person-centred care approach can be described as the absence of theories and dogmas to become fully engaged in the processes of building meaningful experiences (Louw, Marcus & Hugo 2017:4).

The absence of theory and dogma therefore translates to the absence of preconceived ideas of how a system or person should function. Person-centredness is founded on four basic concepts, namely personalised care, which is supported, coordinated and enabling, and ensures that patients are treated with dignity, respect and compassion. The negative effects of personal biases of the healthcare professionals are reduced through self-awareness to enhance patient outcomes (Louw et al. 2017).

Person-centred processes focus on the delivery of care by means of a range of activities (McCormack & McCance 2017:60; McConnell et al 2016:39) to promote the delivery of healthcare services in response to the specific needs of the individual patient with consideration for the patient's abilities, healthcare goals, lifestyle and personal preferences

(Louw et al 2017:5; Ogden, Barr & Greenfield 2017:780). These also form the cornerstones of the South African Patient Rights Charter which stems from the South African Constitution (Act No 108 of 1996), and which is promoted as part of ethical practice by the Health Professions Council of South Africa (HPCSA). The HPCSA guideline for ethical practice Section 2.3.5 states that the patient has the right to be part of the decision-making process regarding their own health matters (HPCSA 2016:2). Yet these concepts are not presently observable in the South African healthcare system and could be attributed to a lack of standardised care processes and the personal preferences of healthcare providers, that obscure the delivery of person-centred evidence-based care to the patients who need it.

In nursing research, utilising a person-centred approach therefore requires the researcher to engage with the participants without having pre-set ideas about how to collect, generate, analyse and implement evidence in clinical practice (Filmlalter, Van Eeden, De Kock, McCormack, Coetzee, Rossouw & Heyns 2015:2). The nurses will serve as the primary sources of information about what works in their context and what does not. Simply including the multidisciplinary team to collaboratively develop the original clinical pathway for NIV in 2012 did not secure implementation in clinical practice. The researcher had hoped that adopting a person-centred approach, the benefits of this study might impact positively on patient outcomes, improve multidisciplinary collaboration and improve operational efficiencies within the healthcare system.

The nurse is an integral part of the delivery of quality person-centred care to patients through knowledge development (Schwind, Lindsay, Coffey, Morrison & Mildon 2014:1167). Person-centred approaches are flexible and respond to the needs of the healthcare consumer and have a positive impact on patient outcomes (Wilberforce, Challis, Davies, Kelly et al 2017:86; McConnel et al 2016:38). The translation of

research evidence into clinical practice stands to improve patient outcomes in the critical care unit. The utilisation of a practice development approach to collaboratively develop a strategy for implementing the clinical pathway for NIV, aimed to identify and address the perceived barriers to implementation, by using a person-centred approach. Getting nurses, and multidisciplinary teams involved in the process, might assist nurses in moving away from the tradition of ‘how things are done here’ to become truly evidence informed (Wilberforce et al 2017:87; Coghlan et al 2014:564; Titler, Wilson, Resnick & Shever 2013:S41; Dalheim, Harthug, Nilson, Nortvedt et al. 2012:2; Gonzalez-Torrente, Pericas-Beltran, Bennasar-Veny, Adrover-Barcelo, et al. 2012:1).

McCormack (2003:202), and McCormack and McCance (2017:61) stated that the success of person-centredness in clinical practice is closely tied to the concepts of patient values and beliefs, nurse values and beliefs and the context where nursing care is delivered, which gave rise to the development of the person-centred framework. This is congruent with the views of Heyns, Botma and Van Rensburg (2017:109). The aim of this study was implementing the clinical pathway for NIV in the critical care unit to promote person-centred care delivery and possibly improve patient outcomes through the collaboration, inclusion and participation of the nurses through an emancipatory practice development approach.

The researcher deemed this the most appropriate approach, since the original clinical pathway for NIV was developed by the multidisciplinary team working in the purposively selected critical care units, who were deemed professionally competent regarding NIV based on their expert knowledge and skills (McCormack & McCance 2017:63-63). Following the development of the clinical pathway for NIV in 2012, traditional methods of evidence implementation were utilised to implement the clinical pathway in the critical care unit. The clinical pathway for NIV



was included as part of the unit's policy and procedure manual. This 'top-down' approach was ineffective, as the implementation never realised.

The researcher postulated that part of the reason for non-implementation could be attributed to the traditional 'top-down' approach which meant that the nurses did not have the necessary facilitation, guidance and support to implement the clinical pathway for NIV. Although they possessed the necessary knowledge and skills pertaining to NIV they were not able to use their knowledge and skills to implement the clinical pathway, and the process of evidence implementation was not adequately facilitated. The consequences of this approach included resistance to change and therefore non-implementation of evidence-based practice at the bedside.

A person-centred approach requires a 'bottom-up' approach, meaning that the nurses are actively participating in the collaborative process of implementation. They guide the process of implementation rather than being told what to do. This approach allows for aligning evidence-based practice to local knowledge – they know what works in their setting and what doesn't. The researcher believed that actively collaborating with the nurses in the critical care unit in a person-centred approach might emancipate them from rigid, tradition-based practices to embrace evidence-based practice.

### **7.2.2. Applying the principles of practice development**

To achieve the aims of a person-centred approach the principles of practice development were observed during the study. Table 7.2 provides a summary of the application of the principles of practice development and person-centredness in this study.

**Table 7.2 Applying the principles of practice development**

Principle (McCormack & McCance 2017:125)	Application	Description
<p>Practice development aims to achieve person-centred and evidence-based care that is manifested through human flourishing and a workplace culture of effectiveness in all healthcare settings and situations.</p>	<p>Gaining access to the purposively selected critical care units.</p>	<p>Section 6.2</p>
<p>Practice development directs its attention at the micro-systems level – the level at which most healthcare is experienced and provided but requires coherent support from interrelated mezzo-and macro-systems.</p>	<p>The focus of practice development is at the point of care, therefore the critical care units in this study were purposively selected, based on their knowledge and experience related to NIV.</p>	<p>Section 5.6.1</p>
<p>Practice development integrates work-based learning with its focus on active learning and formal systems for enabling learning in the workplace to transform care.</p>	<p>Practice development is aimed at facilitating the process of reflection and development of self-knowledge to transform nursing care delivery at the bedside. Facilitation is a key determinant of successful implementation of evidence. The researcher purposively selected internal facilitators in each critical care unit to facilitate learning in the critical care unit.</p>	<p>Sections 7.4 and 7.5</p>

**Table 7.2 Applying the principles of practice development**

Principle (McCormack & McCance 2017:125)	Application	Description
<p>Practice development integrates creativity with cognition to blend mind, heart and soul energies, enabling practitioners to free their thinking and allow opportunities for human flourishing to emerge.</p>	<p>The research paradigm underpinning this study is critical realism, which aligns with the objectives of practice development. The creation of knowledge is considered a creative social process.</p>	<p>Section 3.2.1 Section 7.4</p>
<p>Practice development integrates and enables both the development of evidence from practice and the use of evidence in practice.</p>	<p>The clinical pathway for NIV was collaboratively developed, adapted and validated by the nurses and multidisciplinary teams working in the purposively selected critical care units. The roots of practice development are founded in critical realism. However, implementation of the clinical pathway into practice never occurred.</p>	<p>Section 3.3.1</p>
	<p>The researcher selected the i-PARiHS framework for implementation of the clinical pathway in the critical care unit, because the components of the i-PARiHS framework are embedded in the methodology of practice development.</p>	<p>Sections 7.3 and 7.4</p>

**Table 7.2 Applying the principles of practice development**

Principle	Application	Description
<p>Practice development is a complex methodology that can be used across healthcare teams and interfaces to involve all internal and external stakeholders.</p>	<p>Practice development requires the support and buy-in from all stakeholders in bringing about change in clinical practice. Gaining access and buy-in from all stakeholders is essential to implementation of evidence at the bedside. Furthermore, practice development is not a once-off intervention and the research design must be collaborative, inclusive and participative. The research design for this study was Action Research.</p>	<p>Section 6.2.1  Section 7.4</p>
<p>Practice development is associated with a set of processes including skilled facilitation that can be translated into a specific skill set required as near to the interface of care as possible.</p>	<p>Facilitation of change in practice is a key component of practice development. Change is established through collaboration, inclusion and participation of nurses to develop effective workplace cultures. Development is initiated through work-based learning (learning in and from practice).</p>	<p>Chapter 6  Section 7.4</p>
<p>Practice development integrates evaluation approaches that are always inclusive, participative and collaborative.</p>	<p>Evaluation enables learning from systematically reviewing what worked, for whom, when and in which context, and is always participative, collaborative and inclusive.</p>	<p>Sections 7.3 and 7.4</p>

**Table 7.2 Applying the principles of practice development**

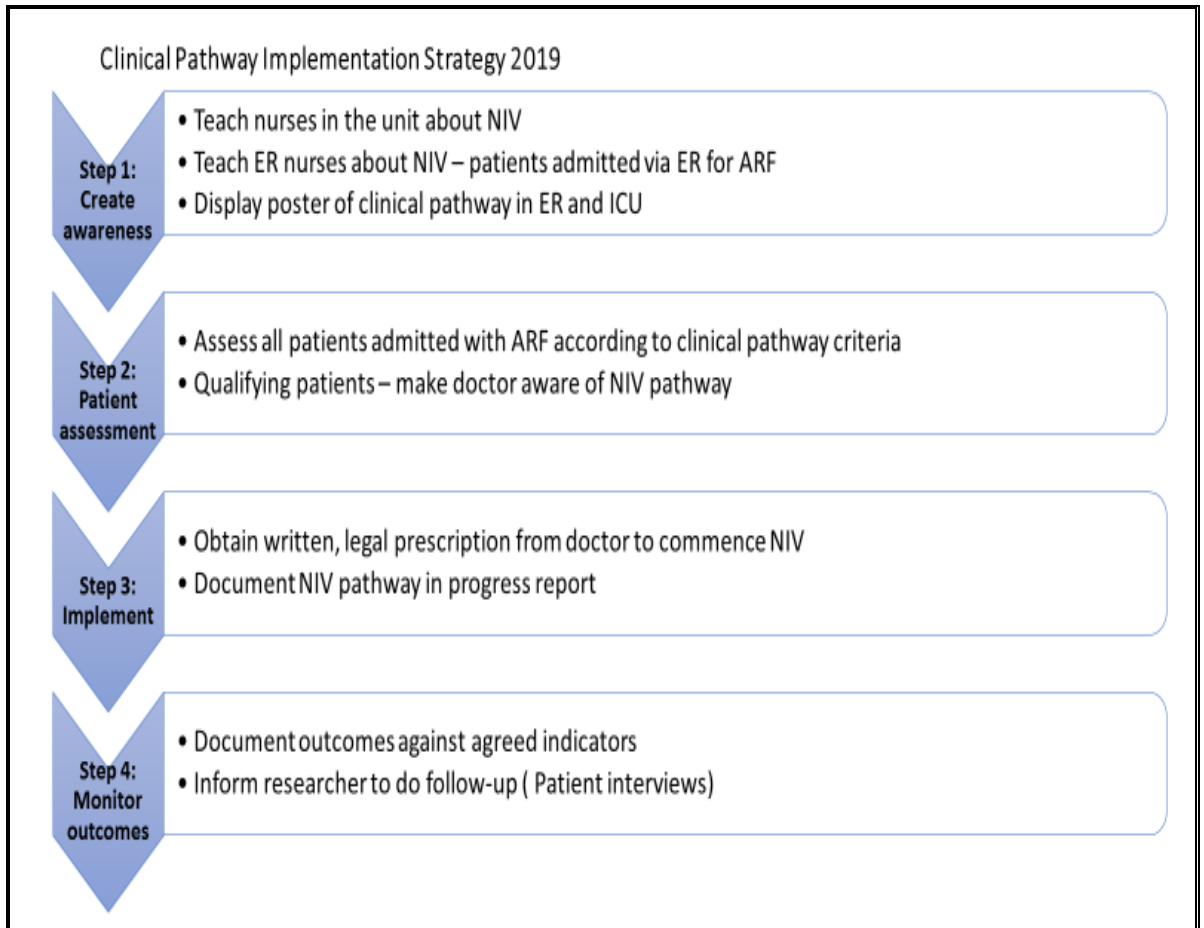
Principle	Application	Description
<p>Practice development uses key methods that are utilized according to the methodological principles being operationalised and the contextual characteristics of the practice development programme of work.</p>	<p>Practice development relies on key methods that are consistently applied to bring about change in practice, namely:</p> <ul style="list-style-type: none"> <li>• Agreed ethical processes</li> <li>• Analysing stakeholder roles and engagement</li> <li>• Clarifying values</li> <li>• Clarifying workplace culture</li> <li>• Clarifying the development focus</li> <li>• Collaborative relationships</li> <li>• Continuous reflective learning</li> <li>• Developing a shared vision</li> <li>• Developing critical intent</li> <li>• Participatory engagement</li> <li>• Developing a reward system</li> <li>• Evaluation</li> <li>• Facilitation of change</li> <li>• Providing space for ideas to flourish</li> <li>• Good communication strategy</li> <li>• Implementing processes for sharing and dissemination</li> <li>• Knowing ‘self’ and participants</li> </ul>	<p>Chapter 6  Section 7.4</p>

**Adopted from Manley, McCormack & Wilson (2008:5) and McCormack & MacCance (2017:125)**

### **7.3. DEVELOPING THE IMPLEMENTATION STRATEGY**

The implementation strategy was developed by the Proteas (intervention group) in collaboration with the external facilitator

(researcher) during a workshop. The researcher engaged the internal facilitators in a strategic planning session to discuss and agree the strategy for implementing the clinical pathway for NIV in the critical care unit. The outcome of the planned strategy is outlined in Figure 7.2. Annexure E1 is a diagrammatic representation of the four (4) step implementation strategy.



**Figure 7.2: Proteas’ implementation strategy for the clinic pathway for NIV (intervention group)**

The four (4) steps of the implementation strategy included the following:

- **Step 1 – Create awareness**

The internal facilitators collaboratively agreed that the Emergency Department (ED) nurses needed to be included in the implementation

strategy, based on the reflective discussions they had during previous sessions to identify patients who are suitable for NIV and who are admitted via ED (see Section 6.4.2.1). The aim was that patients would be screened on admission to ED and that patients who meet the inclusion criteria for NIV would not be invasively intubated in ED but rather admitted directly to the critical care unit, where NIV would be commenced by the critical care nurses.

- **Step 2 – Patient assessment**

Step 2 of the implementation strategy involved the recognition of patients admitted with signs and symptoms of respiratory failure and assessing the appropriateness for NIV for each patient. If the internal facilitators found that a patient was an ideal candidate for NIV, the next step would be to make the attending doctor and physician aware that the patient meets the criteria for NIV. The internal facilitators agreed that the patients who qualify for NIV would be nursed by a registered nurse to ensure patient safety and accurate interpretation of the patient data presented, e.g. changes in arterial blood gas values, level of consciousness and vital data.

- **Step 3 – Implement the clinical pathway for NIV**

The next step of the implementation strategy required the doctor to examine the patient and provide a legal, written prescription for the continuation of NIV as per the validated clinical pathway. The written prescription as well as the patient's progress or deviation from the clinical pathway would be recorded in the patient's progress report and nursing notes. The internal facilitators would assist the nurse allocated to the patient to effectively monitor the patient for signs of NIV failure and to keep the attending doctor informed of any changes in the patient's condition, to prevent delays in treatment and advanced airway support.

If the doctor is not immediately available to examine the patient, the doctor would be telephonically informed that the patient is a candidate for the clinical pathway for NIV and a telephonic prescription would be obtained from the attending doctor to commence NIV as per the validated clinical pathway. The telephonic prescription for NIV would only be valid for 24-hours as per hospital policy related to the control and administration of medication, which means that the doctor is obligated to examine the patient and provide a written prescription for treatment within 24 hours.

- **Step 4 – Monitor & evaluate outcomes**

The aim of this step of the implementation strategy is to allow for the monitoring and evaluation of patient outcomes. Patient outcomes would be monitored against the agreed key indicators for success, e.g. length of stay, NIV failure (requiring endotracheal intubation or death of the patient), complications such as ventilator associated infections (VAP). Patients who are successfully managed with NIV via the clinical pathway will be interviewed by the external facilitator (researcher) once they are discharged from the critical care unit to a general ward. The interview schedule and participant information and consent document can be viewed in Annexure E2. The aim of interviewing patients who were treated with NIV, was to gain an understanding of their experience with NIV to assist the nurses in providing person-centred care with compassion and regard for the patient's needs.

#### **7.4. IMPLEMENTING THE CLINICAL PATHWAY FOR NIV**

During the implementation period from February 2019 to the end of June 2019, the researcher (external facilitator) and the internal facilitators had monthly face-to-face meetings to discuss the progress as well as the challenges. To enhance communication, it was agreed that the internal facilitators and the researcher would communicate as often as possible via the WhatsApp group at least once a week to



monitor and evaluate progress (see Annexure E3). During the researcher's monthly visits, learnings from the previous period were discussed and the information used to inform the next steps for implementing the clinical pathway for NIV.

Face-to-face meetings are crucial in maintaining the interest of the internal facilitators and providing visible leadership support. The researcher also had an opportunity to guide the internal facilitators to communicate their challenges clearly and help them find innovative solutions for overcoming barriers. It also provided an opportunity for the researcher to observe the day-to-day operations of the critical care unit as well as the interactions between the members of the multidisciplinary team, the unit managers and internal facilitators.

#### **7.4.1. Step 1 – Creating awareness (February 2019)**

The first step of the implementation strategy included creating awareness of NIV in the Emergency Department (ED). This was achieved through four (4) training sessions with the nurses in the ED to teach them how to identify patients with acute respiratory failure who would be suitable candidates for NIV. The internal facilitators spent one-on-one sessions with the ED nurse on their shift to ensure that they were aware of the inclusion criteria for NIV. The internal facilitators and ED nurses collaboratively agreed that when a patient is admitted who might be a candidate for NIV the ED nurse would immediately notify the internal facilitator who would provide support for the ED nurse to ensure the timely admission of the patient to the critical care unit where NIV would be initiated by the critical care nurses.

The researcher visited the Proteas on two occasions, on 16 and 23 February 2019. On both occasions the unit had a 50% occupancy and the patients admitted to the unit did not require NIV. The patients in the unit were admitted for conditions such as dehydration, post-operative

pain management, uncontrolled hypertension, chest pain and myocardial infarction. The researcher discussed the progress with the internal facilitators on duty, who exclaimed their concern regarding the low occupancy of the unit.

Meanwhile in the control group, the internal facilitators stated that they will discuss the implementation plan with the unit manager when she returns from sick leave. This will then be shared with the doctors working in the unit to consider implementing the clinical pathway for qualifying patients.

#### **7.4.2. Step 2 – Patient assessment**

Only one patient was admitted to ED during February 2019 who required advanced airway management, but the patient was not a candidate for NIV due to the severity of facial fractures sustained in a motor vehicle accident. The patient was stabilised and transferred to a tertiary hospital 30km away. However, the ED nurse did contact the internal facilitator on duty to assess the patient and determine suitability of NIV. This was an indication that the time spent raising awareness among the A&E nurses pertaining to NIV has worked well.

#### **7.4.3. Step 3 – Implement the clinical pathway for NIV**

During March, the researcher was able to visit the intervention group once, on 23 March 2019. The researcher arrived at the unit to find that the unit was staffed with only agency staff – none of the internal facilitators were available as they had all gone away for a team building event sanctioned by the hospital manager. Later discussions with the internal facilitators revealed that the compulsory team building event was an attempt at improving the team dynamics in the critical care unit, as there were some untoward events that caused a severe breakdown in team communication and team work between the shift leaders and

the unit manager. The researcher asked them to provide feedback electronically via email, regarding the progress with the implementation plan. No feedback was received from any of the internal facilitators.

The researcher then resorted to contacting the internal facilitators individually, to ascertain what the problems were. One of the internal facilitators indicated that they are struggling with internal team dynamics and have not given any attention to the research activities again, as their priority is to rebuild their team now. The researcher suggested a breakfast meeting during April 2019 to discuss their challenges. The researcher asked the internal facilitators to decide on a date when they (internal facilitators) would be able to meet. The aim of this meeting was to discuss their progress and the way forward. The researcher waited for 2 weeks to get the internal facilitator's input regarding a suitable date for the breakfast meeting. The researcher had no response from the internal facilitators. The researcher consulted with the most active of the internal facilitators to provide a date when they would be available during April 2019. The date was set for 30 April 2019. The researcher created an invitation which was sent to them all via email as well as the WhatsApp group and to their individual mobile numbers (see Annexure E4).

The researcher and internal facilitators were all set for the breakfast meeting on 30 April 2019. However, two days before the planned meeting the internal facilitators all cancelled. When the researcher enquired as to why, the excuses ranged from being allocated to work night shift to curb agency expenditure, to preferring to spend time with family over the religious holiday period. Some of the internal facilitators indicated that the research activities are not a priority for them anymore, and they would rather maintain the status quo at that stage. As stated in the PICD completed by the internal facilitators (see Annexure C1), they could withdraw from the study without penalty. For this reason, the researcher decided to continue working with the three

internal facilitators who were active throughout the study. However, no patients were admitted that were candidates for the clinical pathway.

The impact of a loss of team cohesion and poor teamwork on the implementation of the clinical pathway for NIV in the critical care unit became apparent when the internal facilitators all declined to participate in an all-expenses paid breakfast. The aim of the breakfast meeting was to have a reflective discussion about the slow progress in the implementation plan and to revisit the implementation strategy. When the researcher asked one of the Proteas why she declined she stated that she is not prepared to sit around the table with the rest of the team and pretend that all is well. They do not get along at work and she has no desire to spend her off-time with them too. Another Protea sent a WhatsApp message to say that the scheduled change to night shift has impacted on her family time, and she would rather be at home than participate in the breakfast.

The loss of team cohesion and teamwork was due to conflict between the management and the Proteas, which had a demotivating effect on them. The Proteas were more focused on 'surviving' another shift, than participating in evidence-based practice implementation. It is the researcher's observation that each one looked after their own interests first, and that they have lost trust in their team members. A lack of team cohesion and teamwork leads to a loss of vital information and knowledge transfer. The consequences of this loss of teamwork meant that the implementation of the clinical pathway did not continue as planned. The researcher became increasingly conscious of the importance of teamwork in improving quality of patient care at the bedside – are they really acting in the best interest of the patient, or merely getting through another shift? What measures should be taken to resolve the conflict and rebuild the team in the critical care unit to be receptive to change?

Religious holidays in April 2019, had a great impact on the occupancy of the unit. The two long weekends in short succession lead to the extended absence of the attending physician, who took annual leave. For a period of approximately two weeks admissions to the critical care unit were limited to lower acuity high care patients only. Admitting doctors diverted critically ill patients to the nearest hospital where a full-time physician was available. The critical care nurses were allocated to work in other departments in the hospital such as the ED and the general wards. They voiced their frustration with having to work in other departments and felt that this was just another cost-saving intervention from hospital management.

As expected, the Daisies had made no progress with the implementation of the clinical pathway. They felt that they needed the unit manager to discuss it with the doctors during the monthly meeting before they could go ahead. The researcher asked them to keep her informed and let her know if they needed more assistance. However, they never approached the researcher for assistance. This was congruent with the findings of the CAI questionnaire conducted in the critical care unit of the control group (see Annexure C5). The results of the CAI indicated that they value leadership, but also perceive their leaders as somewhat traditional. This strengthens the hierarchical nature of the nursing profession – the team is not willing to challenge the boundaries and will not attempt to implement anything without the permission of the unit manager who is seen as the spokesperson for the critical care nurses. Although this is accepted practice in the hospital, as the unit manager remains accountable and responsible for the nurses in their unit, it delayed attempts at implementation of the clinical pathway for NIV in the critical care unit.

#### **7.4.4. Step 4 – Evaluate the outcomes of the clinical pathway for NIV**

Implementation science is primarily concerned with the development of strategies to enhance the uptake of research evidence into clinical practice through facilitation of the process (Livet, Haines, Curran, Seaton, Ward, Sorenson & McClurg 2018:491). Several factors contributed to the unsuccessful implementation, including factors related to the patients, the nurse (internal facilitators), and the organization as discussed in the sections that follow.

##### **7.4.4.1. Patient outcomes**

At the onset of the study, the researcher and the internal facilitators collaboratively agreed that the patient outcomes related to NIV would include the length of stay, the NIV failure rate, and the patient discharge outcomes. The length of stay would be used to assess if the utilisation of NIV reduced the length of stay of the patient in the critical care unit as well as the overall length of stay of the patient in the hospital. Because NIV is underutilised in the South African context, there is limited data available on NIV utilisation in South African acute care hospitals. Internationally, research evidence has shown that NIV is a cost-effective treatment modality for patients presenting with acute respiratory failure. The average cost is reduced due to a reduction in the complications associated with invasive mechanical ventilation such as ventilator acquired pneumonia, which equates to a reduction in the overall cost of hospitalisation (Kyeremanteng, Gagnon, Robidoux, Thavorn, Chaudhuri, Kobewka & Kress 2018:2; Hall, Schmidt & Kress 2015:np; Patel, Pena & Babcock 2015:549).

A retrospective cost analysis conducted by Mahomed and Mahomed (2019:38) concluded that the average cost per patient day in a critical care unit amounts to ZAR 13 433.00 in public sector hospitals and up to ZAR 14 006.00 per day in private sector hospitals. In private sector

hospitals this amount is paid by the medical aid funder to the private sector hospital. The costing model used in private sector hospitals excludes additional services such as pathology, radiology, and doctor consultation fees from this amount. Should the patient's medical aid funder not cover these additional costs, the patient is held liable for the payment after discharge from the hospital. Considering that the average length of stay of an invasively ventilated patient is between 5.9 to 11 days as per the hospital group, this amounts to a total of approximately ZAR 84 036.00 to ZAR 154 066.00 for a single admission to the critical care unit. Should the patient develop complications such as ventilator acquired pneumonia, the cost is increased significantly due to the additional medication required to treat the pneumonia and the increased length of stay of the patient in the critical care unit.

Research evidence indicates that patients treated with NIV have a significant reduction of 3.2 to 4.3 days shorter length of stay in the critical care unit (Sheikh, Tiruvoipati, & Hurley 2019:262; Stefan, Nathanson, Lagu, Priya, Pekow, Steingrub, Hill, Goldberg, Kent & Lindenauer 2016:1096). Considering this, and the high cost of hospitalisation in South Africa, a reduction in length of stay of even one day warrants the utilisation of NIV in the critical care units. To put this in monetary value, this means that the average cost of stay will be reduced to approximately ZAR 42 016.00 to ZAR 98 042.00 – a saving of more than 50%.

The aim was to present the local data to the hospital management teams and doctors to support the utilisation of NIV in the critical care units. Additionally, the researcher planned to conduct structured interviews with patients who received NIV during their hospitalisation to establish the patient's individual experiences related to NIV. However, factors related to unit occupancy, and changes in patient population and disease profile, prevented the implementation of the clinical

pathway for NIV. The researcher therefore was unable to collect any data related to NIV and the possible patient outcomes of NIV utilisation in the critical care units.

The unit occupancy in the intervention group declined steadily over the course of the research study, which contributed to the non-implementation of the clinical pathway for NIV. Of the patients admitted to the unit, less than 10% were candidates for NIV, based on the exclusion criteria defined in the clinical pathway (see Annexure D5). Reasons for exclusion are depicted in Table 7.3.

**Table 7.3 Exclusions from NIV**

Criteria	February 2019	March 2019	April 2019	May 2019	June 2019
<b>Occupancy</b>	50%	52%	31%	50%	84%
<b>Admission diagnosis</b>	Acute myocardial infarction; dehydration; spinal trauma; head injury	Acute myocardial infarction; spinal/head trauma. Post-operative observation (abdominal surgery)	Acute myocardial infarction. Post-operative observation (abdominal surgery)	Acute myocardial infarction. Post-operative observation (abdominal surgery)	Acute myocardial infarction; Poly- trauma. Post-operative observation (abdominal surgery)
<b>Number of patients requiring ventilator support</b>	Nil	Nil	2 invasively ventilated from theatre	1 invasively ventilated from theatre	1 invasively ventilated from theatre

**Source: The Hospital (2019)**



The unforeseen changes in unit occupancy, patient population, and disease profile during the implementation phase of this study, contributed to the non-implementation of the clinical pathway for NIV in the critical care unit. However, this does not invalidate the potential effectiveness of utilising the clinical pathway for NIV in another setting.

Demoule, Chevret, Carlucci, Kouatchet, Jaber, Meziani, et al. (2016:89) state that internationally, the use of non-invasive ventilation outside the critical care unit, such as out-of-hospital care, in the Emergency Department (ED) and in general wards has increased during the past 15 years. The increase in NIV utilisation has also changed to include treating patients with acute respiratory failure of various aetiologies (Demoule et al. 2016:90; Cabrini, Esquinas, Pasin, Nardelli, Frati, Pintaudi, et al. 2015:587). The increased use of NIV outside of the critical care environment can be attributed to a better understanding of the benefits of NIV, as well as the fact that doctors are more confident and skilled in the use of NIV outside the critical care unit. The growing shortage of critical care beds was relieved using NIV outside the critical care units and patients requiring ventilator support could be treated effectively (Cabrini, Esquinas, Pasin, Nardelli, Frati, Pintaudi, et al. 2015:587; Kopic & Paradžik 2014:310).

#### **7.4.4.2. Nurses' outcomes (internal facilitators)**

During May 2019, the researcher visited the unit twice. Since the Proteas were now all spread across the four shifts (day and night), it was impossible to get them all together in one room for a discussion. The researcher decided to spend two days in the unit to at least get to speak to all the Proteas individually. The researcher visited on 18 and 25 May 2019, respectively. It became clear that the implementation strategy was not working. The researcher discussed this with the internal facilitators to ascertain why this could be. The researcher interviewed the three (3) Proteas individually. The interviews were semi-structured and conducted informally in the tearoom of the critical

care unit. The interview lasted approximately 10 minutes with each of the internal facilitators and was audio-recorded.

The interview schedule consisted of questions related to the implementation strategy for the clinical pathway for NIV:

- The first step of the implementation strategy was to teach the ED nurses to recognise acute respiratory failure and patients who are candidates for NIV. How has this worked? Was the hospital management and the ED team supportive of this initiative?
- How are the critical care doctors reacting to your suggestions to utilise NIV for qualifying patients?
- Are you able to teach / coach the nurses in your team to monitor the patients effectively and communicate changes in patient's condition with you?
- What else can we do to get the nurses more involved in the implementation process?

Interview data was coded by the researcher in collaboration with her supervisors, based on the concepts of the i-PARiHS framework, which was the conceptual framework utilised for this study. Several factors contributed to the unsuccessful implementation of the clinical pathway for NIV, including factors related to evidence, the recipient, the context, and facilitation.

Table 7.4 provides a summary of the data collected from the interviews with the internal facilitators as well as the application to the i-PARiHS framework. A detailed discussion related to each of the identified factors that influenced the implementation of the clinical pathway for NIV is presented in the section that follows.

**Table 7.4 Summary of themes, sub-themes and categories from interview data**

Theme	Sub-theme	Category (Barriers)
<b>Evidence (core construct)</b> <i>The type of research evidence to be implemented. There should be a high degree of congruence with practice for evidence to be accepted and implemented</i>	Implementing new evidence-based patient care interventions is not the priority.	Gap between evidence and current practice (utilisation of NIV)
	Lack of support from management	Organisational culture
<b>Facilitation (core construct)</b> <i>Act of enabling or empowering participants to adopt evidence into daily practice</i>	Lack of support from management	Organisational culture - Leadership
	Lack of time to teach/coach ICU nurses	Organisational culture – resources
	Lack of continuity in ICU nurses (agency staff)	Organisational culture – resources

**Table 7.4 Summary of themes, sub-themes and categories from interview data**

<b>Theme</b>	<b>Sub-theme</b>	<b>Category (Barriers)</b>
<b>Recipient</b> <i>Recognised the individuals who are involved in the implementation of evidence and their unique characteristics that impact on implementation</i>	ICU nurses are in 'survival mode' – feeling undervalued	Poor / absent motivation (disempowered and disengaged)
	Lack of authority to influence doctor decisions	Organisational culture – don't challenge the status quo
	Lack of critical care resources – increased workload	Significant strain on internal facilitators to ensure quality safe patient care
<b>Innovation</b> <i>The act of purposively blending research evidence (knowledge) with local knowledge from practice to enhance the adoption of evidence into clinical practice</i>	Lack of management support to change current practice – resistance to change	Organisational culture – Leadership
	Not feeling valued as a member of the multidisciplinary team	Organisational culture – Leadership and Evaluation

**Table 7.4 Summary of themes, sub-themes and categories from interview data**

Theme	Sub-theme	Category (Barriers)
<b>Context (core construct) – Inner context</b> <i>The setting where the implementation is to happen, e.g. critical care unit in the hospital</i>	Lack of management support	Organisational culture – Leadership
	Lack of resources – workload	Organisational culture – Resources
	Resistance to change	Organisational culture - Leadership
<b>Context (core construct) – Outer context</b> <i>The context in which the hospital is embedded, e.g. the South African health care system</i>	Lack of resources	National crises – shared challenges between the public and private health care sector
	Authority to influence nursing practice	Shortage of ICU qualified nurses to be addressed as a matter of urgency

**Adapted from Cheng et al (2017:5104 – 5112) and Harvey & Kitson (2016:1-13)**

As summarised in Table 7.4, the barriers to the implementation of the clinical pathway for NIV in the critical care unit were identified by the internal facilitators, and consensus was reached with the external facilitator. The most significant barrier to implementation of the clinical pathway for NIV in the critical care unit was the context. As stated by Cheng et al (2017:5106 - 5110) and Harvey and Kitson (2016:1-13) context is the main driver for affecting change in the clinical setting.

#### **7.4.5. The impact of context on evidence-based practice**

The next section discusses the impact of the changes in the context on other constructs during this study.

##### **7.4.5.1. Evidence**

The clinical pathway was originally developed by the multidisciplinary team working in the purposively selected critical care units in 2012 (Balfour et al. 2012:107), and subsequently included in the policy and procedure file of the critical care unit. However, the clinical pathway was not implemented into clinical practice. During the baseline phase of the study, the researcher conducted the Context Assessment Index (CAI) which indicated that the nurses in the unit perceive their leadership as lacking. A total of 69% of respondents felt that they did not have the authority to influence decision-making processes in the unit and 54% indicated that communication with the multidisciplinary team and the management of the hospital is problematic.

Although measures were taken to empower the internal facilitators, the negative workplace culture of ‘how we do things here’ persisted, leading to low motivation from the internal facilitators to actively participate in the research activities. Triplett and Loh (2018:77) state that employees are disempowered when they believe that their workplace is controlled by external forces beyond their circle of influence. Triplett and Loh (2018:77) add that the level of trust between members of the team in an organisation has a definite impact on the motivation of employees to perform their best work.

The prevailing workplace culture has seemingly worn down the internal facilitators, to the point where they doubt their worth as members of the multidisciplinary team capable of bringing about change. According to participant P1, “*What is it all for?...*”. Depersonalization refers to

negative and cynical attitudes and impersonal feelings toward the subject of one's work, which inevitably leads to feelings of inadequacy to perform one's work (Triplett & Loh 2018:77; Vandebroek et al. 2017:546). This negative trend has led to nurses becoming overwhelmed, exhausted, and disengaged. Another participant (P2) stated that they only go to work "*because we have to*" and that there is not much satisfaction in going to work. This low level of motivation directly impacted on the implementation of the clinical pathway for NIV. It was not deemed worth the effort because the internal facilitators were disengaged and merely trying to get through another shift.

The i-PARiHS framework states that for evidence to be successfully implemented into clinical practice, the evidence to be implemented should resonate with the local knowledge and skill of the persons responsible for the implementation (Mekki, Øye, Kristensen, Dahl, Haaland, Nordin et al. 2017:2; Ward et al. 2017; Rycroft-Malone et al. 2013; Seers et al. 2012:2; Squires et al. 2012:294; McCormack, McCarthy, Wright, Slater & Coffey 2009:33). However, even though the nurses and multidisciplinary teams collaborated and participated in the development of the original clinical pathway for NIV as well as the process of adapting and validating the clinical pathway prior to implementation, participants' motivation to participate in the implementation of the clinical pathway was negatively influenced by the prevailing workplace culture. The researcher realised that a negative workplace culture had detrimentally impacted the entire team and their motivation to change practice which is consistent with the findings of Triplett and Loh (2018:77) and Vandebroek et al. (2017:546).

#### **7.4.5.2. Facilitation**

Facilitation is a core component of the i-PARiHS framework and described as the main activating component for the implementation of evidence into clinical practice (Harvey & Kitson 2016:1-13). Emancipatory practice development advocates the use of internal

facilitators to drive the process of change. The researcher assumed that utilising internal facilitators from the purposively selected critical care unit would enhance the adoption of the clinical pathway into clinical practice, because they are part of the multidisciplinary team and work closely within their teams daily. However, the effect of the negative workplace culture inhibited the implementation of the clinical pathway for NIV, as stated by participant P2 and P3, they “*..just want to get through the day...*” and “*...do what is necessary...*” The researcher focused on the facilitation process but lacked the skills to effectively deal with the unexpected outcomes related to a negative workplace culture in the intervention group, such as the conflict within the team. Additionally, as an external facilitator, the researcher had truly little authority to influence hospital management decisions, which could be perceived as a limitation.

The internal facilitators stated that they had to rely on agency nurses (temporary staff) to nurse patients in the critical care units, and that these temporary nurses are not adequately trained or skilled to work in the critical care unit. This adds significantly to the internal facilitator’s workload who took responsibility for the safety of the patients as well as the nurses working in the unit. The internal facilitators indicated that they do not have time to teach or coach these nurses, because they had to complete their own work before the end of their shift. One of the participants indicated that it is a waste of time to try to teach (facilitate) these nurses, because they are not competent to nurse critically ill patients. According to P3, “*Some are as dumb as a box of rocks!*”. The perceived incompetence of the agency (temporary) nurses were a source of anxiety and frustration for the internal facilitators. The participants emphasized that the appointment of suitably qualified critical care nurses would assist greatly in improving patient outcomes and patient satisfaction. According to one participant,



*“We need more permanently appointed ICU qualified nurses in our unit, we can’t go on like this. I sometimes think that I need to look for another job with less stress. I don’t want to work like this”*

Shortages of critical care qualified nurses to safely staff critical care units has a profound impact on the emotional and professional well-being of the nurses currently working in the critical care units (Ward, Baloh, Zhu & Stewart 2017:8; Hill, Guihan, Hogan, Smith et al. 2017:8; Florczak 2016:110). These nurses are accountable and responsible for the safety of each patient under their care, and the shortage of adequately skilled nurses to care for critically ill patients means that those who are qualified are overburdened with responsibility and additional work to ensure that nursing care is delivered (Mekki, Øye, Kristensen, Dahl et al. 2017:7; Florczak 2016:109). The quality of nursing care delivered to the patients remains a priority, but rather than challenge the status quo, the nurses choose to continue with their current ways of work, to *‘survive another shift’*. This adds to their levels of stress, exhaustion, and disengagement.

Triplett and Loh (2018:78) state that trust is a major factor influencing the team environment. A lack of trust amongst team members has a negative effect on the translation of information amongst members of the same team. Feelings of distrust lead to team members being disengaged, reluctant to participate in team discussions and poor team performance. Creating workplace environments that foster a feeling of safety and trust, enhances optimal team performance and enhanced team cohesion (Triplett & Loh 2018:77). In this study, the researcher believed the high rate of temporary staff utilisation created a sense of distrust which added to the internal facilitators’ workload. They were responsible for ensuring safe patient care and good patient outcomes but were not provided with the necessary ‘tools’ to function effectively.

They had to ‘babysit’ less competent staff, and make do with what they had, and the hospital management teams did not acknowledge the impact of utilising high numbers of temporary staff on the well-being of the critical care teams. The critical care nurses (internal facilitators) were demotivated by the continuous influx of new temporary staff, who needed to be coached and trained. According to one participant, “*I would rather do it myself and know that it is done right, rather than leave it to the agency nurse*”. This type of response confirmed the lack of trust within the teams. In addition, this meant that valuable information was not shared with the members of the team and facilitation of critical conversations about patient care is neglected.

#### **7.4.5.3. Recipient**

The revised i-PARiHS framework describes the recipient as all the persons who are involved in the implementation of new evidence into clinical practice, which extends to include patients, the multidisciplinary team, nurses, and managers (Harvey & Kitson 2016:1-13). The role each of the stakeholders play in adopting or resisting change in clinical practice significantly impacts on the success of the implementation process.

Although the internal facilitators were enthusiastic about the implementation at the onset of the study and had a shared goal as evidenced by their Values & Beliefs declaration (see Annexure C3), the impact of weak leadership and lack of support from management demotivated the internal facilitators. Subsequently, the internal facilitators became more disengaged and lost their motivation to change practice and participate in the research activities. Weak leadership and a lack of support from management relate to organisational factors that create unhealthy workplace environments. Murray, Sundin, and Cope (2018:1287) state that engagement can be defined as “a fulfilling work-related state of mind”. When nurses are engaged in their work, they tend to have positive patient outcomes and

organisational outcomes but that this is dependent on good leadership at the bedside.

During the study, a new hospital management team was appointed, and several managers were appointed into new positions. This was disruptive to the Proteas, who then had to establish new trust relationships with a new management team, which is a process which requires time and effort. The new management team seemed more focused on achieving organisational targets and paid less attention to individual quality improvement initiatives.

The Proteas experienced the new management team as punitive – they only provide feedback on targets that were not achieved and demanded action plans to ensure that targets are met within the next review period. The Proteas experienced this as a negative culture where the blame for non-performance is placed on the nurses. Evidence suggests that a negative workplace culture directly impacts of the work performance of the employee (Shanafeldt et al 2019:1556; Vandenbroeck et al 2017:547). According to one participant, “Nothing is ever good enough. They just tell us that we need to do better next time”. This type of negative feedback is demoralising and breaks down teamwork in the critical care unit, leading to more disengaged teams in the clinical setting. Celebrating small successes – even if it is a 1% improvement on the previous results – would go a long way to improving team motivation. Another participant (P1) stated, “We don’t celebrate our successes because there is no time, no resources and no motivation”.

The continuous negative workplace culture affected the internal facilitators’ personal motivation to change practice (Triplett & Loh 2018:77; Murray et al 2017:1289). Rather than challenging convention, they focused on achieving the targets set by management and trying to survive. The reality is that the negative workplace environment affected

individuals on both a personal and a professional level. Their dissatisfaction stemmed from the moral conflict they experienced daily between wanting to do more for their patients and having to ensure that organisational targets are met. Murray, Sundin and Cope (2017:1290) state that the change of focus in the health care sector to become more target driven and less concerned about the patient in the bed contributes to the disempowerment of nurses and multidisciplinary team members, which contributes to high levels of disengagement and poor work satisfaction. Continued job dissatisfaction forces nurses to seek alternative employment, and the national shortage of critical care qualified nurses will be compounded, as these nurses often leave the nursing profession and bedside nursing indefinitely (Murray et al 2017:1289).

The unsuccessful implementation of the clinical pathway for NIV can be attributed to the high level of disengagement of the critical care nurses in the critical care unit. In addition, critical care nurses are disempowered by the hierarchical health care system and have lost the ability to participate in critical conversation and clinical decision-making at the bedside.

#### **7.4.5.4. Innovation**

The revised i-PARIHS framework defines the concept of innovation as a process of aligning the new intervention with local knowledge and experience to enhance the odds of adopting the new practice (Harvey & Kitson 2016:1-13). The original clinical pathway for NIV was developed by the nurses and multidisciplinary team working in the purposively selected critical care units which was advantageous, as the innovation was already aligned with the knowledge, experience and practice of the participants in the clinical setting and would enhance the adoption of the innovation in clinical practice.

However, the changes in the organisational culture impacted on the implementation of the clinical pathway for NIV in the critical care unit. The negative workplace culture where the nurses feel under-valued and under-appreciated led to the demotivation of the internal facilitators to actively facilitate the implementation of the clinical pathway in the critical care unit. The lack of support from management, weak leadership and lack of adequate resources further compounded the non-implementation of the clinical pathway for NIV. As a P3 stated, “...*they just sit behind desks, ... they should come and work with us...*”. The effect of absent or poor leadership in the workplace has a negative effect on the motivation of nurses to change practice (Murray et al. 2017:1287–1291; Triplett & Loh 2017:82; Lynch, McCance, McCormack & Brown 2017:428).

Under-utilisation of non-invasive ventilation continues to deprive qualifying patients from evidence-based interventions and highlights that the South African private health care sector does not promote person-centred care delivery. Moving to a person-centred care delivery model, requires changes in leadership styles to create workplace cultures that are receptive to change and provide for the professional safety of the critical care nurses (Lynch, McCance, McCormack & Brown 2018:428; Triplett & Loh 2017:78).

#### **7.4.5.5. Context**

The i-PARiHS framework defines context as the inner- and outer context in which health care delivery takes place. The inner context is concerned with the unit and organisational culture, whereas the outer context is concerned with the broader health care system in which the inner context is embedded for example the South African health care system (Harvey & Kitson 2016:1-13).

○ ***Inner context***

Organisational factors such as workload, workplace culture, leadership and management support directly impact on individual's motivation and ability to drive and sustain practice change (Cheng et al. 2017:5104). As the external facilitator the researcher's focus was on facilitating the process of implementing the clinical pathway for NIV in the critical care unit. As the study unfolded the impact of organisational factors became more apparent.

The culture of an organisation is a vital element for success. Contextual factors that influence the implementation of evidence-based practice at the bedside include the culture of the organisation, leadership and resource availability (Cheng, Broome, Feng, Hu 2017:5104; Kajermo, Boë, Johansson, Henriksen, McCormack, Gustavsson & Wallin 2013:42). Workplace culture is said to be the shared vision and beliefs of the organisation which is deeply rooted in the history of an organisation. The workplace culture is characterised by the development of policies and procedures that guide the behaviour of team members, explicit statements regarding expected performance and what measures are taken to manage poor performance. Workplace culture can be described as a broad statement of the organisation and its manager's attitude towards employees and has a significant impact on the employee's job satisfaction (Shanafeldt 2019:1557; Stepanek, Jahanshahi & Millard 2019:470).

Workplace culture has been recognised as a significant barrier to the implementation of evidence in clinical practice and includes factors related to the leadership of the organisation, resource allocation and availability. These factors significantly influence the ability of the organisation to implement innovations to improve practice (Stepanek et al. 2019:470; Cheng et al. 2017:5109; Rycroft-Malone, Burton,

Wilkinson, Harvey, McCormack, Baker, et al. 2016:17; Rycroft-Malone, Wilkinson, Burton, Andrews, Ariss, Baker, et al. 2011:74).

Ali, Jangga, Ismail, Kamal and Ali (2015:162) describe a desirable workplace culture as an environment where employees and the organisation have a shared common goal, employees are empowered to participate in the decision-making process, and the actions and behaviours of leaders, and allocation of resources is clearly communicated. However, this was not the case in this study. The culture of the critical care unit is greatly influenced by the culture and leadership of the organisation (Bailey & Burhouse 2019:106; Triplett & Loh 2017:76; Murray et al 2017:1289). In the intervention group it became clear that there is a huge incongruence between the culture of the critical care unit and the culture of the organisation. In other words, there was a gap between ‘what we say’ and ‘what we do’. In addition, the discrepancy between the nurses’ values and beliefs and those of the organisation lead to job dissatisfaction and demotivation of the nurses in the critical care unit. According to the participants,

*“It’s not about the patient at all anymore - the patient is not priority – we need to tick all the boxes to prove that we’ve done our jobs”.*

The hierarchical workplace culture in the organisation proved to be a formidable barrier to the implementation of evidence-based practice at the bedside. The ultimate authority of the doctor as the decision-maker regarding the patient’s care strengthens the hierarchical culture further disempowering the nurse as a professional member of the multidisciplinary team. The nurses would rather do what they are told to avoid conflict, than challenge convention to improve practice. Cheng et al. (2017:5109) state that this workplace culture could be a facilitator of change if management teams were interested in implementing evidence-based practice at the bedside by utilising their authority and power appropriately for advancing patient outcomes. However, in the

researcher's view the management teams of private sector hospitals are more focused on achieving operational targets – ticking the boxes – than implementing scientifically defensible interventions to improve patient outcomes. How the targets are achieved is not considered important, as long as they are achieved at the end of the review period. The influence of the organisational leadership is crucial in the implementation of evidence at the bedside.

Traditional methods of evidence implementation using a top-down approach have had limited success because this approach invokes resistance from nurses. Utilising an emancipatory practice development approach shifts the balance of power by utilising a 'bottom-up' approach, which means that the nurses are empowered to influence the process of evidence implementation at the bedside. However, this requires a strong leader who understands the value of collaboration, inclusion, and participation of the critical care nurses in the process (Cheng et al. 2017:5109; Sijbom, Janssen, Van Yperen 2016:733). A valuable finding of this study was that the management teams are not necessarily good leaders. They can manage their nursing teams and the critical care units to achieve organisational targets but lack the leadership skills to guide their teams to improve patient care delivery and outcomes through the implementation of evidence at the bedside. The lack of leadership was evidenced by the following statements of the participants,

*“They sit behind their desks all day; they should come to work with us on the floor and see what we have to put up with”*

*“They should spend less time in the office and having meetings”.*

The South African nursing context remains hierarchical. The behaviour of the managers of an organisation is shaped by the overall workplace culture. Middle and junior management behaviour is dictated by the behaviour of senior management who are considered superior (Sijbom et al. 2016:734). The general perception is that nurses in managerial



positions such as unit managers and nurse manager have superior knowledge, competence and skill, and therefore have the authority to make decisions that impact on nursing practice at the bedside (Sijbom, Janssen & Van Yperen 2016:734). Managers who are focused on achieving organisational goals tend to perceive the input of their subordinates regarding work-related matters as inferior. When subordinates present their opinions, managers may perceive this as a threat or a challenge to their competence and skill. Managers who are focused on achieving organisational goals tend to rely on their own frame of reference – which is influenced by the behaviour of senior management - rather than consider alternative ideas from subordinates and refrain from engaging with their teams in critical conversations about patient care and patient outcomes (Sijbom et al. 2016:734).

The consequences of neglecting to engage nurses in critical conversations about patient care and patient outcomes are far reaching. When nurses are not engaged in critical conversations about their work, they become disempowered. Dahinten, Lee and MacPhee (2016:1061) state that work satisfaction and teamwork are improved in workplace cultures where employees are empowered with support and guidance from managers, have access to resources. Moreover, empowering nurses in the workplace increases the level of job satisfaction, commitment to achieving group goals, and enhances trust relationships with management teams. Feelings of disempowerment leads to dissatisfaction in the workplace which ultimately leads to a loss of motivation.

Motivation is recognised as an important driver to enhance participation in evidence implementation at the bedside (Cheng et al 2017:5107). As stated by an internal facilitator during the interviews, they are feeling demotivated because their efforts in the workplace are not recognised, they do not have access to appropriate resources (high levels of

temporary nurses) and the management is only focused on criticizing their work. The constant negative feedback demotivated the internal facilitators, which inevitably led to the non-implementation of the clinical pathway for NIV in the critical care unit. Despite the researcher's best efforts to motivate the internal facilitators to participate in the implementation of the clinical pathway for NIV, their lack of motivation was an insurmountable barrier. The impact of a negative workplace culture stifled the attempts to implement evidence-based practice at the bedside.

- ***Outer context***

The perceptions of the doctors working in the critical care unit regarding the implementation of research evidence has a definite impact on how research evidence is utilised at the bedside (Stavor et al. 2017:57). Health care remains driven by expert opinion and clinical experience (Kea & Sun 2014:373). Resistance to change impacts negatively on efforts to improve the quality of care delivered at the bedside. Change to clinical practice is a multidisciplinary collaborative effort (Cheng et al. 2017:5110). The South African private health care sector remains dominated by doctors, who have the ultimate decision-making powers. The hierarchical nature of the health care system impedes the implementation of nurse led initiatives to improve patient care and patient outcomes, which further disempowers and disengages nurses in the clinical setting (Cheng et al. 2017:5110).

In addition, the South African private health care sector is money-driven, which translates to profits, and the private sector is obliged to maintain the status quo as far as doctor preference is concerned, because this is how they survive. The national shortage of critical care specialist doctors compounds the issue (Jobson 2015:5). If a doctor is unhappy with hospital management, they simply move their practice elsewhere and the hospital loses revenue. This is a move that no hospital management team can afford. Therefore, doctor preference is

still a major deciding factor in the private health care sector. He and Yang (2015:407) found that the focus on revenue generation in the health care sector is a major barrier to the implementation of evidence-based clinical pathways in China and stated that the revenue-focused mindset of doctors largely undermines the effective utilisation of evidence-based clinical pathways. This mirrors the findings of this study.

The researcher realised that in the South African context, health care remains fragmented, and that interprofessional collaboration across the public and private sector to improve the utilisation of evidence-based interventions should be driven from the National Department of Health and regulatory bodies. This is part of the process to implement the National Health Insurance (NHI) plan which aims to provide better health care and access to health care for all South Africans. Nurse leaders have a responsibility to actively participate in the development and implementation of evidence-based care, standards, policies, and procedures that impact their profession, in collaboration with regulatory bodies to promote better health care for all (National Strategic Plan 2017).

#### **7.4.6. Evaluating the outcomes of the implementation of the clinical pathway for NIV**

Evaluating organisational outcomes included evaluation of the context in the purposively selected critical care units using the Context Assessment Index (CAI) questionnaire and reflective conversations with internal facilitators.

##### **7.4.6.1. Context Assessment Index (CAI) questionnaires**

The researcher aimed to administer the CAI questionnaire to the same participants (nurses working in the critical care units) during the

Evaluation phase of the study and compare the findings with the findings of the CAI during the baseline phase (phase 1) of the study. The researcher had hoped that this would indicate if there had been any changes in the culture and context of the critical care units following the implementation of the clinical pathway for NIV. Because the workplace culture had deteriorated since the inception of the study, and the fact that there has been an influx of temporary nurses who might not have participated in the CAI questionnaire during Phase 1 of the study, the researcher critically discussed this with her supervisors. The researcher and her supervisors reached consensus that repeating the CAI would be futile. The results would not be comparable due to the high turnover of temporary staff, and the observable negative workplace culture that developed. For this reason, repeating the CAI questionnaire was abandoned.

#### **7.4.6.2. *Reflective conversations with Proteas***

Interviews are defined as a deliberate interaction between two people centred around a specific concept and interview data can be structured, semi-structured or unstructured. Semi-structured interviews are generally face-to-face encounters between the interviewer and the participant and requires a more systematic approach and structured set of questions that will be used to collect the data during the allocated time frame for the interview (Merriam & Tisdell 2016:109-110; Olsen 2012:33-34). The researcher deemed the use of semi-structured interviews appropriate as it allows the participant to engage in authentic, open conversation in a non-threatening manner. The researcher hoped that this will provide an opportunity for the participants to provide more detailed information. The researcher made individual appointments with the internal facilitators to conduct the interviews as described. Three (3) internal facilitators participated voluntarily in the interviews. The interviews typically lasted 15 minutes.

The researcher conducted reflective conversations with three (3) of the internal facilitators who chose to continue participating in the research activities. The use of semi-structured interviews allows for open-ended questions to be asked in a conversational manner. The same questions were posed across participants but not necessarily in the same exact order (Frey 2018:874; Coghlan & Brydon-Miller 2014:464-465). The interview schedule was designed to elicit the experiences of the internal facilitators related to the implementation of the clinical pathway for NIV in the critical care unit and to prompt them to critically reflect on what worked and what didn't work during the implementation strategy (see Annexure F1). The interview schedule was based on the proposed questions related to leadership, evaluation and culture identified following statistical analysis of the CAI during the baseline phase of the study (see Annexure C5) as well as the observations of the researcher in the critical care unit. A semi-structured interview was conducted with the internal facilitators as seen in Annexure F3.

The researcher sensed that the internal facilitators were cautious of participating in the interviews for fear of sanctions against them if their views are exposed. To ensure a meaningful engagement and critical reflection occurred with the participants, the researcher engaged them in a visual exercise. Before asking the interview questions, the researcher asked the participants to compile a visual representation of their current workplace (see Annexure F2). The gravity of the situation was made clear during the interview, when one of the participants asked “... *will they see this?... I hope not...(giggle)*”, which indicated that their need for confidentiality is extremely important, as they fear sanctions against them if their views become known.

Daiute (2014:2) describe visual narratives as ‘... accounts of daily life...’. Narratives are further described as expressions of the interactions between persons and their environment, and the meaning of events that influence people's experiences. The use of visual media

to aid the narration of experiences assists researchers in engaging with participants in a meaningful manner (Daiute 2014:4). Narratives are the product of social interaction and be viewed as ‘...culture in action...’ (Daiute 2014:2). Alleyne (2015:33) states that narratives are a means for generating and assessing knowledge about what the world means to us. The researcher provided pictures and media (coloured markers, paper) for the participants to use to ‘draw a picture’ of their current workplace. Each participant was able to produce a picture of how they experienced their current workplace, using various types of media. This exercise allowed the participants to ‘open up’ and explain what they are experiencing in the workplace.

The researcher used the pictures as a departure point for engaging in the interview. The findings from the visual representations was supported by the data collected from the interviews. Figure 7.3 is an example of the ‘pictures’ drawn by two participants of their current workplace.

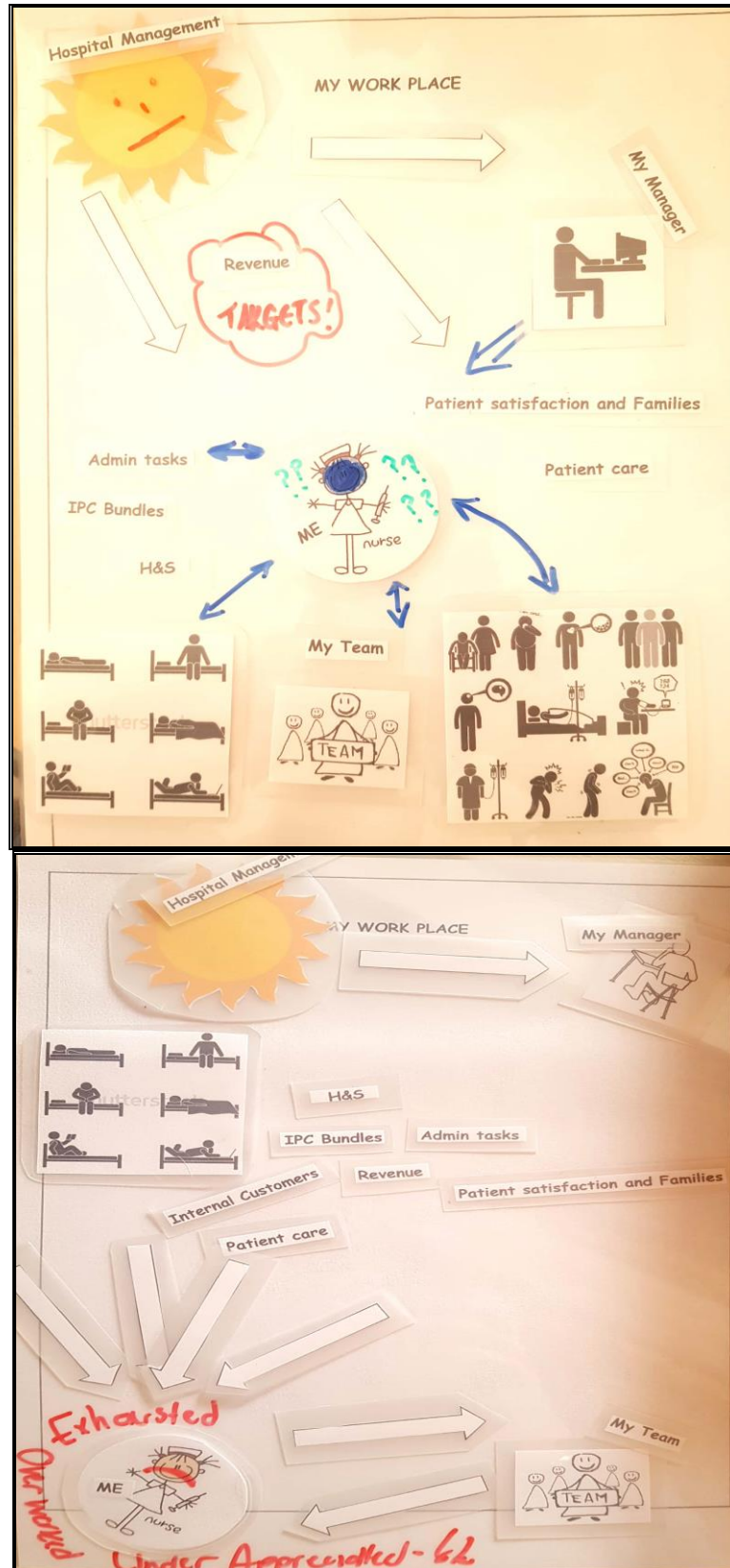


Figure 7.3: Two participants' impression of current workplace

The researcher collaborated with her supervisors to analyse the content of the visual narratives and supporting interview data. The findings were then shared with an expert in the field of industrial psychology, who is currently investigating the effects of workplace culture on individual employees. The researcher deemed this appropriate in confirming and validating the findings of the study as she needed an expert opinion. The researcher and her supervisors met with the expert for one session which lasted 6 hours. During the session each of the participant's drawings were analysed by the industrial psychologist, and common themes were identified.

The expert industrial psychologist agreed with the researcher and concluded that the internal facilitators all shared the same perception of their workplace. None of them experienced their workplace as a safe environment where they can perform to the best of their ability. Drawing the mouth upside down on the nurse figure clearly indicates that they are dissatisfied. One participant coloured in the face of the nurse figure as an indication that they feel powerless and under-valued in the workplace. The source of their dissatisfaction is clearly indicated on their pictures – lack of support from management, lack of leadership, lack of positive feedback. Managers are depicted as distant individuals – with their back turned to their teams. A clear indicator of absent support. The internal facilitators placed them and their management teams at opposite ends of the page – a clear divide between management and the nurses, further supporting the fact that the internal facilitators feel unsupported in their workplace.

Table 7.5 is a summary of the themes, sub-themes and categories identified from the individual reflective conversations the researcher conducted with the internal facilitators. The researcher collaborated with her supervisors to code the data to identify themes, sub-themes and categories. The data was also presented to the expert industrial psychologist who validated the findings alongside the visual narratives.



**Table 7.5 Themes, sub-themes and categories from individual interviews**

Theme	Number of responses	Sub-theme	Category
<b>Unsupported in the workplace</b>			
<b>Lack of support from management to participate in research activities</b> ( <i>The internal facilitators indicated that they feel management is only concerned with reaching group targets and have little interest in new ideas</i> )	2	<b>Leadership</b>	Lack of authentic engagement Demotivation of critical care nurses
<b>Lack of time – current workload is overwhelming with additional tasks e.g. infection surveillance</b> ( <i>The internal facilitators are expected to perform additional administrative tasks to ensure that the unit reaches the agreed infection prevention and surveillance targets, which leaves little time for any other activities</i> )	3	<b>Workplace culture</b> <b>Leadership</b>	Authentic engagement Demotivation Disengagement Disempowerment of the nurses leading to disengagement of the critical care nurses and demotivation

**Table 7.5 Themes, sub-themes and categories from individual interviews**

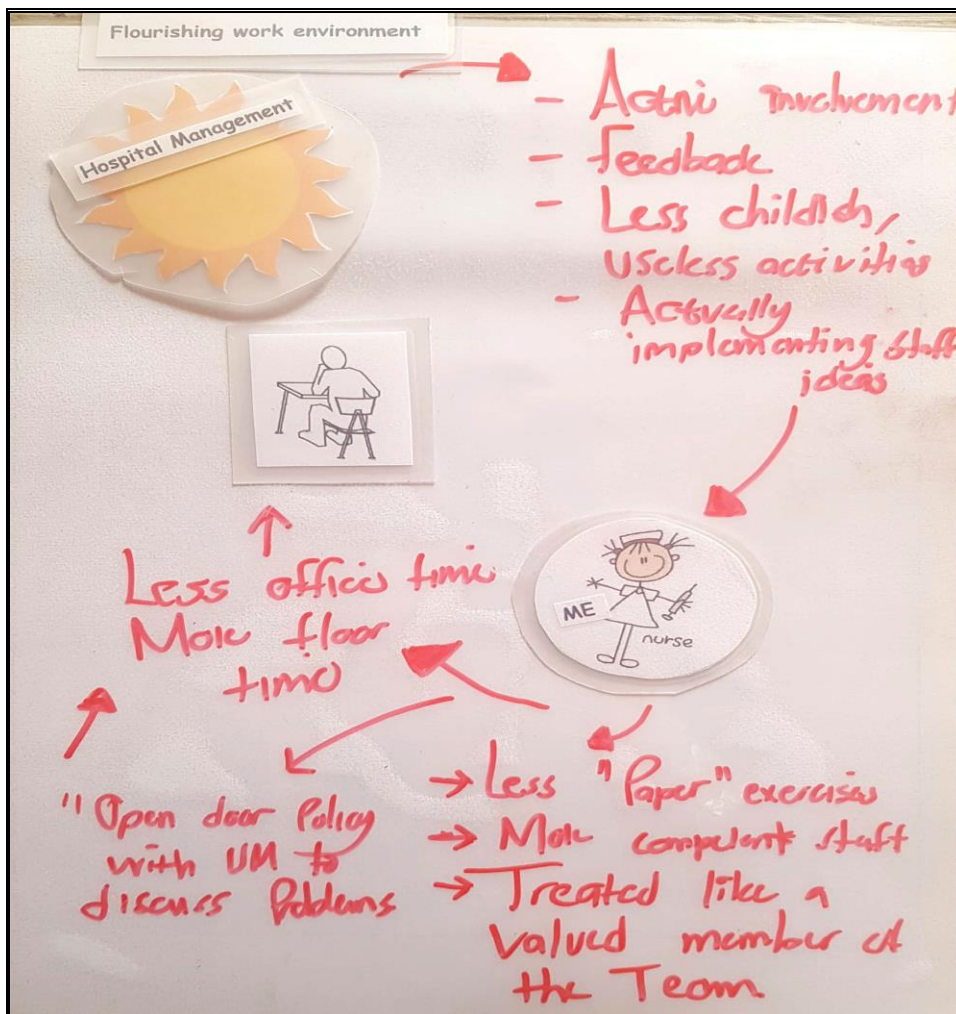
Theme	Number of responses	Sub-theme	Category
<b>Unsupported in the workplace</b>			
<b>Lack of continuity of nursing staff in the unit – new agency (temporary) nurses on each shift</b> <i>(The constant influx of new temporary nurses is not conducive to continuity of care and requires more effort from the internal facilitators to provide clinical supervision to ensure patient safety, which limits their participation in research activities. New nurses need to be closely supervised, inducted and orientated to the unit)</i>	<b>3</b>	<b>Workplace culture</b>	Organisational integrity Lack of supportive leadership

**Table 7.5 Themes, sub-themes and categories from individual interviews**

Theme	Number of responses	Sub-theme	Category
<b>Disempowerment</b>			
<b>Lack of time to engage in meaningful conversations with team members due to scheduling conflicts</b> ( <i>Each internal facilitator is scheduled on an opposite shift, therefor they are unable to meet and have meaningful discussions</i> )	<b>3</b>	<b>Leadership Workplace culture</b>	Demotivation Lack of authentic engagement Lack of compassionate inclusive leadership
<b>Nurses have become disengaged and require more supervision to ensure patient care is delivered</b> ( <i>The shift leaders (internal facilitators) are responsible and accountable for the patients and nurses on their shift, and have indicated that it seems the nurses are 'unwilling or unable to think independently' and need constant support from the shift leader</i> )	<b>3 Observation by external facilitator</b>	<b>Workplace culture Leadership</b>	Demotivation Disengagement Lack of compassionate inclusive leadership support

**Source: Internal Facilitators**

On conclusion of the interview, the researcher asked the participants to use the same media provided for their first picture (drawing) and illustrate their views of the ideal workplace, where they would be able to flourish as professional members of the multidisciplinary team. Using the exact same media to reconstruct how the participants see a flourishing work place, improved consistency and reduced the risk of bias related to the data collection process (Frey 2018:1409; Pace, Pluye, Bartlett, Macaulay, Salsberg, Jagosh, et al. 2017:118; Lavrakas 2008:58). Figure 7.4 is an example of the flourishing workplace as described by the internal facilitators.



**Figure 7.4: A participant's impression of a flourishing workplace**

Through the utilisation of visual narratives, the internal facilitators clearly indicated what they need to enable them to flourish as

professional members of the multidisciplinary team in the critical care unit as described in the section that follows. The most significant barriers to a flourishing workplace identified from the data collected, were related to **workplace culture and leadership**.

- **Workplace culture**

Organisational culture refers to the employer's view of the employees within the organisation and their attitude towards employees. This is made visible in the organisation's vision and mission statements, value statements, employee performance management practices, and support from management (Stepanek, Johanshahi & Millard 2019:470; Shanafelt et al. 2019:1557). Organisational culture also speaks to the 'say-do' gap. What the leadership of the organisation claims to do to support their employees must be visible in their interactions with employees for example evaluation and feedback mechanisms related to team performance.

Health care organisations shape their organisational culture through vision and mission statements which provides a sense of identity, meaning and purpose. Values are attached to the organisation's vision and mission and often publicly shared as part of their marketing strategy (Shanafelt et al. 2019:1557). Organisations expect their employees to uphold the values and 'live' the values in their daily tasks under the assumption that this delivers quality service to their clients. By the same token, employees expect their employers to protect them from undue harm, be supportive and provide a safe working environment (Triplett & Loh 2018:78).

In addition, this study indicated that the nurses in the critical care unit are desperate for authentic support and feedback from their managers. As stated by participant P1, "*..come work with us for once... see what we do...*". Another participant stated, "*...stop criticizing and say thank you...*"The conflict situations that arose between the nurses and the

management teams negatively impacted on the motivation of the internal facilitators to implement the clinical pathway for NIV in the critical care unit. Despite having support from the external facilitator this was not enough to motivate the internal facilitators to bring about practice change. Manley, O'Keefe, Jackson, Pearce and Smith (2014:1) state that the development of a shared purpose in the workplace is a key step to the development of person-centred workplace cultures. Nembhard, Alexander, Hoff and Ramaujam (2009:35) stated that developing a shared purpose requires leaders who can collaborate with their team, agree the way forward and facilitate the process of adoption of change.

Within the organisation's overall culture each sub-unit subscribes to their own culture with unwritten rules and values that guides their behaviour (Shanafelt et al. 2019:1557; Triplett & Loh 2018:82; Antonelli 2017:407). In the intervention group the conflict between the hospital management team (organisational culture) and the critical care nurses (sub-unit culture) contributed to the non-implementation of the clinical pathway for NIV in the critical care unit. When the culture of the sub-unit conflicts with that of the organisation, employees are subjected to inner moral conflict, feelings of betrayal, disempowerment and distrust of their leadership.

Dahinten, Lee and MacPhee (2016:1061) state that a person's job satisfaction is improved when they have access to the necessary strategic tools to perform their job at their best. Strategic empowerment is achieved by granting employees access to organisational resources such as opportunities for growth, guidance, support, and other resources which empower the employees to perform their tasks optimally. Having access to necessary resources reduces the stress experienced by nurses in the clinical setting and enhances their job satisfaction which correlates with a positive attitude toward their

management teams, the organisations they are employed by, and an enhanced trust relationship with their managers.

A key finding of this study supports the claims by Cheng et al. (2017: 5109) and Dahinten et al. (2016:1061) that access to resources and clear communication about the availability of resources impacts on the implementation of evidence into practice. The lack of adequately trained and qualified nurses to work in the critical care unit impacted negatively on the ability of the internal facilitators to implement the clinical pathway for NIV in the critical care unit. Due to the lack of critical care qualified nurses to work on each shift, the internal facilitators were placed on different shifts, which made group communication difficult. The change in shift schedules also contributed to the lack of motivation of the internal facilitators to participate in research activities. They were not afforded the opportunity to participate during working hours and were not prepared to sacrifice personal time to participate.

Strategic empowerment can be achieved through effective leadership in the clinical setting. Leaders need to acquire the skills to collaborate with their teams, to enhance the team's understanding of what resources are available and facilitate the process of change through participation and inclusion of the team. Leaders should provide support for the implementation of evidence into practice and facilitate the translation of knowledge to members of their teams.

- **Leadership**

Leadership is described as the art of guiding, directing, motivating, inspiring and influencing people to achieve common goals utilising available resources (Marshall & Broome 2017:14). Ali, Jangga, Ismail, Kamal and Ali (20115:163) state that both culture and leadership play an integral role in motivating teams to achieve goals because the leaders of an organisation create the culture, values and beliefs of the

organisation. The leadership style utilised by the organisational leaders impacts on the individual employee's motivation to participate in the achievement of organisational goals (Bailey & Burhouse 2019:106). Traditional leadership styles such as transactional leadership is insufficient to facilitate the implementation of evidence into practice and is a barrier to knowledge translation (Ali et al. 2015:163).

Transactional leaders manage their team's performance by using trade-offs – the team receives rewards and recognition to avoid punitive measures against them. The team members will comply with the leader's requests to avoid punishment (Ali et al. 2015:163). During this study it was found that the negative feedback given to the team had a demotivating effect on the internal facilitators, which in turn led to the non-implementation of the clinical pathway for NIV in the critical care unit.

Transformational leadership is based on the premise that a leader can motivate their teams and inspire them to achieve the extraordinary. A transformational leader can motivate their team to go 'beyond the call of duty' and acts in the best interest of the team. Observations made during this study indicated that the unit managers possess some of the characteristics of transformational leadership, however, the pressure from hospital management to comply with organisational targets often overshadows their ability to be truly transformational. An example of this was observed when a conflict situation arose between the unit manager and the internal facilitators. Rather than engaging with the internal facilitators in a critical conversation to collaboratively develop a strategy for the staffing crisis in the critical care unit, the unit manager made a unilateral decision to change their duty schedules. Although this action improved patient safety in the critical care unit, the conflict led to the internal facilitators feeling disempowered and becoming disengaged. They were in 'survival mode' – just getting through



another shift. This impacted negatively on the implementation of the clinical pathway for NIV.

Murray et al. (2017:1289) and Marshall and Broome (2015:15) describe transformational leaders as leaders with vision and emotional intelligence (self-awareness, self-management, social awareness and relationship management) to support the spiritual needs of their teams. Other characteristics of transformational leaders include energy to inspire others, engagement, and trust. It is further stated that successful leaders must consciously choose to lead their teams. However, leadership skills are not acquired in the blink of an eye. It is my opinion that our unit managers are not given the opportunity to fully develop their leadership skills and therefore lack the emotional intelligence to support their teams effectively. Poor leadership disables teamwork, which divides teams and leads to demotivated, disengaged teams. When team members find themselves feeling threatened by their manager or leader primal survival instincts take over. Bailey and Burhouse (2019:108) state that people under threat exhibit one of three basic responses, namely, fight, flight, or freeze, all of which have negative effects on teamwork and team performance (Bailey & Burhouse 2019:106; Shanafelt et al. 2019:1558; Stepanek et al. 2019:470; Murray et al. 2017:1289; Dahinten et al. 2016:1061). Leadership has a direct impact on the job satisfaction of the nurses and their work performance.

Bailey and Burhouse (2019:106) propose a shift in leadership style known as compassionate, inclusive leadership. Utilising a compassionate, inclusive leadership style requires the leader to be open to learning from their teams. The purpose of the leader is to create an environment where team members feel valued and appreciated and this can be achieved through compassion. Compassionate inclusive leaders can engage their teams in critical conversations to understand their team's needs and behaviour, and

help their teams learn from past failures. Compassionate inclusive leaders utilise empathy, compassion and emotional intelligence to create a safe learning environment for their teams where the implementation of evidence into practice is more likely to succeed. This leadership style is based on coaching and facilitating change.

The development of compassionate, inclusive leadership requires leaders to be more reflective about their own practice and behaviour and to become more self-aware. Awareness of one's own leadership practices is vital in understanding the behaviour of team members. In addition, organisations need to support the development of their leaders and allow them time to develop their skills (Bailey & Burhouse 2019:109).

Another key finding from the data was that the internal facilitators feel overwhelmed with the current workload. In addition to direct patient care, and clinical supervision, they are also assigned additional administrative tasks. As one participant stated “...*we have to tick all the boxes...*”. Additional tasks are assigned to ensure that organisational targets related to quality patient care outcomes are met, such as infection prevention and surveillance. One of the internal facilitators who voluntarily participated in this study indicated that she was also responsible for reporting on the critical care unit's infection prevention practices and whether the organisational targets for compliance were met. The internal facilitator stated that there is no reward in performing this task, they are merely doing it because they were told to. Additionally, the participants stated that there is no time during the 12-hour shift to complete the necessary ‘tick-boxes’ and that they are expected to perform these duties in their own time, without recognition.

This is evidence of the hierarchical nature of the nursing leadership (Nembhard, Alexander, Hoff & Ramanujam 2009:29). Being told to perform a task is a typical ‘top-down’ approach which lacks person-

centredness and has been proven ineffective (Marshall & Broome 2017:7; Nicolaidis & Raymaker 2015:171). If tasks are performed merely for the sake of doing them, the nurse attaches no meaning to the assigned task. Shanafelt et al (2019:1556) state that the addition of more tasks to improve patient care and patient outcomes can overburden health care providers if the process of change is not adequately facilitated, which leads to the ‘...erosion of the meaning of work...’.

Meaningful work experiences are directly linked to job satisfaction as stated by Dahinten et al. (2016:1061). Nurses who experience their work as meaningful are more willing to contribute to the development of innovative solutions to improve patient care and are happier in their work environment. Job satisfaction is also linked to strategic empowerment – nurses who have access to adequate resources to perform their work are less stressed which has a positive effect on their commitment to their employer, their patients and helps foster strong trust relationships with their managers (Dahinten et al. 2016:1061).

Florczak (2016:110) and Nicolaidis et al. (2015:173) concur that the successful implementation of change in any organisation requires an organisational culture where individuals feel valued as team members and a high level of trust in the leadership exists, which in turn will facilitate the process of change. Furthermore, the sustainability of practice change needs to be evaluated as part of the implementation process to establish the impact thereof on nursing practice and relevant clinical patient outcomes. However, this was not the case in the intervention group.

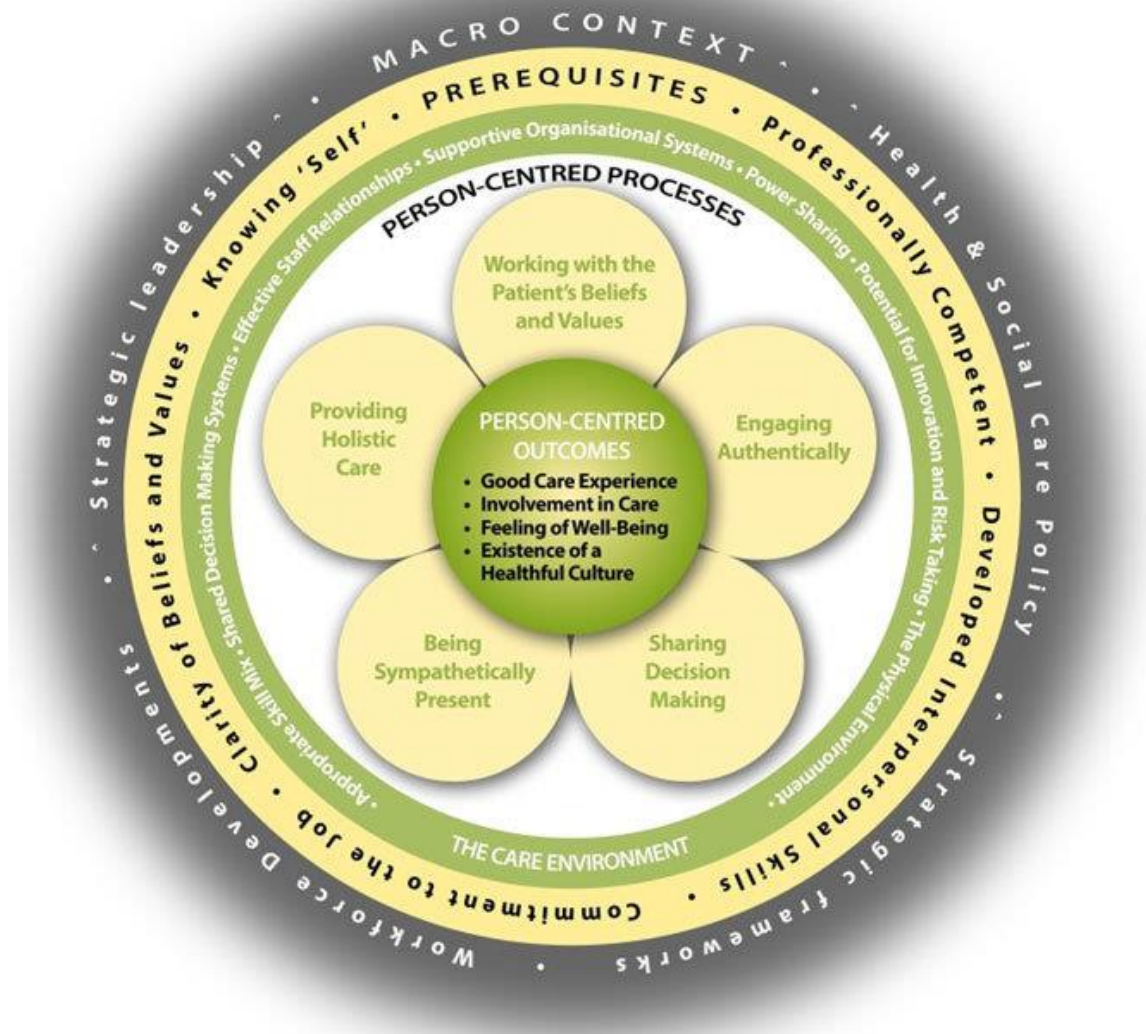
## **7.5. REFLECTING ON THE FINDINGS**

Emancipatory practice development utilises a person-centred approach, which enables nurses to identify and address perceived

barriers in the clinical setting and empowers nurses to change current practice to improve patient outcomes (McConnell et al.2016:39; Laird, McCance, McCormack & Gribben 2015:1455; Brekke, Phillips, Pancake, Lewis & Duke 2009:594). The person-centred practice framework is an integral part of practice development as described by McConnell, McCance and Melby (2016:39), and focuses on the unique attributes of the participants, the context, care processes and expected outcomes. These constructs are aligned with the constructs represented in the i-PARiHS framework for implementation, namely, context, evidence, recipient and innovation which supports emancipatory practice development initiatives which aim to improve patient outcomes (Fairbrother 2015:6; Smith 2015:660).

The person-centred practice framework is based on the concepts related to the nurse (pre-requisites), the critical care unit (care environment) and the patient (person-centred care processes).The person-centred framework indicates that person-centred outcomes are a result of effective person-centred practice in the health care environment (Ecklund, Holmström, Kumlin, Kaminsky, Skoglund, Högländer, Sundler, Condén, Meranius 2019:3-11; McCormack, Van Dulmen, Eide, Skovdahl, & Eide 2017:4; Laird, McCance, McCormack & Gribben 2015:1456; Jakimowicz & Perry 2015:1499-1517).

The discussion that follows elaborates on the barriers and enablers related to the concepts of the Person-centred Framework depicted in Figure 7.5, identified during this study which contributed to the non-implementation of the clinical pathway for NIV in the critical care unit.



**Figure 7.5: The Person-centred Framework (Adopted from McCormack et al 2017:60)**

The concepts of the person-centred framework applicable to the findings of this study are discussed in the sections that follow.

### 7.5.1. Pre-requisites

Pre-requisites form the outer part of the person-centred framework and are related to the attributes of the nurses which impact on implementation of evidence-based practice at the bedside (McCormack

& McCance 2017:63). During this study, the researcher identified the attributes of the nurses and the multidisciplinary team in the purposively selected critical care units that were deemed enablers and barriers to the implementation of the clinical pathway for NIV. Concepts identified as enablers included professional competence and clarity of values and beliefs.

- **Professional competence**

Professional competence can be defined as a fundamental requirement for the delivery of safe, quality person-centred care. Professional competence refers to the knowledge, skills, attitudes, and values of nurses related to the delivery of patient care (Karami, Farokhzadian, Foroughameri (2016:2). In the person-centred practice framework, professional competence includes the skills and abilities related to reflection, professional judgement, and holistic care (McCormack & McCance 2017:64). The researcher deemed professional competence in relation to this study as the knowledge and skills of the nurses in the critical care unit related to the utilisation of NIV for patients presenting with acute respiratory failure as an enabler to the implementation of the clinical pathway for NIV. The researcher deemed the nurses in the purposively selected critical care units as knowledgeable and skilled in the use of NIV since they collaborated with the researcher and multidisciplinary team in the development of the original clinical pathway for NIV (Balfour et al. 2012:107-114).

The knowledge and skill of the nurses in the purposively selected critical care units regarding the utilisation of NIV was identified as an enabler to the implementation of the clinical pathway for NIV in the unit. At the onset of the study the internal facilitators were motivated and enthusiastic about the implementation of the clinical pathway for NIV and participated in the planned research activities. However, the impact of the negative workplace culture and a paternalistic physician who does not recognise the contributions of the nurses to improving

patient outcomes caused moral distress and conflict, which ultimately demotivated the nurses to continue with the implementation of the clinical pathway for NIV. The negative workplace culture in the critical care unit, changed this enabler to a barrier, which led to increased distress amongst the internal facilitators, as they were not permitted to utilise their professional judgement, knowledge, and skills to implement the clinical pathway for NIV in the critical care unit.

- ***Clarity of values and beliefs***

The clarification of individual values and beliefs related to the implementation of evidence in the clinical setting is a vital step in promoting the successful assimilation of evidence-based practice and allows for teams of nurses to develop a shared goal to improve patient outcomes. Individual values and beliefs are said to influence what nurses think should be done to ensure the delivery of quality nursing care and is closely related to moral values and beliefs. The 'say-do' gap is often augmented by a failure to recognise the discrepancies between the expected values and beliefs of the team (what we say) and the behaviour exhibited in practice (what we do) which adds to moral distress (McCormack & MacCance 2017:66; Lynch, McCance, McCormack & Brown 2017:433;438).

The researcher conducted the values and beliefs exercise with the internal facilitators during Phase 1 (Baseline data) of the study (see Annexure C3). Although the internal facilitators shared a common goal related to the implementation of the clinical pathway for NIV, they were unable to fulfill their roles as internal facilitators effectively due to a lack of support from the physician and their managers, causing moral distress and a loss of motivation from the internal facilitators. The negative workplace culture disempowered the internal facilitators and led to a loss of interest in the implementation of the clinical pathway. The workplace culture contributed to the loss of motivation of the

internal facilitators to continue with the implementation strategy and they became disengaged.

The Person-centred framework includes commitment to the job and developed interpersonal skills as a pre-requisite for the successful implementation of evidence into practice. However, during this study the lack of interpersonal skills of the internal facilitators and their managers proved to be a barrier to the implementation of the clinical pathway for NIV in the critical care unit. Additionally, their ambiguous levels of commitment to the task at hand contributed to the non-implementation of the clinical pathway. Their level of commitment is causally related to their demotivated state of mind brought on by the negative workplace culture.

- **Commitment to the job**

The person-centred practice framework defines commitment to the job as providing quality nursing care informed by evidence (McCormack & McCance 2017:66). Commitment is fundamental to the successful implementation of evidence at the bedside and extends beyond the realms of 'going the extra mile'. Clinical decisions should be made based on evidence-based practice.

The internal facilitators all expressed that they provided holistic quality care and that they are engaged with their patients. According to P1,

*“We are more involved with our patients; we know their life stories. It is sometimes a bit too much, but I do think the patients feel more comfortable with us, it means a lot to them to tell us their stories because we are with them all day long. Sometimes I think we are too involved with the patients, but it is good for them, despite everything our patients still get the best out of us....”*



However, commitment to providing holistic care includes being able to make clinical decisions and judgements that are evidence informed. The internal facilitators felt disempowered and unable to make a change to clinical practice due to the negative workplace culture. Initially the internal facilitators all committed to the implementation of the evidence-based clinical pathway for NIV in the critical care unit as evidenced by the completed PICD (see Annexure C1) and the collaboratively agreed Values and Beliefs statement (see Annexure C3). However, the negative workplace culture prevented them from doing so which added to the moral distress suffered by the nurses.

- ***Interpersonal skills***

The person-centred practice framework identifies developed interpersonal skills as a pre-requisite for the implementation of evidence at the bedside. Developed interpersonal skills are defined as the ability of the nurse to communicate effectively at all levels in the organisation using both verbal and non-verbal communication. Effective interpersonal skills indicate the ability of the nurse to effectively interact with other by showing authentic concern for the problem and being committed to collaboratively finding a solution (McCormack & McCance 2017:65). Another key aspect of effective interpersonal skills highlights the awareness of emotions and the use of emotional intelligence to communicate effectively. Black (2014:34) defines emotional intelligence as being aware of, and able to control, one's own emotions as well as that of one's team members. Emotional intelligence is vital in developing trust relationships between individuals in the workplace (Black 2014:34).

The conflict situations that arose indicated a lack of well-developed interpersonal skills at both levels in the unit. The lack of well-developed interpersonal skills led to the high levels of demotivation and disengagement amongst the nurses which contributed to the non-implementation of the clinical pathway for NIV in the critical care unit.

The researcher believes the lack of emotional intelligence and ‘top-down’ approach utilised by management further contributes to the moral distress and moral injury suffered by the nurses in the critical care environment.

- **Knowing self**

Knowing self is described as understanding one’s own life experiences shapes their decision-making and how they build relationships with others. In terms of person-centred practice knowing self implies that the individual’s perception of themselves influence the way the practice in the critical care unit (McCormack & McCance 2017:66). The internal facilitators expressed that they are restricted in their authority to make clinical decisions related to patient care. As P3 remarked,

*“The shift leaders are allowed to make some decisions in the absence of the unit manager, but the doctor decides how to treat the patient”.*

The ‘top-down’ approach and limited power sharing between the manager, doctors, and nurses, is perceived as a barrier to effective relationship building in the critical care unit. A perceived lack of trust between the members of the multidisciplinary team and the nurses is not conducive to a healthy workplace culture. The longstanding disempowerment of the nurses in the critical care unit has caused a feeling of being undervalued and the nurses are now unable to build effective, healthful relationships within the team (Triplett & Loh 2018:82; Antonelli 2017:407). A lack of trust leads to high levels of dissatisfaction and moral injury in the workplace.

However, during the reflective conversations the internal facilitators realised that they too utilise a ‘top-down’ approach with the nurses working in the critical care unit. As P2 remarked, “... *I’d rather do it myself than leave it to an agency nurse...*”. This realisation seemed to shock the internal facilitators, and they realised that their actions

contribute to the high levels of distrust in their teams and adds significantly to their stress levels. The internal facilitators indicated that they need to find a solution to this by identifying those agency nurses in their teams who are competent and allow them to function more independently by delegating tasks to them, rather than try to do everything by themselves. The researcher identified this as a positive outcome of the study and encouraged the internal facilitators to pursue this possible solution and inform her of the outcomes. This is also a vital step in building trust relationships within and amongst the teams.

### **7.5.2. Care environment**

The second concept in the Person-centred framework refers to the care environment and defines the elements in the context that contribute to the successful adoption of evidence into practice (McCormack & McCance 2017:67). The care environment consists of key elements to enhance the utilisation of research evidence in the clinical setting, namely supportive organisational systems, power sharing, potential for innovation and risk taking, skill mix, shared decision-making and healthful relationships (McCormack & McCance 2017:67). The researcher identified the barriers related to these concepts that impeded the implementation of the clinical pathway for NIV in the critical care units as in the discussion that follows.

- ***Supportive organisational structures***

Organisational culture also speaks to the 'say-do' gap. What the leadership of the organisation claims to do to support their employees must be visible in their interactions with employees for example evaluation and feedback mechanisms related to team performance (Stepanek, Johanshahi, Millard 2019:470; Shanafelt et al. 2019:1557).

A key finding of this study was that the nurses felt that management teams are only focused on giving negative feedback when targets are not met, but that the expression of gratitude for what they do daily will

enhance their motivation to improve their performance because they feel valued as a member of the organisation. The findings of this study support the claims made by Cheng et al. (2017:5109) that nurse leaders should emphasize the quality of work performed by the nurses and evaluation of work performance should not be based on merely getting the job done, but the quality of what is delivered.

Often, reward and recognition take a back seat and nurses are expected to continue performing and even outperforming competitors without recognition for their work. The researcher observed that on two occasions, the families of very ill patients brought cake and snacks to the unit, to thank the nurses for their hard work. However, there was no recognition from the hospital management for their efforts. As P1 and P2 indicated, that they wished that management would just “...*stop criticizing...*” and once in a while “...*say thank you...*”. Fisher (2015:19) states that rewards are not necessarily monetary and that the reward often stems from performing the job itself, for example meeting a patient’s treatment goals for the day. The driver for enhanced performance comes from the reward experienced by the nurse for acknowledging ‘a job well done’.

Another finding of this study indicated that the nurses in the critical care unit are desperate for authentic support and feedback from their managers. The conflict situations that arose between the nurses and the management teams negatively impacted on the motivation of the internal facilitators to implement the clinical pathway for NIV in the critical care unit. Despite having support from the external facilitator this was not enough to motivate the internal facilitators to bring about practice change. Manley, O’Keefe, Jackson, Pearce and Smith (2014:1) state that the development of a shared purpose in the workplace is a key step to the development of person-centred workplace cultures. Developing a shared purpose requires leaders who can collaborate with their team, agree the way forward and facilitate the

process of adoption of change (McCormack & McCance 2017:71; Nembhard, Alexander, Hoff & Ramaujam 2019:35).

Strategic empowerment can be achieved through effective leadership in the clinical setting. Leaders need to acquire the skills to collaborate with their teams, to enhance the team's understanding of what resources are available and facilitate the process of change through participation and inclusion of the team. Leaders need to provide support for the implementation of evidence into practice and facilitate the translation of knowledge to members of their teams. A key finding of this study supports the claims by Cheng et al. (2017: 5109) and Dahinten et al. (2016:1061) that access to resources and clear communication about the availability of resources impacts on the implementation of evidence into practice.

The lack of adequately trained and qualified nurses to work in the critical care unit impacted negatively on the ability of the internal facilitators to implement the clinical pathway for NIV in the critical care unit. Due to the lack of critical care qualified nurses to work on each shift, the internal facilitators were placed on different shifts, which made group communication difficult. The change in shift schedules also contributed to the lack of motivation of the internal facilitators to participate in research activities. They were not afforded the opportunity to participate during working hours and were not prepared to sacrifice personal time to participate. The conflict that existed between the team members further contributed to their loss of participation – they were not willing to spend time together around the table to reflect on the implementation strategy for the clinical pathway for NIV.

- ***Appropriate skill mix and shared decision-making***

Appropriate skill mix in the person-centred practice framework refers to the appropriate number of registered nurses in relation to other

categories of nursing staff in the team to ensure safe patient care is rendered to the patients (McCormack & McCance 2017:67). The role of the nurse in the critical care unit is prescribed by the Scope of Practice for each category of nurse (see Section 2.2). The national shortage of critical care qualified nurses and budgetary constraints mean that hospitals rely on temporary (agency) nurses to fill the staffing needs of the critical care units based on unit occupancy levels.

Temporary (agency) nurses are utilised on an ad hoc basis when the critical care unit occupancy increases which influences the daily continuity of nursing staff in the critical care unit. The impact of high turnover of temporary nurses had a negative effect on the implementation of the clinical pathway for NIV in the critical care unit. Additionally, temporary nurses provided to fill the shortfalls are often not registered nurses. The limited scope of practice of other categories of nurses in the critical care unit, implies that most patient care activities as well as the clinical supervision of all the patients and the nurses allocated to them becomes the responsibility of the critical care qualified registered nurse or shift leader. The added stress of being responsible and accountable for the actions of less qualified nurses in the critical care unit, adds to the moral distress suffered by the internal facilitators in the critical care unit. Ultimately, the internal facilitators focused more on 'getting the job done' than implementing the clinical pathway for NIV.

The constant influx of new nurses in the critical care unit negatively impacted on the implementation of the clinical pathway for NIV, as the internal facilitators pointed out that they do not have the time to coach new nurses continuously. According to the internal facilitators they feel that not all the temporary (agency) nurses are competent to nurse critically ill patients and do not trust the temporary nurses to deliver safe nursing care, and therefore focus on the individual supervision of the temporary nurses rather than adding additional tasks such as

teaching them about NIV. P2 remarked, “ *I’d rather do it myself than leave it to an agency nurse*”, which supports the fact that the use of the appropriate skill mix in the critical care unit will enhance the uptake of research evidence into practice.

As a critical care qualified nurse, who once worked as both a shift leader and a critical care unit manager, the researcher fully understood what the internal facilitators had to deal with daily. The focus remains on maintaining the health status of the patients under their care and preventing adverse patient events at all costs. The researcher realised that as a critical care unit manager who had to deal with the same staffing issues daily, she often acted with little empathy for the needs of the critical care qualified nurses – they were expected to understand the challenges but without clear communication and without asking their assistance in finding a tailored solution for the critical care unit. As a result, the researcher realised that leadership skills are crucial in maintaining a healthy, safe workplace culture for the critical care nurses, and that investing in developing the leadership skills of the unit managers will benefit the development of healthy workplace cultures where nurses are able to flourish.

- ***Healthful relationships and shared decision-making***

Healthful relationships within the critical care team is causally related to the performance of the team and their commitment to delivering quality care to the patients. The absence of effective relationships within the team creates a negative workplace culture where team members feel undervalued and under-appreciated and is not conducive to a supportive workplace culture where change is embraced. A positive workplace culture is characterised by an environment which provides psychological safety to the members of the team, a supportive leadership structure and power sharing (McCormack & McCance 2017:69). This was not the case in the intervention group of this study.

In the interest of patient safety and compliance to legal requirements, it was necessary for the critical care unit manager to ensure that each shift is covered by a critical care qualified nurse. The shortage of critical care qualified nurses contributed to the changes in the duty schedules of the internal facilitators. They were split up to ensure that each of the four (4) 12-hour shifts on day and night duty was covered. This negatively impacted on the time available for the internal facilitators to spend on implementing the clinical pathway for NIV in the critical care unit in the intervention group. Additionally, this demotivated the internal facilitators even more, and they became disengaged from the research activities in the unit.

Their dissatisfaction with their working conditions further contributed to their low levels of motivation to implement the clinical pathway for NIV in the critical care unit. From the researcher's experience as a critical care nurse, the way the changes to the duty schedules were communicated by their leadership, also contributed to their level of dissatisfaction and demotivation. Unit managers often act in the interest of organisational goals without empathy for the sacrifices of their teams. By instructing teams from the top-down that they will 'do as they are told' unit managers lose the trust and support of their key team members which leads to conflict within the teams. This was a crucial learning during this study. Damaging the trust relationship between the manager and the team has far-reaching consequences for the long-term performance of the team and negatively impacts on their motivation to deliver quality care in the critical care unit (McCormack & McCance 2017:68-69).

As an external practice development facilitator, the researcher was focused on the implementation of the clinical pathway for NIV in the critical care units and assumed that the internal facilitators would find a way to overcome this barrier on their own. The researcher did not immediately recognise the fact that the internal facilitators were already



feeling overburdened with their current workload and expected them to continue with the implementation strategy as planned. During the reflective conversations with them during Phase 3 of the study, it became apparent that the inner context of the critical care units had a significant negative impact on their motivation to change practice. The impact of a negative workplace culture contributed to the non-implementation of the clinical pathway for NIV in the critical care unit.

Changes occurred in the inner context of the critical care unit during this study. The internal facilitators indicated that the conflict situations that arose within the critical care unit team, as well as their dissatisfaction with the hospital management team diverted their focus away from the implementation of the clinical pathway for NIV, to rather focus on rebuilding their team within the critical care unit. Even though the internal facilitators regained some of the teamwork within their team, they felt that they didn't have the time to focus on implementing the clinical pathway as this was an additional external task, which was not a priority to them.

As the external facilitator, the researcher was able to provide emotional support and a listening ear to the internal facilitators but lacked the authority to influence hospital management teams to be more supportive of the internal facilitators. As a practice development facilitator, the researcher silently hoped that the conflict situation would resolve spontaneously, and that the implementation of the clinical pathway would be successful. However, this was not the case. To be effective as an external practice development facilitator the development of the necessary skills to build healthful relationships at all levels within the health care sector – macro-, meso- and micro – levels, to influence practice development and bring about change needs to be addressed.

- ***Power sharing***

The person-centred practice framework refers to power sharing as the development of non-hierarchical relationships without exploitation of the individual to achieve mutually agreed goals (McCormack & McCance 2017:69). The need to recognise the critical care nurse as an autonomous, independent practitioner is central to practice development and person-centred practice (McCormack & McCance 2017:70). Nursing and the health care environment in South Africa remain hierarchical, and decision-making is done by the leaders of the organisation.

Leadership is described as the art of guiding, directing, motivating, inspiring, and influencing people to achieve common goals utilising available resources (Marshall & Broome 2017:14). Ali, Jangga, Ismail, Kamal & Ali (2015:163) state the both culture and leadership play an integral role in motivating teams to achieve goals because the leaders of an organisation create the culture, values and beliefs of the organisation. The leadership style utilised by the organisational leaders impacts on the individual employee's motivation to participate in the achievement of organisational goals (Bailey & Burhouse 2019:106). Traditional leadership styles such as transactional leadership is insufficient to facilitate the implementation of evidence into practice and is a barrier to knowledge translation (Ali et al. 2015:163).

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extraordinary. A transformational leader can motivate their team to go 'beyond the call of duty' and acts in the best interest of the team. Observations made during this study indicated that the unit managers possess some of the characteristics of transformational leadership, however, the pressure from hospital management to comply with organisational targets often overshadows their ability to be truly transformational.

An example of this was observed when a conflict situation arose between the unit manager and the internal facilitators. Rather than engaging with the internal facilitators in a critical conversation to collaboratively develop a strategy for the staffing crisis in the critical care unit, the unit manager made a unilateral decision to change their duty schedules. Although this action improved patient safety in the critical care unit, the conflict led to the internal facilitators feeling disempowered and becoming disengaged. They were in 'survival mode' – just getting through another shift. This impacted negatively on the implementation of the clinical pathway for NIV.

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Burhouse (2019:108) state that people under threat exhibit one of three basic responses, namely, fight, flight, or freeze. All of which have negative effects on teamwork and team performance (Bailey & Burhouse 2019:106; Shanafelt et al. 2019:1558; Stepanek et al. 2019:470; Murray et al. 2017:1289; Dahinten et al. 2016:1061). Leadership has a direct impact on the job satisfaction of the nurses and their work performance.

Bailey and Burhouse (2019:106) propose a shift in leadership style known as compassionate, inclusive leadership. Utilising a compassionate, inclusive leadership style requires the leader to be open to learning from their teams. The purpose of the leader is to create an environment where team members feel valued and appreciated and this can be achieved through compassion. Compassionate inclusive leaders can engage their teams in critical conversations to understand their team's needs and behaviour, and help their teams learn from past failures. Compassionate inclusive leaders utilise empathy, compassion, and emotional intelligence to create a safe learning environment for their teams where the implementation of evidence into practice is more likely to succeed. This leadership style is based on coaching and facilitating change.

The development of compassionate, inclusive leadership requires leaders to be more reflective about their own practice and behaviour and to become more self-aware. Awareness of one's own leadership practices is vital in understanding the behaviour of team members. In addition, organisations need to support the development of their leaders and allow them time to develop their skills (Bailey & Burhouse 2019:109).

- ***Potential for innovation and risk taking***

The potential for innovation and risk taking in terms of person-centred practice implies that the nurse is able to make clinical decisions based

on the best evidence available as well as professional judgement and with consideration for patient preferences (McCormack & McCance 2017:71). Professional judgement is based on the clinical knowledge and skill of the critical care qualified nurse and is a critical competency required. The extended Scope of Practice of the critical care qualified nurse indicates that the critical care qualified nurse an autonomous professional who can make patient care decisions. However, in the South African context the hierarchical nature of nursing and the health care profession stifles the autonomy of the critical care qualified nurse, which adds to their high levels of job dissatisfaction (McCormack & McCance 2017:71).

A key finding from the data was that the internal facilitators feel overwhelmed with the current workload. In addition to direct patient care, and clinical supervision, they are also assigned additional administrative tasks. As P3 stated, “*We have to tick all the boxes*”. Additional tasks are assigned to ensure that organisational targets related to quality patient care outcomes are met, such as infection prevention and surveillance. One of the internal facilitators who voluntarily participated in this study indicated that she was also responsible for reporting on the critical care unit’s infection prevention practices and whether the organisational targets for compliance were met. The internal facilitator stated that there is no reward in performing this task, they are merely doing it because they were told to. Additionally, the participants stated that there is no time during the 12-hour shift to complete the necessary ‘tick-boxes’ and that they are expected to perform these duties in their own time, without recognition.

This is evidence of the hierarchical nature of the nursing leadership (Nembhard, Alexander, Hoff & Ramanujam 2009:29). Being told to perform a task is a typical ‘top-down’ approach which lacks person-centredness and has been proven ineffective (Marshall & Broome 2017:7; Nicolaidis & Raymaker 2015:171). If tasks are performed

merely for the sake of doing them, the nurse attaches no meaning to the assigned task. Shanafelt et al (2019:1556) state that the addition of more tasks to improve patient care and patient outcomes can overburden health care providers if the process of change is not adequately facilitated, which leads to the ‘...erosion of the meaning of work...’.

Meaningful work experiences are causally linked to job satisfaction as stated by Dahinten et al. (2016:1061). Nurses who experience their work as meaningful are more willing to contribute to the development of innovative solutions to improve patient care and are happier in their work environment. Job satisfaction is also linked to strategic empowerment – nurses who have access to adequate resources to perform their work are less stressed which has a positive effect on their commitment to their employer, their patients and helps foster strong trust relationships with their managers (Dahinten et al. 2016:1061).

Florczak (2016:110) and Nicolaidis et al. (2015:173) concur that the successful implementation of change in any organisation requires an organisational culture where individuals feel valued as team members and a high level of trust in the leadership exists, which in turn will facilitate the process of change. Furthermore, the sustainability of practice change needs to be evaluated as part of the implementation process to establish the impact thereof on nursing practice and relevant clinical patient outcomes. However, this was not the case in the intervention group.

### **7.5.3. Person-centred care processes**

Person-centred care processes form the inner circle of the person-centred framework and is related to the patient. Care processes are defined as the range of activities performed by nurses to deliver patient care. The concepts related to care processes are causally linked to

person-centred outcomes and includes holistic care, sympathetic presence, shared decision-making, patient's values and beliefs, and engagement (McCormack & McCance 2017:72). The person-centred care processes present in the critical care unit that should have enabled the implementation of the clinical pathway for NIV are discussed first:

- ***Providing holistic care and patient's values and beliefs***

Holistic care in terms of person-centredness implies that patient care is delivered to ensure the physical, emotional, and spiritual needs of the patient is met (McCormack & McCance 2017:75). Data collected from the reflective conversations indicated that the participants are providing for the needs of their patients and are authentically engaged with their patients. As P1 remarked, *"We know their life stories, it means a lot to them to tell us their stories, it is good for them"*. The researcher deemed this an enabler to the implementation of the clinical pathway for NIV in the critical care unit.

However, providing for the basic needs of the patient is not the only indicator of successful person-centred practice. Holistic care is linked professional competence. And even though the critical care nurses are professionally competent, the negative workplace culture and hierarchical structure prevents the critical care nurses from becoming fully person-centred. An example of this presented when a terminally ill patient was admitted to the critical care unit via the accident and emergency unit during Phase 1 of the study. The patient was well-known to the critical care nurses and they expected the patient to die during this episode. The patient was invasively intubated and mechanically ventilated by the accident and emergency room doctor on admission. The internal facilitator remarked that this patient and their family would have benefitted from NIV, as this would have afforded them the opportunity to communicate freely and *'say their goodbyes'*. The internal facilitators felt that the attending doctor disregarded the

patient's history and their final wishes and robbed the family of precious time. In the researcher's opinion, the critical care nurses have the potential to change practice to become person-centred, but the hierarchical nature of the health care setting is preventing them because the doctor has the ultimate decision-making power.

- ***Sympathetic presence***

Person-centred practice recognises the importance of engaging with patients and their families to determine their individual health outcome goals and responding accordingly. From observations conducted in the critical care unit, the critical care nurses display an adequate sympathetic presence in their conduct and engagement with patients and their families. As in the example described in the previous section, the critical care nurses have a unique relationship with their patients and portray a sympathetic presence. The researcher deemed this an enabler to the implementation of the clinical pathway for NIV in the critical care unit. However, the prevailing workplace culture negatively impacted on the ability of the internal facilitators to implement the clinical pathway in the critical care unit.

Barriers to the implementation of the clinical pathway for NIV related to person-centred care processes were identified as the lack of engagement and lack of shared decision-making privileges. A discussion of the findings follows in the next section.

- ***Engagement***

Engagement refers to the ability of the nurse to authentically engage with the patient. McCormack and McCance (2017:73) state that the focus is "... on *that* person at *that* time...". The overwhelming workload of the critical care qualified nurse (internal facilitator) means that their attention is not focused on one patient at a given time. They are expected to perform many tasks during their shift which distracts them from authentically engaging with each patient and their family. This



increases their levels of stress and dissatisfaction. This also means that they are not able to participate in research activities, and are less likely to challenge the status quo, because they are trying to survive the shift. In other words, the critical care environment is not conducive to person-centred practice.

- ***Shared decision-making***

Shared decision-making in terms of person-centred care processes refers to the involvement of the patient in decisions related to their care. Patients who participate actively in the decision-making process have a feeling of well-being and that the health care providers are acting in their best interest (McCormack & McCance 2017:76). In the South African context, this concept is still lacking. In the intervention group the researcher observed that the interaction between the attending doctor and the patient seems one-sided. The doctor explains the course of treatment but does not offer alternative options to the patient. The patient and /or their family make decisions based on the limited information provided by the attending doctors. In the control group, however, the doctors make a conscious effort to keep patients and their families informed during the structured family sessions daily. Patients and families are actively involved in the decision-making process.

The lack of shared decision-making regarding patient care contributed to the non-implementation of the clinical pathway for NIV in the critical care unit.

- ***A healthful culture***

The person-centred practice framework describes a healthful culture as “... one in which decision-making is shared, staff relationships are collaborative, leadership is transformational and innovative practices are supported...” (McCormack & McCance 2017:76). A healthful culture implies that the care environment is conducive to change and

supports and enables nurses to deliver person-centred care. Healthful cultures are associated with greater job satisfaction which aligns with higher retention rates of nurses (McCormack & McCance 2017:77). From the data collected during the Evaluation phase of this study the critical care unit lacks a healthful culture.

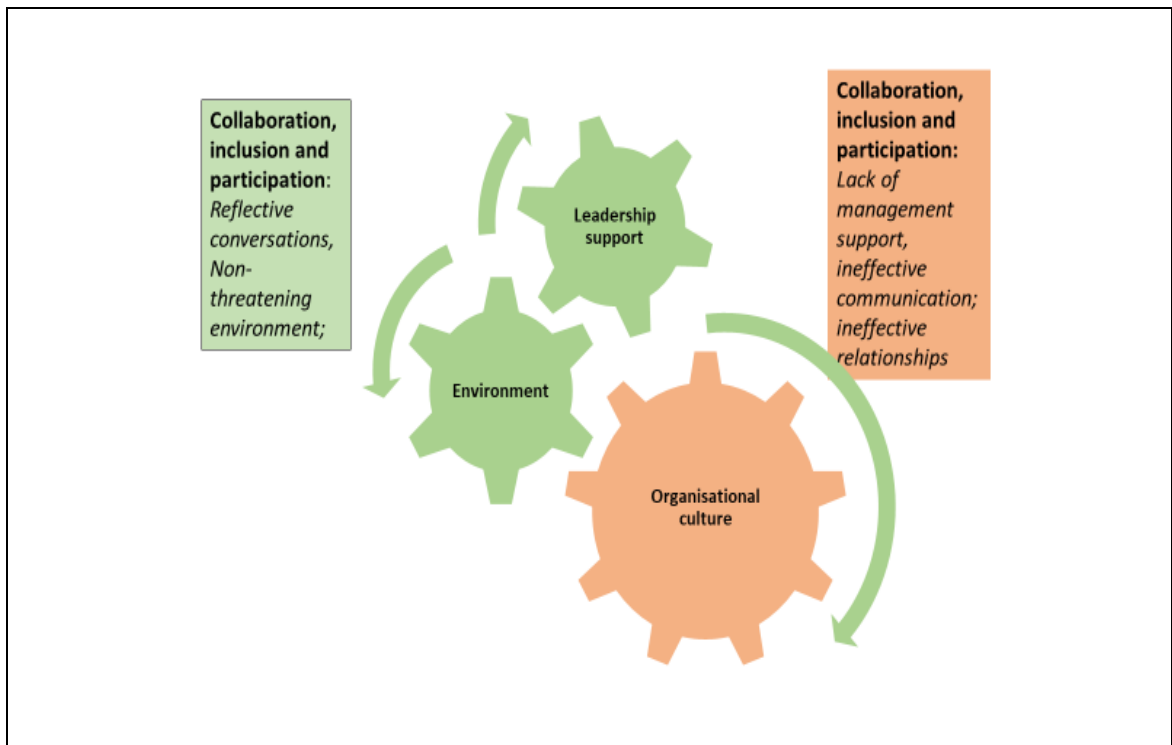
Informal interviews were conducted with the doctors in the critical care units to determine their experiences with implementing the clinical pathway for NIV. The doctor in the intervention group maintained that the patient's well-being is ultimately her responsibility and that she is not comfortable using the clinical pathway. She declined to elaborate any further. The doctors in the control group indicated that they agreed with the clinical pathway in principle and would most likely consider using it if the patient population in the unit was eligible for NIV. They also indicated that they would most likely support, drive and sustain the implementation process if they had been directly involved in the development of the clinical pathway for NIV. Although they participated in adapting and validating the clinical pathway for NIV, they indicated that they would be more comfortable if the external experts who validated the clinical pathway via the Delphi were known to them.

This is a clear indication of the lack of trust amongst health care providers. As described by Shanafelt et al. (2019:1558), the lack of trust between health care providers and health care organisations is augmented by the addition of additional tasks to prove quality care delivery such as tick boxes and pre-authorisation to justify patient care decisions. A break in the trust relationship leads to what is described as moral injury (Triplett & Loh 2018:82; Antonelli 2017:407). The researcher realised that in the South African context, health care remains fragmented. Not only is there a lack of collaboration, inclusion, and participation between the public and private health care sectors, but also between members of the multidisciplinary team. And the role of the critical care nurse as a valued member of the team, capable of

contributing to improving patient outcomes, is disregarded completely, further escalating their levels of disengagement, dissatisfaction, and moral injury.

Health care organisations need doctors, physicians, nurses, and allied health care professionals to deliver their services to consumers. Without adequate support from these key stakeholders, hospitals will not exist. It is imperative that health care organisations reevaluate their values and beliefs and become truly person-centred. Development of effective workplace cultures is key to organisational success and excellent service delivery to health care consumers. The findings of this study clearly emphasized the changes that are required for South African health care context and workplace culture to improve person-centred care, and patient outcomes through implementation of evidence-based practice in the clinical setting. Sustainable, measurable change requires a change in workplace culture (Bridges, Pickering, Barker, Chable, Fuller, Gould, et al. 2018:101; Murray, Sundin & Cope 2017:1291; Lor, Crooks & Tluzek 2016:362). The findings of this study informed the development of the conceptual framework illustrated in Chapter 8 (see Annexure F6).

Although the anticipated implementation of the clinical pathway for NIV did not occur, the researcher now strongly believes in the value of building person-centred workplace cultures. The researcher's findings related to what worked and what did not work is supported by the person-centred framework. Actions that were effective and less effective are illustrated in Figure 7.6.



**Figure 7.6: Evaluation of the actions to support evidence implementation**

Creating a non-threatening environment during focus group sessions was invaluable to the participants. The participants felt valued as members of the critical care team who contribute to improved patient outcomes. Because the researcher was well known to the participants, they trusted her and could discuss their challenges openly. This set the scene for improving communications between the internal facilitators as evidenced by the outcomes presented in Chapter 8. Having reflective conversations created an environment where open communication is encouraged and provided the participants with a support system where they can voice their frustrations and empowered them to reflect on their own practice daily. This was effective in development of the internal facilitators; however, the negative

workplace culture stifled the implementation of the clinical pathway for NIV. It is clear to the researcher now, that the effect of workplace culture is far reaching and the most important factor in successful implementation of evidence into practice.

The implementation might have been successful if organisational culture supported the implementation of evidence-based practice wholly. The dysfunctional relationships between organisations and their employees directly influence job satisfaction and motivation. Without adequate management support, creating a person-centred culture cannot be effective. Collaboration, inclusion, and participation at all levels in the organisation is negatively influenced by personal agendas, which contribute to the dissatisfaction of the nurses who are primarily concerned with improving patient outcomes. The nurses keep the wheels of the organisation turning despite their numerous challenges, as depicted in Figure 7.6.

## **7.6. SUMMARY**

The aim of phase 2 of the study was to implement the clinical pathway for NIV using the implementation strategy collaboratively developed with the internal facilitators and then evaluate the outcomes of the implementation strategy. However, this approach was not entirely successful in promoting the use of NIV in the critical care unit. The unintended consequences of this study revealed a far more disturbing phenomenon which contributes to the poor adoption of research evidence into clinical practice.

Nurses are at the heart of health care delivery, but they have been disempowered by a dysfunctional health care system. Disempowered nurses are disengaged, and a disengaged workforce is ineffective and inefficient. The balance of power can not be changed if the workforce, namely nurses are unable to overcome this barrier. This will lead to a

more dysfunctional health care system where the role of the critical care nurse remains marginalised to that of a physician's helper. The workload and task allocation – specifically administrative tasks and those not related to direct patient care – need to be addressed. Unless this is addressed satisfactorily, the nurses will continue to 'survive' from one shift to the next, without meaningful contributions to improving patient outcomes. Nurse leaders should examine this more closely and develop innovative solutions to this problem (Bridges, Pickering, Barker, Chable, Fuller, Gould, et al. 2018:101; Murray, Sundin & Cope 2017:1291; Lor, Crooks & Tluzek 2016:362). Providing adequate support and leadership to nurses providing clinical care might alleviate the problem. However, mere superficial support is not adequate. Continuing along this road, will have disastrous consequences for the patient, the nurse, and the nursing profession.

This chapter discussed the objectives of Phase 2 of the study. Chapter 8 discusses Phase 3 of the study.

## Chapter 8 Phase 3 – Evaluation

### 8.1. INTRODUCTION

Chapter 7 provided a discussion related to the implementation phase (phase 2) of the study. Based on findings of Phase 2 (implementation) and consultation with an industrial psychologist the following recommendations, findings, and conceptual framework are presented, based on aspects in the workplace culture that contributed to non-implementation of the clinical pathway for NIV in the critical care units. Figure 8.1 illustrates Phase 3 of the study.

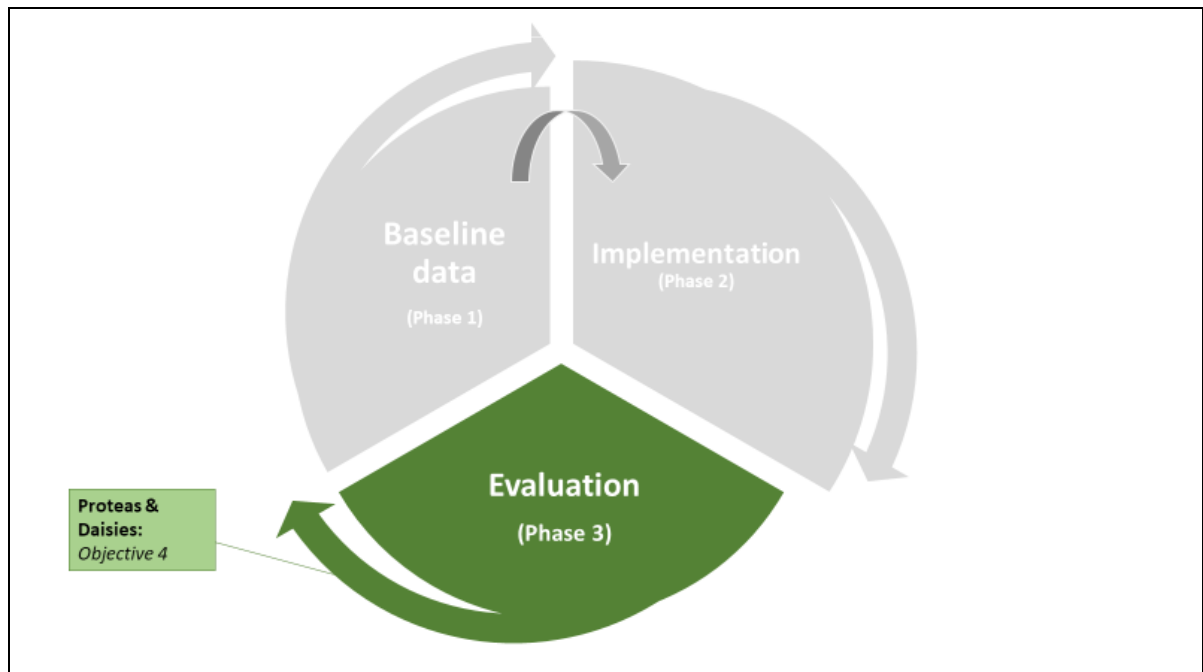


Figure 8.1: Phase 3 –Evaluation

During Phase 3 of the study the outcomes of the evaluation of the implementation of the clinical pathway for NIV in the critical care units is presented.

## 8.2. OVERVIEW OF PHASE 3 – EVALUATION

The aim of the evaluation phase was to determine the outcomes of the implementation of the clinical pathway for NIV in the critical care units in the intervention (Proteas) and control groups (Daisies). The following objective was identified:

**Objective 4:** Evaluate the outcomes of the implementation of the NIV clinical pathway in the critical care unit.

Despite the use of a person-centered practice development approach, and the principles of collaboration, inclusion and participation, the clinical pathway for NIV was not implemented as expected in the critical care units.

However, the evaluation of the implementation process provided valuable insight related to the impact of workplace culture on the individual nurse's motivation to change practice, as well as the effect of workplace culture on teamwork in the critical care units. The outcomes of the evaluation of the implementation of the clinical pathway for NIV, has implications for the individual nurse, the multidisciplinary team, and the health care organisation, as well as the greater health care system in South Africa. Table 8.2 is a summary of the key learnings and findings related to the evaluation of the outcomes of the study.

## 8.3. OUTCOMES OF EVALUATION

The researcher aimed to make sense of the effect of workplace culture on the individual nurses' motivation to change practice in the critical



care units. The researcher consulted with an expert in the field of industrial psychology in collaboration with her supervisors, to gain insight from the visual narratives and reflective conversations with the internal facilitators pertaining to the reasons for non-implementation of the clinical pathway for NIV in the critical care unit. The researcher provided the visual narratives and transcribed interviews to the industrial psychologist for discussion.

A workshop, over a period of 6 hours took place during which the industrial psychologist examined and interpreted each of the drawings provided by the internal facilitators. The findings of this workshop are presented in the sections that follow.

### **8.3.1. Key learnings from internal facilitators**

The researcher conducted individual interviews with both the Proteas and the Daisies. The researcher scheduled individual interviews with the participants. The interviews were conducted at a time and venue selected by each individual participant. The interviews typically lasted 15 minutes and was audio-recorded with the verbal permission of the participant at the onset of the interview. The interview data was transcribed verbatim.

The researcher collaborated with her supervisors to identify the themes, sub-themes, and categories from the reflective conversations with the Proteas and Daisies which were substantiated by the expert industrial psychologist. Table 8.1 provides a summary of the key learnings gained from the interview data.

**Table 8.1 Summary of key learnings from Internal facilitators**

Theme	Sub-theme	Category	Section
<b>Evidence-based practice</b>	Access to information	Perceived lack of access research evidence	Section 8.4.1
	Value of evidence-based practice for nursing	Adapting and validating the clinical pathway for NIV	
	Search for evidence and application		
<b>Teamwork</b>	Communication	Importance of teamwork	Section 8.4.2
	Supportive relationships	Importance of supportive relationships in the critical care unit	
<b>Disillusionment</b>	Lack of support	Management support Team support	Section 8.4.3
	Demotivation	Disengagement	
	Ineffective leadership	Top-down approach	
<b>Workplace culture</b>	‘Top-down’ approach	Demotivation; distrust	Section 8.4.4
	Lack of person-centeredness	Feeling unsafe; Voiceless	
	Staff and staffing	Distrust in management	

Table 8.1 provides an overview of the key learnings identified by the Proteas and Daisies during Phase 3 (Outcome of evaluation) of the study as well as the relevant discussion related to each.

Practice development approaches are aimed at the development of individuals to liberate them from their preconceived ideas about how a discipline should function and enable them to change their ways of working. The key learnings identified by the internal facilitators are discussed in Section 8.4. The researcher identified key learnings which enabled her to grow as a nurse researcher and nurse leader in the South African context as discussed in Section 8.5.1.

## **8.4. DISCUSSION OF OUTCOMES**

The evaluation of the implementation of the clinical pathway for NIV in the critical care units yielded both positive and negative outcomes. This section is dedicated to a discussion of each of the findings.

### **8.4.1. Evidence-based practice**

At the onset of the study, the internal facilitators and external facilitator collaboratively agreed that the original clinical pathway for NIV might be outdated, as it was originally published in 2012 (Balfour et al. 2012:107-114). Objective 2 of the study was to adapt and validate the clinical pathway for NIV to include the most recent research evidence related to NIV. The clinical pathway for NIV was subsequently adapted and later validated by experts in critical care as discussed in Section 6.4.1.

The internal facilitators indicated that they were not confident in searching for literature and research evidence to adapt the clinical pathway. Following a session dedicated to assisting the internal facilitators to search for, find and critically appraise the literature, the

internal facilitators indicated that they have learnt a new skill which will assist them in future. This finding mirrors international findings (Rankin, Butow, Thein, Robinson, Shaw, Price et al. 2015:4; Majid, Foo, Luyt, Zhang, Theng, Chang et al. 2011:230).

The collaborative effort of the internal facilitators and the external facilitator to adapt the clinical pathway and receive validation from external experts in critical care medicine provided the internal facilitators with a sense of accomplishment and a positive view towards research and the application of research evidence in clinical practice. The internal facilitators realised that they can effectively access and utilise research evidence to change clinical practice. This is one of the aims of emancipatory practice development approaches which was met by this study.

#### **8.4.2. Teamwork**

Reflection in and on practice is considered a vital part of continuous practice development (Welp, Johnson, Nguyen & Perry 2018:3990). Developing reflective thinking skills requires commitment from the participants to critically view their current practices and determine the efficacy of their nursing practice in providing evidence-based care to patients (McConnell, McCance & Melby 2016:39; Laird, McCance, McCormack & Gribben 2015:1455; Brekke, Phillips, Pancake, Lewis & Duke 2009:594).

Welp et al. (2018:3991) state that reflective thinking provides the nurse with the ability to develop strategies to overcome challenges in the clinical setting to ensure the delivery of quality nursing care to patients. Reflective practices are also associated with improved teamwork and conflict management skills by minimizing the negative effects of a high stress workplace environment and providing a sense of well-being to the nurses (Welp et al. 2019:3991; Manion 2017:142).

The conflict situations that arose in the intervention group during this study negatively impacted on the ability of the internal facilitators to continue participating in the research activities. However, the reflective conversations held with the internal facilitators assisted them in realising that they need to work as a team to improve their own well-being in the critical care unit as well as to ensure the best outcomes for the patients in the unit. The internal facilitators collaboratively agreed to implement a 'communication book' that would assist in clear communication between the shifts.

The conflict between the internal facilitators and the management team strengthened their commitment to work as a team, and the internal facilitators collaboratively agreed that they would make a concerted effort to rebuild the trust relationship within the team. This led to the development of supportive relationships within the nursing teams in the critical care unit, as evidenced by the support the internal facilitators provided for the inexperienced nurse during night shift (see Section 8.4.4). The improved teamwork in the critical care unit also improved conflict resolution with their management teams. The development of interpersonal skills is part of the principles of a person-centeredness and emancipatory practice development approaches, which was met by this study.

#### **8.4.3. Disillusionment**

The reflective conversations with the internal facilitators also highlighted the negative aspects that prevented the implementation of the clinical pathway for NIV in the critical care unit. The internal facilitators were disillusioned by the realisation that they had inadequate support and leadership from their management teams to implement the clinical pathway in the critical care unit, and that the lack of management support (Manion 2017:142).

The internal facilitators realised that they were dissatisfied with how their managers implemented changes in the critical care unit by using a ‘top-down’ approach and that this approach caused them to feel demotivated and disengaged. Furthermore, they realised that they utilise the same ‘top-down’ approach within their own teams and that this approach impacts on the way their teams perform. As one participant stated, ‘... *I would rather do it myself than leave it to an agency nurse...*’ The internal facilitators realised that this approach does not contribute to the development of trust and healthy workplace relationships in the critical care unit. However, the challenge will be to develop and sustain compassionate leadership styles and skills to improve the communication and delegation of duties within their teams and to change workplace culture.

#### **8.4.4. Workplace culture**

As the study progressed, the researcher became increasingly anxious about the non-implementation of the clinical pathway for NIV in the critical care units. Attempts at engaging the internal facilitators in the research activities became increasingly difficult. Their level of dissatisfaction in the workplace, and what was initially perceived by the researcher as their lack of interest became a matter of concern. From experience, the researcher had empathy for their situation. The researcher’s emic perspective ensured close relationships with the internal facilitators. The researcher had first-hand knowledge of the emotional burdens they had to endure to survive in the workplace as well as the impact of their work dissatisfaction in their personal lives. It is a well-known fact that burdens experienced in the workplace spill over into personal lives which could have disastrous outcomes such as divorce, substance abuse, depression and even suicide. (Shanafelt et al. 2019:1559; Stepanek et al. 2019:469).

Nurses are the heart of the hospital and a vital part of the services offered. Quality nursing care is the ‘product’ that hospitals are selling to the health care consumer. However, the quality of the product is influenced by the health and well-being of the nurses providing the service (Vandenbroek, Van Gerven, De Witte, Vanhaecht & Godderis 2017:546). The researcher explored the literature to find a reason for the disengagement of the internal facilitators related to the implementation of evidence into practice, and in hopes of finding a solution to the problem.

Shanafelt, Schein, Minor, Trockel, Schein and Kirch (2019:1556) stated that problems within the workplace culture is associated with high levels of professional dissatisfaction which leads to burnout and has far reaching consequences on both professional and personal levels for health care providers. This is consistent with the views of Klipin (2019:5) and Vandenbroeck et al. (2017:546). Symptoms of burnout include emotional exhaustion, depersonalization and a marked reduction in the work performance and competence of the employee (Vandenbroeck et al. 2017:546).

Recently the impact of burnout, moral distress and moral injury amongst physicians and nurses received a great deal of attention (Shanafelt 2019:1556; Vandenbroek, Van Gerven, De Witte, Vanhaecht & Godderis 2017:546). According to Shanafelt et al. (2019:1556) the incidence of burnout amongst physicians is much higher than that of any other profession and that is related to the distress and moral injury suffered in the workplace. However, Williamson, Murphy, Greenberg and Stevelink (2019:2) concluded that moral injury is not limited to a single profession and can occur in most organisations. The concept of moral injury described by Antonelli (2017:407) and Shay (2014:182) seemed to fit the experiences of the internal facilitators in the workplace. The researcher concluded that the critical care nurses are experiencing the signs and symptoms of moral

injury. This was confirmed by an expert in the field of industrial psychology during a consultation session as described in Chapter 7.

Moral injury is defined by Shay (2014:182) as the presence of *betrayal of trust* by a person or *persons of authority in high stakes situations*. Although this definition was aimed at the US military, it seems to fit the hierarchical nature of the South African health care system and the nursing profession. The nurses are experiencing feelings of betrayal due to the lack of support from management and poor leadership and are being disempowered in the clinical setting. The critical care unit requires a high level of cognitive, emotional, and physical investment from the nurse for the duration of their 12-hour shift. The critical care environment is a high stress, high risk environment where life-threatening emergencies occur daily (Stepanek et al. 2019:470; Dahinten et al. 2016:1069).

Shay (2014:182) and Antonelli (2017:409) describe moral injury within a hierarchical organisation as having three components, namely (i) a betrayal of what is considered right, (ii) by a person in a position of authority, (iii) in a high- stakes situation. An example of this was observed in the intervention group when an inexperienced registered nurse was placed in charge of the critical care unit at night, without the support of a critical care qualified nurse. When things went wrong during the shift the nurse called upon her critical care qualified colleagues for assistance, rather than calling her manager. Her colleagues came to her aid by going into work early to assist her with a critically ill patient. The team supported the young nurse, but the manager was absent. Should a serious untoward event occur under the clinical supervision of the inexperienced nurse, the medical-legal implications could lead to the suspension or loss of her license to practice nursing, which implicates her personal life and her career. Considering the essential components of moral injury, this situation fits the criteria provided by Shay (2014:182).



- (i) **a betrayal of what is considered right** – the inexperienced nurse was expected to perform nursing care and clinical supervisory tasks beyond her Scope of Practice, and beyond her level of knowledge, skill and expertise. The inexperienced nurse did not feel that she had the authority to refuse or question the decision made by her manager.
- (ii) **by a person in a position of authority** - The unit manager and nurse manager collectively agreed on this unsafe staffing strategy and put the career of the inexperienced nurse at risk, which negatively impacts on the trust relationship between the critical care nurses and the management team.
- (iii) **in a high- stakes situation** - patients in the critical care unit are experiencing life-threatening emergencies, a life or death situation. The well-being of the patient and the patient outcome rests on the expert nursing skill and knowledge of the critical care nurse.

The researcher recognised the signs and symptoms of moral injury described by Shay (2012:58) exhibited by the internal facilitators. Table 8.2 provides a summary based on the criteria of moral injury, as applied to this study.

**Table 8.2 Signs and symptoms of moral injury**

Criteria	Signs & Symptoms	Application to the study
Trigger event	Acts that violate deeply held moral values	Internal facilitators verbalized that they are unable to provide optimal care to patients due to resource constraints and lack of support from management.
Individual's role at the time of the event	Perpetrator, victim or witness	<p><b>Victim:</b> The nurses feel undervalued and may relate as the victims of organisational processes.</p> <p><b>Perpetrator:</b> They also relate as the perpetrators – they are continuing to work as they did before, unable to change their practice and therefore seem to be supporting organisational culture and behaviour, although they are deeply dissatisfied.</p> <p><b>Witness:</b> Nurses in junior positions are witnesses to the daily practices in the critical care unit, and although they feel 'uncomfortable', they feel powerless to change the situation.</p>

**Table 8.2 Signs and symptoms of moral injury**

Criteria	Signs & Symptoms	Application to the study
Predominant painful emotion	Guilt, shame, anger	<p><b>Guilt:</b> Nurses experience guilt as they want to do more for their patients, but they are powerless to do so.</p> <p><b>Anger:</b> They also experience anger because the workplace is not supportive or congruent with their personal values and beliefs about critical care nursing.</p> <p><b>Shame:</b> The nurses verbalised that they are not proud of the work they do, and only do the minimum to survive the shift.</p>
Re-experiencing the event?	Yes, daily	Nurses are faced with the same challenges on a shift-by-shift basis. They already know what to expect before coming on duty.
Avoidance or numbing?	Yes	The nurses avoid challenging the status quo thereby avoiding conflict, which leads to 'survival mode' and a depersonalisation towards their work.
What necessity is lost?	Trust	Loss of trust in the relationship between nurses and managers leads to a loss of motivation to perform at their best, which in turn causes conflict within the team.

Adopted from Shay (2012:58) and Molendijk, Kramer and Verweij (2018:38)

The nurses feel betrayed by their managers who place them in these dangerous situations. This feeling of betrayal by a person in a position of power or authority breaks down the trust relationship and causes micro-trauma as described by Antonelli (2017:408). Employees who are continuously subjected to micro-trauma in the workplace distrust their managers, which leads to the undoing of the team in the unit (Triplett & Loh 2018:82). On a personal level, employees develop mechanisms to protect themselves from the emotional discomfort and distress and become disengaged – this was evident from the lack of motivation to participate in the research activities in the unit. A disengaged and demotivated team is unable to provide excellent service which is of great concern (Cheng et al. 2017:5107; Joseph & Bogue 2016:339).

The invisible wounds caused by micro-trauma in the workplace often manifest as behavioural changes such as increased absenteeism, lack of compassion and not doing what is deemed as part of the job description e.g. not meeting targets or due dates for additional assignments (Stepanek et al. 2019:469; Vandebroek et al. 2017:552). Managers may not recognise these manifestations as signs and symptoms of a dysfunctional workplace culture and attempt to rectify the employee's behaviour through punitive performance management processes. A work environment that requires a high level of sustained mental, physical and emotional investment from the employee is associated with high levels of burnout and exhaustion (Dyrbye, Johnson, Johnson, Satele & Shanafelt et al. 2018:447; Vandebroek et al. 2017:547). The consequences of ignoring the signs and symptoms of moral injury and a negative workplace culture have a negative impact on the mental well-being of the nurses in the critical care unit. Vandebroek et al. (2017:546) state that rates as high as 78% of European nurses suffer from burnout. The consequences of burnout range from depression to suicidality

(Shanafelt et al. 2019:1559; Dyrbye et al. 2018:449; Vandebroeck 2017:552).

On the surface, the nurses are doing what they must, to get through the day and survive another shift, and it appears that the patients are cared for. However, a continuous negative workplace culture will continue to drain their energy leading to less than effective nursing teams who provide the bare minimum patient care. Patients are sensitive to these factors and will often complain of poor nursing care which further escalates the negativity in the workplace. Continuous negative feedback from managers creates a sense of ‘not being good enough’ which leads to the loss of meaning in work. Allan, Batz-Barbarich, Sterling and Tay (2018:502) and Shanafelt et al. (2019: 1556) describe this process as the “...erosion of the meaning of work...”. Loss of meaningful work experiences escalates demotivation and disengagement of the persons performing the tasks, which negatively impacts on the organisational outcomes (Allan et al, 2018:502; Shanafelt et al. 2019:1556).

Table 8.3 is a summary of the relationship between the barriers to person-centeredness in the critical care unit and moral injury. The summary is derived from the literature related to moral injury, workplace culture and based on the requirements of a person-centered framework (Molendijk, Kramer & Verweij 2018:37; Lee 2018:44; Antonelli 2017:406; Shay 2014:182).

**Table 8.3 Linking barriers to person-centredness and moral injury**

Concept	Findings	Link to Moral injury	Outcome
<b>PERSON-CENTRED CARE PROCESSES</b>			
Shared decision-making	Patients and families have limited decision-making privileges – mostly doctor driven	Betrayal – critical care nurses are not empowered to influence decision-making processes related to their patients	Disempowered, disengaged
Engagement	Maintaining status quo – no motivation to challenge current practice	Betrayed by management – no support – feelings of anger/guilt	Disengaged
<b>CARE ENVIRONMENT</b>			
Supportive organisational systems	Lack of support from management	Conflict / moral distress – no support from management	Demotivated, disengaged
Power sharing	Limited access to strategic resources	Moral distress	Demotivated
Physical environment	Physician driven	Lack of management support for nurses in unit	Disengaged, disempowered

**Table 8.3 Linking barriers to person-centeredness and moral injury**

Concept	Findings	Link to Moral injury	Outcome
<b>CARE ENVIRONMENT</b>			
Appropriate skill mix	Lack of adequately trained nurses to care for critically ill patients	Lack of resources Lack of support from management	Demotivated, disengaged, disempowered
Shared decision-making	Top-down approach from management	Lack of support	Demotivated, disengaged, disempowered
Effective staff relationships	Lack of effective, authentic support from management	Betrayal	Demotivated, disengaged, disempowered
<b>PRE-REQUISITES</b>			
Professionally competent	Knowledge of clinical pathway for NIV; collaborated with development of clinical pathway	Contributions are not acknowledged	Disengaged

**Table 8.3 Linking barriers to person-centeredness and moral injury**

Concept	Findings	Link to Moral injury	Outcome
<b>PRE-REQUISITES</b>			
Clarity of values & beliefs	Shared purpose amongst internal facilitators, but not rest of MDT and management	Unable to fulfil role as internal facilitator due to work environment	Disempowered, demotivated, disengaged
Commitment to the job	Just surviving another shift because they must	Betrayal of own values and beliefs	Demotivated, disengaged, disempowered
Developed interpersonal skills	Lack of appropriate interpersonal skills	Poor communication leading to conflict situations within the team	Disengaged

**Adopted from Molendijk, Kramer & Verweij (2018:37), Lee (2018: 44), Antonelli (2017:406) and Shay (2014:182)**



## **8.5. DEVELOPING A CONCEPTUAL FRAMEWORK OF CURRENT WORKPLACE CULTURE**

Despite using a person-centered practice development approach and observing the principles of collaboration, inclusion and participation, the clinical pathway for NIV was not implemented in clinical practice as expected. Based on this, the researcher concluded that the workplace culture is not conducive to human flourishing. The internal facilitators identified a lack of leadership and a negative workplace culture as contributing factors to the non-implementation of the clinical pathway for NIV in the critical care units. The researcher investigated possible causes of a negative workplace culture and came across the concept of moral injury. Moral injury is the opposite of human flourishing, and a contributor to the unsuccessful implementation of evidence at the bedside. A lack of leadership and support will continue to disempower nurses. The sections that follow will elaborate on the key learnings of the researcher.

### **8.5.1. External facilitator's key learnings**

Practice development approaches are aimed at the development of individuals to liberate them from their preconceived ideas about how a discipline should function and enable them to change their ways of working (Wilberforce et al. 2017:87; Coghlan et al. 2014:564; Titler, Wilson, Resnick & Shever 2013:S41; Dalheim, Harthug, Nilson, Nortvedt et al. 2012:2; Gonzalez-Torrente, Pericas-Beltran, Bennasar-Veny, Adrover-Barcelo, et al. 2012:1). A discussion of the key learnings identified by the researcher which enabled her to grow as a nurse researcher and nurse leader in the South African context is presented in the section that follows.

Table 8.4 provides an overview of the key learnings identified by the external facilitator (researcher) during Phase 3 (evaluation) of the study as well as the relevant discussion related to each.

**Table 8.4 Summary of external facilitator’s key learnings**

Theme	Sub-theme	Section
Facilitation of change	Top-down vs Bottom-up	Section 8.5.1.1
	Reflection	
Dysfunctional system	Chasing the wrong target – money driven; physician preference	Section 8.5.1.2
Important role of effective leadership	Compassionate, inclusive leaders	Section 8.5.1.3
	Importance of shared leadership	

### **8.5.1.1. Facilitation of change**

Ward et al. (2017:3) and Nicolaidis and Raymaker (2015:172) describe facilitation as a deliberate process and technique utilised by one person to assist other in changing their behaviour, attitude and skills to improve the likelihood of successful implementation of an intervention. As an external practice development facilitator, the researcher’s focus was on facilitation of the implementation process. The researcher as external facilitator was able to provide the internal facilitators with new skills, such as searching for relevant research literature to adapt and validate the clinical pathway for NIV. This led to a positive change in their perception of the importance of evidence-based practice and the role of nursing research. The researcher believes that she was able to influence the behaviour of the internal

facilitators to become more person-centered and evidence-based in the clinical setting.

The researcher's utilisation of reflective practice as part of the action research process enabled the internal facilitators to recognise their own 'top-down' management styles within their own teams. The researcher was excited to assist the internal facilitators to change their behaviour. However, the influence of the negative workplace culture and lack of support from the management team led to the non-implementation of the clinical pathway for NIV in the critical care units. The researcher realised that the facilitation of the implementation process is not enough to enhance the adoption of research evidence into practice.

#### **8.5.1.2. Dysfunctional health care system**

The researcher concluded that the money-driven environment in the private sector hospitals contributes to the lack of person-centeredness in the critical care units. Doctors claim to act in the best interest of the patients, but in fact they are looking after their own financial interest first. This money-driven focus in conjunction with the need for meeting organisational targets creates a dysfunctional health care system which is incongruent with the values and beliefs of the critical care nurses, which inevitably causes moral distress and moral injury, leading to a disengaged and demotivated nursing team.

The private health care sector in South Africa remains doctor driven. Doctor preference plays a major role in the treatment plans and management of patient care. However, the focus should be the standardisation of care (Cheng et al. 2017:5109). The private sector is dependent of the support of doctors to generate adequate revenue to meet their organisational targets. The Health Market Inquiry conducted by the South African Competition Commission (2017:np) indicated that doctor behaviour has a significant influence on the utilisation of health care services. Point 11 of the report by the Competition Commission

states that specialist doctors (physicians) often resist joining preferred provider groups in order to adapt billing codes to effectively increase fees charged to patients without an equal improvement in the quality of the service provided.

Additionally, the report found that incentives provided to doctors often promotes the over-servicing of patients, in the form of increased admissions to hospitals, increased length of stay, referral to higher levels of care, such as critical care facilities, and the utilisation of more expensive treatment modalities, which are incongruent with the disease burden of the local population (Point 17). Considering this statement, the researcher deducted that the use of NIV is not widely accepted as there is a reduced fee chargeable by doctors for NIV compared to the fees charged for invasively ventilated patients.

Furthermore, the Health Market Inquiry report (2017:np), point 19, states that the rate of admissions to critical care units in South Africa is significantly higher than that of other countries with comparable data. The cost of the higher admission rates to critical care units amounts to approximately ZAR 2.7 billion per annum. The report also states a positive correlation between the number of critical care unit admissions and the number of beds available in the area. Private hospital groups often compete to attract specialist doctors and the arrangement benefits both the hospital and the doctor with higher treatment rates and intensity of treatment provided. However, this is not for the benefit of the uninformed health care consumer, who must foot the bill when their medical aid funder is unable to cover the additional costs. The Health Market Inquiry report indicated that the utilisation of health care services in the private sector is based on 'supply induced demand'. The report further raised concerns related to the behaviour of doctors and the supply driven private sector hospitals where there is an apparent abridged tendency to embrace new treatment modalities and methods of care delivery for in-hospital patients. The researcher

postulated that this contributed to the non-implementation of the clinical pathway for NIV in the critical care units.

### **8.5.1.3. Effective leadership**

The culture of the critical care unit is greatly influenced by the culture and leadership of the organisation (Bailey & Burhouse 2019:106; Triplett & Loh 2017:76; Murray et al. 2017:1289). In the intervention group it became clear that there is a huge incongruence between the culture of the critical care unit and the culture of the organisation. In other words, there was a gap between ‘what we say’ and ‘what we do’. In addition, the discrepancy between the nurses’ values and beliefs and those of the organisation lead to job dissatisfaction and demotivation of the nurses in the critical care unit. According to the participants,

*“It’s not about the patient at all anymore - the patient is not priority – we need to tick all the boxes to prove that we’ve done our jobs”.*

The hierarchical workplace culture in the organisation proved to be a formidable barrier to the implementation of evidence-based practice at the bedside. The ultimate authority of the doctor as the decision-maker regarding the patient’s care strengthens the hierarchical culture further disempowering the nurse as a professional member of the multidisciplinary team. The nurses would rather do what they are told to avoid conflict, than challenge convention to improve practice. The lack of effective and supportive leadership in the critical care unit contributed to the demotivation of the internal facilitators to implement the clinical pathway for NIV, and further contributed to the moral injury of the critical care nurses. As stated by a participant, *“What is it all for?”*

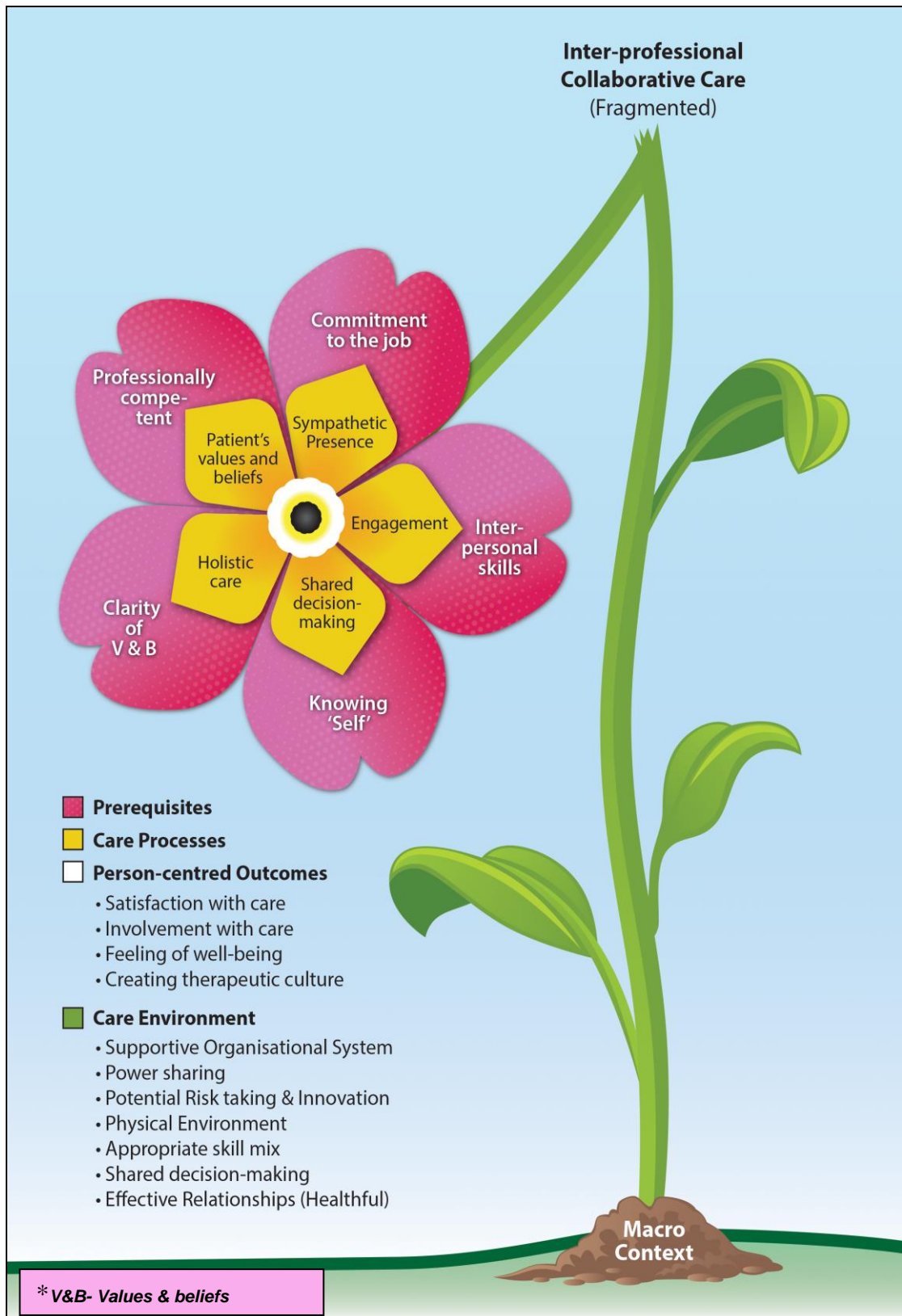
Factors that influence the implementation of evidence-based practice in the clinical setting include the culture of the organisation, leadership and resource availability (Cheng, Broome, Feng, Hu 2017:5104; Kajermo,Boë, Johansson, Henriksen, McCormack, Gustavsson &

Wallin 2013:42). The behaviour of team members is guided by the development of policies and statements regarding expected performance and what measures are taken to manage poor performance. Workplace culture can be described as the organisation and its manager's attitude towards employees and has a significant impact on the employee's job satisfaction (Shanafeldt 2019:1557; Stepanek, Jahanshahi & Millard 2019:470). Workplace culture is also a significant barrier to the implementation of evidence-based practice and the motivation of individuals to change current practice to improve patient outcomes (Stepanek et al. 2019:470; Cheng et al. 2017:5109; Rycroft-Malone, Burton, Wilkinson, Harvey, McCormack, Baker, et al. 2016:17; Rycroft-Malone, Wilkinson, Burton, Andrews, Ariss, Baker, et al. 2011:74;).

A conceptual framework of the current workplace culture was developed as discussed in Section 8.5.2.

### **8.5.2. Researcher's conceptual framework of current workplace culture**

The effect of a negative workplace culture contributed to the non-implementation of the clinical pathway for NIV in the critical care unit. The researcher compared the findings from the reflective conversations with the internal facilitators with the person-centered practice framework as discussed in Section 8.4 (McCormack & McCance 2017:60) and developed the conceptual framework illustrated in Figure 8.2. An overview of the concepts and their interdependent relationships are provided in Table 8.5.



**Figure 8.2: Researcher's conceptual framework of current workplace culture**

The concepts of the conceptual framework and their interdependent relationships are summarised in Table 8.5.

**Table 8.5 Concepts of the researcher’s conceptual framework**

Concept	Description	Relationship
Stalk	Care environment	The stalk provides water and nutrients to the rest of the flower to allow the flower to grow and bloom. A break in the stalk means that the rest of the flower is not receiving adequate nutrition and the flower will start to die off slowly. The lack of interprofessional collaborative care in the critical care units have a negative impact on the rest of the flower. Some parts of the flower have already suffered catastrophic damage, and it is only a matter of time before the rest of the flower dies.
Pink flower petals (outside)	Prerequisites that contribute to achieving person-centered outcomes and a healthy workplace culture.	The flower petals rely on the stalk to provide water and nutrients required to sustain growth and allow the flower to bloom (flourish) in its environment. Some of the elements were present in the internal facilitators, but the ‘broken’ care environment has negatively impacted on the other elements, leading to non-implementation of the clinical pathway.



**Table 8.5 Concepts of the researcher’s conceptual framework**

Concept	Description	Relationship
Yellow flower petals (inside)	Care processes – refers to the actual patient interaction and care delivery in the critical care unit.	The yellow petals rely on nourishment from the pink petals to bloom (flourish). Although some of the pink petals are able to provide some nourishment to feed the yellow petals, the damage incurred by the lack of adequate nourishment from the fragmented stalk is not adequate to sustain the yellow petals, and ultimately the centre of the flower will suffer catastrophic damage.
Centre of the flower	Person-centred outcomes – refers to the expected outcomes of a person-centred care environment.	The flower petals that are still viable have a positive impact on the centre of the flower, and some of the outcomes such as high patient satisfaction rates are evidence of this. However, this is not sustainable, as the petals require adequate nourishment from the stalk to flourish and continue providing for the needs of the rest of the flower.
Soil	Macro-context – refers to the greater health care system in which the hospital is embedded.	The soil provides nourishment to the stalk and is vital to the survival of the flower. The greater health care system in the South African context remains fragmented which perpetuates the delivery of fragmented care to patients and contributes to the dissatisfaction of the nurses and doctors providing essential health care to patients.

Table 8.5 provided a summary of the concepts and their interdependent relationships. The fragmented stalk of the flower means that some parts of the flower are still functioning, but the lack of support is slowly causing the flower to wilt, and ultimately the flower will die. A negative workplace culture in the critical care units does not enable the nurses to flourish due to a lack of person-centeredness. The disastrous outcome of a dying flower will lead to patient suffering and dissatisfaction.

## 8.6. SUMMARY

Organisational culture contributes to the presence of moral injury. Management teams need to be actively working alongside their teams instead of spending time behind desks and delegating more and more administrative tasks to nurses. The divide between management teams and their nurses became painfully clear in the visual narratives provided by the internal facilitators. Nurses are feeling underappreciated, under-valued and have little job satisfaction. Health care organisations need to develop strategies to resolve the moral injury incurred by their multidisciplinary teams and nurses.

Shay (2012:57) states that the road to recovery is facilitated by cohesion, leadership, and training. Considering the battlefield of health care in South Africa, it is apt to apply these principles to the context of the critical care units. Shay (2014:189) states that recovery ‘...only happens in community...’. To the researcher this signifies that nurse leaders need to reach out to the nurses in the clinical setting as well as members of the multidisciplinary team, regulatory authorities and professional associations, to collaboratively address the moral injury incurred by our colleagues and participate in the development of inclusive strategies to pave the road to recovery – for the sake of our patients, ourselves and our profession.

Collaboration across the public and private health care sectors to improve the utilisation of evidence-based interventions should be driven from the National Department of Health and regulatory bodies. This is part of the process to implement the National Health Insurance (NHI) plan which aims to provide better health care and access to health care for all South Africans. However, if the dysfunctional workplace cultures are not addressed first and resolved adequately, the implementation of evidence-based practice will not realise, and the health care consumer will be left with the short end of the stick again.

As nurse leaders it is our responsibility to actively participate in the development and implementation of evidence-based care and standards, policies and procedures that impact our profession and clinical practice, in collaboration with regulatory bodies to promote better health care for all. Nurse leaders need to reach out to the members of the multidisciplinary team to collaboratively develop training programmes that will benefit all the members of the multidisciplinary team, instead of continuing to exist in a ‘vacuum’ – interprofessional collaboration and education will bridge the divide between the medical and nursing communities and provide patients with truly person-centered care.

This chapter provided a discussion related to the Phase 3 of the study, Outcomes of evaluation. Chapter 9 is a discussion related to the implications for nursing practice.

# Chapter 9

## Conclusions, contributions, implications, and limitations

### 9.1. INTRODUCTION

Chapter 8 provided an in-depth discussion related to the evaluation (Phase 3) of the study. The findings of this study have several important implications for nursing practice in South Africa. This chapter focusses on the conclusion, contributions of this study, implications for practice, future research, and the limitations of the study.

### 9.2. CONCLUSIONS

The overall aim of the study was to implement the clinical pathway for NIV in the critical care units and subsequently evaluate the outcomes of the implementation of the clinical pathway for NIV. Despite the utilisation of a person-centred practice development approach, the implementation of the clinical pathway for NIV did not realise as described in Section 8.4. The influence of a hierarchical, negative workplace culture prevented the implementation of the clinical pathway. A discussion related to each of the objectives of this study is presented in the next section.

**9.2.1. Objective 1:** Assess unit culture and context to identify barriers and enablers to implementation of the clinical pathway for NIV in the critical care unit.

The Context Assessment Index (CAI) yielded adequate results related to the context in each of the purposively selected critical care units.

The highest return rate was seen in the intervention group, the Proteas. As per the guidelines for analysis and interpretation, the context within the Proteas group was receptive to change, with a strong culture score which indicated a strong sense of community. To the researcher, this was an important indicator of success.

A strong sense of comradery along with the fact that the Proteas were involved in the development of the original clinical pathway indicated that the chances of successful implementation of the clinical pathway was greatly improved. The Proteas scored lower on the aspects related to leadership, which the researcher attributed to the authoritarian physician practising in the critical care unit. However, changes in the leadership and a break down of team cohesion, led to the Proteas losing their motivation to continue with the implementation of the clinical pathway for NIV in the critical care unit. The barriers to implementation that the Proteas identified were collaboratively addressed as outlined in Table 6.5.

Retrospectively, the researcher should have focused more on overcoming the barriers and done more close monitoring of the factors that impeded team cohesion to ensure that the internal facilitators have sufficiently overcome the barriers before continuing with the implementation strategy. Therefor the researcher concludes that workplace culture, specifically related to leadership and team cohesion are the determining factors or indicators of successful implementation of evidence at the bedside.

As expected, the Daisies (control group) failed to implement the clinical pathway for NIV in their unit too. The researcher concluded that the failure to implement the clinical pathway was related to a lack of support from the researcher (external facilitator) to drive the process of implementation. In the context of the Daisies, the environment was receptive to change, but the traditional leadership style present in the

hospital limited their ability to implement the clinical pathway for NIV. Had there been continued support from the researcher and interaction with the multidisciplinary team, implementation might have succeeded.

**9.2.2. Objective 2:** Adapt and validate the clinical pathway for NIV.

The adaptation and validation of the clinical pathway was the least stressful part of this study. The Proteas and Daisies had a vested interest in the topic because they were involved in the initial development of the original clinical pathway. Through utilising person-centred principles of collaboration, inclusion and participation, the internal facilitators learnt how to search for relevant research literature as well as how to critically appraise content for use in the clinical setting. The validation of the clinical pathway through external experts provided the internal facilitators with a sense of accomplishment and being valued. This is evidence of the invaluable contributions of nurses to improving the outcomes of patients in the critical care unit.

Although clinical pathways are not widely accepted in the South African context, the researcher concluded that there is indeed a valuable role of clinical pathways in the standardisation of patient care to improve patient safety and clinical outcomes. The development of clinical pathways for the South African context is a valuable tool for practice development. The implementation of clinical pathways in the south African context, however, requires an interprofessional collaborative approach for the greater good of the patients we serve.

**9.2.3. Objective 3:** Adopt a person-centred practice development approach to collaboratively design and implement a strategy for implementing the clinical pathway for NIV in the critical care unit.

The collaborative efforts of the Proteas and external facilitator to develop an implementation strategy for implementing the clinical pathway provided an opportunity to include the nurses working in the ED and strengthen the relationship between the two departments. This improved the communication between the critical care nurses and the ED nurses, and they shared a common goal, namely identification of patients who are candidates for NIV to improve patient clinical outcomes. The success of person-centred approaches lies in the inclusion, participation, and collaboration of the multidisciplinary team (Wilberforce, Challis, Davies, Kelly, Roberts & Clarkson 2017: 86; McConnell et al. 2016:39; Laird et al. 2015:1455). However, the hierarchical culture in the critical care unit, and the influence of a paternalistic physician and inadequate leadership, led to the non-implementation of the clinical pathway for NIV in the critical care unit.

Although the communication between the nurses in ED and the critical care nurses improved, the lack of support from management coupled with the prevailing organisational culture contributed to the non-implementation of the clinical pathway for NIV in the critical care unit. Therefore, the researcher concluded that the implementation of research evidence into clinical practice, needs to be fully supported by the entire management team and the goals clearly communicated to the multidisciplinary team.

The goal is to improve patient outcomes through the standardisation of care. The lack of adequate communication between the nurses and doctors contributes to the significant moral injury suffered by the critical care nurses which further impedes attempts at improving patient outcomes through innovation and research implementation. Person-centred cultures cannot be developed or sustained without the support of management, and all the members of the multidisciplinary team in the critical care environment.

**9.2.4. Objective 4:** Evaluate the outcomes of the implementation of the NIV clinical pathway in the critical care unit.

The non-implementation of the clinical pathway led to the discovery of a more disturbing phenomenon, which the researcher discovered during reflective conversations with the internal facilitators. The researcher concluded that the presence of moral injury in the critical care nurses contributes to their reluctance to question the status quo and leads to demotivation and disengagement. The high levels of disengagement contribute to the nurses' 'survival mode', and to the non-implementation of the clinical pathway for NIV. The effective and sustained implementation of research evidence into practice relies on the collaboration, inclusion, and participation of the nurses in the critical care unit. However, if moral injury persists, the implementation of evidence at the bedside will remain incomplete and ineffective. The results will be incomparable with international benchmarks.

### **9.3. CONTRIBUTIONS**

The theoretical and methodologic contributions of this study as well as the contributions to nursing practice are discussed in the section that follows.

#### **9.3.1. Theoretical contribution**

The theoretical contribution of this study adds to and strengthens the existing body of knowledge related to the use of non-invasive ventilation in the critical care unit. The clinical pathway for NIV is an evidence-based clinical decision-making instrument, based on the extensive research conducted in the field of respiratory disease management. The clinical pathway translates to the best possible



evidence-based care for qualifying patients, which in turn improves patient outcomes, operational efficiencies, and cost-management in the health care sector. During Phase 1 (baseline data) of the study, the clinical pathway for NIV was adapted to include the most recent research evidence related to NIV and validated by experts in the field of critical care medicine.

Clinical pathways have internationally been developed and used as an effective means for standardisation of care and clinical practice. Standardisation of clinical practice allows for the cost-effective treatment of patients in the acute care setting by minimizing variances related to doctor preference. In the South African health care context, the treatment of patients varies greatly between public and private sectors. Public sector health care delivery is dependent on the availability of resources which determines what treatment options are offered to patients, whereas the private sector remains driven by doctor preferences, which contributes to the vast differences in patient outcomes and cost of treatment in hospitals. The changing landscape of health care in South Africa requires a different approach to ensuring quality evidence-based patient care, and the development and implementation of clinical pathways provide the basis of scientifically defensible health care interventions that strengthen the argument for the standardisation of clinical practice to ensure accessibility and quality health care for the South African health care consumer.

Globally, clinical pathways are used for the management of a variety of clinical conditions, but in the South African context the uptake of clinical pathways in clinical practice remains a challenge. The resistance from multidisciplinary teams to implement clinical pathways, especially in the private sector, leads to fragmented care because patients are managed by multidisciplinary teams who do not necessarily communicate their treatment intentions to each other (Soffin & YaDeau 2016:iii62-iii72). The clinical pathway for NIV aims to improve person-

centred patient care by providing a platform for members of the multidisciplinary team to engage with each other as well as the patient in determining the best treatment plan for the individual patient, whilst reducing variances in treatment and optimising operational efficiencies.

In addition, clinical pathways are person-centred to include the patient at the centre of the decision-making process and allow for the patients' preferences related to their treatment to be acknowledged by the multidisciplinary team. The South African health care landscape is changing, and patients are more aware of their right to be involved in each aspect of their health care. Dismissing the right of the patient to be part of the decision-making process leads to increased dissatisfaction of the health care consumer with the delivery of health care services in South Africa. Acknowledging the patient as a member of the decision-making team through the utilisation of clinical pathways will not only improve communication between patients and health care providers but improve patient satisfaction levels because patients experience a sense of wellbeing – they are regarded as human beings and not just another item on a health care provider's 'to-do list'. They are actively collaborating with the multidisciplinary team to achieve their best health outcomes and not just passive recipients at the mercy of the multidisciplinary team.

Clinical pathways are essentially a 'blueprint' for providing optimal care and treatment to a patient by stipulating the sequence of interventions and the timing of specific interventions. Clinical pathways set the standard for providing patient care that is based on the latest research evidence. Clinical pathways provide the basis for treatment of the patient which is aligned to best practice. Adherence to best practice is monitored and evaluated against the outcomes of the clinical pathway and provides a basis for managing variances in care and treatment deviations. However, clinical pathways are not static entities and are constantly evolving. As new evidence becomes available, clinical

pathways are reviewed and adapted, which is aligned with the aims of practice development, namely constant quality improvement in all areas of health care delivery. Ideally, clinical pathways are reviewed yearly, which allows for improvements in treatment plans to be included and implemented in clinical practice. Using a person-centred practice development approach aims to include all the members of the critical care team to take ownership for the improvement of quality in clinical practice.

The utilisation of a person-centred practice development approach for this study was unique and challenged the conventional ‘top-down’ method of knowledge translation in the nursing profession in South Africa. The utilisation of a person-centred practice development approach based on the principles of collaboration, inclusion and participation contributed to our understanding of the impact of workplace culture on the motivation of critical care nurses to change practice in the South African context. Another contribution of this study was the development of the conceptual framework which illustrates the dysfunctional workplace culture in the critical care units as illustrated in Figure 8.1 in Chapter 8. The conceptual framework illustrates the dire need for the implementation of interprofessional collaborative care processes to ensure the best possible patient outcomes in the critical care unit.

The findings of this study emphasize the need for a new approach to the utilisation and implementation of evidence-based practice in the South African context, and has implications for policy makers, the nursing profession, nursing education, and future nursing research as described in Section 9.4.

### 9.3.2. Methodologic contribution

The first methodologic contribution of this study relates to the utilisation of a person-centred practice development approach, which is uncharted territory in the private health care sector. The person-centred approach required the utilisation of internal facilitators to bring about change in the critical care units, which challenges conventional methods of evidence-based practice implementation in the South African context. Initially, the approach seemed effective, however the effects of a negative workplace culture impacted on the ability of the internal facilitators to sustain the implementation process.

Another methodologic contribution of this study relates to the use of visual narratives during the reflective conversations with the internal facilitators. The use of visual narratives is generally applied to the field of anthropology and social sciences (Kim 2016:143; Squire, Andrews, Tamboukou 2013:3).

Visual narratives are described as ‘... accounts of daily life...’ and ‘...culture in action..’. Narratives are expressions of the interactions between persons and their environment, and the meaning of events that influence people’s experiences. The use of visual media to aid the narration of experiences assisted the researcher in engaging with participants in a meaningful manner. Alleyne (2015:33) states that narratives are a means for generating and assessing knowledge about what the world means to us. The researcher utilised visual narratives constructed by the internal facilitators to support the findings from the reflective conversations, which was substantiated by the expert industrial psychologist. The application of visual narratives outside of the field of anthropology is a unique contribution of this study and provided valuable insight into the lived experiences of the nurses in the critical care unit.

Another possible contribution of this study relates to the transformative, sequential data collection and the inductive/deductive approach to data analysis throughout the phases of the study. The needs of the internal facilitators were recognised as a vital component to the success of the implementation process, which supports the aims of a person-centred approach.

### **9.3.3. Nursing profession**

The i-PARiHS framework recognises the importance of the recipient as a key aspect for successful implementation of evidence into practice. Identifying aspects in the individual participant's behaviour that affects the implementation of evidence at the bedside proved to be valuable, however, when the culture of the unit changes due to behavioural changes in nurse leaders and organisational behaviour the impact on the motivation of the internal facilitators was not anticipated.

The enormous impact of the change in organisational culture lead to the disengagement of the internal facilitators, to switch to 'survival mode' rather than engaging in activities to improve patient care and the delivery of evidence-based care to the patients. Upon further investigation, the relationship between the level of motivation to change practice and the mental and emotional well-being of the nurses uncovered a disturbing phenomenon in the critical care unit. Moral injury is described by Shay (2012:58) as "...the soul wounds inflicted by doing something that violates one's own ethics, ideals or attachments."

Our nurses are subjected to this every day, which breaks down the trust relationship between nurses, their managers, and the health care organisations they represent. Left untreated, these soul wounds cause nurses to suffer from depression, burnout, and even suicidal

tendencies, and forces them to leave the profession, and the patients who need them most. A contribution of this study was recognising that the South African nursing profession and the greater health care sector are in need of a workplace culture ‘make-over’, starting with the development of a person-centred workplace culture which allows nurses and members of the multidisciplinary team to flourish for the benefit of the patients under their care.

Nurse-driven health care interventions in South Africa have been limited to primary healthcare settings, such as Nurse Initiated Management of Anti-Retroviral Treatment (NIMART), due to a lack of resources such as doctors to attend to patients in primary healthcare clinics who cannot be accommodated at hospitals. These programmes have proven to be successful in providing clinical treatment and care to large numbers of patients who would normally not have access to health care services. However, the rising burden of disease in South Africa means that more patients are now seeking health care services from acute care facilities, which are also embattled for human resources.

Implementing clinical pathways which are monitored by nurses in the critical care unit in collaboration with the multidisciplinary team reduces the burden on the limited number of doctors and ancillary health care providers and provides a scientific basis for the optimal management of patients. Evidence supports the efforts for the development, adaptation, and implementation of clinical pathways in the South African context.

#### **9.4. IMPLICATIONS FOR PRACTICE**

The implications for practice are based on the findings of this study as discussed in Chapter 8. Implications related to policy makers, the

nursing profession, nursing education and future research as discussed in Sections 9.4.1 to 9.4.4.

#### **9.4.1. Implications for policy makers**

Interprofessional collaborative care is defined as the process of health care delivery by a team of professionals from different disciplines to improve the quality of health care (Gonzalo, Himes, McGillen, Shifflet & Lehman 2016:459). Based on this definition the implications for policy makers are outlined below.

The implications for policy makers include:

- Addressing and bridging the gap between public and private sector by forming healthful public-private partnerships to promote and implement interprofessional collaborative care in all health care sectors.
- Development of effective shared leadership to promote interprofessional collaborative care implementation.
- Establishing 'task teams' to implement and assist in sustaining interprofessional collaborative care to improve the quality of health care delivery.
- Establishing governing bodies to regulate the development and implementation of clinical pathways in all health care sectors to promote the standardisation of care interventions.
- Establishing 'implementation teams' to promote the uptake of clinical pathways in all health care sectors in South Africa.
- Developing a reward system to incentivize health care teams for the effective utilisation of clinical pathways.
- Reducing the gap between private and public health care through the implementation of the proposed National Health Insurance programme by addressing the discrepancies in health care expenditure between the public and private sectors.

- Obtaining and utilising funding for the ‘task team’ and ‘implementation teams’ to effectively implement and sustain evidence-based practice in all health care sectors.

#### **9.4.2. Implications for nursing practice**

The implications for nursing practice are relate to the existence of moral injury amongst nurses in South Africa. Nursing as a profession needs to take a step back and reassess their current situation. Nurse leaders are equally responsible for the creation and maintenance of moral injury amongst their colleagues. By default, nurse leaders are then equally responsible for the collaborative development of programmes to resolve the moral injury in the workplace. If left unchecked, the nursing profession will lose their nurses and cease to exist as a meaningful profession.

The road to recovery from moral injury is daunting. Lee (2018:24) stated that moral reconciliation is a transformative, collaborative, inclusive and participative process. Moral reconciliation is achieved through concerted efforts to improve team cohesion, supportive leadership and training to prepare nurses for the challenges of clinical practice as described in Sections 9.4.2.1 to 9.4.2.3.

##### **9.4.2.1. Team Cohesion**

The facilitation of the healing process starts with creating and rebuilding trust relationships within the nursing teams and the nursing profession at large. Shay (2014:189) stated that “...recovery only happens in community...” which fits perfectly with the African proverb, “... it takes a village to raise a child...”. The nursing profession needs to recognise that it forms part of the greater health care community, and collaborate with allied health care professions, doctors and physicians to rebuild the trust relationships between the disciplines and facilitate the healing and recovery process. This can be achieved



through the implementation of interprofessional collaborative care as described in the RNAO best practice guidelines for developing and sustaining interprofessional collaboration (RNAO 2013:6).

#### **9.4.2.2. Supportive leadership**

Leadership or the lack thereof was identified by the internal facilitators as a barrier to the implementation of the clinical pathway for NIV. Managers lack the skill to create person-centred workplace cultures that allow nurses to flourish and contribute to the sustained presence of moral injury amongst nurses. The development of programmes to enable nurses to acquire suitable leadership skills should be a priority for nurse leaders everywhere. Leadership training should be considered an integral part of the professional development and training of the nurse from the foundation level. Current training programmes do not include bespoke leadership development training, which contributes to the current state of nursing in South Africa.

The hierarchical nature of the nursing profession plays an important role in maintaining discipline in the clinical setting. However, nurse leaders need to move away from using the hierarchical structures in a top-down manner to implement evidence-based practice at the bedside. Nurse leaders and managers need to develop leadership skills to enable the successful implementation of evidence into practice.

Manion (2017:142) states that effective leadership starts with a shared leadership approach. Shared leadership is defined as a leadership style that distributes leadership tasks amongst the members of a team, with shared accountability and responsibility. The key benefits of shared leadership are aligned with the person-centred care framework and moral reconciliation as outlined in Table 9.1.

**Table 9.1 Shared leadership, person-centredness and moral reconciliation**

<b>Shared leadership</b>	<b>Person-centredness</b>	<b>Moral reconciliation</b>
Alignment with organisational values and purpose	Understanding of values and beliefs:  Personal  Within the team  Organisational	Alignment of values and beliefs reduces moral distress which leads to moral reconciliation
Improved communication and decision-making	Care processes: Shared decision-making	Nurses feel valued as professional members of the multidisciplinary team and can effectively communicate with members of the multidisciplinary team
Reduced 'silo' working	Healthful relationships:  Clear understanding of roles; Effective communication with staff and multidisciplinary team  Interpersonal skills  Holistic patient care	Nurses have a clear understanding of the roles of each of the members of the team.  All team members have a shared responsibility for achieving outcomes and hold each other accountable for achieving targets.

**Table 9.1 Shared leadership, person-centredness and moral reconciliation**

Shared leadership	Person-centredness	Moral reconciliation
Supportive relationships	Supportive environment with access to resources, power-sharing, appropriate skill mix, and healthful staff relationships	Nurses take ownership and are valued as team members who can improve quality. They are no longer 'victims' of organisational systems
Improved personal commitment and engagement	Commitment to the job is considered a pre-requisite for the successful implementation of person-centred care. A functioning care environment supports the individual nurse to flourish in the critical care unit.	Nurses are recognised as valuable members of the critical care team and are engaged in and find meaning in their work, which promotes moral reconciliation.
Development of future leaders	Person-centredness encourages the development of the individual to flourish in the care environment	Each member of the team is a responsible and accountable leader in their team.

Adopted from Manion (2017:143) and McCormack & MacCance (2017:125)

Without a concerted effort to change the ‘top-down’ paradigm of nursing practice, evidence implementation and knowledge translation will be lost to the nursing profession. Nurse leaders need to strategically empower and enable their nurses in the clinical setting for the good of the patients they serve. Strategic empowerment creates a sense of belonging and being valued as a member of the critical care team, which motivates nurses to bring about evidence-based practice change in the clinical setting rather than relying on traditional methods of working.

The role of the nurse in practice is to deliver person-centred care to the patient in need. However, the addition of more and more administrative tasks is effectively removing the nurses from the bedside where they are needed, and the nurses are feeling overwhelmed. As nurse leaders it is our duty to reevaluate the non-nursing tasks allocated to nurses and ensure that we empower the nurses at the bedside to perform quality, safe nursing care. Providing meaningful work experiences adds to the job satisfaction of the nurse, which motivates the nurse to exceed the performance expectations of managers and health care organisations. Meaningful work experiences can be created by including nurses in critical conversations about patient care to aid knowledge translation at the bedside. A learning environment free from penalty and punitive measures creates a sense of well-being and motivates nurses to change practice through innovation.

#### **9.4.2.3. Training**

Strategic empowerment relates to the access to resources to perform one’s job. Creating learning opportunities through critical conversations and authentic engagement with nurses, forms part of strategic empowerment, which creates a positive workplace culture and assists in achieving organisational goals. When nurses are actively engaged in critical conversations about patient care, they are empowered to create

innovative solutions to modern nursing practice challenges, and the translation of research knowledge into practice is promoted.

The time has come to reassess our current career path development for nurses in South Africa. Not all clinical nurses are interested in becoming nurse managers or nurse researchers. However, the current career path development for nurses in the clinical setting follows a straight hierarchical path to management. Nurses who are interested in research often end up in academia and are lost to clinical practice. The researcher concludes that there should be a career path for nurses who are interested in nursing research but who choose to stay close to practice, such as in some European hospitals (Adreassen & Christensen 2018:1-11; Dahinten, Lee & MacPhee 2016:1069; WHO 2015:13). The contributions of nurse researchers or PhD nurses to clinical practice must be acknowledged. Afterall, we are all working toward the same common goal – evidence-based patient care at the bedside.

#### **9.4.3. Implications for nursing education**

The implications for nursing education are:

- The inclusion of person-centred care as part of the fundamental training of all categories of nurses in South Africa. If the foundation is based on person-centred approaches the implementation of evidence-based practice at the bedside should be enhanced and knowledge translation improved.
- Importance of developing expert facilitation skills – to enable external practice development facilitators to effectively influence organisational outcomes at all levels of an organisation.
- Development of a person-centred learning environment to address the needs of the individual learners and allow them the opportunity to flourish as the clinical nurses and nurse leaders of the future.

- Embracing the concept of shared leadership – allowing the learners to take ownership for their own learning and development.
- Development of interprofessional collaborative learning opportunities across all disciplines to enhance interprofessional collaboration and communication. Providing opportunities for nurses to actively participate in learning events alongside other disciplines such as pharmacists, doctors, physiotherapists and social workers provides nurses and members of the multidisciplinary team with an opportunity to experience the unique contributions of each discipline to the outcome of the patient in the critical care unit. This approach strengthens interprofessional collaboration and communication and builds trust relationships amongst the disciplines (Donovan, Aldrich, Gross, Barchas, Thornton, Schell-Chaple, et al 2018:984; O'Rourke & Brown 2017:104).

#### **9.4.4. Implications for future research**

Suggestions for future research related to this study should include:

- Development and implementation of nurse-led quality improvement initiatives and research in acute care settings such as the critical care environment, aligned to the WHO strategy for strengthening nursing and midwifery towards the 2020 goals (WHO 2015:14).
- Evaluation of the outcomes of nurse-led quality improvement initiatives based on patient outcomes, such as patient satisfaction.
- Development and implementation of leadership development programmes for all categories of nurses in South Africa, based on the principles of person-centredness.
- Evaluation of the outcomes of leadership development programmes for nurses and the impact on patient satisfaction,

nurse's job satisfaction and nurse retention rates in all sectors of health care delivery.

- Development and implementation of person-centred approaches to promote interprofessional collaborative care in the critical care unit.
- Evaluation of the outcomes of the implementation of interprofessional collaborative care in the critical care environment on the job satisfaction and retention rates of critical care nurses.
- Development and implementation of nurse-led clinical pathways in the critical care environment.
- Evaluation of the outcomes of nurse-led clinical pathways on patient's length of stay, complication rates and discharge outcomes.

## 9.5. LIMITATIONS

Limitations in respect to the following need to be acknowledged:

- The research was conducted in two purposively selected critical care units of a private sector hospital group in Gauteng. It is possible that the challenges identified in the selected units are related to the geographic location of the hospitals, which has a direct impact on the availability of resources such as critical care qualified nurses who are available to work in the selected hospitals and the high turnover of temporary (agency) nurses;
- The small sample size in the purposively selected units could be considered a limitation
- The challenges experienced by the internal facilitators in the purposively selected critical care unit might not be generalisable to other critical care units in the private health care sector in South Africa.
- The researcher was focused on facilitating the process of implementation, which impacted on her ability to deal with the

unexpected negative changes in workplace culture. Although the initial CAI questionnaire results indicated that the workplace culture was not fully ready for the implementation of the clinical pathway for NIV, the researcher assumed that it would change with adequate facilitation of the implementation strategy. The researcher learnt that mere facilitation is also not adequate to bring about sustainable change in the clinical setting.

- The use of the self-administered CAI questionnaires did not allow for probing which could have resulted in obtaining more in-depth data.
- The convenience sample of international literature used for the adaptation of the clinical pathway for NIV placed a limitation on the data obtained using this specific data source. Additional data may have been obtained if more articles were used.
- From an epistemological stance, the researcher acknowledges that the disciplinary knowledge of nursing is infinite and that it was, therefore, impossible to reach data- or theoretical saturation. The knowledge obtained is authentic to the context to which the researcher was exposed at the time during which the study was conducted. Variation may occur if the study is conducted in a different context.

## 9.6. CONCLUSION

The study set out to implement and evaluate the outcomes of a clinical pathway for NIV in the critical care unit. Although implementation of the clinical pathway did not realise as anticipated, important factors related to the impact of workplace culture on the implementation of evidence into practice were identified.

The findings add to our understanding of the impact of a dysfunctional workplace culture in the South African context, on the ability of the critical care nurse to actively participate in the implementation of



evidence-based nursing at the bedside. The research confirms the previous findings of Manley, O’Keefe, Jackson, Pearce and Smith (2014:1-2) that the development of effective workplace cultures rests on building a shared purpose through collaboration, inclusion and participation of all key stakeholders in the organisation and that research activities should allow for the creation of meaningful work experiences through authentic engagement of the nurses in the implementation of innovation at the bedside. Although the researcher was unsuccessful in implementing the clinical pathway for NIV in the critical care unit, the study did substantiate the importance of a workplace culture that is receptive to change, inclusive of all the members of the multidisciplinary team and compassionate leadership styles.

The study highlights the importance of the development and implementation of strategies to support person-centred care delivery and interprofessional collaborative care. Recognising the role and responsibility of the nurse as a professional member of the multidisciplinary team through the development of interprofessional collaborative learning opportunities suggests that interprofessional collaboration and mutual respect will follow, as the level of trust between the disciplines grows.

The development of effective nurse leaders who can implement and sustain interprofessional collaborative care initiatives through shared leadership suggests that more nurses will be retained in the critical care setting due to reduced stress and higher levels of job satisfaction.

*I end this thesis with a quote from Charles M. Blow –*

*“One doesn’t have to operate with great malice to do great harm.  
The absence of empathy and understanding are sufficient”.*

*I invite my fellow nurse leaders to challenge the status quo in the interest of the nurses we are leading. Their well-being in practice, the well-being of our patients and the well-being of the nursing profession at large rests on the active engagement of all nurse leaders to bring about change. The effort we exert today, will serve us well in future to ensure human flourishing for all.*

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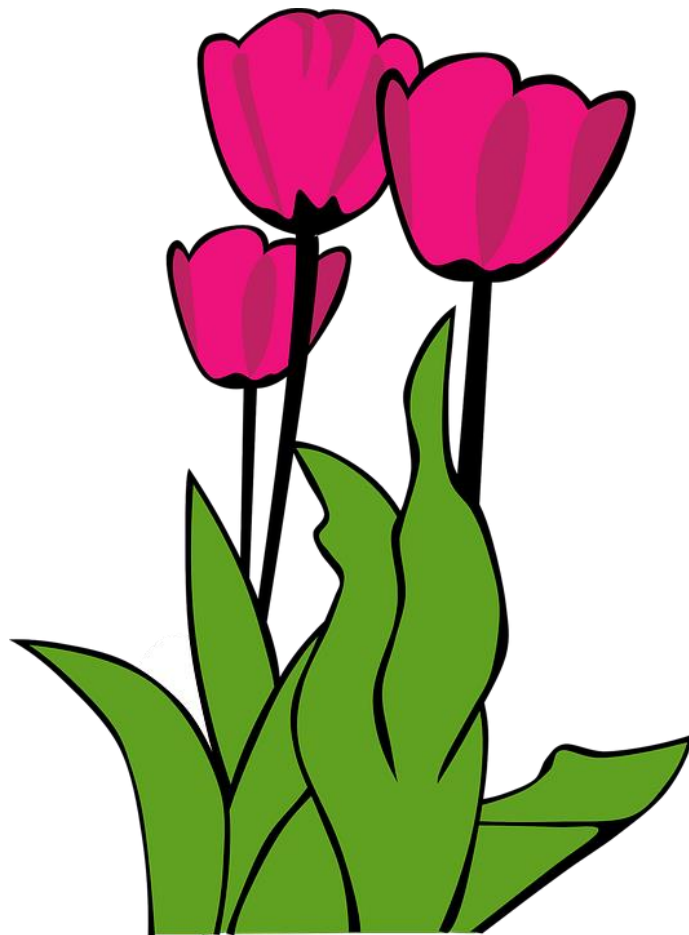
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# Annexure A

## Ethics



The Research Ethics Committee, Faculty Health Sciences, University of Pretoria complies with ICH-GCP guidelines and has US Federal wide Assurance.

• FWA 00002567, Approved dd 22 May 2002 and Expires 20 Oct 2016.

• IRB 0000 2235 IORG0001762 Approved dd 22/04/2014 and Expires 22/04/2017



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences Research Ethics Committee

07-Mar-2018

## Approval Certificate

### New Application

**Ethics Reference No.:** 26/2018

**Title: Implementation and evaluation of a clinical pathway for non-invasive ventilation in critical care: a person-centred practice development approach**

Dear Mrs Liezl Balfour

The **New Application** as supported by documents specified in your cover letter for your research received on the , was approved by the Faculty of Health Sciences Research Ethics Committee on the 31-Jan-2018.

Please note the following about your ethics approval:

- Ethics Approval is valid from to .
- Please remember to use your protocol number (26/2018) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, or monitor the conduct of your research.

#### Ethics approval is subject to the following:

- The ethics approval is conditional on the receipt of 6 monthly written Progress Reports, and
- The ethics approval is conditional on the research being conducted as stipulated by the details of all documents submitted to the Committee. In the event that a further need arises to change who the investigators are, the methods or any other aspect, such changes must be submitted as an Amendment for approval by the Committee.

We wish you the best with your research.

Yours sincerely

**Dr R Sommers**

MBChB MMed(Int) MPharMed

Deputy Chairperson: Faculty of Health Sciences Research Ethics Committee

*The Faculty of Health Sciences Research Ethics Committee complies with the SA National Act 61 of 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 and 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health).*

( 012 3563084

- [deepeka.behari@up.ac.za](mailto:deepeka.behari@up.ac.za)

- <http://www.up.ac.za/healthethics>

Private Bag X323, Arcadia, 0007 - Tswelopele Building, Level 4, Room 4-60 (opposite the BMW Building), Dr Savage Road, Gezina, Pretoria

*\*\* Kindly collect your original signed approval certificate from our offices, Faculty of Health Sciences, Research Ethics Committee, H W Snyman South Building, Room 2.33 / 2.34.*



Permission to access Records / Files / Data base Life,  
[REDACTED] Hospital

To: Nurse Manager  
[REDACTED]  
[REDACTED]

From: The Investigator  
[REDACTED] Group

Mrs Liezl Balfour

Re: Permission to do research at [REDACTED] Hospital, Gauteng

I am a researcher working at the Surgical Intensive Care Unit, at [REDACTED] Hospital. I am requesting permission to conduct a study on the Implementing and evaluating a person-centred clinical pathway for non-invasive ventilation in critical care: a practice development approach at the Hospital grounds that involves access to patient records.

The request is lodged with you in terms of the requirements of the Promotion of Access to Information Act, No. 2 of 2000.

The title of the study is: Implementing and evaluating a person-centred clinical pathway for non-invasive ventilation in critical care: a practice development approach

The researcher requests access to the following information during the study:

Conducting the Context Analysis Index (CAI) in the Critical Care Units to establish current practice in the Critical Care Units.

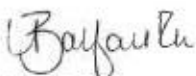
Access to the clinical files, record book and the data base of patients who have received non-invasive ventilation in your Hospital's critical care units.

I intend to publish the findings of the study in a professional journal and/ or at professional meetings like symposia, congresses, or other meetings of such a nature.

I intend to protect the personal identity of the patients by assigning each patient a random code number.

I undertake not to proceed with the study until we have received approval from the Faculty of Health Sciences Research Ethics Committee, University of Pretoria.

Yours sincerely



Liezl Balfour

Permission to do the research study at this hospital and to access the information as requested, is hereby approved.

Nurse Manager

Li [REDACTED]  
Mrs A [REDACTED]

[REDACTED] *Jan*  
\_\_\_\_\_  
Signature of the Nurse Manager

[REDACTED] Official  
Stamp  
C/O HF VERWOERD & MARE STS  
HEIDELBERG

Permission to access Records / Files / Data base [REDACTED]  
[REDACTED] Hospital

To: Nurse Manager

[REDACTED]

[REDACTED]

From: The Investigator

[REDACTED]

Mrs Liezl Balfour

Re: **Permission to do research at [REDACTED] Gauteng**

I am a researcher working at the Surgical Intensive Care Unit, at [REDACTED] Hospital. I am requesting permission to conduct a study on the Implementing and evaluating a person-centred clinical pathway for non-invasive ventilation in critical care: a practice development approach at the Hospital grounds that involves access to patient records.

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I intend to protect the personal identity of the patients by assigning each patient a random code number.

I undertake not to proceed with the study until we have received approval from the Faculty of Health Sciences Research Ethics Committee, University of Pretoria.

Yours sincerely

  
Liezl Balfour

Permission to do the research study at this hospital and to access the information as requested, is hereby approved.

Nurse Manager

[Redacted Name]

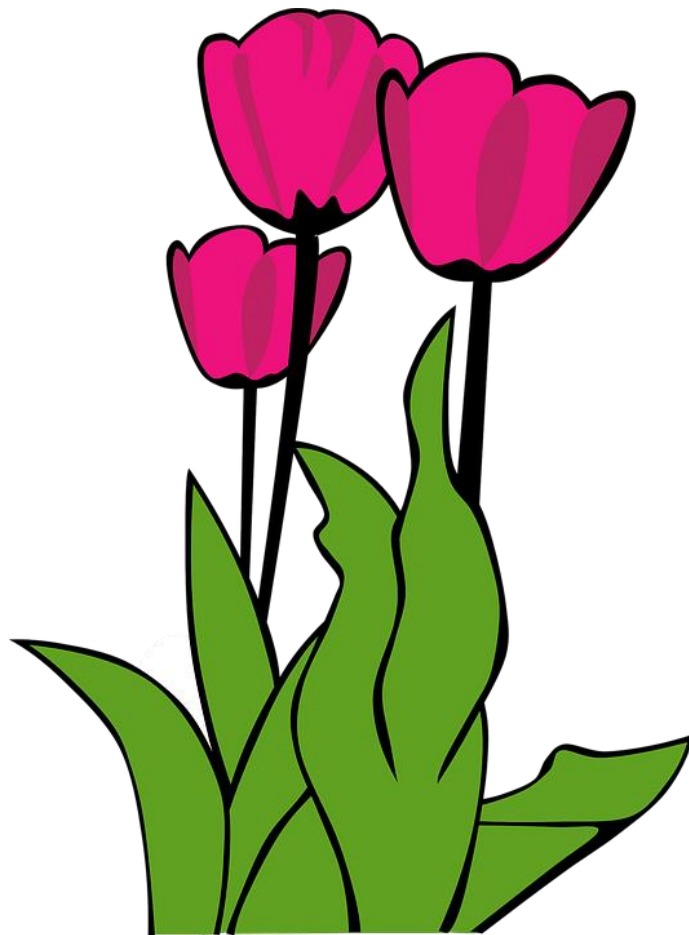
[Redacted Signature]  
Signature of the Nurse Manager

THE **CIVILWOOD HOSPITAL**  
Reg. No. 76/04197/07  
PR. No. 5807743  
P.O. BOX 635  
[Redacted Address]

Hospital Official  
Stamp

# **Annexure B**

## **Gaining Access**



# IMPLEMENTATION AND EVALUATION OF A CLINICAL PATHWAY FOR NIV: A PERSON- CENTERED PRACTICE DEVELOPMENT APPROACH

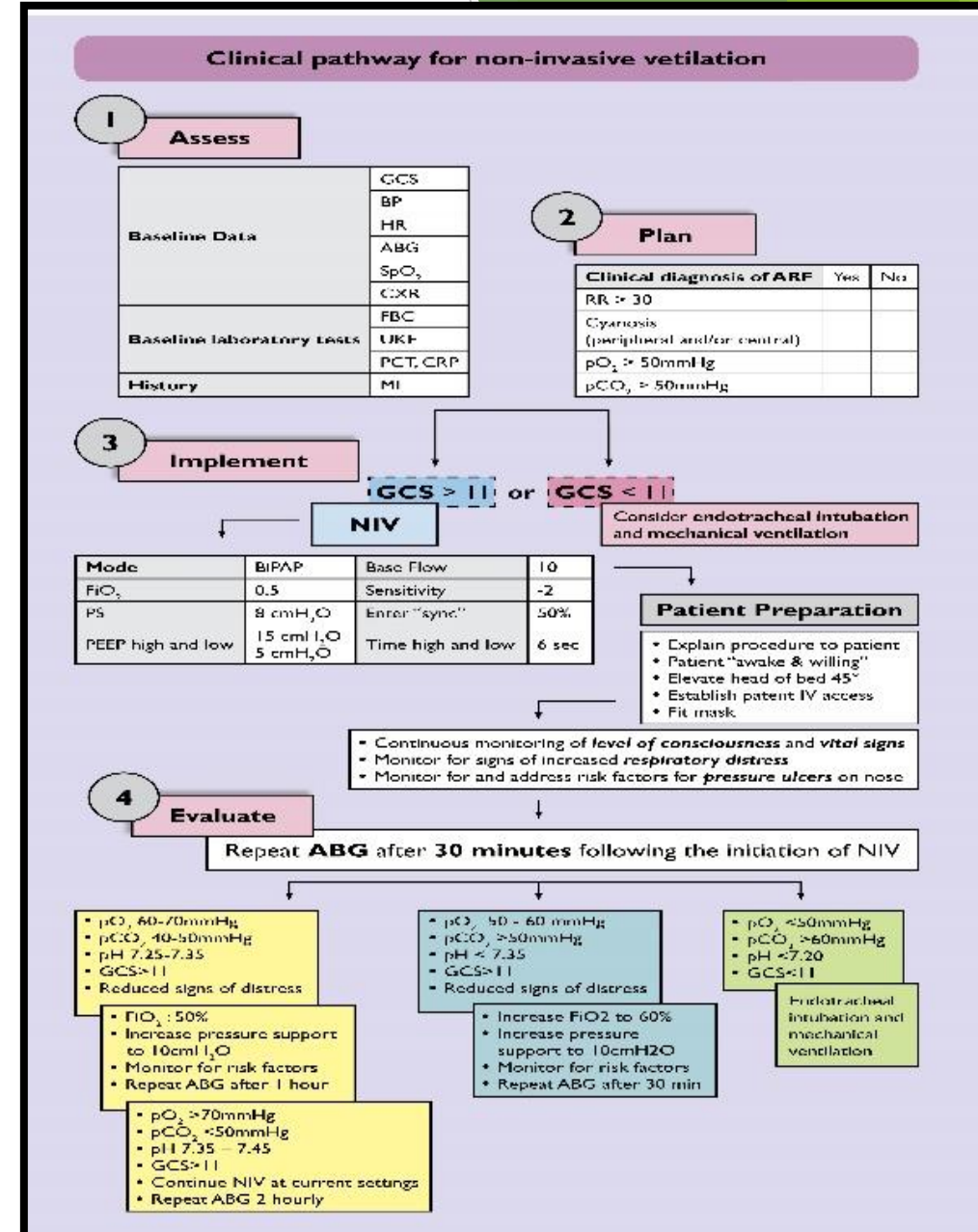
A practice development  
approach

# background

- ❖ Acute respiratory failure
- ❖ Complications of invasive mechanical ventilation
- ❖ Alternative ventilatory support = NIV
- ❖ Collaborative effort of Multidisciplinary team
- ❖ Expectations vs Reality



Urden *et al.* 2014:571  
 Berkus *et al.* 2013:312  
 Masclans *et al.* 2013:249  
 Endorf & Dries 2010:217



# Problem statement

- ❖ Evidence-based clinical pathway exists
- ❖ Multidisciplinary team approach to patient care = person-centredness
- ❖ Patients are not benefitting
- ❖ Research evidence is not translated into clinical practice, WHY?
- ❖ As a provider of world class patient care can we afford to ignore international best practice in our critical care units?



## Current practice

- ❖ What does the health care system (hospital) gain?

VAE's remains a problem in the critical care units

- ❖ What does the clinical nurse practitioner gain?

Same old, same old... How we do things here!

- ❖ What does the patient gain?

Patient's expectations not met = dissatisfaction

Nursing staff despondent = vicious circle

- ❖ What does the multidisciplinary team gain?

Research evidence is available, but not used

Poor communication - care is lost in translation

- ❖ Future implementation of evidence-based patient



Rangachari *et al.* 2013:118  
Curran *et al.* 2012:217  
Squires *et al.* 2012:293  
Spenceley *et al.* 2007:955

# Emancipatory practice development

- ❖ Aimed at ongoing **Quality improvement**, by being **person-centred**
- ❖ Challenges **conventional wisdom** to improve practice through **innovation**
- ❖ **Liberates** nurse practitioner from rigid culture based practice to become truly  
**evidence -informed**

Botma *et al.* 2010:199  
Offredy & Vickers 2010:28  
Andrew Halcomb 2009:10

# Research question

- ▶ **What are the outcomes of the implementation of a clinical pathway for NIV in the critical care unit?**

## Significance: What could be...

### ❖ Hospital

Improved patient satisfaction rates

Improved funder satisfaction

Reduced staff turnover in specialised areas

### ❖ Nurse practitioner

Sense of achievement / job satisfaction / ownership

Empowerment to improve patient outcomes

Improving current practice in line with international best practice guidelines

### ❖ Patient

High quality, safe nursing care

Improved satisfaction

### ❖ Interdisciplinary team

Improved communication, collaboration and transfer of information between team members - all working toward the same goal



# Scope of the study

- **How?**

Phases of the study

- **What?**

Practice development facilitators collaboration to develop an 'implementation plan' and drive process in the CCU

Memorandum of agreement between hospital management and researcher

- **When?**

Estimated period of 8 to 12 months in selected CCU (Phase 1, Phase 2 and Phase 3)

- **Where?**

Selected CCUs within the hospital after randomization

- **Who? (Roles)**

External and internal facilitators

Nursing management team

Nurses in CCU

Members of the interdisciplinary team working in CCU



# Why this hospital?

- ❖ Multiple critical care units serving diverse patients
- ❖ Dynamic group of nurse leaders, nurse practitioners & multidisciplinary team
- ❖ Potential impact of successful implementation
  - Improved job satisfaction (nurse practitioners)
  - Improved quality of nursing care delivered at the bedside
  - Improved collaboration of the interdisciplinary team
  - Improved patient outcomes
  - Improved patient satisfaction





Principal researcher:

Liezl Balfour

Mobile : 076 618 4527

E-mail : [liezlbalfour@mweb.co.za](mailto:liezlbalfour@mweb.co.za)

## **CRITICAL CARE NURSES:**

**The University of Pretoria cordially invites you to a presentation of Non-invasive ventilation in the ICU: a quality improvement and research initiative.**

**12 & 19 August 2018 @ 06:30 (Day shift) and 19:30 (Night shift)  
ICU tea room**

**Join us for cake and coffee.**

**We look forward to meeting you!**

**RSVP: [Liezl.balfour@lenmed.co.za](mailto:Liezl.balfour@lenmed.co.za) or sms/WhatsApp 0766184527**



## **CRITICAL CARE NURSES:**

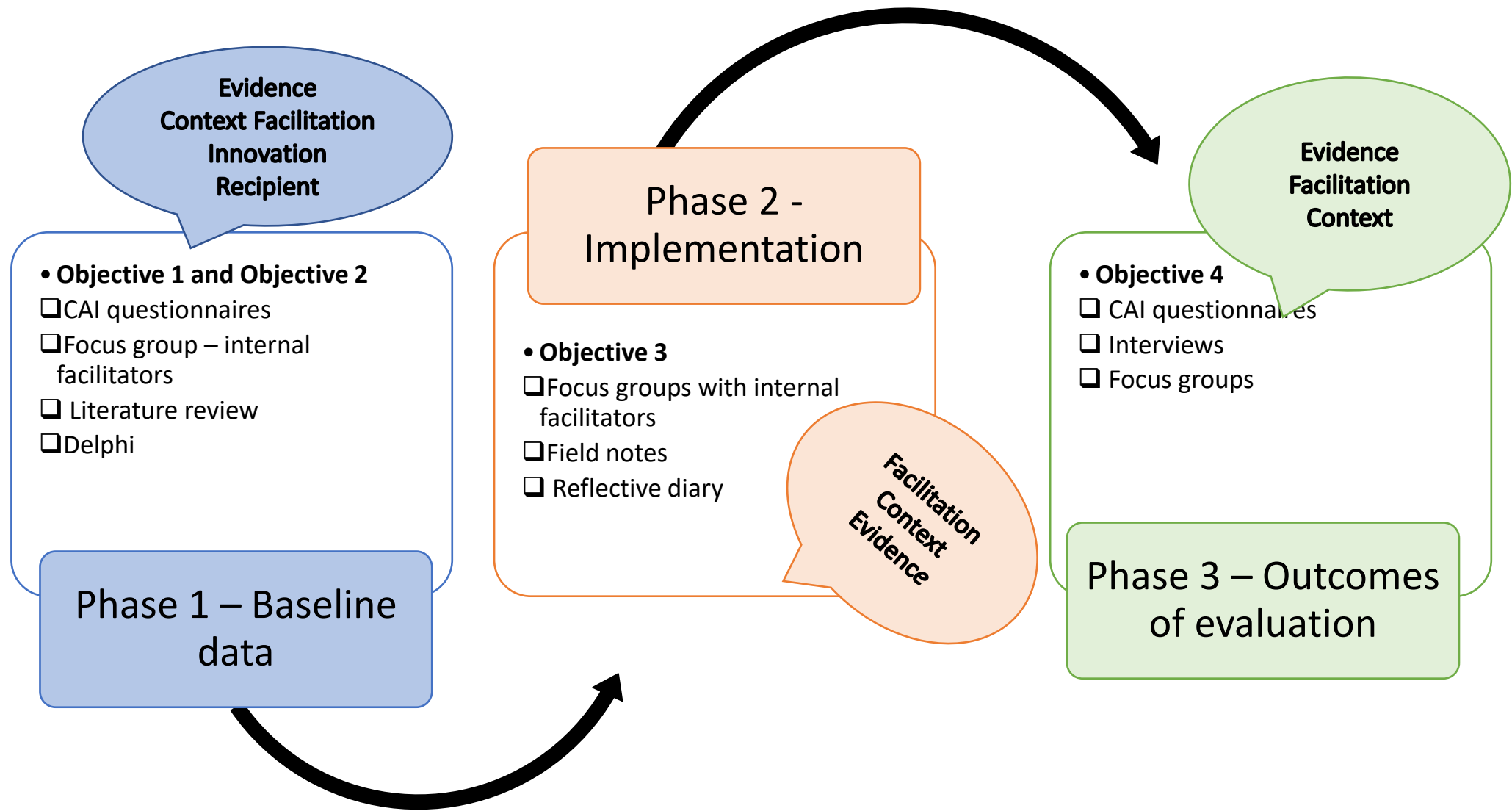
**The University of Pretoria cordially invites you to a presentation of Non-invasive ventilation in the ICU: a quality improvement and research initiative.**

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ICU tea room**

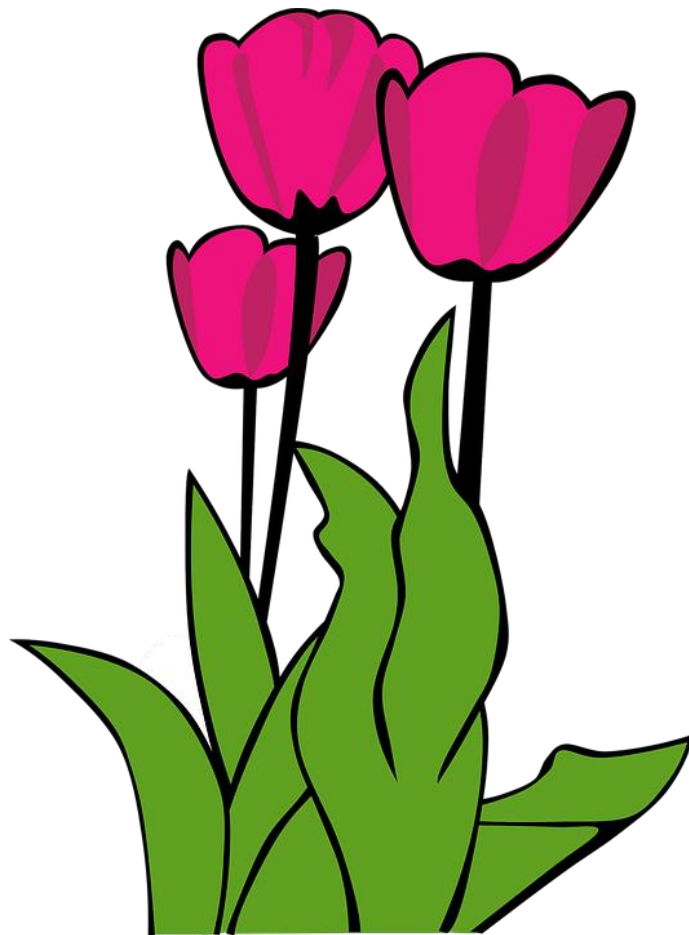
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**Annexure C**  
**Phase 1: Baseline data**



**PARTICIPATION INFORMATION AND INFORMED CONSENT DOCUMENT - PICD**  
**Internal Facilitator****TITLE OF STUDY****Implementation and evaluation of a clinical pathway for non-invasive ventilation in critical care: a person-centred practice development approach**

**Dear Participant,**

You are invited to act as an internal facilitator in a research study for healthcare providers that will take place in a private hospital over a period of approximately 10 months. This information leaflet contains information that will help you understand your role in the study. If there is any need for further clarification, please feel free to contact the researcher, Liezl Balfour.

**1. The nature and purpose of this study**

After recognizing the need for an alternative method for providing safe mechanical ventilatory assistance to adult patients presenting with acute respiratory failure, the multidisciplinary team collaborated to develop the clinical pathway for non-invasive ventilation (NIV). The clinical pathway provides the sequence of activities to effectively monitor the patient's progress whilst receiving NIV, as well as indicators of failure of NIV to be considered, thereby delivering safe, uncompromised nursing care to the patient. The overall aim of the study is implementing and evaluating the outcomes of an existing clinical pathway for NIV and to achieve the overall aim of the study the following objectives have been identified:

**Objective 1:** Assess unit culture and context to identify barriers and enablers to implementation of the clinical pathway for NIV in the critical care unit.

**Objective 2:** Adapt and validate the clinical pathway for NIV.

**Objective 3:** Adopt a person-centred practice development approach to collaboratively design and implement a strategy for implementing the clinical pathway for NIV in the critical care unit.

**Objective 4:** Evaluate the outcomes of the implementation of the NIV clinical pathway in the critical care unit.

## 2. Explanation of procedures to be followed

You are requested to participate as an internal facilitator for the implementation of a clinical pathway for non-invasive ventilation in critical care.

Your role as internal facilitator involves:

- Attending weekly focus group meetings which typically last an hour (60 minutes) to discuss implementation of the clinical pathway.
- Working together with the researcher, multidisciplinary team, and registered nurses in unit to implement the clinical pathway
- Assist with the monitoring and evaluation of the implementation process by means of keeping a reflective diary during the study

## 3. Risk and discomfort involved

There is no risk or discomfort involved in participating in the research study. Your identity as part of the research team will be known to the other participants in the study. Your input into this research study will require some of your time and effort.

## 4. Benefits of the study

Your knowledge of the research process and emancipatory practice development will deepen as you and other participants will be actively engaged in the research process. This could enable you to be a positive change agent. In addition, your contribution will be as a builder of evidence-based practice in the hospital. Successful implementation of the clinical pathway for non-invasive ventilation may assist in reducing turnover of nursing staff, increased patient satisfaction rates, reduced infection rates and easy integration into clinical practice by assisting with the translation of research evidence into clinical practice. By assisting in the practice development programme, clinical nursing will be compliant with international best practice guidelines.

## 5. Your rights as a participant

Your participation in this study is entirely voluntary. You can refuse to participate in the study, but you will not be allowed to withdraw from the research study once you have signed the participation information and informed consent document (PICD).

## 6. Ethical approval

The Faculty of Health Sciences' Research Ethics Committee at the University of Pretoria and your hospital has given written approval for this study.

## 7. Information and contact person

If you have any questions about the research you are welcome to contact the Research Ethics Committee Faculty of Health Sciences University of Pretoria's Office:

Tel: 012 354 1330 or 012 354 1677

Fax: 012 354 1367

E Mail: [manda@med.up.ac.za](mailto:manda@med.up.ac.za)

E Mail: [deepeka.behari@up.ac.za](mailto:deepeka.behari@up.ac.za)

If you have any questions about your participation in this study, you should contact the researcher, Ms Liezl Balfour

Work telephone: (010) 534 6321

Cell phone: 0766184527

Email address: [liezlbalfour@mweb.co.za](mailto:liezlbalfour@mweb.co.za)

Alternatively, you may contact my supervisor Dr. Isabel Coetzee at:

Work telephone: (012) 354 2132

Cell phone: 071 158 9045

Email address: [Isabel.coetzee@up.ac.za](mailto:Isabel.coetzee@up.ac.za)

## 8. Compensation

Your participation is voluntary. No compensation will be given for your participation.

## 9. Confidentiality

Please note that although the researcher will take every precaution to ensure confidentiality of the data, the nature of focus groups meetings prevents the researcher from guaranteeing confidentiality. The researcher would like to remind participants to respect the privacy of your fellow participants and not repeat what is said in the focus group meeting to others.

### ***Consent to participate in the research study***

#### **INTERNAL FACILITATOR**

Your participation in this research is subject to reading and accepting the above information and signing the informed consent document below. A copy of the signed consent document will be given to you.

#### **INFORMED CONSENT**

I confirm that the person asking my consent to take part in this study told me about the nature, process, risks, discomforts and benefits of the study. I have also received, read and understood the above written information regarding the study. I am aware that the results of the study, including personal details, will be anonymously processed into research reports. I am participating willingly. I have had time to ask questions and have no objections to participate in the study. I understand that I may not withdraw as an internal facilitator once the study commences.

Participant's name (please print) \_\_\_\_\_

Participant's signature \_\_\_\_\_

Date -----

Investigator's name (please print) \_\_\_\_\_

Investigator's signature \_\_\_\_\_

Date \_\_\_\_\_

Witness's Name (please print) \_\_\_\_\_

Witness's signature \_\_\_\_\_

Date \_\_\_\_\_



# Ground rules

- *Everyone is responsible for maintaining the rules*
- *No phone calls – emergencies only*
- *One conversation at a time*
- *Respect each other's views*
- *Everyone's input is valuable – don't criticise others*
- *If we can't reach agreement we will use the 'parking lot' and come back to it later*



- *All FG meetings will begin and end on time*
- *When we disagree, we will focus on the topic, not the person*
- *The meeting will continue if 3 out of 4 members are present*
- *Make every effort to meet commitments – if you can't we will communicate it well in advance via e-mail or WhatsApp to the group*
- *We must support and defend all major decisions that come from this group*

“Trust yourself.  
You know more than  
you think you do.”

— Benjamin Spock

# Values & Beliefs Exercise: Internal Facilitators

*Liezl Balfour, RN, RM, M.Cur: Clinical (UP)*

# Introduction

- ▶ Dewing, McCormack and Titchen (2014:17- 59) stated that one can't simply assume that individuals who share the same work environment automatically share the same beliefs related to practice.
- ▶ The clarification of individual values and beliefs in the clinical setting influences their attitudes and behaviour
- ▶ Clarification of values & beliefs lead to team cohesion, improved communication, sense of being valued as a member of the multidisciplinary team in the unit

<https://www.youtube.com/watch?v=NFf2ZD1X6lM>

# Values & Beliefs Exercise

# Exercise 1 - Step 1

*Write down your own short answer to each of the following questions.  
REMEMBER there is no 'right' or 'wrong' answer. Give your own truthful  
answer*

I believe the ultimate purpose of  
person-centered care is...

## Exercise 1 - Step 1

*Write down your own short answer to each of the following questions.  
REMEMBER there is no 'right' or 'wrong' answer. Give your own truthful  
answer*

I believe the ultimate purpose of  
implementing the clinical pathway  
for NIV is...

# Exercise 1 - Step 1

*Write down your own short answer to each of the following questions.  
REMEMBER there is no 'right' or 'wrong' answer. Give your own truthful  
answer*

I believe this purpose can be  
achieved by...

# Exercise 1 - Step 1

*Write down your own short answer to each of the following questions.  
REMEMBER there is no 'right' or 'wrong' answer. Give your own truthful  
answer*

I believe the factors that enable  
this purpose to be achieved is...



# Exercise 1 - Step 1

*Write down your own short answer to each of the following questions.  
REMEMBER there is no 'right' or 'wrong' answer. Give your own truthful  
answer*

I believe the factors that inhibit/  
constrain this purpose to be  
achieved is...

## Exercise 1 - Step 1

*Write down your own short answer to each of the following questions.  
REMEMBER there is no 'right' or 'wrong' answer. Give your own truthful  
answer*

Other values and beliefs that I  
hold true about NIV is ...

# Exercise 1 – Step 2

Your results

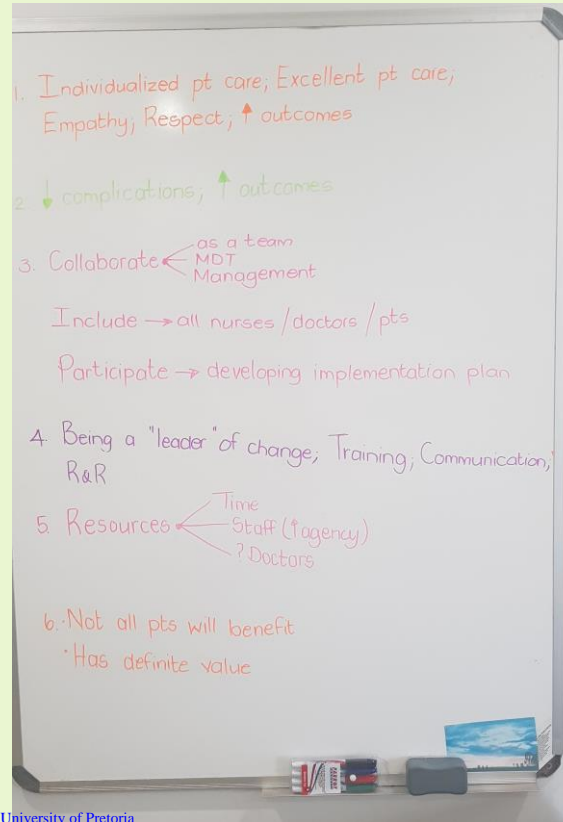
**Share your answers with the group.**

**What did we find?**

# Group results

*Identify the common themes – what does this tell us about our team?*

1. Individualized care; Empathy; Respect; Improved patient outcomes
2. Reduce patient complications, improved outcomes
3. Collaborate, Participate, Include
4. Leadership; Communication; Team work; Reward & Recognition; Training
5. Lack of knowledge; lack of resources - time, staff; doctor preferences
6. Not suitable for all patients, but has definite value in CCU



# Our values & beliefs (Example)

*We believe that our patients should be at the centre of our work and receive quality evidence-based care in collaboration with the multidisciplinary team.*

*We will achieve this through:*

- ▶ *Learning new skills to implement evidence-based care at the bedside*
- ▶ *Clearly defining and understanding our roles and responsibilities*
- ▶ *Meaningful engagement with the members of our team and the multidisciplinary team to teach and learn*
- ▶ *Support from our managers to participate in the study*
- ▶ *Sharing our experiences with our teams*
- ▶ *Providing support and appreciation to our teams (valuing others) through positive feedback*



Questions?

Thank you for your time.

1. Individualized pt care; Excellent pt care;  
Empathy; Respect; ↑ outcomes

2. ↓ complications; ↑ outcomes

3. Collaborate ← as a team  
MDT  
Management

Include → all nurses / doctors / pts

Participate → developing implementation plan

4. Being a "leader" of change; Training; Communication;  
R&R

5. Resources ← Time  
Staff (↑ agency)  
? Doctors

6. • Not all pts will benefit

• Has definite value



# *Our values & beliefs*

Annexure C3

*We believe that our patients should be at the centre of our work and receive quality evidence-based care in collaboration with the multidisciplinary team.*

*We will achieve this through:*

- Learning new skills to implement evidence-based care at the bedside*
- Clearly defining and understanding our roles and responsibilities*
- Meaningful engagement with the members of our team and the multidisciplinary team to teach and learn*
- Support from our managers to participate in the study*
- Sharing our experiences with our teams*
- Providing support and appreciation to our teams (valuing others) through positive feedback*



## PARTICIPATION INFORMATION AND INFORMED CONSENT DOCUMENT

### CAI participants

#### TITLE OF STUDY

### Implementation and evaluation of clinical pathway for non-invasive ventilation in critical care: a person-centred practice development approach

#### Dear Participant,

You are invited to participate in a research study for healthcare providers that will take place in a private sector hospital over a period of approximately 10 months. This information leaflet contains information that will help you understand your role in the study. If there is any need for further clarification, please feel free to contact the researcher, Liezl Balfour, at any time.

#### 1. The nature and purpose of this study

After recognizing the need for an alternative method for providing safe mechanical ventilatory assistance to adult patients presenting with acute respiratory failure, the multidisciplinary team collaborated to develop the clinical pathway for non-invasive ventilation (NIV). The clinical pathway provides the sequence of activities to effectively monitor the patient's progress whilst receiving NIV, as well as indicators of failure of NIV to be considered, thereby delivering safe, uncompromised nursing care to the patient. The overall aim of the study is implementing and evaluating the outcomes of an existing clinical pathway for NIV and to achieve the overall aim of the study the following objectives have been identified:

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**Objective 3:** Adopt a person-centred practice development approach to collaboratively design and implement a strategy for implementing the clinical pathway for NIV in the critical care unit.

**Objective 4:** Evaluate the outcomes of the implementation of the NIV clinical pathway in the critical care unit.

#### 2. Explanation of procedures to be followed

You are requested to complete the 37-item multiple choice questionnaire, which requires about 20 minutes of your time. Answer the questions by marking your answer with an 'X' in the selected block. Mark the answer statement with which you are most comfortable e.g. 'strongly agree' to 'strongly disagree'. Please return the completed questionnaire in the sealed envelope provided, to the researcher. Do not write your name on the questionnaire. The researcher can be contacted on the numbers provided if you require assistance.

#### 3. Risk and discomfort involved

No risk or discomfort is involved by participating in this study. Your input into this project will require some of your time and effort. **The structured, self-reported questionnaire will take approximately 20 minutes to complete.**

#### 4. Benefits of the study

Your participation will assist the researcher in understanding your individual needs for delivering quality nursing care to patients in your unit.

**5. Your rights as a participant**

Your participation in this study is entirely voluntary. You can refuse to participate or stop at any time during the study without giving any reason or penalty.

**6. Ethical approval**

The Faculty of Health Sciences' Research Ethics Committee at the University of Pretoria and the hospital has given written approval for this study.

**7. Additional information**

If you have any questions about the research, you are welcome to contact the Research Ethics Committee Faculty of Health Sciences University of Pretoria's Office:

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Email address: [liezlbalfour@mweb.co.za](mailto:liezlbalfour@mweb.co.za)

Alternatively, you may contact my supervisor Prof. Isabel Coetzee at:

Work telephone: (012) 354 2132

Mobile phone: 071 158 9045

Email address: [Isabel.coetzee@up.ac.za](mailto:Isabel.coetzee@up.ac.za)

**8. Compensation**

Your participation is voluntary. No compensation will be given for your participation.

**9. Confidentiality**

Completion of the CAI questionnaire is anonymous. **Do not write your name on the questionnaire.**

**10. INFORMED CONSENT**

I confirm that the person asking my consent to take part in this study told me about the nature, process, risks, discomforts and benefits of the study. I have also received, read and understood the above written information regarding the study. I am aware that the results of the study, including personal details, will be anonymously processed into research reports. I am participating willingly. I have had time to ask questions and have no objections to participate in the study. I understand that I may not withdraw as an internal facilitator once the study commences.

Participant's name (please print) \_\_\_\_\_

Participant's signature \_\_\_\_\_

Date \_\_\_\_\_

---

Investigator's name (please print) \_\_\_\_\_

Investigator's signature \_\_\_\_\_

Date \_\_\_\_\_

---

Witness's Name (please print) \_\_\_\_\_

Witness's signature \_\_\_\_\_

Date \_\_\_\_\_

<b>CONTEXT ANALYSIS INDEX (CAI)</b>
-------------------------------------

Demographic data	
Age	
Gender	
Race	
Highest qualification PhD/ Master's degree/ Bachelor's degree/ Nursing diploma	
Number of years qualified as RN	
Role in organisation: Newly qualified RN/ Ward RN/ clinical facilitator/ unit manager	
Do you have any other post graduate qualifications in nursing (specialities, e.g. critical care nursing)	

### QUESTIONNAIRE

Please respond to the following statements, indicating the degree to which you agree or disagree with each statement. Mark the answer that best fits you, now, with an 'X' in the corresponding box.

<i>For each of the following statements, please put a cross in one box only. A – Strongly agree; A – Agree; D – Disagree; SD – Strongly disagree</i>					
Health care professionals (HCP)					
		SA	A	D	SD
01	Personal and professional boundaries between HCPs are maintained				
02	Decisions on care and management are clearly documented by all staff				
03	A proactive approach to care is taken				
04	All aspects of care/treatment are based on evidence of best practice				
05	The nurse leader acts as a role model of good practice				
06	HCPs provide opportunities for patients to participate in decisions about their own care				
07	Education is a priority				
08	There are good working relations between clinical and non-clinical staff				
09	Staff receive feedback on the outcomes of complaints				
10	HCPs in the MDT have equal authority in decision making				
11	Audit and/or research findings are used to develop practice				

		SA	A	D	SD
12	A staff performance review process is in place which enables reflection on practice, goal setting and is regularly reviewed				
13	Staff have explicit understanding of their own attitudes and beliefs towards the provision of care				
14	Patients are encouraged to be active participants in their own care				
15	There is a high regard for patient's privacy and dignity				
16	HCPs and healthcare support workers understand each other's roles				
17	The management structure is democratic and inclusive				
18	Appropriate information (large written print, tapes, etc.) is accessible to patients				
19	HCPs and patients work as partners providing individual patient care				
20	Care is based on comprehensive assessment				
21	Challenges to practice are supported and encouraged by nurse leaders and nurse managers				
22	Discussions are planned between HCPs and patients				
23	The development of staff expertise is viewed as a priority by nurse leaders				
24	Staff use reflective processes (e.g. action learning, clinical supervision or reflective diaries) to evaluate and develop practice				
25	Organisational management has high regard for staff autonomy				
26	Staff welcome and accept cultural diversity				
27	Evidence-based knowledge on care is available to staff				
28	Patients have choice in assessing, planning and evaluating their care and treatment				
29	HCPs have the opportunity to consult with specialists				
30	HCPs feel empowered to develop practice				
31	Clinical nurse leaders create an environment conducive to the development and sharing of ideas				
32	Guidelines and protocols based on evidence of best practice (patient experience, clinical experience, research) are available				
33	Patients are encouraged to participate in feedback on care, culture and systems				
34	Resources are available to provide evidence-based care				
35	The organization is non-hierarchical				
36	HCPs share common goals and objectives about patient care				
37	Structured programmes of education are available to all HCPs				

Adopted from McCormack, McCarthy, Wright, Coffey and Slater (2008:55-60)

CAI Analysis PROTEAS

Annexure C5

STEP 1 - SCORES PER ELEMENT

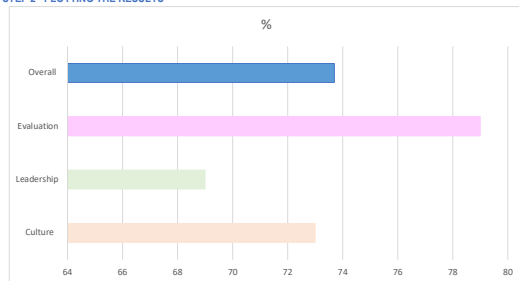
Element: Culture																Total score x 1.5025	
Statement number	1	3	7	9	12	15	16	18	21	23	24	28	31	33	34	36	
Score	37	43	39	34	42	48	38	26	39	40	32	34	32	43	39	42	608

Element: Leadership								Total score x 3.57
Statement number	2	6	10	17	22	27	29	
Score	37	45	24	33	36	38	37	250

Element: Evaluation														Total score x 1.78	
Statement number	4	5	8	11	13	14	19	20	25	26	30	32	35	37	
Score	46	47	43	33	46	45	44	43	41	43	35	40	29	41	576

Element %  
 Culture 73  
 Leadership 69  
 Evaluation 79  
 Overall 73.7

STEP 2 - PLOTTING THE RESULTS



STEP 3 - OVERALL SCORE

Sum of all 3 scores divided by 3 = 73%

STEP 4 - IDENTIFYING AREAS FOR DEVELOPMENT

Statement number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37		
Participant																																							
A1	2	4	4	4	3	3	3	3	1	1	3	3	4	3	4	3	3	1	4	3	3	3	3	3	3	3	3	1	3	3	3	3	3	3	2	3	3		
A2	3	4	4	4	3	3	4	3	3	1	2	3	4	4	4	3	3	2	3	3	2	3	4	3	3	3	3	2	3	3	4	4	3	3	2	4	3		
A3	1	4	3	4	3	3	3	3	1	1	4	3	4	4	4	4	3	1	3	3	1	3	1	3	3	3	3	3	1	2	3	3	3	2	3	3			
A4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
A5	3	2	3	3	4	3	3	3	3	1	2	3	3	3	3	3	2	2	1	2	3	3	2	3	2	3	3	3	1	3	3	2	2	3	3	2	3		
A6	3	2	1	2	4	3	1	3	3	1	1	3	3	2	3	1	1	1	3	3	3	2	3	1	4	4	1	3	2	1	2	2	3	1	1	2	2		
A7	4	2	4	4	4	3	4	3	3	3	4	4	4	4	4	4	3	3	4	4	4	4	3	4	3	3	3	4	4	4	4	4	4	4	3	4	4		
A8	3	3	4	4	3	4	4	3	2	2	2	3	3	4	4	3	2	3	4	3	2	3	2	3	2	3	2	3	2	1	2	1	3	3	2	3			
A9	1	4	4	4	3	4	4	3	2	2	3	3	4	4	3	2	4	3	3	3	2	1	4	4	2	2	1	2	1	2	1	3	3	2	3	3			
A10	3	2	3	3	4	3	3	3	3	1	2	3	3	3	3	2	2	1	2	3	3	2	3	2	3	3	3	1	3	3	2	2	3	3	2	3			
A11	3	2	1	2	4	3	1	3	3	1	1	3	3	2	3	1	1	1	3	3	3	2	3	1	4	4	1	3	2	1	2	2	3	1	1	2			
A12	4	2	4	4	4	4	3	4	3	3	3	4	4	4	4	4	3	3	4	4	4	4	3	4	3	3	4	4	4	4	4	4	4	3	4	4			
A13	4	2	4	4	4	3	4	3	3	3	4	4	4	4	4	3	3	4	4	4	4	3	4	4	3	3	4	4	4	4	4	4	3	4	4	4			
Total score	37	37	43	46	47	45	39	43	34	24	33	42	46	45	48	38	33	26	44	43	39	36	40	32	41	43	38	34	37	35	32	40	43	39	29	42			

Low scoring questions

- 2 - Decisions on care and management are clearly documented by all staff
- 10 - HCPs in the MDT have equal authority in decision making
- 18 - Appropriate information (large written print,tapes, etc.) is accessible to patients
- 28 - Patients have choice in assessing, planning and evaluating their care and treatment

Interpretation / Comments

Communication of treatment goals and documenting is problematic as per 54% of respondents  
 69.2% of respondents feel that they have no authority in decision making processes  
 62% of respondents indicated that there is a lack of appropriate information available to patients  
 46% of respondents indicated that patients have limited choices regarding treatment plans

Agreed actions to address low scoring areas

Leadership

Culture





# Practice development research - ICU

Feedback November 2018

Liezl Balfour

# Introduction

I would like to thank you and your team for welcoming me as part of your team and allowing me to continue my research in your facility.

The aim of this presentation is to update you with regard to the research activities and progress made to date.

# Activities

- **Hospital visits**

I visited the unit a few times to engage with the team and to inform them of the scope of the research project

- **CAI (Context analysis index)**

The CAI provided a departure point for this research, the results are presented in the next slides

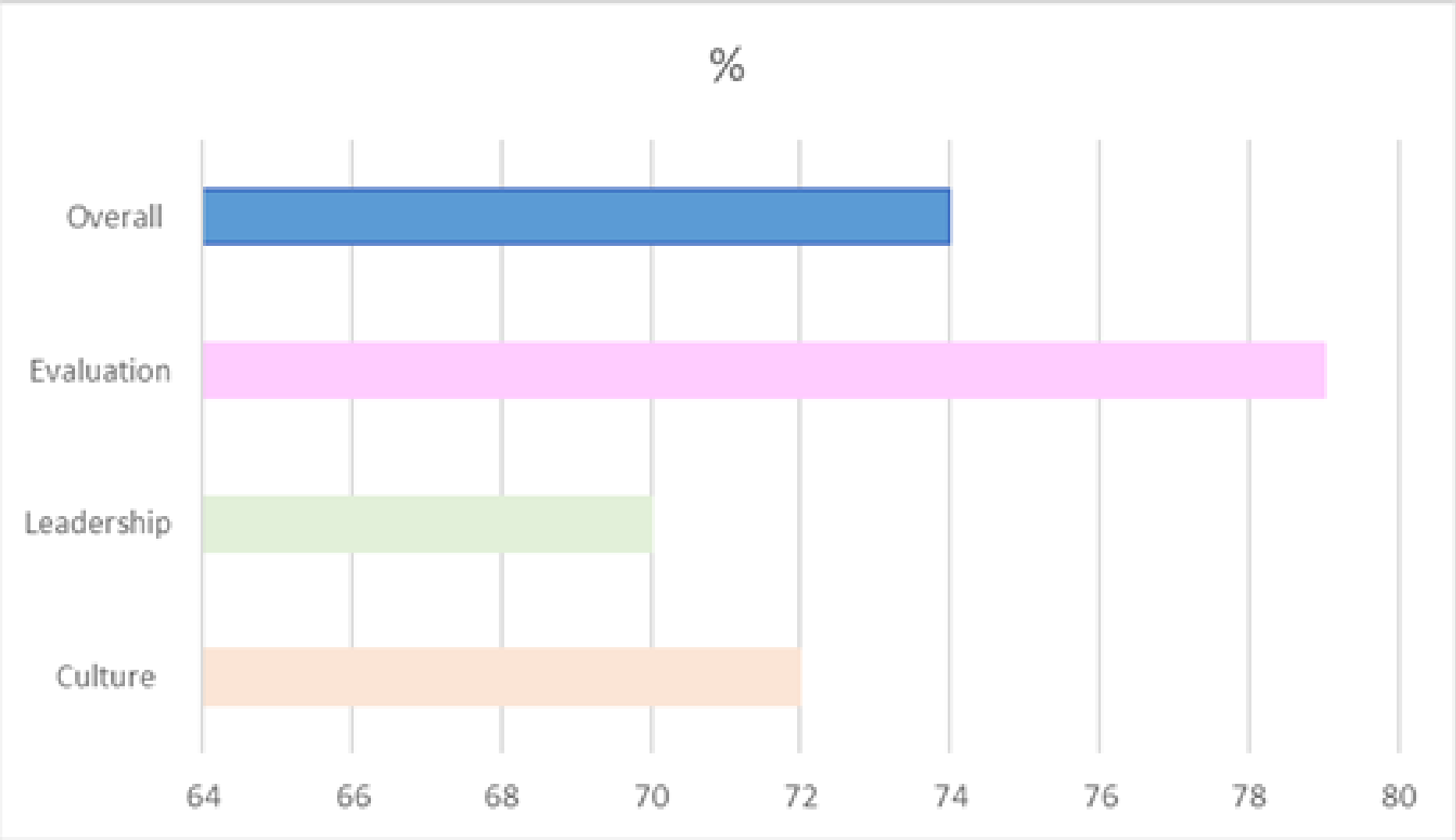
- **Internal facilitators**

Four of the registered nurses in the ICU agreed to voluntarily participate in the research. Due to confidentiality restraints I am not able to divulge their names in this presentation

# Activities – CAI Results

- The CAI provides insight into how the nurses view their team, unit, nurse leaders and organizational structure. Your team scored consistently high scores, which indicates a healthy team dynamic.
- The nurses perceive their nurse leaders as supportive transformational leaders, who make a positive impact on nursing practice in the hospital.
- Feedback provided to the team regarding their performance is highly regarded and directs their actions.

# Activities – CAI Results



# Next steps

- Sharing CAI results with internal facilitators
- Validation of the updated clinical pathway for noninvasive ventilation
- Developing an implementation plan in collaboration with the internal facilitators
- Evaluating the outcomes

# Conclusion

- Your ICU team is exceptional
- Your leadership inspires them to deliver quality care to improve patient outcomes
- Your ICU nurses are ready to use their skills and knowledge to improve patient outcomes through innovation and research evidence

**THANK YOU FOR BEING AN EXCEPTIONAL NURSE LEADER!**

## Excerpt from a reflective diary

## Annexure C7

**September 25, 2018, 3:24 PM**  
55 Austral Rd, Selcourt, Springs, 1567, South Africa · 26°C · ☀️ · 📧

I visited the intervention group today. The unit seems organised and peaceful but there are only 4 high care patients in the unit. None of them requiring NIV. I planned to discuss the clinical pathway. This was not possible as 3 of the 4 internal facilitators were not on duty. Two of them were placed on night duty and one was attending compulsory in house training.

The changes on duty times presents a new challenge. This means that we might not have the opportunity to have all the internal facilitators together at the same time. This change was brought on by sudden unexpected resignations and a shortage of ICU nurses in the area willing to work night duty.

We will have to communicate via email and WhatsApp in the meantime.

It feels like I am being obstructed in every way.... 😞 😞

**June 16, 2019, 12:07 PM**  
Heidelberg · 20°C · ☀️ · 📧

The unit is quite busy this morning. Short staffed. Shift leader has been on duty since 6am to sort out the unit. The night shift leader is a newly qualified ICU EXPERIENCED. RN, and she couldn't cope. I think this is unfair towards the night RN, as she was expected to do something she is not trained for. The risk and medical legal implications are huge. I hope the UM is aware of this, but I don't feel comfortable discussing this with her.

The UM is also here now (10:00). There is a distinct unpleasant vibe ... everyone avoiding the um because she is in a bad mood. Lots of agency staff on duty. One invasive ventilated pt, young Male, respiratory failure due to cardiac arrest. One elderly man with 20% BSI burns and inhalation burns being transferred to Johannesburg burns unit. One female adult with respiratory distress due to antipsychotic drugs from old age home. Possible NIV candidate still to be seen by the doctor.

The internal Facilitators have been very quiet. No communication via WhatsApp etc. There is a distinct disconnect between them and their manager, I get the impression they are overwhelmed and overworked with little support from the UM. When I was the UM I always made sure they were taken care of, even if it meant looking after a patient myself. I thought that my successor would learn from me and continue in the same way. It seems I was mistaken. Leading by example failed in this instance....clearly it was not enough...

I delivered a motivational message and kitkat to each of the internal Facilitators. I need them to know that their efforts are appreciated. Hope this means something to them...

**September 25, 2018, 4:22 PM**  
68 Austral Rd, Selcourt, Springs, 1567, South Africa · 26°C · ☀️ · 📧

Intervention Group  
We had a productive session today.  
I met with the internal facilitators to discuss the updating of the clinical pathway and the CAI findings.

The internal facilitators were 'surprised' by some of the CAI findings. They seem to understand the importance of acknowledging their teams contributions to patient outcomes. Some of them were surprised to learn that their teams actually learn from them and their behaviour.

They expressed concerns about the newly appointed management team - not sure they are going to have their support in continuing with the research activities. I assured them that we will deal with it as it happens - i am due to repeat the presentations to the new team to inform them of the research activities in the ICU next week.

**September 19, 2018, 12:54 PM**  
Life Suikerbosrand Hospital · 28°C · ☀️ · 📧

Intervention Group Meeting  
The aim of this meeting was to discuss the CAI and start work on updating the existing clinical pathway for NIV. I arrived at the hospital only to find that most of the staff had been sent home on flexitime and that some of the internal facilitators are on leave for the long weekend. I am feeling extremely frustrated at this point. On the positive side I received more CAI questionnaires which is promising.

I plan to visit again next week and we will discuss the way forward.



## Excerpt from a reflective diary

## Annexure C7

Intervention Group  
Meeting planned with intervention group today. Had to postpone meeting to afternoon due to operational requirements. On arrival the team seems distracted and distraught. They told me that they had a terrible day so far. An unsuccessful resuscitation attempt of a young healthy patient. The body was still in the unit as they need to wait for forensic pathology services to collect it.  
We collaboratively decided that we would not work on the pathway today. Instead the time was used to debrief the team about the morning's event. We had tea and cake. The team resumed their duties in the unit at 14:00.  
Our next meeting is scheduled for Wednesday 19 September at 12:00

September 14, 2018, 1:02 PM  
25°C

What a day. I don't want to be here and I miss my family. Feels like nothing is working out as planned. I feel desperately alone. I keep reminding myself that I at least have a good job.... I feel so sorry for Ilze and Gabe.... lost another baby and a retrenchment.... I won't be able to handle that

As for my PhD.... patiently waiting for a degree..... WHATEVER

February 5, 2019, 9:56 PM

Protea Hotel by Marriott Durban Umhlanga · 23°C

Intervention Group  
Meeting planned with intervention group today. Had to postpone meeting to afternoon due to operational requirements. On arrival the team seems distracted and distraught. They told me that they had a terrible day so far. An unsuccessful resuscitation attempt of a young healthy patient. The body was still in the unit as they need to wait for forensic pathology services to collect it.  
We collaboratively decided that we would not work on the pathway today. Instead the time was used to debrief the team about the morning's event. We had tea and cake. The team resumed their duties in the unit at 14:00.  
Our next meeting is scheduled for Wednesday 19 September at 12:00

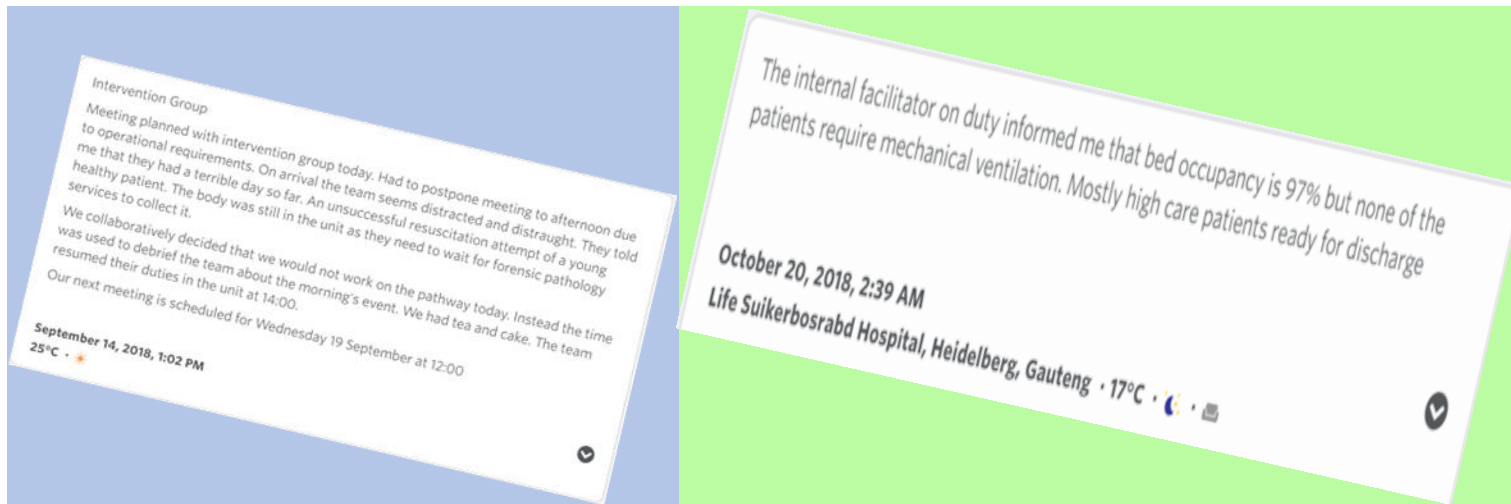
September 14, 2018, 1:02 PM  
25°C

Visited the intervention group today. One patient in the unit is currently mechanically ventilated. The prognosis is poor. When I asked the internal facilitator on duty about the patient she said that the patient is end stage COPD and has been in and out of hospital several times for ARF. He now has a severe respiratory infection too. When he was admitted via A&E two nights ago the admitting doctor was not familiar with patient or his health history and decided to intubate the patient. She seemed frustrated that the patient and their family have to be tortured to watch him die on the ventilator. He would have been a good candidate for NIV even if it was for palliative support only.

October 13, 2018, 12:30 PM  
68 Austral Rd, Selcourt, Springs, 1567, South Africa · 16°C

## Excerpt from a reflective diary

## Annexure C7



# CERTIFICATE *of* ACHIEVEMENT

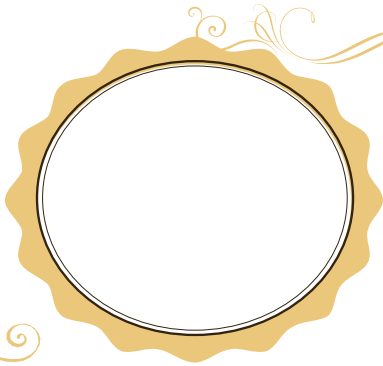
THIS ACKNOWLEDGES THAT

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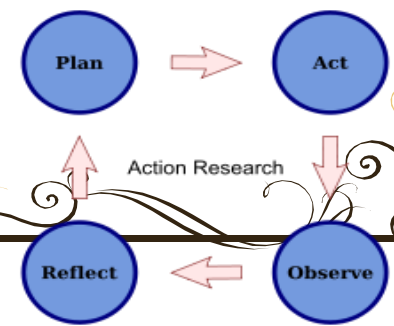
HAS BEEN INDUCTED AS INTERNAL FACILITATOR INTO THE

**ORDER OF CHANGE**



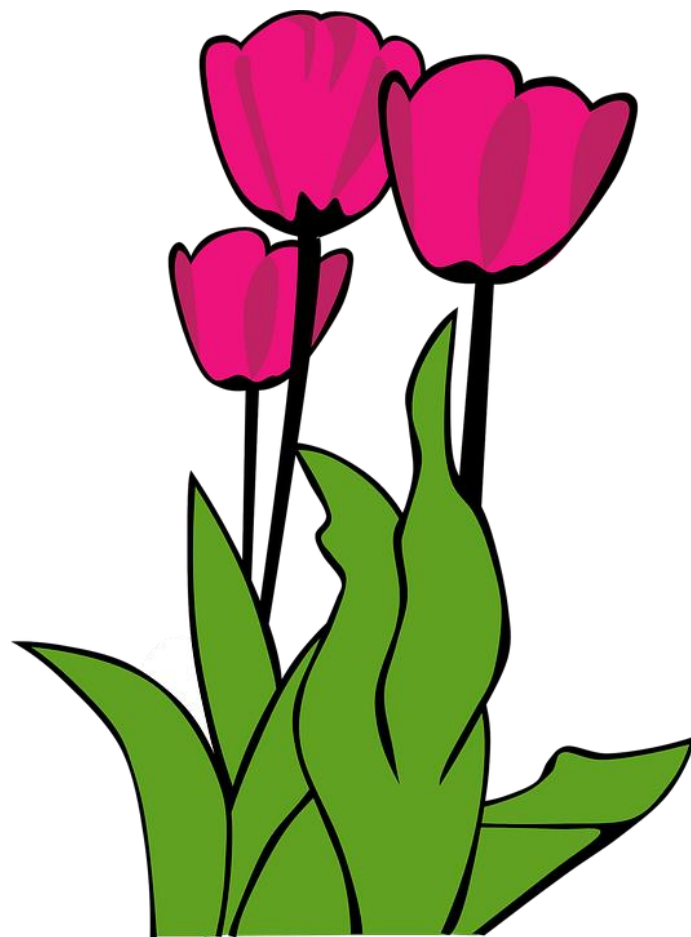
2018

SIGNED: Liezl Balfour (External facilitator)

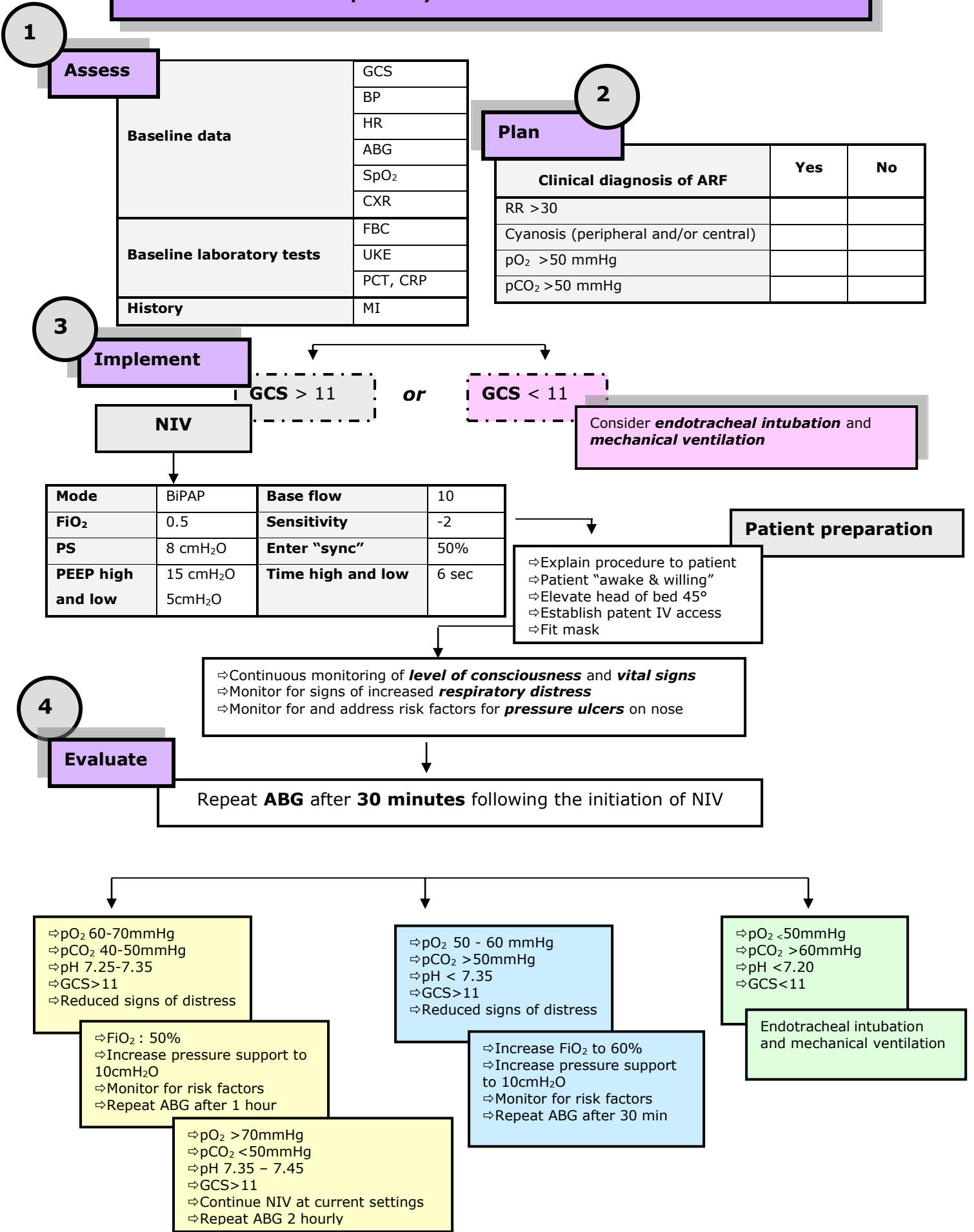


# Annexure D

## Clinical Pathway



**Clinical pathway for non-invasive ventilation**



**List of abbreviations**

<b>ABG</b>	Arterial blood gas
<b>BiPAP</b>	Bi-level /Bi-phasic positive airway pressure
<b>BP</b>	Blood pressure
<b>CXR</b>	Chest x-ray (portable)
<b>FiO<sub>2</sub></b>	Fractional inspired oxygen
<b>GCS</b>	Glasgow Coma Scale
<b>HR</b>	Heart rate
<b>PEEP</b>	Positive end-expiratory pressure
<b>PS</b>	Pressure support
<b>RR</b>	Respiration rate
<b>sec</b>	seconds
<b>SpO<sub>2</sub></b>	Peripheral oxygen saturation

Data extraction table for NIV literature

Annexure D2

Component	Specific interventions	Articles																									
		Zhu et al. (2016)	Burns et al. (2014)	Cross (2012)	Denecke et al. (2012)	Laird et al. (2015)	Mas et al. (2015)	Peng et al. (2016)	Lindenhauer (2015)	Rankin et al. (2015)	Balch et al. (2016)	Balfour et al (2012)	Beasley et al. (2015)	Beaulieu et al. (2013)	Berkius et al. (2013)	Elliott et al (2017)	Hipp et al. (2016)	Mascians et al. (2013)	Maitra et al (2016)	Naughton et al. (2014)	Ozyilmaz et al. (2014)	Popat et al. (2016)	Rochweg et al. (2017)	Rose (2012)	Singh et al. (2017)	Terzano et al. (2012)	
<b>Assessment data</b>																											
Vital data (HR, SpO <sub>2</sub> , BP)	Parameters to consider			x										x	x	x		x		x				x			
Arterial Blood gas values	Hypoxia / Hypercapnia	x	x	x			x	x	x										x	x			x	x	x	x	
Chest X-ray	Is it necessary?														x				x					x			
Indications	Who is a good candidate?	x	x				x	x	x				x			x		x	x	x			x	x	x		x
Contra-indications	Who should never get NIV		x	x				x								x		x	x	x			x	x	x		x
<b>Planning</b>																											
Predictors of failure				x				x		x			x			x		x		x	x	x	x	x	x	x	
<b>Implementation</b>																											
Predictors of success			x						x									x	x			x		x		x	
<b>Evaluation / Monitoring</b>																											
Patient outcomes					x	x		x	x				x					x	x			x	x	x	x	x	x
Cost implications								x																		x	
<b>Patient-centered care</b>																											
Clinical pathways					x					x	x	x		x		x	x									x	

## PARTICIPATION INFORMATION AND INFORMED CONSENT DOCUMENT - PICD

## Expert consensus

**TITLE OF STUDY**

**Implementation and evaluation of a person-centred clinical pathway for non-invasive ventilation in critical care: a practice development approach**

**Dear Participant,**

You are invited to participate in a Delphi as part of a research study that will take place in a private sector hospital over a period of approximately 10 months. This information leaflet contains information that will help you understand your role in the study. If there is any need for further clarification, please feel free to contact the researcher, Liezl Balfour.

**1. The nature and purpose of this study**

After recognizing the need for an alternative method for providing safe mechanical ventilatory assistance to adult patients presenting with acute respiratory failure, the multidisciplinary team collaborated to develop the clinical pathway for non-invasive ventilation (NIV). The clinical pathway provides the sequence of activities to effectively monitor the patient's progress whilst receiving NIV, as well as indicators of failure of NIV to be considered, thereby delivering safe, uncompromised nursing care to the patient. The overall aim of the study is implementing and evaluating the outcomes of an existing clinical pathway for NIV and to achieve the overall aim of the study the following objectives have been identified:

**Objective 1:** Assess unit culture and context to identify barriers and enablers to implementation of the clinical pathway for NIV in the critical care unit.

**Objective 2:** Adapt and validate the clinical pathway for NIV.

**Objective 3:** Adopt a person-centred practice development approach to collaboratively design and implement a strategy for implementing the clinical pathway for NIV in the critical care unit.

**Objective 4:** Evaluate the outcomes of the implementation of the NIV clinical pathway in the critical care unit.



**2. Explanation of procedures to be followed**

You are requested to participate in a Delphi to obtain your expert opinion regarding the use of NIV, and to assist the researcher in verifying the content of the clinical pathway for NIV prior to implementation of the clinical pathway in the critical care unit.

**3. Risk and discomfort involved**

There is no discomfort involved in participating in the study. Your identity will be protected and your name will not be published in any of the research documentation. Your input will only be referred to by means of a pseudonym for example, Participant A1. However, should you wish to participate in the writing of scholarly articles, you will waive your right to anonymity in order to obtain full credit as a co-author.

**4. Benefits of the study**

Successful implementation of the clinical pathway for non-invasive ventilation may assist in improving the patient experience through improving communication between members of the multidisciplinary team in the unit. By participating in this research study, you will assist the researcher and the multidisciplinary team in providing patients the best possible care.

**5. Your rights as a participant**

Your participation in this study is entirely voluntary. You can refuse to participate or stop at any time during the study without penalty.

**6. Ethical approval**

The Faculty of Health Sciences' Research Ethics Committee at the University of Pretoria has given written approval for this study.

**7. Information and contact person**

If you have any questions about the research, you are welcome to contact the Research Ethics Committee Faculty of Health Sciences University of Pretoria's Office:

Tel: 012 354 1330 or 012 354 1677

Fax: 012 354 1367

E Mail: [manda@med.up.ac.za](mailto:manda@med.up.ac.za)

E Mail: [deepeka.behari@up.ac.za](mailto:deepeka.behari@up.ac.za)

If you have any questions about your participation in this study, you should contact the researcher, Mrs Liezl Balfour

Work telephone: (010) 534 6321  
Cell phone: 076 618 4527  
Email address: liezlbalfour@mweb.co.za

Alternatively you may contact my supervisor Dr. Isabel Coetzee at:

Work telephone: (012) 354 2132  
Cell phone: 071 158 9045  
Email address: Isabel.coetzee@up.ac.za

**8. Compensation**

Your participation is voluntary. No compensation will be given for your participation.

**9. Confidentiality**

Please note that the researcher will take every precaution to ensure confidentiality of the data and will not disclose your name or any other personal information at any time without prior written consent from you.

**VALIDATION OF THE UPDATED CLINICAL PATHWAY FOR NIV**

Please complete the relevant demographic information below:

Demographic data	
Age	
Gender	
Highest qualification, e.g. PhD/ Master's degree/ Medical doctor / Bachelor's degree/ Nursing diploma	
Number of years critical care experience	
Job title / Role in organisation e.g. Physician, respiratory specialist, intensivist, etc.	

**EVALUATION OF THE CLINICAL PATHWAY**

Please indicate with an 'X' the answer that best describes your impression of the clinical pathway for NIV according to the criteria below:

Criteria	Exemplary	Sufficient	Marginal	Unsatisfactory
Clarity – user friendly				
Simplicity				
Consistency				
Comprehensiveness				
Importance for nursing / critical care practice development				
Applicable to critical care units				
Other (please specify)				

**Additional comments:**

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Thank you for your time and effort. It is greatly appreciated.

**PARTICIPATION INFORMATION AND INFORMED CONSENT**  
**DOCUMENT - PICD Expert consensus**

**TITLE OF STUDY** Implementation and evaluation of a person-centred clinical pathway for non-invasive ventilation in critical care: a practice development approach

**Dear Participant,**

You are invited to participate in a Delphi as part of a research study that will take place in a private sector hospital over a period of approximately 10 months. This information leaflet contains information that will help you understand your role in the study. If there is any need for further clarification, please feel free to contact the researcher, Liezl Balfour.

**1. The nature and purpose of this study**

After recognizing the need for an alternative method for providing safe mechanical ventilatory assistance to adult patients presenting with acute respiratory failure, the multidisciplinary team collaborated to develop the clinical pathway for non-invasive ventilation (NIV). The clinical pathway provides the sequence of activities to effectively monitor the patient's progress whilst receiving NIV, as well as indicators of failure of NIV to be considered, thereby delivering safe, uncompromised nursing care to the patient. The overall aim of the study is implementing and evaluating the outcomes of an existing clinical pathway for NIV and to achieve the overall aim of the study the following objectives have been identified:

**Objective 1:** Assess unit culture and context to identify barriers and enablers to the implementation of the clinical pathway for NIV in the critical care unit

**Objective 2:** Update and validate the clinical pathway for NIV

**Objective 3:** Adopt a person-centred practice development approach to collaboratively design and implement a strategy for implementing the clinical pathway for NIV in the critical care unit

**Objective 4:** Evaluate the outcomes of the implementation of the clinical pathway for NIV in the critical care unit

**2. Explanation of procedures to be followed**

You are requested to participate in a Delphi to obtain your expert opinion regarding the use of NIV, and to assist the researcher in verifying the content of the clinical pathway for NIV prior to implementation of the clinical pathway in the critical care unit.

**3. Risk and discomfort involved**

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**4. Benefits of the study**

Successful implementation of the clinical pathway for non-invasive ventilation may assist in improving the patient experience through improving communication between members of the multidisciplinary team in the unit. By participating in this research study, you will assist the researcher and the multidisciplinary team in providing patients the best possible care.

**5. Your rights as a participant**

Your participation in this study is entirely voluntary. You can refuse to participate or stop at any time during the study without penalty.

**6. Ethical approval**

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E Mail: [deepeka.behari@up.ac.za](mailto:deepeka.behari@up.ac.za)

If you have any questions about your participation in this study, you should contact the researcher, Mrs Liezl

Balfour

Work (010) 534 6321

telephone:

Cell phone: 076 618 4527

Email address: [Liez.lbalfour@lenmed.co.za](mailto:Liez.lbalfour@lenmed.co.za)

Alternatively you may contact my supervisor Dr. Isabel Coetzee at:

Work telephone: (012) 354 2132

Cell phone: 071 158 9045

Email address: [Isabel.coetzee@up.ac.za](mailto:Isabel.coetzee@up.ac.za)

### 8. Compensation

Your participation is voluntary. No compensation will be given for your participation.

### 9. Confidentiality

Please note that the researcher will take every precaution to ensure confidentiality of the data and will not disclose your name or any other personal information at any time without prior written consent from you.

## VALIDATION OF THE UPDATED CLINICAL PATHWAY FOR NIV

Please complete the relevant demographic information below:

Demographic data	
Age	60
Gender	Male
Highest qualification, e.g. PhD/ Master's degree/ Medical doctor / Bachelor's degree/ Nursing diploma	Master's Degree

Number of years critical care experience	2
Job title / Role in organisation e.g. Physician, respiratory specialist, intensivist, etc.	Group Nurse Manager

**EVALUATION OF THE CLINICAL PATHWAY**

Please indicate with an 'X' the answer that best describes your impression of the clinical pathway for NIV according to the criteria below:

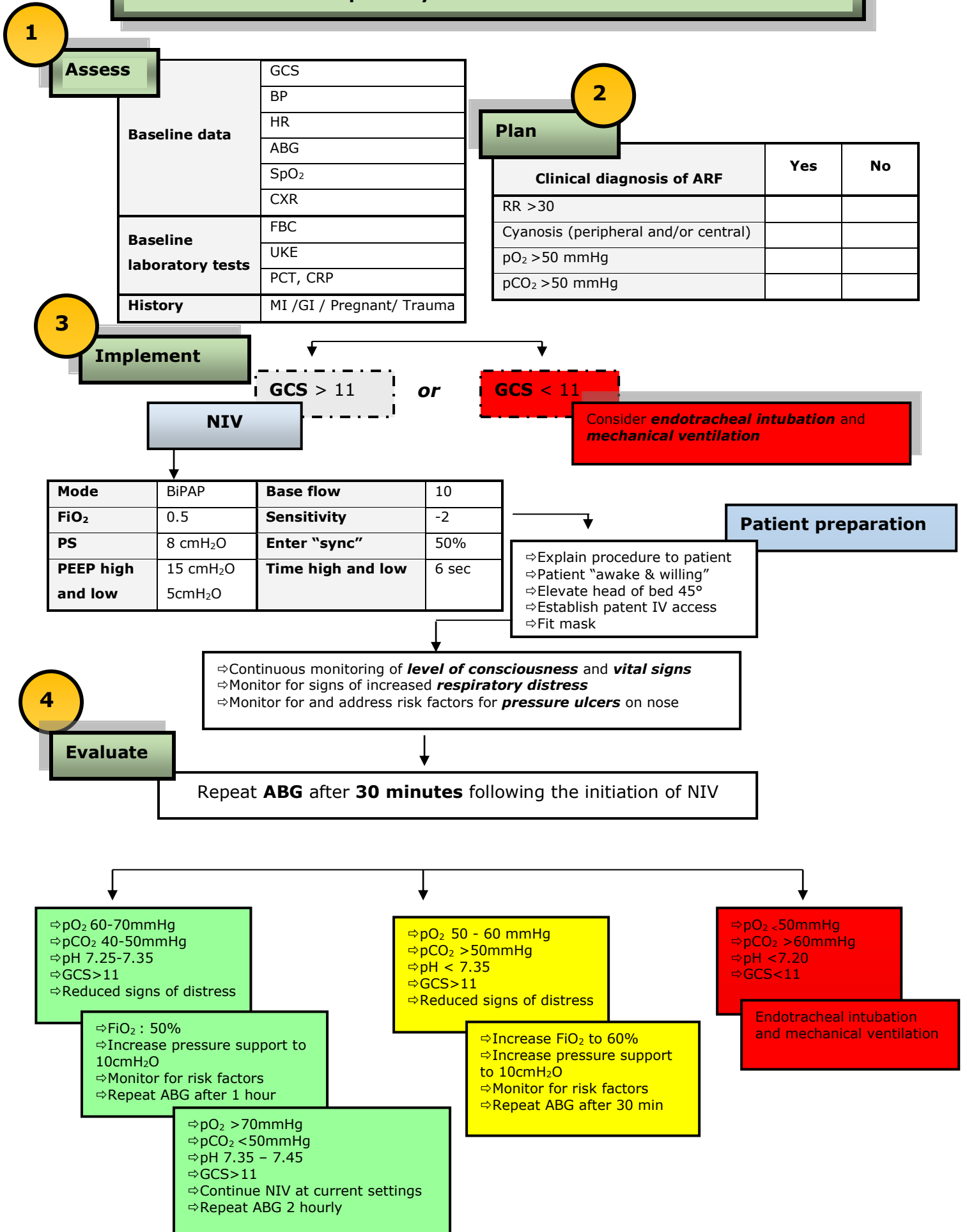
Criteria	Exemplary	Sufficient	Marginal	Unsatisfactory
Clarity – user friendly	X			
Simplicity		X		
Consistency		X		
Comprehensiveness	X			
Importance for nursing / critical care practice development	X			
Applicable to critical care units	X			
Other (please specify)				

**Additional comments:**



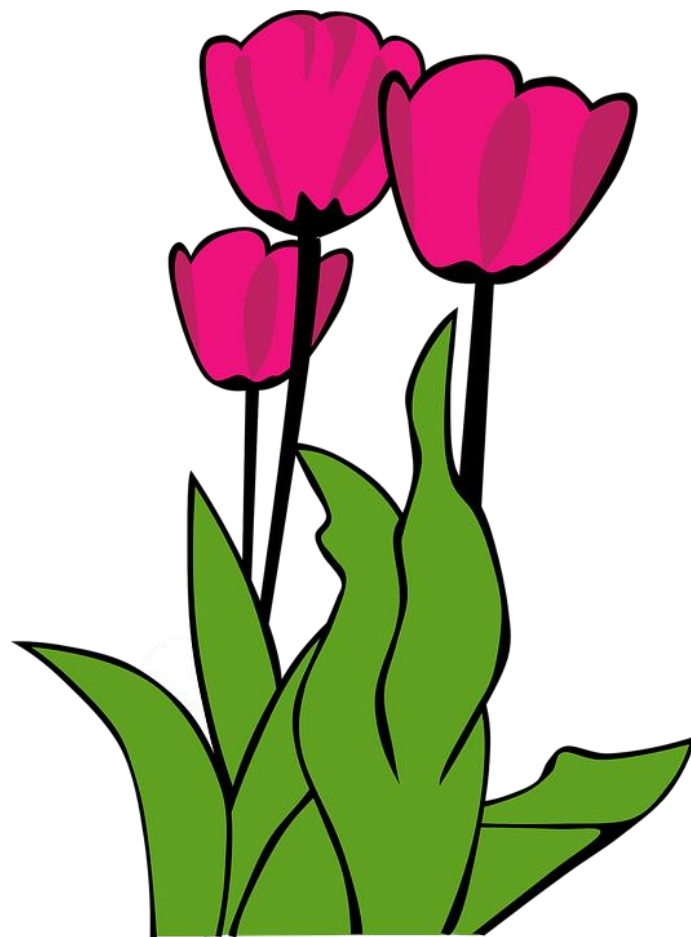


## Clinical pathway for non-invasive ventilation



List of abbreviations	
<b>ABG</b>	Arterial blood gas
<b>BiPAP</b>	Bi-level /Bi-phasic positive airway pressure
<b>BP</b>	Blood pressure
<b>CXR</b>	Chest x-ray (portable)
<b>FiO<sub>2</sub></b>	Fractional inspired oxygen
<b>GCS</b>	Glasgow Coma Scale
<b>HR</b>	Heart rate
<b>PEEP</b>	Positive end-expiratory pressure
<b>PS</b>	Pressure support
<b>RR</b>	Respiration rate
<b>sec</b>	seconds
<b>SpO<sub>2</sub></b>	Peripheral oxygen saturation

**Annexure E**  
**Phase 2: Implementation & Evaluation**



## Step 1: Create awareness

- Teach nurses in the unit about NIV
- Teach ER nurses about NIV – patients admitted via ER for ARF
- Display poster of clinical pathway in ER and ICU

## Step 2: Patient assessment

- Assess all patients admitted with ARF according to clinical pathway criteria
- Qualifying patients – make doctor aware of NIV pathway

## Step 3: Implement

- Obtain written, legal prescription from doctor to commence NIV
- Document NIV pathway in progress report

## Step 4: Monitor outcomes

- Document outcomes against agreed indicators
- Inform researcher to do follow-up ( Patient interviews)

**PARTICIPATION INFORMATION AND INFORMED CONSENT DOCUMENT -**

**PICD**

**Patient experience**

**TITLE OF STUDY**

**Implementation and evaluation of a clinical pathway for non-invasive ventilation in critical care: a person-centred practice development approach**

**Dear Participant,**

You are invited to participate in a research study that will take place in a private sector hospital over a period of approximately 10 months. This information leaflet contains information that will help you understand your role in the study. If there is any need for further clarification, please feel free to contact the researcher, Liezi Balfour.

**1. The nature and purpose of this study**

Non-invasive ventilation (NIV) refers to a mode of ventilation where a patient receives breathing support by means of a special mask that is fitted over the patient's nose and mouth. The patient does not need a breathing tube down their throat to assist them to breathe. The patient is awake and able to talk, eat and drink freely when the mask is removed. Your participation will assist the physicians and nurses to improve the quality of care provided to patients.

**2. Explanation of procedures to be followed**

You are requested to participate in a short interview that will last approximately 15 minutes to answer the following questions:

- Describe your worst experience during NIV.
- Describe your best experience during NIV.
- Is there anything else you would like to add about your experience with NIV?

To ensure your safety, you will only be allowed to participate in the interview if your doctor deems you fit, you are pain free and comfortable. The interview will only take place once you are discharged from ICU to a general ward, and your participation is entirely voluntary.

**3. Risk and discomfort involved**

There is no discomfort involved in participating in the study. Your identity will be protected and your name will not be published in any of the research documentation. Your input will only be referred to by means of a pseudonym for example, Patient A1.

**4. Benefits of the study**

Successful implementation of the clinical pathway for non-invasive ventilation may assist in improving the patient experience through improving communication between yourself and the multidisciplinary team taking care of you. You will have an active role in the decision making regarding your care. By participating in this research study, you will assist the researcher and the multidisciplinary team in providing you with the best possible care.

**5. Your rights as a participant**

Your participation in this study is entirely voluntary. You can refuse to participate or stop at any time during the study without penalty.

**6. Ethical approval**

The Faculty of Health Sciences' Research Ethics Committee at the University of Pretoria, your hospital / hospital group has given written approval for this study.

**7. Information and contact person**

If you have any questions about the research you are welcome to contact the Research Ethics Committee Faculty of Health Sciences University of Pretoria's Office:

Tel: 012 354 1330 or 012 354 1677

Fax: 012 354 1367

E Mail: [manda@med.up.ac.za](mailto:manda@med.up.ac.za)

E Mail: [deepeka.behari@up.ac.za](mailto:deepeka.behari@up.ac.za)

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Cell phone: 076 618 4527

Email address: liezlalfour@mweb.co.za

Alternatively you may contact my supervisor Dr. Isabel Coetzee at:

Work telephone: (012) 354 2132

Cell phone: 071 158 9045

Email address: Isabel.coetzee@up.ac.za

## **8. Compensation**

Your participation is voluntary. No compensation will be given for your participation.

## **9. Confidentiality**

Please note that the researcher will take every precaution to ensure confidentiality of the data, and will not disclose your name or any other personal information at any time without prior written consent from you.

2018/11/21, 16:50 - Messages to this group are now secured with end-to-end encryption. Tap for more info.

2018/11/21, 16:50 - You created group

"Suikerbossies Rule! "

2018/11/21, 16:51 - You added [REDACTED]

2018/11/21, 16:51 - You added [REDACTED]

2018/11/21, 16:51 - You added [REDACTED]

2018/11/21,16:51 – You added [REDACTED]

2018/11/21, 16:53 - Liezl Balfour: Hello Ladies! I trust you enjoyed your goody bags.

Please remember to give your completed consent forms to [REDACTED]. I will collect them from her during the course of the week.

Have an awesome day. Thank you for your participation and support 🍷

2018/11/21, 16:57 - [REDACTED]:

Hi....Im not aware of this? Working tonight

2018/11/21, 16:57 - [REDACTED]: Ek het ook niks ontvang nie Sorry.

2018/11/21, 16:58 - Liezl Balfour: Hi. I'll check with [REDACTED]. Thanks for letting me know

2018/11/21, 16:59 - [REDACTED]: 👍

2018/11/21, 16:59 - [REDACTED]: 🌸🌸

2018/11/22, 08:45 - Liezl Balfour: IMG-20181105-WA0005.jpg (file attached)

2018/12/07, 07:16 - [REDACTED]: VID-20181207-WA0026.mp4 (file attached)

2018/12/07, 07:16 - Liezl Balfour: ❤️

2018/12/14, 07:23 - Liezl Balfour: IMG-20181214-WA0002.jpg (file attached) - Happy Friday

2018/12/14, 08:08 - [REDACTED]: 😄😄

2018/12/28, 20:18 - Liezl Balfour: Hallo almal. Hoop julle Kersfees was lekker.

Stuur asb jul epos adresse vir my sodat ek die CAI feedback met julle kan deel

Dankie . Lekker aand

2018/12/28, 20:29 - [REDACTED]: E mail adresse?

2018/12/28, 20:30 - Liezl Balfour: Jip

2018/12/28, 20:31 - [REDACTED]: [REDACTED]@gmail.com



2018/12/28, 20:32 - Liezl Balfour: 👍

2018/12/28, 20:53 - [REDACTED]: [REDACTED]@gmail.com

2018/12/28, 20:55 - Liezl Balfour: Dankie

2018/12/28, 21:00 - [REDACTED]vodamail.co.za

2018/12/28, 21:01 - Liezl Balfour: Dankie

2019/01/30, 06:04 - Liezl Balfour: IMG-20190124-WA0002.jpg (file attached)

2019/01/30, 06:05 - Liezl Balfour: Have a great day. Please send me your feedback via email and WhatsApp pictures of your diaries. Thank you

2019/03/11, 15:34 - Liezl Balfour: IMG-20190311-WA0001.jpg (file attached)

2019/03/11, 15:36 - Liezl Balfour: Hello Suikerbossies. Hoop dit gaan goed met julle almal. Ek is alweer oppad Durban toe vir werk.

Ek staan hoed in hand.... kan julle asseblief na die vrae kyk en in julle dagboeke skryf en vir my n paar fotos stuur? Ek sal so bly wees... Laat weet hoe gaan dit met die NIV implementation??

2019/03/11, 15:38 - Liezl Balfour: Julle moet asb n datum kies in April sodat ons kan n koffie drink en gesels. Ek weet julle is seker ook moeg vir my 😊😁 maar Ons is amper daar... Baie dankie.

Sodra ons klaar is stick ek julle vir ete... met baie wyn en Champaign 🍷

2019/03/11, 18:57 - Liezl Balfour: IMG-20190311-WA0003.jpg (file attached)

2019/03/12, 06:42 - Liezl Balfour: IMG-20190215-WA0004.jpg (file attached)

2019/03/15, 18:42 - Liezl Balfour: IMG-20190306-WA0005.jpg (file attached)

2019/03/15, 19:58 - [REDACTED] IMG-20190315-WA0014.jpg (file attached)

2019/03/15, 19:59 - Liezl Balfour: 😞

2019/03/16, 06:43 - Liezl Balfour: IMG-20190310-WA0000.jpg (file attached)

2019/03/16, 08:28 - [REDACTED]: IMG-20190316-WA0001.jpg (file attached)

2019/03/16, 08:48 - Liezl Balfour: 😞

2019/03/17, 14:19 - Liezl Balfour: Hi julle almal. Hoop julle het n Lekker Sondag.

I have printed the feedback questions for each of you and will ask [REDACTED] to deliver your envelopes to ICU on Wednesday. Please answer the questions in your notebook/diary. Unfortunately time caught up with me and I will not be able to visit you this week. Thank you for your support. Have a great week

2019/03/19, 07:45 - Liezl Balfour: IMG-20190319-WA0000.jpg (file attached)

2019/03/21, 12:38 - Liezl Balfour: Hello julle almal. Geniet die vakansie dag!

2019/03/21, 12:38 - Liezl Balfour: Het almal hulle koeverte gekry?

2019/03/21, 13:47 - Liezl Balfour: IMG-20190321-WA0008.jpg (file attached)

2019/03/31, 14:11 - Liezl Balfour: IMG-20190331-WA0001.jpg (file attached) - Happy Sunday!

2019/03/31, 14:13 - Liezl Balfour: Thank you to those who sent me their feedback. I will be very grateful if you could send it to me this week please.

2019/03/31, 14:25 - [REDACTED] IMG-20190331-WA0002.jpg (file attached)

2019/03/31, 14:27 - Liezl Balfour: 🙏

2019/04/04, 07:51 - Liezl Balfour: IMG-20190301-WA0004.jpg (file attached)

2019/04/04, 07:51 - Liezl Balfour: More meisies! Hoop julle het n heerlike dag.

2019/04/04, 08:38 - Liezl Balfour: IMG-20190404-WA0001.jpg (file attached)

2019/04/05, 07:24 - [REDACTED] Liezl. Ek gaan ongelukkig nie die Saterdag kan bywoon nie. Eks op nagdiens enn werk Paasnaweek....dus is al om die ander naweek gesinstyd. Ekskuus daarvoor

2019/04/05, 10:59 - Liezl Balfour: Doodreg. Geen problem

2019/04/25, 06:29 - Liezl Balfour: More julle. Ons sal Saterdag se ontbyt uitstel vir 2 weke wanneer julle beskikbaar is.Ek sal n nuwe uitnodiging stuur. Lekker werk

2019/04/25, 19:14 - Liezl Balfour: IMG-20190425-WA0007.jpg (file attached)

2019/04/25, 19:25 - [REDACTED] 🌸🌸

2019/04/30, 17:33 - Liezl Balfour: <https://protect-za.mimecast.com/s/I0btCLgBO3uYVGEcBEXhc?domain=yuppiechef.com>

2019/06/16, 13:07 - Liezl Balfour: IMG-20190616-WA0002.jpg (file attached)

Hoop julle het n heerlike dag 🌹

2019/07/05, 07:15 - Liezl Balfour: IMG-20190705-WA0000.jpg (file attached Happy Friday

2019/07/05, 10:00 - Liezl Balfour: IMG-20190705-WA0001.jpg (file attached)

# Thank you!

Dear Valued Stakeholder,  
Thank you for your assistance during the past months.  
Please join me for brunch to celebrate our achievements!

Date: Saturday, 27 April 2019

Time: 10:00 - 12:00

Venue: Cappuccino's, Heidelberg Mall

Dress code: Casual, come as you are!

RSVP: On or before 15 April 2019, via WhatsApp (0766184527)

What to bring:

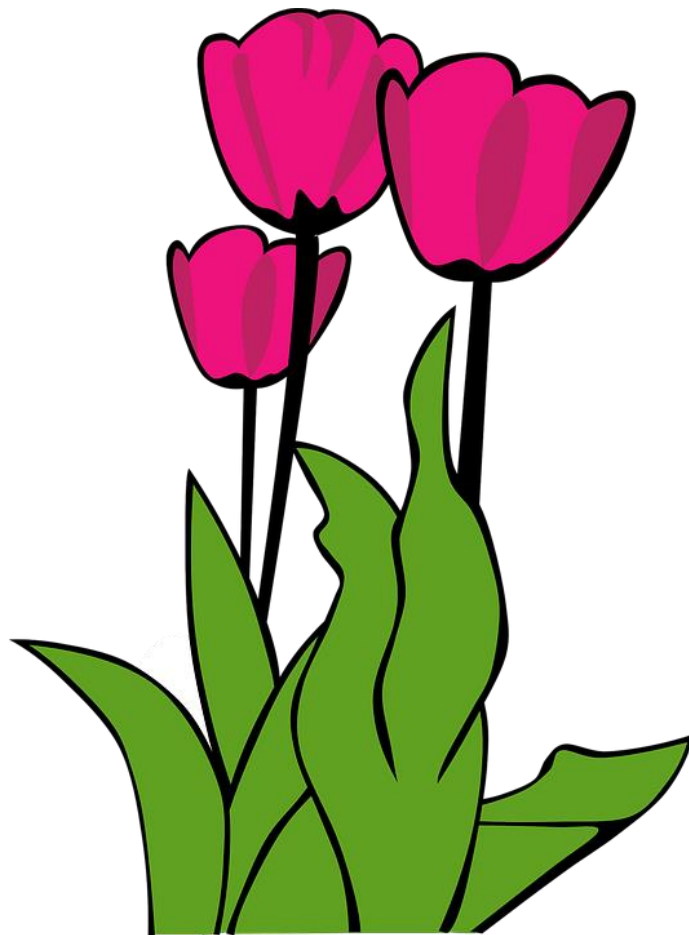
Yourself - most important!

An empty stomach...

Your diary and a pen

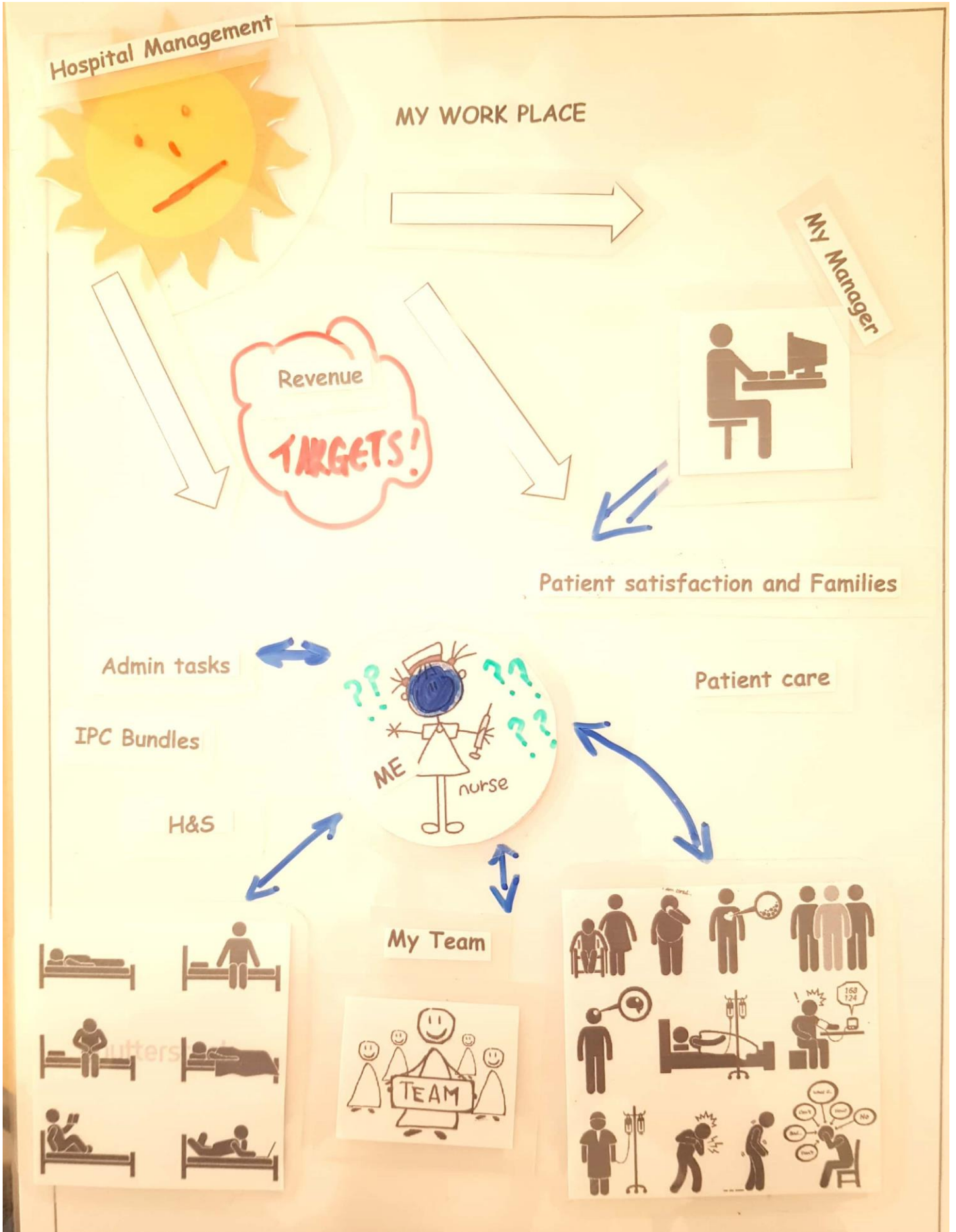


**Annexure F**  
**Phase 3: Outcomes of Evaluation**



**Interview schedule: Internal facilitators**

- How do you celebrate your team successes? What about failures?
- Do you feel valued as a professional person who can make a difference to nursing practice and patient outcomes? What happens to your suggestions?
- How would you like the management to help you succeed?
- What keeps you coming back every day?
- Nurses seems disengaged. What is your experience? Why do you think this is?
- How can we change that? How do we as nurse leaders get them to actively participate?  
Now what?
- Draw a picture of how you see the ideal work place where you and your team will be able to flourish?



Flourishing work environment

Hospital Management



My Manager

My Team

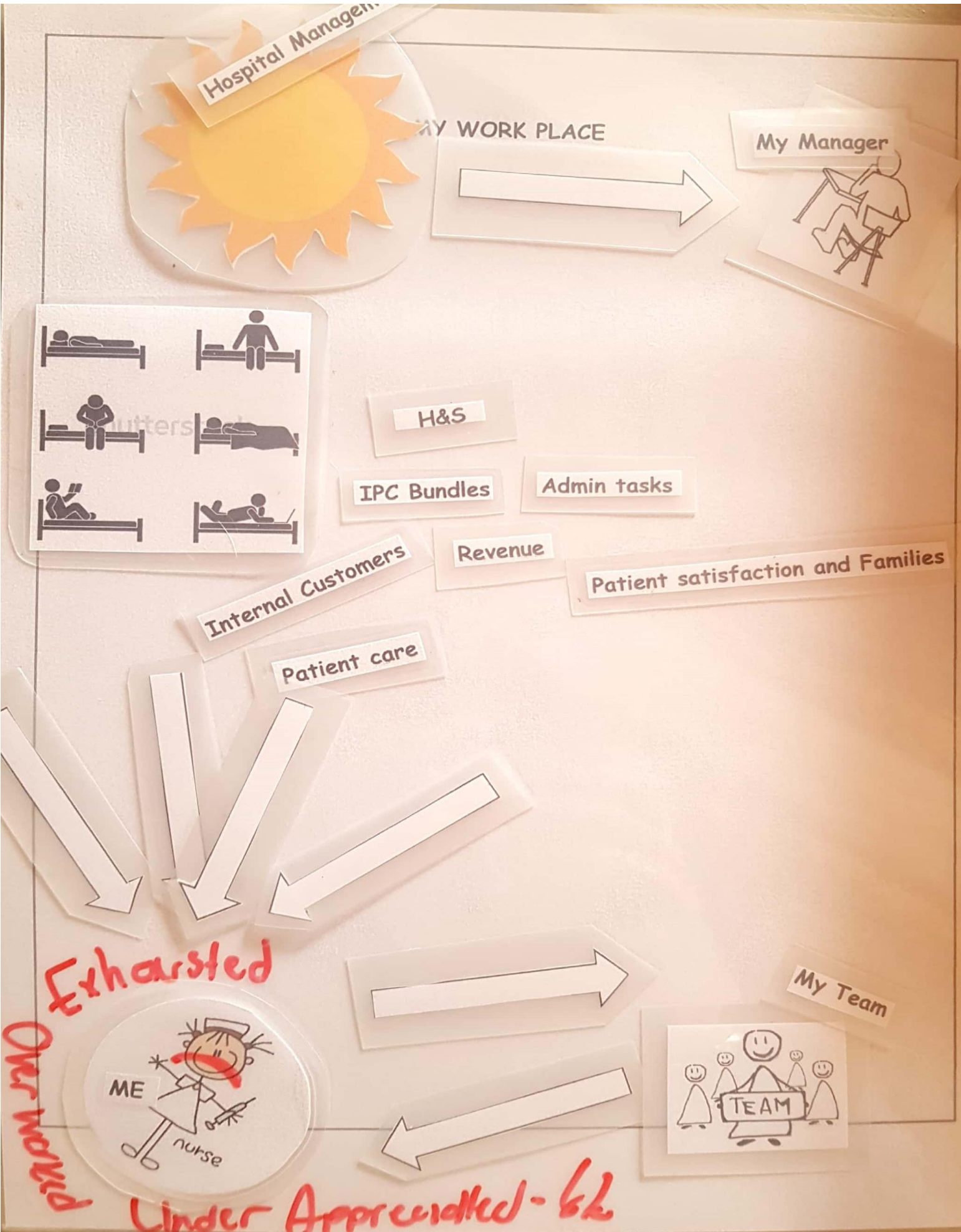
Patient satisfaction and Families



Patient care

I.C.U.

- SUPPORT:
- SAY THANK YOU
  - PATIENT'S COME FIRST !!
  - DON'T ALWAYS BE NEGATIVE
  - SHOW ME HOW TO DO IT BETTER





Flourishing work environment



- Active involvement
- Feedback
- Less childish, useless activities
- Actually implementing staff ideas



Less office time  
More floor time

"Open door Policy with UM to discuss problems

- Less "Paper" exercises
- Make competent staff
- Treated like a valued member of the Team

**Semi-structured interview schedule (internal facilitators):**

- How do you celebrate your team successes? What about failures?
- Do you feel valued as a professional person who can make a difference to nursing practice and patient outcomes? What happens to your suggestions?
- How would you like the management to help you succeed?
- What keeps you coming back every day?
- Nurses seems disengaged. What is your experience? Why do you think this is?
- How can we change that? How do we as nurse leaders get them to actively participate?

Comments	Participant	Transcription
	I	Okay, so how do you celebrate your team’s success. When you achieve success in the unit, what do you do to celebrate your team?
<i>Participant has folded her arms across her chest and has an indifferent look on her face</i>	P	We don’t...
	I	Why not?
<i>Participant seems reluctant to answer</i>	P	(sigh)...Because there is no time, no resources, and no one is really motivated
	I	Not motivated... So?
<i>Participant unfolded her arms and is resting her chin on her hand – seems ‘down trodden’ and tired</i>	P	What is it all for? ...That’s what it’s about...
	I	So why do <b>you</b> come back every day?
	P	Because I have to! To survive. That’s all. I don’t enjoy it anymore...it isn’t nice anymore
	I	To survive? And what about the people working with you?
	P	I think everybody feels much the same at the moment...
	I	...Not...Not motivated, disengaged...
	P	We all work because we have to, not because we enjoy it anymore...
	I	What about the patients? Isn’t it about the patient in the bed?
<i>Participant seems distressed / irate – frowning and moving about in the chair</i>	P	No... not at all!

Comments	Participant	Transcription
	I	And what do you think we need to do to change this? Because this is a frustration everyone shares, that I can tell you for a fact. Everyone feels that their teams are disengaged, they are only there to fill a space, and one person has to take the lead, and one person – just like you illustrated in your drawing – has to take responsibility for everything. What do we need to do to change this?
<i>Participant made an eye-roll gesture</i>	P	... (inaudible)... Appoint more permanent staff! One permanent nurse per shift is not cutting it! The quality of nurses from the agencies .... Really!!!....
	I	Questionable?
	P	Mmmm.... Some are as dumb as a box of rocks...
	I	Competence is a problem...?
	P	Very much yes...
	I	And what... if you now have to describe the ideal set up in your ICU, what will you do to ensure that your team remains engaged and not just in survival mode?
	P	(sigh)...Yet again.... More competent permanent staff... stop criticizing us and help us....
	I	Okay, and if you were person responsible for ensuring that your team performs well? What would you do?
<i>Participant throws her hands in the air and shrugs her shoulders</i>	P	(silence).... I don't know...
	I	What would you like management to do for you?
	P	They need to come and work with us – look at what we are doing every day – Get out from behind your desks and come see what we are doing! We don't just sit around all day.
	I	And when they are there with you? What do you want to show them? What do you want them to see and experience?
<i>Participant seems calmer when talking about her patients needs. She has a smile on her face</i>	P	Well, I think with the limited staff and the incredibly high workload we have, all our patients are still happy. They need to see that despite everything our patients still get the best out of us. Even though we are demotivated, we are still doing what is expected of us. And I think because we are not a large unit, we are more involved with our patients, we know their life stories. It is sometime a bit too much, but I do think the patients feel more comfortable with us, it means a lot to them to tell us their stories because we are with them all day long. Sometimes I think we are too involved with the patients, but it is good for them... Come have a look at what value we add to the patients...
	I	And for you personally as a professional person in the multidisciplinary team to feel valued, what do you need to make you feel that you are not just going back because you have to?
<i>Participant has a shy-looking smile on her face</i>  <i>Participant giggles nervously</i>	P	...(silence)...It sounds a bit dumb, but... just for someone to say 'Thank you', or wow, I saw you doing that.... Look how well your patient is doing... that's all. I don't want more money, because I know it doesn't work like that, but just acknowledge what I am doing... I think I do more than what is expected... and nobody sees it... (giggle)... That's all I want to say about that!

Comments	Participant	Transcription
	I	Thank you for your time and participation...

<b>CONTEXT ASSESSMENT INDEX (CAI)</b>
---------------------------------------

Demographic data	
Age	
Gender	
Highest qualification	
Number of years qualified as RN	
Role in organisation: RNQ/RN exp/ UM	

### QUESTIONNAIRE

Please respond to the following statements, indicating the degree to which you agree or disagree with each statement. Mark the answer that best fits you, now, with an 'X' in the corresponding box.

*For each of the following statements, please put a cross in one box only. A – Strongly agree; A – Agree; D – Disagree; SD – Strongly disagree*

Health care professionals (HCP)

		SA	A	D	SD
01	Personal and professional boundaries between HCPs are maintained				
02	Decisions on care and management are clearly documented by all staff				
03	A proactive approach to care is taken				
04	All aspects of care/treatment are based on evidence of best practice				
05	The nurse leader acts as a role model of good practice				
06	HCPs provide opportunities for patients to participate in decisions about their own care				
07	Education is a priority				
08	There are good working relations between clinical and non-clinical staff				
09	Staff receive feedback on the outcomes of complaints				
10	HCPs in the MDT have equal authority in decision making				
11	Audit and/or research findings are used to develop practice				
12	A staff performance review process is in place which enables reflection on practice, goal setting and is regularly reviewed				
13	Staff have explicit understanding of their own attitudes and beliefs towards the provision of care				
14	Patients are encouraged to be active participants in their own care				
15	There is a high regard for patient's privacy and dignity				

For each of the following statements, please put a cross in one box only. **A – Strongly agree; A – Agree; D – Disagree; SD – Strongly disagree**

Health care professionals (HCP)

		SA	A	D	SD
16	HCPs and healthcare support workers understand each other's roles				
17	The management structure is democratic and inclusive				
18	Appropriate information (large written print, tapes, etc.) is accessible to patients				
19	HCPs and patients work as partners providing individual patient care				
20	Care is based on comprehensive assessment				
21	Challenges to practice are supported and encouraged by nurse leaders and nurse managers				
22	Discussions are planned between HCPs and patients				
23	The development of staff expertise is viewed as a priority by nurse leaders				
24	Staff use reflective processes (e.g. action learning, clinical supervision or reflective diaries) to evaluate and develop practice				
25	Organisational management has high regard for staff autonomy				
26	Staff welcome and accept cultural diversity				
27	Evidence-based knowledge on care is available to staff				
28	Patients have choice in assessing, planning and evaluating their care and treatment				
29	HCPs have the opportunity to consult with specialists				
30	HCPs feel empowered to develop practice				
31	Clinical nurse leaders create an environment conducive to the development and sharing of ideas				
32	Guidelines and protocols based on evidence of best practice (patient experience, clinical experience, research) are available				
33	Patients are encouraged to participate in feedback on care, culture and systems				
34	Resources are available to provide evidence-based care				
35	The organization is non-hierarchical				
36	HCPs share common goals and objectives about patient care				
37	Structured programmes of education are available to all HCPs				

Adopted from McCormack, McCarthy, Wright, Coffey and Slater (2008:55-60)

Thank you for your participation.

<b>CONTEXT ASSESSMENT INDEX (CAI)</b>
---------------------------------------

Demographic data	
Age	
Gender	
Highest qualification	
Number of years qualified as RN	
Role in organisation: RNQ/RN exp/ UM	

**QUESTIONNAIRE**

Please respond to the following statements, indicating the degree to which you agree or disagree with each statement. Mark the answer that best fits you, now, with an 'X' in the corresponding box.

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Health care professionals (HCP)

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15	There is a high regard for patient's privacy and dignity				

For each of the following statements, please put a cross in one box only. **A – Strongly agree; A – Agree; D – Disagree; SD – Strongly disagree**

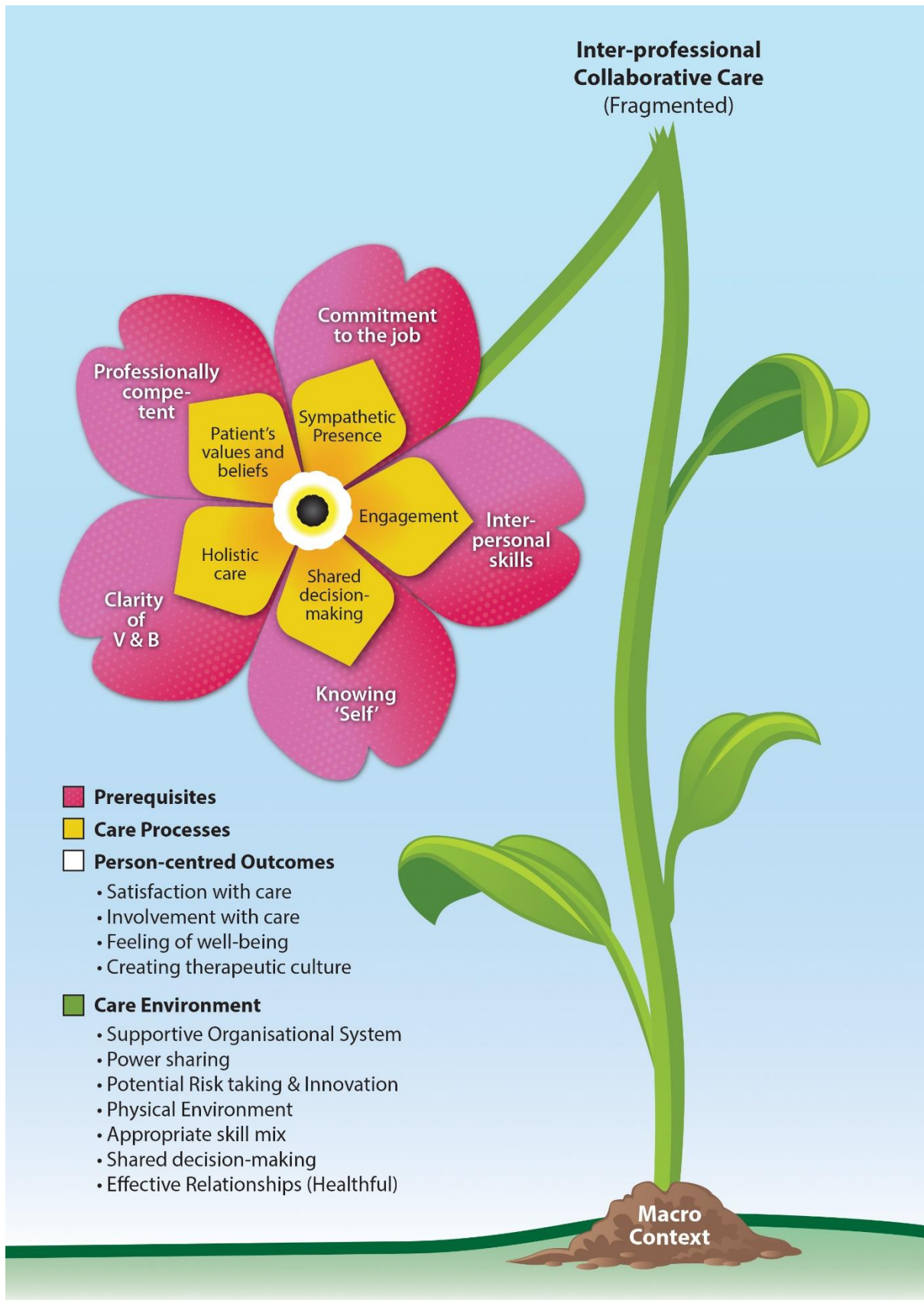
Health care professionals (HCP)

		SA	A	D	SD
16	HCPs and healthcare support workers understand each other's roles				
17	The management structure is democratic and inclusive				
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20	Care is based on comprehensive assessment				
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35	The organization is non-hierarchical				
36	HCPs share common goals and objectives about patient care				
37	Structured programmes of education are available to all HCPs				

Adopted from McCormack, McCarthy, Wright, Coffey and Slater (2008:55-60)

Thank you for your participation.





**Aim of Focus group session: Adapting the clinical pathway (internal facilitators):**

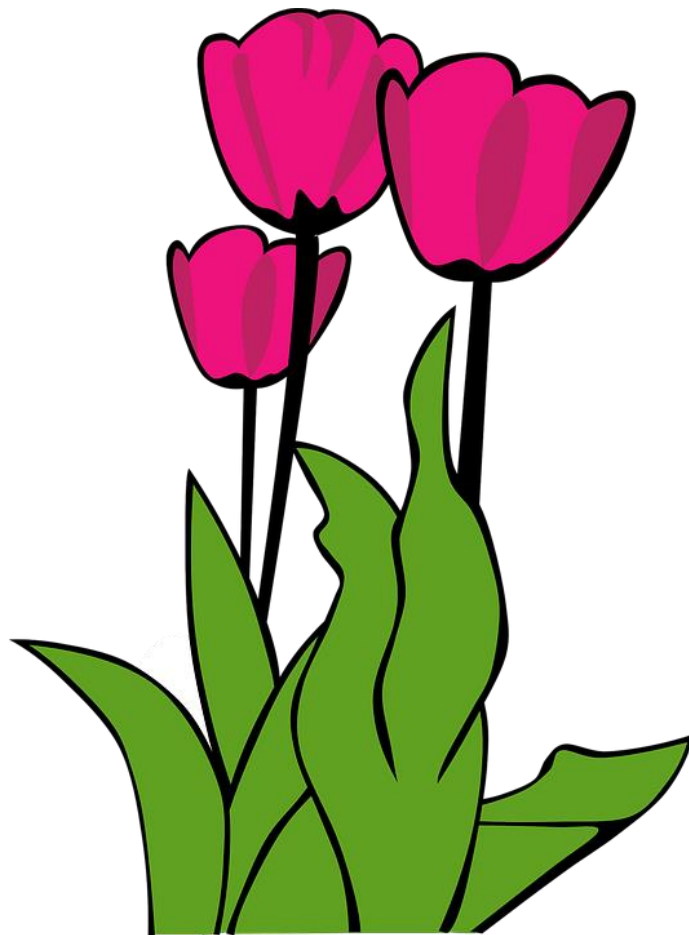
- Internal facilitators discussed the content of the clinical pathway

Comments	Participant	Transcription
	I	Okay, so let's start with the assessment criteria. What needs to be assessed before we start the patient on non-invasive ventilation?
	P	I think we need to use a systems approach – you know, like a full admission history?
	P	Jip, we need to look for anything that would exclude the patient as uhm , not suited for NIV. The original pathway excluded uhm.... Acute MI, facial trauma and upper GI-surgery.
	I	What did you find in the literature?
	P	(sigh)...The only additional contra-indications we could find were pregnancy and facial trauma. I think we need to add this to the clinical pathway to make sure it is not missed during the initial assessment of the patient.
	I	Do we all agree that this must be added?
	P	Definitely
	I	I will add pregnancy and facial trauma on the clinical pathway document. Any other suggestions?
	P	No, the content of the assessment portion is sufficient
	I	What should we change about the indications for the initiation of NIV? What did you find in the literature?
	P	Well, uhm, we didn't find anything else. The indications for NIV are the same. I don't think we need to change anything
	I	Are we in agreement that the indications remain unchanged?
	P	Yes, the literature provides the same information, so we should change that
	I	Thank you. Let's move on to the contra-indications. What did you find in the literature?

Comments	Participant	Transcription
	P	Here is the list of the absolute and relative contra-indications we found. This article indicates that NIV shouldn't be considered if the patient's GCS is less than 10. Our clinical pathway shows that NIV is not indicated if the GCS is less than 11. Personally, I feel we should leave it at 11, it feels safer. What do you think, M?
	P	I agree, a GCS of 10 is risky. Just now, someone starts NIV for the wrong patient... we don't want that. You know how dumb some of these agency people are... they can't count...
	P	Mmm – agreed.
	I	Do we agree that we are not changing any of the criteria for contra-indications?
	P	Yes
	P	Perfect
	P	Uhm, yes. Agreed
	I	Thank you, Ladies. The next section is about the possible complications of NIV. If you look at the clinical pathway is there anything else we need to add?
	P	There is a list of the possible complications. I think it is comprehensive, and I don't think we need to add anything else here? Hey, T?
	P	No, I don't think there is anything else we need to change or add here. I agree with the content as it is
	P	Me too. If you understand NIV and the clinical pathway you will know what complications to look out for.
	I	Do we have consensus that this part of the clinical pathway is sufficient?
	P	Yes
	P	Agreed
	P	Agreed

# Annexure G

## Declarations



**Principal Investigator(s) Declaration for the storage of research data and/or documents**

I, the Principal Investigator(s), Liezl Balfour of the following study titled:

**Implementation and evaluation of a clinical pathway for non-invasive ventilation in critical care: a person-centred practice development approach**

will be storing all the research data and/or documents referring to the above-mentioned trial/study at the following address:

9 Commonwealth Road  
Selcourt  
Springs

**I understand that the storage for the abovementioned data and/or documents must be maintained for a minimum of 15 years from the commencement of this trial/study.**

START DATE OF STUDY: March 2018

END DATE OF STUDY: June 2019

UNTIL WHICH YEAR WILL DATA WILL BE STORED: June 2034

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**Name: L Balfour**

Signature: 

**Date: 31 March 2018**

Cell/Mobile: 073-782-3923

53 Glover Avenue  
Doringkloof  
0157 Centurion

27 January 2020

**TO WHOM IT MAY CONCERN**

I hereby certify that I have edited Liezl Balfour's doctoral dissertation, **Implementation and evaluation of a clinical pathway for non-invasive ventilation in critical care: a person-centred practice development approach**, for language and content.

*IM Cooper*

IM Cooper

lauma M Cooper

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