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Development of a nursing record tool for critically ill or injured patients in an accident and emergency (A&E) unit

by

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Declaration

I, Ilze Emelia van Eeden, hereby declare that:

The development of a nursing record tool for critical ill or injured patients nursed in an accident and emergency (A&E) unit

is my original work, that all sources that have been used or quoted have been indicated as well as acknowledged by means of a complete reference list, and that this work has not been submitted for any other degree at another institution.

_____ _____

Ilze E van Eeden (Researcher) Date and place

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Abstract

The A&E unit is a unique environment with unique problems, including those problems pertaining to the documentation of the nursing care provided to the critically ill or injured patient. In such a hectic and turbulent environment where minutes can be the decider between life and death, saving the patient's life takes priority over record keeping, and crucial information is not recorded.

The aim of this study was to develop a nursing record tool to record the management of critically ill or injured patients in an accident and emergency (A&E) unit. The researcher used the collaborative inputs of three different groups of experts in the field of A&E nursing and record keeping to reach this aim.

The study was descriptive, explorative and contextual in nature, and a qualitative approach was used. The A&E nurse practitioners views were incorporated into a final nursing record tool that could be used in the A&E unit for critically ill or injured patient for the first six hours of resuscitation.

The compiled nursing record tool was comprehensive and included a pre-hospital management section to ensure the continuity of care in the emergency environment. Although more comprehensive as the current tool, the use of tick-off prompts shortened the time spend to complete this nursing record tool and, in doing so, increased the retaining of crucial information that could enhance the quality and ensure the continuity of care pertaining the critically ill or injured patient in the changing emergency environment.

Key words

Accident and emergency (A&E) unit, A&E nurse practitioner, critically ill or injured patient and nursing record tool.

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List of abbreviations	Explanation
A&E	Accident and Emergency
ALS	Advanced Life Support
ATLS	Advanced trauma life support
BLS	Basic Life Support
FGI	Focus group interview
HPCSA	Health Professions Council of South Africa
ILS	Intermediate Life Support
ITLS	International trauma life support
P1	Priority one
P2	Priority two
PHTLS	Pre-hospital Trauma Life Support
RN	Registered nurse
SANC	The South African Nursing Council

Note of clarification

For the purpose of anonymity, the hospital where the study was done will be referred to as **the hospital,** in both text and referencing.

1 Orientation to the study

1.1 Introduction

A master builder uses his skills to build a house of excellent quality. There is truth in the saying that a builder is only as good as his tools (Geyer 2005:82). The tool utilised for documenting nursing actions in a hospital's accident and emergency (A&E) unit is known as the nursing record tool. The registered nurse (RN) uses the nursing record tool to record the events in a chronological format as these take place in the A&E unit, from when the patient is admitted until he/she is discharged or transferred to another unit. Although the RN acknowledges the importance of and necessity for record keeping, this is not regarded as a rewarding task (Geyer 2005:82). Geyer further notes that it often happens that the RN who values the clinical part of nursing resents record keeping and perceives the updating of documentation as an unnecessary distraction from his/her "real business" of providing nursing care.

The records the RN keeps are an indispensable part of the communication system and relate directly to the provision of care (Reddy & Spence 2006:653). The authors state that the A&E unit is largely about various forms of communication, and that well written accessible records are an essential part of this process. Proper communication between the different members of the multidisciplinary health team is important to ensure continuation of care, especially with a critically ill or injured patient. Within the A&E unit the nursing record tool used to record the data of a critically ill or injured patient is often the only link in the communication pathway between the various members of the multidisciplinary health team.

The researcher identified various shortcomings in the nursing record tool currently used in the A&E unit where the study was conducted that need improvement (see Annexure B.1).

1.2 Background to the problem

The A&E unit is a unique environment with unique problems, including those problems pertaining to the documentation of the nursing care provided. Such a unit is a hectic and turbulent environment in which minutes can be the decider between life and death. When critically ill or injured patients are admitted to the A&E unit, the multidisciplinary team members promptly start with a prioritised assessment. The management of the identified problems then follows immediately to ensure that life-threatening conditions are sorted. This is when saving the patient's life takes priority over record keeping.

The patient's records will only be written up once his/her condition has been stabilised. The problem in this situation is that the RNs often forget to record all the actions carried out. This seems to be a problem across various disciplines. Lowenstein (2005:453) points out, for instance, that when taking the history of a patient, emergency physicians lose one-third of the data, and then they lose another third because they do not write down the data obtained. According to Geyer (2005:76) RNs specifically indicated that an increased workload and low staffing ratios are some of the reasons for their shuffling the paperwork to the bottom of their priorities. This situation also appears to be applicable to the A&E unit of the hospital where this study was conducted.

Although the problem of not keeping records exists, one cannot ignore the fact that record keeping is one of the duties of all health professionals, including the RN working in the A&E unit. The record keeping duty of the RN in the A&E unit includes ensuring that all aspects, namely the nursing assessment and findings, emergency interventions, specific nursing and medical management, as well as the evaluation of the outcome of the patients admitted to the unit, are documented (O'Shea 2005:664).

O'Shea (2005:41) as well as Nicol and Steyn (2004:19) emphasise the importance of record keeping by suggesting that the management of the

critically ill or injured patient should follow a systematic and structured approach. The systematic approach includes the primary survey (Airway, Breathing, Circulation, Disability and Exposure/Environmental control) during which life-threatening conditions are assessed and managed (American College of Surgeons [ATLS] 2005:18). This survey is followed by obtaining an "AMPLE" history. The AMPLE mnemonic refers to *allergies*, *medications, past medical history, last food/drink* taken by the patient and *events or environment* related to the injury (Mistovich, Hafin & Karren 2004:83). Once a history is obtained from the patient, family and/or friends, the resuscitation phase follows.

During the resuscitation phase the patient's management focuses mainly on normalising the hemodynamics of the critically ill or injured patients (American College of Surgeons [ATLS] 2005:20). The secondary survey does not begin until the primary survey has been completed and the resuscitative efforts are well established (American College of Surgeons [ATLS] 2005:21). The secondary phase includes a head-to-toe evaluation of the patient, including the re-assessment of the vital signs (ATLS 2005:21; Campbell & Chapter [ITLS] 2008:38). These are some of the elements that are omitted in the nursing record tool currently used in the A&E unit (see Annexure B.1).

While investigating the nursing record tool currently used in the A&E unit, it was noted by the researcher that the tool is time-consuming to complete, and therefore recording is often neglected. The nursing record tool fails to provide accurate time frames of when the emergency management of the critically ill or injured patient was initiated. The tool also does not portray a complete overview of the link between the management given to the patient in the pre-hospital environment (by the emergency care practitioners) and the RNs and multi-disciplinary team member in the A&E unit. This is important information that must be conveyed to the RN receiving the patient within the critical care environment (Urden, Stacy & Lough 2006:974) when the patient is transferred. If important information regarding the emergency management of such a patient is not conveyed to the RN receiving the

patient within the critical care environment, it could have various medico-legal implications for the RN overall. Important information may be lost if not recorded. Lost information may not be available for future enquiries to prove that the RN did deliver appropriate nursing care.

The challenges experienced in this regard led to the identification of major inadequacies of the nursing record tool currently used for the critically ill or injured patients within the A&E unit. The existence of this problem was confirmed by the feedback obtained from Goba & Masondo (2006), the Accreditation Committee of the Gauteng Department of Health who visited the A&E unit in 2005 and 2006 for the purpose of accreditation. During the visit feedback concerning general errors relating to recording issues within the hospital was given by the Accreditation Committee. A number of the errors could be applied to the nursing record tool used in the A&E unit.

Based on the report provided and compiled by the Accreditation Committee for the hospital (The Hospital 2006), the researcher compiled a list of common shortcomings that could be applied to the nursing record tool used in the A&E unit.

The shortcomings were as follows:

- No interim reports are written on the nursing care given to the patient between the assessment phase and the evaluation phase.
- There is no continuity in the recording of patient care; for instance, movement of the patient in and out of the unit and the patient's reaction to the nursing care is not recorded.
- There are no records of the discharge information given to the patient on discharge.
- No space is provided on the nursing record tool to record any contact numbers of families that might be needed, for instance for emergency theatre consent.
- The prescription part of the document does not require the signature of a doctor/s next to each entry, and therefore more medication could be added by unauthorised persons without the doctor's knowledge.

These shortcomings mentioned by the Accreditation Committee reinforce the view of the researcher that the nursing record tool currently used within the A&E unit to record the management of the critically ill or injured patient is incomplete and needs to be revised.

1.3 Problem statement

One of the core medico-legal considerations of the A&E environment is that no recording may mean no defence (Nicol & Steyn 2004:451). It is evident, based on the list of shortcomings mentioned in Section 1.2, that the standard of record keeping in the A&E unit needs to be revised.

Record keeping is a skill that needs to be developed by each and every RN as efficient nursing care is based on correct and complete records. By developing a less time-consuming but more comprehensive nursing record tool for critically ill or injured patients, it is anticipated that all RNs working in the A&E unit will find it easier to record all the important data that is needed when nursing these patients. In addition such a tool could eliminate risks that might lead to dire consequences for the nurse, the patient and the hospital. The researcher is of the opinion that this tool could improve the quality of recording and protect both the patient and the RN.

1.4 Research questions

In view of the background and problem statement, the following research question was formulated:

What does a nursing record tool for critically ill or injured patients nursed in an A&E unit entail?

Based on the research question, the following sub-questions were formulated:

- **Question 1:** How should the nursing record tool be designed?
  - What are the components of a nursing record tool?
  - How would consensus be reached regarding the content and layout of a nursing record tool?
  - What does the preliminary nursing record tool entail?
- **Question 2:** How should the final nursing record tool be constructed?
  - Which criteria should the nursing record tool adhere to?
  - What does the final nursing record tool encompass?

1.5 Aim and objectives of the study

The aim of this study is to develop a nursing record tool to record the management of critically ill or injured patients nursed in an accident and emergency (A&E) unit.

To attain the aim of this research, the following objectives are set in the study:

- **Objective 1:** Explore the compilation of a nursing record tool
  - Describe the components of the nursing record tool
  - Reach consensus on the content and layout of the nursing record tool
  - Compile a preliminary nursing record tool

- **Objective 2:** Evaluate the nursing record tool
  - Evaluate the preliminary nursing record tool
  - Construct the final nursing record tool

1.6 Frame of reference

The frame of reference of the study can be described in terms of the relevant paradigm, assumptions and conceptual definitions.

1.6.1 Paradigm

Appleton and King (2002:642) state that deciding on the appropriateness of a chosen methodology and its philosophical underpinnings is essential. With regard to the social sciences specifically Trigg (2001:255) suggests that "the philosophy of the social sciences cannot be an optional activity, indulged in by those reluctant to get on with real empirical work. It is the indispensable starting point for all the social sciences". Trigg is thus advocating that the philosophical groundwork must be undertaken before the researcher approaches the 'doing' phase of the research. This is consistent with the views of Wilson and McCormack (2006:46).

With this challenge in mind, the purpose of this section is to outline the paradigmatic perspective of this study, which was used as the basis for the framework that guided the process taken to construct a nursing record tool for the A&E unit.

With regard to terminology around the paradigm, the constructivist paradigm is also referred to as the naturalistic paradigm according to Polit and Beck (2008:15). Doolittle (2004:[1]) holds the view that constructivism is a theory of learning that has roots in both philosophy and psychology. The essential core of constructivism is that people actively construct their own knowledge and meaning from their experiences. Medley (2008:[1]) states that constructivism is based on the idea that we learn when comparing new information to what we already know. By using analysis and synthesis researchers develop new knowledge and insight based on the results of new and old information. When this occurs new knowledge is constructed, which forms the basis of research.

Constructivists see reality as "relativism/local and specific" (Denzin & Lincoln 1994:109). In nursing it is imperative that nurses accept the utility of a research tradition that provides for the most meaningful way to describe and understand human experiences. Recognising that reality is dynamic is the first step in establishing a truly humanistic perspective of research (Streubert-Speziale & Carpenter 2007:4).

The constructivist paradigm assumes that knowledge is maximised when the distance between the researcher and the participants is minimised. The voices and interpretations of those involved in the study are the key to understanding the phenomenon of interest and subjective interactions are the primary way to assess them. The findings from this inquiry are the product between the inquirer and the participants (Polit & Beck 2008:15). Constructivist theory acknowledges that researchers encode their understandings in language, hence communication is essential in all research (Ferguson 2005:[3]).

Constructivists acknowledge the participants' active role in the personal creation of knowledge, the importance of experience (both individual and social) in the knowledge creation process and the realization that the knowledge created will vary in its degree of validity as an accurate representation of reality (Doolittle 1999:[1]). According to Polit and Beck (2008:15) the naturalistic inquirer's reality is not fixed, but a construction of the individuals participating in the research. Reality also exists within a specific context in which many constructions are possible.

1.6.2 Assumptions

Burns and Grove (2005:728) define assumptions as statements taken for granted or considered true, even though they have not been scientifically tested. In studies, assumptions are embedded in the philosophical base of the framework, study design and interpretation of the findings (Burns & Grove 2005:39).

Table 1.1: Major assumptions of the constructivist paradigm and application

Type of assumption	Assumption	Application
The nature of reality	Reality is multiple, subjective and mentally constructed by individuals	-Recording of patient data in a A&E unit is a reality to ensure continuous optimal patient care -Inefficient recording may lead to medico-legal liability, patient neglect and ethical concerns -Ideally recording should be prompt, complete and comprehensive, but not time-consuming -The nursing record tool should be in a tick-off format to encourage completeness and enhance direct observation of patient data
Role of values in the inquiry	Subjectivity and values are inevitable and desirable	-The researcher is a nurse specialist in the A&E unit for which the nursing record tool has been developed, thus minimising the distance between the researcher and the participants in this study -The participants were colleagues and therefore had an interest in improving the current nursing record tool, thus maximising knowledge required to develop the tool -The participants' views and inputs were acknowledged and applied throughout the study, thus being the key to understanding the phenomenon of interest -Construction of the final nursing record tool was the product of the interaction between the researcher and the participants

Type of assumption	Assumption	Application
The relationship between the researcher and those being studied	The researcher interacts with those being researched and findings are the creation of interaction	All of the following interactions by the researcher and the participants enhanced the creation of a nursing record tool for the critically ill or injured patients admitted to the A&E unit: -Communication amongst A&E nurses confirmed that the nursing record tool used was not efficient -Consultation with various A&E nurses revealed gaps in the construction of the current tool which may lead to medico-legal liability and ethical concerns -Discussions led to the construction of a revised nursing record tool for the A&E unit - Consensus was reached pertaining to the content of the revised nursing record tool -Evaluation of the nursing record tool took place through input and feedback from experts -The researcher, through her initial knowledge, constructed a new nursing record tool by gaining new knowledge through the knowledge and sharing experience of participants
Best methods for obtaining evidence/knowledge	Seeks patterns	-The pattern of progression of patients from the pre-hospital environment through the A&E unit until transfer was covered in the nursing record tool
	Flexible design	-The tool can be utilised for both the critically ill or injured adult patients -The tool covers a wide spectrum of medical illnesses and physical injuries -The tool can be universally applied in other A&E units dealing with similar cases

Type of assumption	Assumption	Application
Best methods for obtaining evidence/knowledge (continue)	Emphasis on the whole	-The advanced life support principles of primary survey, resuscitation and secondary survey were systematically documented in the nursing record tool, which enhanced the emphasis on the assessment and management of the critically ill or injured patient as a whole -Emphasise the total care of the patient, starting from the incident until the patient is transferred -Envisage a multi-disciplinary approach, by including pre-hospital, hospital and other health care professionals as well as the patient's next of kin
	Focus on the subjective and non-quantifiable	-Knowledge, skills and experience of the researcher and the participants was engaged by contributing subjectively to the development of the tool
	Narrative information, qualitative analysis	-FGI provided qualitative data that was used during content analysis -Through analysis and synthesis new knowledge was developed based on new and old information
	Context-bound; contextualised	-Developed specifically for an A&E unit in a public hospital in Gauteng, which admits predominantly critically ill or injured patients (P1 and P2)
	Insider knowledge	-The researcher has been working in the A&E unit for approximately 13 years as a registered nurse and clinical facilitator -Knowledgeable, skilled and experienced researcher and participants participated in the research

Type of assumption	Assumption	Application
Best methods for obtaining evidence/knowledge (continue)	Emerging interpretations grounded in participants' experiences	-Foundations in the development of the nursing record tool was rooted in the combined experiences of the researcher and participants -Experiences were from a wide spectrum of emergency care, including the pre-hospital environment (road and air transportation), A&E unit and critical care units
	Focus on product and process	-A comprehensive nursing record tool, based on sound qualitative research principles was constructed

Source: Adapted from Polit and Beck (2008:15)

The researcher recognises that there are various types of constructivism and that constructivism is deeply rooted in philosophy. However, for the purpose of this research these aspects are not addressed.

1.7 Conceptual definitions

In the context of this research, and for simplicity and consistency throughout this dissertation, the following key concepts are defined as follows.

1.7.1 Accident and emergency unit

According to the Collins English Dictionary (2006:9) an accident is "*an unforeseen event or one without an apparent cause*" and "*a misfortune or mishap, especially one that causes injury or death*". The Collins English Dictionary (2006:511) defines an emergency as "*an unforeseen or sudden occurrence, especially of danger demanding immediate action*". The

definition found for an emergency in the Readers' Digest Oxford Dictionary (1994:478) reads "*a medical condition requiring immediate action*".

For the purpose of this study the A&E unit refers to a unit, situated in a Level III tertiary public hospital in Gauteng, which admits, manages, stabilises and refers critically ill or injured patients of all ages to appropriate specialists. These patients are then transferred to the appropriate critical care units or general wards in the hospital.

1.7.2 Accident and emergency nurse practitioner

Buppert (2008:26) states that in the states of Missouri and Montana a nurse practitioner is called an advanced practice nurse. The author defines such a practitioner as a nurse whose education goes beyond the basic education of a registered nurse. Buppert (2008:26) also adds that additional education must be attained in courses offered in a university setting or nationally recognized organization in fields like midwifery, anaesthetics and clinical specialists.

In the context of this study, the A&E nurse practitioner is a professional nurse practitioner registered as a nurse with the South African Nursing Council (SANC) who cares for patients involved in accidents and emergencies in the A&E unit under investigation. An A&E nurse practitioner should also have completed one or more of the following additional qualifications registered at the SANC:

- Medical and surgical nursing science: Trauma and emergency nursing
- Medical and surgical nursing science: Trauma nursing

1.7.3 Critically ill or injured patient

According to Nicol and Steyn (2004:15), a critically ill or injured patient refers to a walking patient or one on a stretcher who, due to his or her illness or injury, exhibits altered vital signs, which include a decreased level of consciousness or signs of respiratory, cardiovascular or

neurological compromise. This definition will be used to define a critically ill or injured patient in this study.

1.7.4 Emergency care

According to the Department of Health (Regulation 48 of 2002) emergency care means the rescue, assessment and management of the care of an ill or injured person in an emergency situation. It also includes the continuation of the management and care during the transportation of the patient to or between health establishments/institutions. In the context of this study it applies to pre-hospital care delivered by emergency care practitioners, as well as medical care delivered in-hospital by the A&E unit staff.

1.7.5 Emergency care practitioner

According to the Department of Health in Regulation 432 (RSA 2005:4) an emergency care practitioner includes all persons registered in terms of section 17 of the Health professions Act (Act number 56 of 1974) as a paramedic with basic, intermediate or advanced life support skills. This includes all categories of paramedics working in the pre-hospital environment. The categories include:

- **Basic life support (BLS) paramedics:**

According to Regulation 432 (RSA 2005:4) this includes persons who obtained a certificate as basic ambulance assistant, a certificate as ambulance emergency care assistant or a certificate as basic life support paramedic from an approved institution. In this study these persons will be included under, and referred to as emergency care practitioners.

- **Intermediate life support (ILS) paramedics:**

According to Regulation 432 (RSA 2005:4) this includes persons who obtained a certificate in intermediate life support emergency medical care, a certificate as ambulance emergency assistant or a certificate as operational emergency care orderly from an approved institution. For the purpose of this study, these persons will also be included under, and referred to as emergency care practitioners.

- **Advanced life support (ALS) paramedics:**

According to Regulation 432 (2005:5) this includes persons who obtained a certificate in advanced life support emergency medical care, a certificate as a critical care assistant or a National Diploma in emergency medical care from an approved institution. For the purpose of this study, these persons will also be included under, and referred to as emergency care practitioners.

For the purpose of this study emergency care practitioners will include paramedics as well as doctors registered with the HPCSA and nurses registered with the SANC who work in the pre-hospital environment.

1.7.6 Environment

In the Collins English Dictionary (2006:523) an environment is defined as "*external conditions or surroundings*" and "*external surroundings in which a plant or animal lives, which influence its development and behaviour*". Environment is defined in the Merriam-Webster Online Dictionary (2007:[1]) as "*the circumstances, objects, or conditions by which one is surrounded*".

For the purpose of this study, the A&E environment is the unit in which the critically ill or injured patient is treated by the registered nurses and the multi-disciplinary team. The team and the patients are both influenced by their environment, and if this environment does not support advancement for both parties, it is regarded as a toxic environment.

1.7.7 Experts

For the purpose of this study, the definition of an expert by Jasper (1994:774) will be applied. According to Jasper (1994:774) an expert is a nurse who has developed the capacity for pattern recognition through high-level knowledge and skills, who has extensive experience in a specialist field, and who is identified as such by her peers. Two types of experts were involved in this study:

- Qualified trauma and emergency nurse practitioners registered with the SANC, with a minimum of two years' experience in the A&E unit
- Experts within the field of nursing record keeping that have been identified by RN in the clinical setting

1.7.8 Nursing record tool

Medical records, which include nursing records, are defined as "*a written or electronic account of a patient's medical history, current illness, diagnosis, details of treatments, chronological progress notes, and discharge recommendations*". (Thesaurus 2007). Such a nursing record tool is a legal document the patient is entitled to read.

Records are defined as "*all documents that provide evidence of what you were going to do, that you did it, and what happened when you had done it*" (Labcompliance 2007). Tool is defined as "*a tool used to collect and organise information, for example questionnaires, scales and tests*" (Labcompliance 2007).

A nursing record tool in this study refers to a document that contains information about the management of the critically ill or injured patients. This information is recorded in a quick, accurate and predominantly tick-off manner by the RN in the A&E unit, during the initial six hours following admission.

1.7.9 Level III hospital

Based on South Africa's National Health Act (Act 61 of 2003) classification of health establishments, the Department of Health (2006:10) derived the following preliminary definition of a Level III (tertiary) hospital. It includes a facility that provides in-patient services as well as specialist and sub-specialist care within the public sector. The hospital will have sub-speciality representation in at least 50% of Group 1 specialities listed in Annexure F. This definition was adopted in this study.

1.7.10 Triage

Triage comes from the French verb "trier," which means to "*sort, pick or select*" (Holleran 2003:87; Bruce & Suserud 2005:201). According to Caroline (1995:438) triage refers to the "sorting of problems or patients according to their degree of seriousness". Holleran (2003:87) provides a different definition by indicating that in medical terms, triage refers to the process of prioritizing medical care, treatment and transportation of patients. The Merriam-Webster Online Dictionary (2007:[1]) defines triage as "*the sorting of patients according to the urgency of their need for care*".

For the purpose of this study, triage refers to the process of assessing incoming patients in order to ensure that the most appropriate care pathway is used for the further treatment of patients according to their urgency and priority.

1.8 Research methodology

Methodology refers to the framework of theories and principles on which design and method are based (Holloway & Wheeler 2002:287). The methodology used in this study was qualitative research. This research was conducted by utilising a systematic, subjective approach. This qualitative approach was chosen to obtain the views and expertise from participants working in the clinical field, and to then, based on the data gathered, construct a nursing record tool that could be implemented in the A&E unit for documenting the management provided to critically ill or injured patients for the first six hours following admission to the A&E unit.

A detailed, more in-depth description of the methodology will be provided in Chapter 2.

1.8.1 Research design

The research design is a blueprint for conducting the study that maximises control over factors that could interfere with the validity of the findings (Burns & Grove 2005:211). The design guided the researcher to plan and implement the study so as to achieve the set aim and objectives (Burns & Grove 2007:553) and enhance the study's integrity (Polit & Beck 2008:764). With overall planning there will be better control in order to handle difficulties that may be encountered during the research.

In this study a design of this research was contextual, descriptive and explorative in nature (see Section 2.4).

1.8.2 Research method

Research is a process that begins with a problem and ends with the problem either resolved or addressed (Brink, Van der Walt & Van Rensburg, 2006:50). The research method includes the techniques used to structure the study and to gather and analyse the information in a systematic fashion (Polit & Beck 2008:765) in order to address the problem.

The research was done in two phases:

- **Phase 1:** Explorative phase
  - Step 1: Describe the components of a nursing record tool
  - Step 2: Reach consensus regarding the content and layout of the nursing record tool
  - Step 3: Compile a preliminary nursing record tool

- **Phase 2:** Evaluation phase
  - Step 1: Evaluate the preliminary nursing record tool
  - Step 2: Construct the final nursing record tool

See Table 1.2 for a brief overview of the research method utilised in order to reach the aim of the research.

Table 1.2: Research method

Phase 1: Explorative phase			
Objective: Explore the compilation of a nursing record tool			
Step 1: Describe the components of a nursing record tool			
Population and sampling	**Data collection**	**Data analysis**	**Trustworthiness**
Population Experts in the field of A&E nursing and record keeping **Sampling** -Non-probability sampling -Purposive sampling -Network sampling **Sample size** 9 participants	Naive sketch Focus group interview (FGI): -Audio taped -Field notes	Content analysis: -Content categorised, tabulated and reorganised -Literature control	Based on Guba's model of trustworthiness (Lincoln & Guba 1985) using four strategies: -Credibility -Transferability -Dependability -Confirmability Including: -Authenticity
Step 2: Reach consensus regarding the content and layout of the nursing record tool			
Population and sampling	**Data collection**	**Data analysis**	**Trustworthiness**
Population Experts in the field of A&E nursing **Sampling** -Non-probability sampling -Purposive sampling -Network sampling **Sample size** 9 participants	Informal discussion group -Peer consultation -Consensus -Field notes	Content analysis	Based on Guba's model of trustworthiness (Lincoln & Guba 1985) using four strategies: -Credibility -Transferability -Dependability -Confirmability Including: -Authenticity

<table>
<tr><th colspan="4">Step 3: Compile a preliminary nursing record tool</th></tr>
<tr><td colspan="4">The researcher used the data collected during Step 1 and Step 2 and compiled a preliminary nursing record tool</td></tr>
<tr><th colspan="4">Phase 2: Evaluation phase</th></tr>
<tr><td colspan="4">Objective: Evaluate the nursing record tool</td></tr>
<tr><th colspan="4">Step 1: Evaluate the preliminary nursing record tool</th></tr>
<tr><th>Population and sampling</th><th>Data collection</th><th>Data analysis</th><th>Trustworthiness</th></tr>
<tr><td>Population
Experts in the field of A&E nursing
Sampling
-Non-probability sampling
-Purposive sampling
Sample size
-8 participants</td><td>Peer consultation
-Utilise the nursing record tool for a minimum of three critically ill or injured patients in the A&E unit
-Written feedback on nursing record tool</td><td>Content analysis</td><td>Based on Guba's model of trustworthiness 1985) using four strategies:
-Credibility
-Transferability
-Dependability
-Confirmability

Including:
-Authenticity</td></tr>
<tr><th colspan="4">Step 2: Construct the final nursing record tool</th></tr>
<tr><td colspan="4">The researcher reconstructed the final nursing record tool based on the feedback and recommendations obtained from the experts during Step 1</td></tr>
</table>

Source: Adapted from Krefting (1991:214

1.9 Ethical considerations

The ethical considerations in this study focused on the rights of the participants of the focus group discussion. The Ethical Committee of the Faculty of Health Science at the University of Pretoria reviewed the proposal to protect the ethical rights of the participants. Ethical consent was granted (see Annexure A.1).

The researcher obtained ***informed consent*** from all participants who took part in phase 1 and phase 2 (see Annexure D). Participation was

voluntary, which means the participants could choose whether they wanted to participate in the study or not. The participants had the right to withdraw from the study at any time. This right is referred to as the ***right to self-determination*** (Burns & Grove 2005:751).

The individuals participating in this research were informed about the aim and objectives of the study as well as when and how information would be gathered. No information would be collected without their consent or knowledge. The participants were informed that the information would be utilised to construct a nursing record tool for an A&E unit. These participants were also made aware of the fact that the study may be reported on in a journal article once completed. This took their ***right to privacy*** into consideration (Burns *& Grove* 2005:747). All questions that the participants might have had concerning this study were answered, and high professional standards regarding all issues of ***confidentiality*** were maintained.

1.10 Significance and contribution of this research

The research may have considerable advantages for both the patients and the registered nurses in the A&E unit. Burns and Grove (2005:3) stated that nursing is accountable to society for providing quality, cost-effective care and for seeking ways to improve that care. The researcher believes that by improving nursing record keeping the standard of care given to the critically ill or injured patient could improve, as the nursing record tool provides prompts for the management of these patients.

Nursing records provide a trail of the patient's management in the A&E unit. If the proposed nursing record tool is utilised, one should be able to follow this trail more easily as it is set out in a logical and systematic order, leaving less opportunities for not including important findings or actions. If completed promptly and comprehensively, it may become easier for other health care professionals to follow the patient's progress

and also decrease the medico-legal hazards the registered nurse may encounter due to incomplete nursing notes.

The nursing record tool will be easy to use, thus encouraging newly qualified registered nurses to follow the systematic and standardised approach, which in turn may lead to improved quality of care delivery to the patients. In this manner not only the patients benefit from the newly constructed nursing record tool, but also the registered nurses.

The hospital is moving towards paperless documentation, thus encouraging electronic records. This nursing record tool could form the foundation for the development of the electronic data base.

1.11 Scope and limitations of this research

Although this research is primarily aimed at the development of a nursing record tool for critically ill or injured patients, the same tool could also lead to the enhancement of nursing record keeping in the A&E unit as well as an evidence-based record for future research.

Limitations can be seen as restrictions or weaknesses in research (Polit & Beck 2008:74). One of the limitations of qualitative research studies is the lack of generalisation of the findings that must be acknowledged (Holloway & Wheeler 2002:35). The limitation of this study is that the views of other health care professionals were not included in the development of the nursing record tool.
The nursing record tool is only applicable for use in the A&E unit of the hospital for which it was developed, and will not be used in other speciality units or wards. The nursing record tool is thus not developed for general use.

1.12 Layout of this study

The layout of this research consists of chapters and annexures.
The findings of this study were reported in five chapters. The organisation of the chapters is indicated in Figure 1.1.

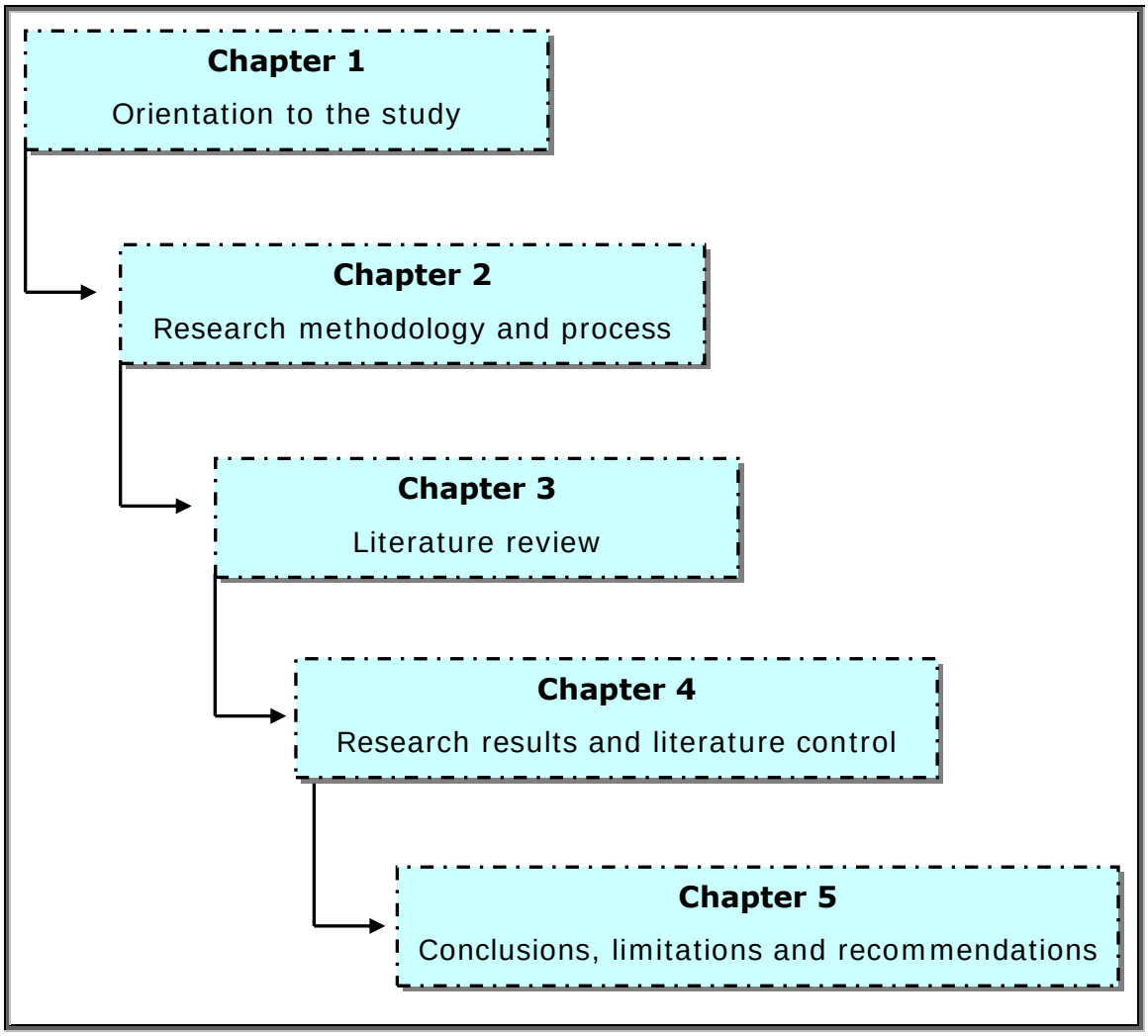

Figure 1.1: Schematic representation of the layout of the research

1.13 Conclusion

This chapter provides an orientation to the study. The background to the problem was described and research questions, aim and objectives were derived from a problem statement. The frame of reference used in this

study was provided and the research methodology was described briefly and summarised in Table 1.1. This was followed by a summary of the ethical considerations, significance and contribution as well as the scope and limitations of the research. The layout of the study provides a visual overview of the organisation of the chapters in the dissertation.

Chapter 2 provides a detailed discussion of the research methodology used in this research.

2. Research methodology and process

2.1 Introduction

In Chapter 1 an orientation to the study was provided. Chapter 2 is dedicated to the research methodology. The context for which the nursing record tool was constructed will be described briefly. Thereafter the research design and method that was followed in order to reach the aim of this study will be discussed in depth.

2.2 The context of the study

The context for which the nursing record tool was constructed consists of an A&E unit of a tertiary public hospital (teaching hospital) situated in Gauteng. The hospital, a Level III tertiary hospital, is a multi-disciplinary teaching hospital. The hospital has 832 beds, including 92 critical care and high care beds. The critical care and high care beds include 44 adult critical care beds and 12 high care beds, 29 neonatal critical care beds and seven paediatric critical care beds (Van Niekerk 2007).

The A&E unit is a 40-bed ward, which includes six adult and one paediatric resuscitation bed, as well as two critical care beds and four high care beds. The allocation of the critical care and high care beds was derived from the shortage of bed space in the hospital and the fact that more than 1 000 patients per month remain in the A&E unit for more than four hours (see Annexure E.1). The hospital (2007) statistics indicate that patients remain anything from 2 hours to 14 days in the A&E unit.

The majority of patients admitted to the A&E unit are critically ill and injured patients of all ages with diagnosed or undiagnosed problems of

varying complexity. The patients are triaged based on the acuity level of their illness or injury, and are otherwise referred to as priority 1 (P1) and priority 2 (P2) patients (see Annexure E.2). Priority 3 (P3) patients are referred to the district hospital or local clinic, except for exceptional cases such as orthopaedic emergencies. In the A&E unit of the hospital where the study was done, the patient population and conditions vary as follows:

- Critically ill or injured patients classified as P1 or P2 patients due to a medical condition or traumatic incident, which is life or limb threatening. Nicholl & Munro (2000:955) note examples of such patients as patients with:
    - an airway obstruction,
    - chest injuries,
    - head injuries,
    - hip or pelvis fractures,
    - stroke,
    - myocardial infarction,
    - respiratory distress and
    - other single/combined system involvement illnesses and/or injuries
- Patients from all ages groups
    - The adults patient (age ≥12 years to end of adult life)
    - The paediatric patient (age < 12 years including the newborn)

2.3 Research methodology

A qualitative research methodology was utilised. According to Coates (2004:329) qualitative research is less widely valued as a source of evidence when compared to quantitative research. Coates is also of the opinion that in nursing qualitative research may often be the most suitable approach, depending on the nature of the research. Many of the characteristics of qualitative research, which is seen as strengths by qualitative investigators, are thus viewed as weaknesses by those who do not subscribe to this methodology (Coates 2004:331).

Despite this view, the researcher chose this approach because of the nature of this study. In Phase 1 (Step 1) of this study qualitative research was conducted by means of a naïve sketch and a focus group interview (FGI). The FGI was conducted to gain a better and clear understanding of the opinions based on the knowledge, skills and experiences of A&E nurse practitioners working in the A&E environment as well as experts regarding nursing record keeping. A qualitative approach was also used in Phase 1 (Step 2) of the study. During this phase an informal group discussion was held to discuss and reach consensus on the content and layout of the nursing record tool. During Phase 2 (Step 1) the A&E nurse practitioners were requested to evaluate the nursing record tool in the clinical setting (real-life situation) and then give feedback on the preliminary nursing record tool (see Annexure B.2). The qualitative data and feedback on the nursing record tool was used to compile the final product (Phase 1, Step 2).

2.4 Research design

The research design refers to the overall plan for collecting and analysing the data or, as defined by Burns and Grove (2007:537), it is the 'blueprint' of the research project. The design guided the researcher to plan and implement the study so as to achieve the set goals. The design of this research was explorative, descriptive and contextual in nature.

2.4.1 Explorative nature of the research

The nature of the research was explorative during both phases of the research. Exploration was done in order to:

- satisfy the researcher's curiosity,
- have a better understanding of the phenomena,
- plan and implement a research methodology to construct the nursing record tool, and
- monitor and reflect on the implemented actions.

The research had to be explorative in nature as this approach assisted the researcher in making use of the A&E nurse practitioners working in the A&E, who also had knowledge, skills and experience, to assist in the construction of the nursing record tool. This design also ensured that the researcher and the A&E nurse practitioners were able to acquire new insights into the full nature of the challenges in constructing the nursing record tool.

This explorative design was used throughout the research process by exploring the literature on relevant issues regarding the research topic in order to verify or contradict the research findings. This implied that the researcher was willing to study new ideas and possibilities, and would not allow predetermined ideas to direct the research. The researcher used **bracketing**, a "*qualitative research technique of suspending or laying aside what is known about an experience being studied*" (Burns & Grove 2007:532), in an attempt to suspend her own preconceptions and ensure that the phenomenon was studied with "fresh eyes" (Todres & Holloway 2006:229).

2.4.2 Descriptive nature of the research

A descriptive design was used during the two phases of the research. Babbie and Mouton (2001:80) and Burns and Grove (2007:240) state that the major purpose of many social scientific studies is to accurately portray the characteristics of persons, groups, situations, events and/or the occurrence frequency of certain phenomena as they naturally happen.

During Phase 1 (see Table 1.2) the views of the A&E nurse practitioners and the recording specialists regarding the components that should be included in the nursing record tool were obtained. During Phase 2 the A&E nurse practitioners were involved in the evaluation of the nursing record tool (see Table 1.2), thus providing descriptive feedback.

The descriptive nature of this research also refers to the systematic selection of literature relevant to the research methodology and research topic throughout the phases of the research. This approach was also

applied by providing conceptual definitions (see Section 1.7), indicating the sample selection and size, and describing the data collection and data analysis procedures (see Section 2.5.1.4) in detail (Burns & Grove 2007:240-241).

2.4.3 Contextual nature of the research

A contextual design was used throughout the two phases of the research. According to Babbie and Mouton (2001:272) the researcher should aim to describe and understand the events in the concrete, natural context in which they occur. The context in which healthcare practice takes place can be seen on one level as infinite as it takes place in a variety of settings, communities and cultures that are influenced by, for example, economic, social, political and historical factors (McCormack, Kitson, Rycroft-Malone, Titchen & Seers 2002:94).

In this research, the term context is used to refer to the A&E unit in a public tertiary hospital for which the nursing record tool was constructed. The assessment and actions implemented by A&E nurse practitioners in the A&E unit are specifically based on principles as applied in this type of context. According to the Emergency Nurses Association (ENA) based in the United States, it involves the "assessment, analysis, diagnosis, outcomes identification, planning, implementation of interventions and evaluation of human responses to perceived, actual or potential, sudden or urgent, physical or psychological problems that are primarily episodic or acute" (ENA 1999:[5]).

The context is therefore unique. The nursing process includes a systematic collection of data concerning a patient's actual risk for health problems and needs (ENA 2001:21). Recording forms an essential part of the nursing process. In this study it refers to extensive recording of the pre-hospital, A&E unit and discharge notes.

This research took place in the South African context and was restricted to the A&E unit of a Level III tertiary public hospital. The research is therefore not representative of other public or private A&E units in South

Africa. In addition, the views and experiences described in this study are based on those of the A&E nurse practitioners working in this context. These A&E nurse practitioners attached specific meanings to their own experiences in the context (Morse 1994:106), and the meanings are therefore context-specific and context-bound.

2.5 Research method and process

The research method includes a discussion of the phases of the research with reference to the population, sample plan, data collection techniques and data analysis as it applies to each phase, in other words the process that was followed. The research process is schematically presented in Figure 2.1.

The study consisted of two phases, namely:

- Phase 1: Explorative phase
- Phase 2: Evaluation phase

Each phase and its realisation in this study will be described in depth.

Phase 1: Explorative phase

Phase 1 consisted of three steps (see Table 1.2). Each step will be discussed with reference to the objective, population and sampling, data collection techniques, analysis and trustworthiness (see Sections 2.5.1 to 2.5.3).

2.5.1 Step 1

The objective of Step 1 was to describe the components of a nursing record tool for an A&E unit in a public hospital in Gauteng.

2.5.1.1 Population

Population is defined as "*all elements (people, objects, events, or substances) that meet the sample criteria for the inclusion in a study*" (Burns & Grove 2007:549).

The explicit selection criteria for the participants included:

- A&E nurse practitioners working in public A&E units for a minimum of two years
- A&E nurse practitioners working in private A&E units for a minimum of two years and who have been involved in developing similar nursing record tools for the private sector
- Clinical facilitators involved in the field of A&E nursing
- Lecturers in A&E nursing in Gauteng
- Experts in the field of nursing record keeping

This heterogeneous group was combined as the participants could provide a diversity of insight, knowledge and experience regarding the components that should be included in a nursing record tool for an A&E unit.

The population remained the same throughout the research.

2.5.1.2 Sampling

Sampling is the process of selecting a portion of the population to represent the entire population so that inferences about the population can be made (Polit & Beck 2008:339). Non-probability samples are usually used in qualitative research, as was done in this research. The purpose of this study was never to generalise the results and that meant that non-random sampling could be used (Curtis & Redmond 2007:33). The method used to select the sample in this research therefore was non-random. Although the researcher was aware of the fact that this type of sampling was less likely to produce accurate and representative samples (Polit *& Beck* 2004:292), the participants were selected from different tertiary

hospitals in Gauteng to prevent bias and to increase sample representativeness.

Purposive and network (snowball) sampling was utilised during Step 1. This enabled the researcher to select the specific participants who could provide the most extensive information about the content to be included in a nursing record tool for an A&E unit (Burns & Grove 2007:344; Somekh & Lewin 2005:43; Pope & Mays 2006:24).

Purposive sampling is described by Stommel and Willis (2004:302) as a type of non-probability sampling. Purposive sampling involves a "judgemental" or "selective sampling" by means of the conscious selection of participants (Burns & Grove 2007:344) to include in the focus group interview (FGI). Purposive sampling was used as participants were selected to the range within the total study population (Pope & Mays 2006:24). In addition, the researcher specifically selected all the A&E nurse practitioners working in the A&E unit for which the nursing record tool was developed. All the A&E nurse practitioners that adhered to the inclusion criteria were invited to participate in the FGI, as this could enhance ownership of the nursing record tool once it is implemented in the A&E unit. This sampling method was also used to select the lecturers involved in A&E nursing.

Network sampling, also referred to as snowball sampling takes advantage of social networks and the fact that friends tend to have characteristics in common (Burns & Grove 2007:547). Network sampling involves approaching a single participant to identify further participants that would fit the criteria set out for the participants (Burns & Grove 2007:346). This participants that met the inclusion criteria for the study. Thus a purposive sampling method was used and the sample size was expanded through network sampling (Burns & Grove 2007:346; Holloway & Wheeler 2002:124). This was specifically done to identify A&E nurse practitioners in the private sector as well as people regarded as experts in nursing record keeping.

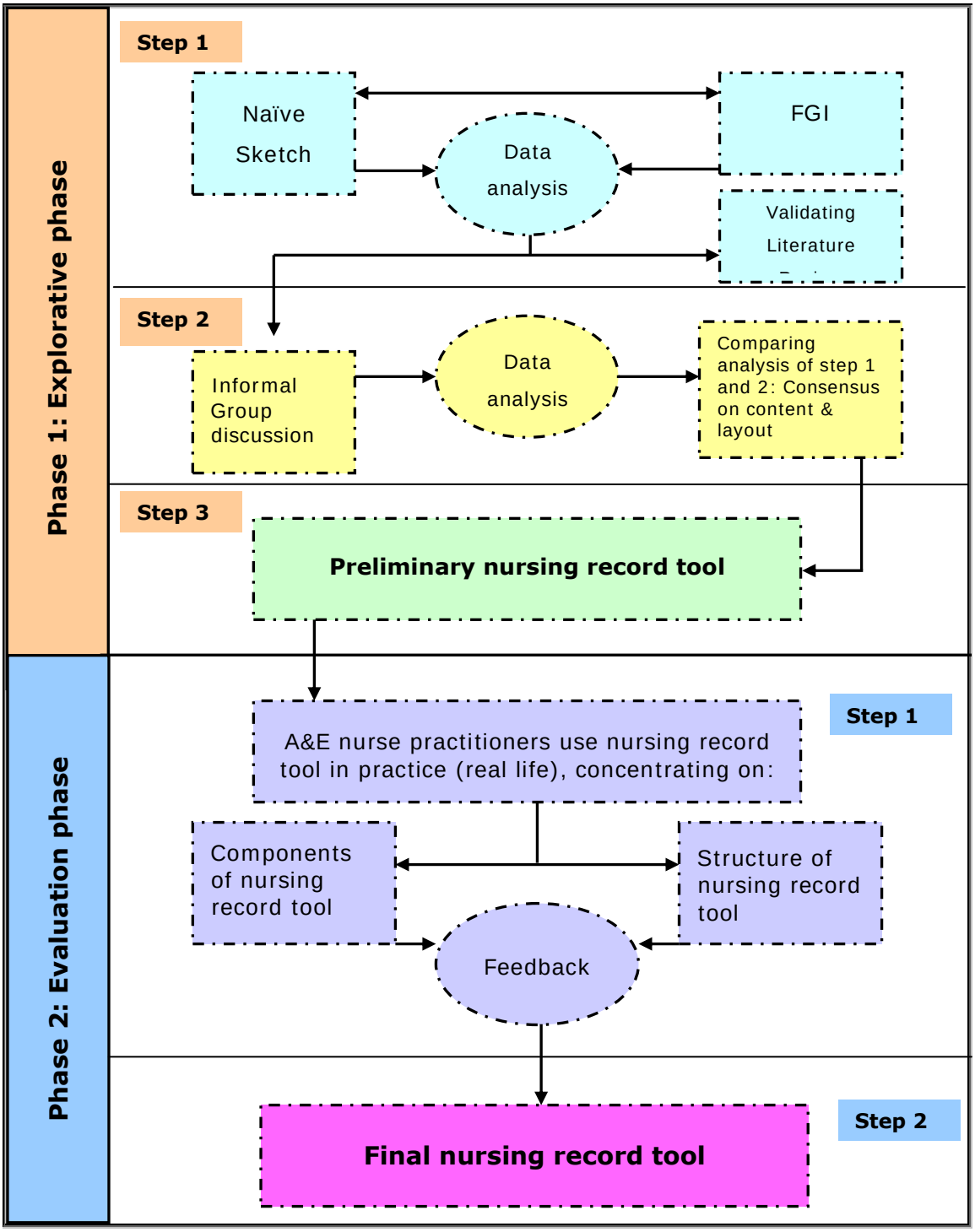

Figure 2.1: Schematic representation of the research process

Potential sampling of the focus group as it applies to this study has the following advantages as described by Pope & Mays (2006:26):

- Can encourage participation from those who are reluctant to be interviewed on their own
- Can encourage contributions from people who feel they have nothing to say or who are deemed "unresponsive"

Table 2.1: Phase 1: Step 1: Participants' expertise as they relate to the set criteria

Inclusion criteria	Experts
A&E nurse practitioners working in public A&E units for a minimum of two years	1
A&E nurse practitioners working in the A&E unit of the hospital for a minimum of two years	2
A&E nurse practitioners working in private A&E units for a minimum of two years and who have been involved in developing similar nursing record tools for the private sector	2
Clinical facilitators in the field of A&E nursing	1
Lecturers in A&E nursing	1
Experts in the field of nursing record keeping	2
Total	9

Holloway and Wheeler (2002:129) assert that a large sample in qualitative research does not enhance the research, and could even harm it as such a sample might lack the depth and richness of a smaller sample. The authors maintain that the need for large samples is rooted in quantitative research, where there is a need to generalise. The size of the sample depends on the nature of the problem and Isaksen (1998:5) recommends the use of five to ten participants. Burns and Grove (2005:543) suggest a number of between six and 12 participants for the FGI. Stommel and Willis (2004:284) are of the opinion that the optimal number of participants is between six and 10 participants.

A group of 12 participants were invited to attend the FGI. This was more than were required to participate in order to counter the inevitable problem of "no-shows" as suggested by Goodman and Evans (2006:357). The participants were contacted personally or telephonically, followed by a participation leaflet and informed consent (see Annexure D.1). A follow-up telephone call to remind them of the purpose and importance of the FGI and the time, date and place of the meeting was scheduled two days before the meeting, which could decrease the number of "no-shows" as described by Goodman and Evans (2006:357), Holloway and Wheeler

(2002:114) and Reiskin (1992:199). Of the 12 participants who were invited, 10 accepted the invitation. On the day of the FGI nine of the participants arrived and took part in the FGI (see Table 2.1).

Although various authors (Stommel & Willis 2004:284; Pope & Mays 2006:24) suggest that more than one FGI should be conducted, the researcher is of the opinion that based on the fact that peer discussions as well as peer evaluation of the nursing record tool was conducted (see Table 1.2), one FGI was adequate for this study.

2.5.1.3 Data collection techniques

Two data collection strategies were utilised to reach the objective of Step 1. These strategies included a naive sketch and a FGI. These techniques were used on the same day with the same participants. The naive sketch was done before the FGI was started.

a) Skilled independent facilitator

A skilled independent facilitator was asked to facilitate the process. This was done to ensure that ideas within the focus group were stimulated and the group allowed to build on responses of others, raise their own questions and question one another (Hollis, Openshaw & Goble 2002:6). The lack of an efficient facilitator could result in less assertive group members not fully participating and dominant group members taking over (Bowling 2006:395). The researcher had no previous experience as facilitator, and therefore decided to use an independent facilitator who had vast experience in FGI techniques to lead the session.

The FGI was conducted by an independent facilitator as suggested by Krueger (1994:100;103). This person was a psychiatric nursing specialist as well as a competent interviewer with the following skills:

- Comfortable and familiar with group processes
- Previous experience of working with groups
- Training in and knowledge of group dynamics
- Excellent communication skills

- Mild and unobtrusive control over the group
- Ability to maintain group enthusiasm and interest in the subject
- Curiosity about topic and participants
- Respect for participants and acknowledgement of their expertise
- A friendly manner and sense of humour

An independent fieldworker was used during the FGI and the rules as set out by Krueger (1994:124-125) were explained to her. The fieldworker had to take full responsibility for all the arrangements regarding the venue, equipment and refreshments provided during the FGI. The morning before the interview she was asked to arrange the allocated venue in such a way that all the participants, including herself and the independent facilitator, would be seated in a comfortable way.

On the day of the naive sketch and FGI, the independent facilitator welcomed all the participants and thanked them for their participation in advance. She then gave a brief overview of the topic and the purpose of the research. She explained the process of the naïve sketch as well as the FGI and allowed time for questions.

b) Naive sketch

The open-ended question was written on a large paper and was visible to all on the wall of the room where the FGI was held. Before the start of the FGI, the independent facilitator asked all the participants to write down their main ideas on the topic and the question. The participants where then given 10 minutes to write down their own ideas on the topic, after which the papers they wrote their ideas on where taken in by the facilitator.

The same unstructured, open-ended question that was asked during the FGI was asked during the naïve sketch, namely:

Describe the components that should be included in a nursing record tool that is developed for critically ill or injured patients managed in an A&E unit.

This data collection method is referred to as a naive sketch. The naive sketch was utilised to obtain descriptions of personal experiences regarding the research phenomena with sensitivity towards the social and cultural context of the research (Giorgi 1985:1). The naive sketch is a method of data collection similar to open-ended questions. The single most important characteristic of the naive sketch is that one open-ended question/statement is provided and the respondents are asked to complete it in writing (Burns & Grove 1997:368).

The purpose of the naïve sketch was to let the experts become aware of their knowledge, skills and experience within the field of A&E nursing and nursing record keeping and stimulate their thinking for the exploratory phase (FGI) as described by Vogel (2003:43).

In order to gather sufficient information the naive sketch was followed by the FGI. The same open-ended question was asked during the FGI. The independent facilitator tried to avoid the exploration of too many topics during the FGI by focusing on the open-ended question chosen for the naive sketch (Curtis & Redmond 2007:32).

c) Focus group interview

It is appropriate to start with the words of Curtis and Redmond (2007:25) who state that:

"Focus group theory is founded on the belief that we are a product of our environment and are heavily influenced by those with whom we interact."

The researcher Krueger agrees with this statement by Curtis and Redmond, as evident in the definition given of focus groups (FGI) by Krueger. Krueger (1994:10) is of the opinion that the FGI taps into

"human tendencies", and that attitudes and perceptions relating to concepts, products, services or programs are developed in part by interaction with other people. Krueger (1994:11) further states that "we are a product of our environment and are influenced by people around us."

For the purpose of this study the definition of Mansell, Bennett, Northway, Mead and Moseley (2004:79) is also included: "*Focus groups are not simply a discussion between people, but are focused interviews exploring interaction between participants.*" The authors continue by stating that the FGI is a one-sided relationship where the researcher gains important insight into the participants, while individual participants simply share their experiences (Mansell *et al*. 2004:81). This was the main aim of the researcher in this phase.

Curtis and Redmond (2007:25) state that, based on literature research, the use of FGI's was almost unknown within the social sciences prior to the 1950's. The use of this method of nursing research has increased substantially over the last 20 years (Happell 2007:18). Happell further maintains that it is usually difficult to determine whether the use of FGI in research is appropriate or popular, and that this is usually due to the lack of a rationale that is provided for the use of this method by researchers (Happell 2007:18).

A focus group interview is defined as an "interview with a group of individuals assembled to answer questions on a given topic" (Polit & Beck 2006: 500). This view is shared by Goodman and Evans (2006:353).

- **Advantages and disadvantages**

One advantage of the FGI is that it gives people an opportunity to discuss, formulate and modify their views and make sense of their experiences as in peer groups (Somekh & Lewin 2005:43). The FGI is not simply a quick and convenient way to collect data from several people simultaneously, but is explicitly designed to capitalise on group interaction to provide distinctive types of data (Pope & Mays 2006:21). It is regarded as an

efficient data-collection technique for exploring a topic (Stommel & Willis 2004:284).

Based on the advantages delineated by Bowling (2002:394), Goodman and Evans (2006:353), Pope and Mays (2006:22), Stommel and Willis (2004:284) and regarding the interaction between the participants, the following advantages of an FGI were regarded as relevant to this study:

- The FGI highlights the priorities, language and framework of understanding of the participants.
- It encourages the participants to develop their own analysis based on their experiences.
- It encourages a variety of communication methods, thus tapping into a wide range of different forms of experience.
- It is possible to gain insight into the group's knowledge and experience.
- It facilitates the expression of ideas and experiences that might be left underdeveloped in an interview.

The disadvantages include that there may be obvious and hidden "pecking orders", the history the participants have with each other, their possible animosities and the potential for confusion about the purpose of the meeting (Somekh & Lewin 2005:43). Because of the small size of the focus group and the nature of the group selection, the findings typically cannot be generalised (Stommel & Willis 2004:284). The generalisation of the outcome of the research (a nursing record tool for an A&E unit designed for the admission of critically ill or injured patients) was not the aim of this research. Some group members may be reluctant to reveal their "true" opinions in a group context (Stommel & Willis 2004:284). This disadvantage was overcome by using a naive sketch before commencing the FGI. This provided each participant with an opportunity to give input in the study as well as to enhance the crystallisation of the research (see Section 2.5.1.3b).

Confidentiality is not obtained in group settings, thus the presence of others can be inhibiting to some respondents. An attempt was made to overcome this disadvantage by making use of a naive sketch.

- **Rationale for using the focus group interview**

One of the primary reasons for the use of the FGI in this study was that this method enabled the researcher to access a large number of participants at one time (Verpeet, De Casterie, Van der Arend & Gastmans 2005:190). The use of this method also provided the researcher with a valuable opportunity to explore the views based on the knowledge, skills and experiences of experts in the field of A&E nursing and recording, on what the components and layout of the nursing record tool used for critically ill or injured patients should include. This objective is supported by Pope and Mays (2006:21).

A second important rationale for using the exploratory FGI was the fact that the researcher was concerned with not only identifying the views that the experts had in common, but also trying to uncover the differences in the participants' views and experiences during interaction with each other. The researcher also decided on this method because of the intricacy involved in the assessment of the critically ill or injured patient, and the need for new information. These rationales are consistent with the views of Curtis and Redmond (2007:27) and Mansell *et al*. (2004:81).

A third reason for using the FGI was derived from Osborne's (1957:229) recommendation that the results of the group will be superior to those of individuals if the problem is clearly stated and the participants are prepared. In research literature Osborne is widely cited due to his ground-breaking work in the field of brainstorming with group discussions (Rossiter & Lilien 1994:62).

- **Venue**

A central and accessible venue was chosen in order to make travelling distances less (Goodman & Evans 2006:357). The venue was also chosen because it ensured a non-threatening environment where the participants

could feel free to express their views and opinions (Happell 2007:21; Holis *et al*. 2002:2). The venue was quiet with a round table that allowed the members to be seated around it, therefore being able to see one another (Pope & Mays 2006:26). Comfortable chairs and snacks were provided in order to create a pleasant and relaxed atmosphere (Bowling 2002:396).

- **Participant invitation**

The researcher invited all participants telephonically to participate in the FGI. The date, time, venue and purpose of the FGI was communicated to all. The participants were contacted again two days prior to the FGI to remind them of the importance of the FGI. This was done in order to prevent large numbers of participants not showing up for the FGI as the researcher was aware that this aspect is one of the weaknesses of using a FGI (Curtis & Redmond 2007:30).

- **Skilled independent facilitator**

The researcher arranged for a skilled independent facilitator to facilitate the FGI because of her own lack of experience in facilitating groups (Mansell *et al*. 2004:83). The facilitator hails from a psychological and educational background and was therefore skilful enough to facilitate the FGI (Curtis and Redmond 2007:29). During the planning phase of the FGI the researcher met with the facilitator to confirm the aim of the FGI and to clarify the questions that were to be asked in the FGI (also see Section 2.5.1.3a).

Authors such as Stommel and Willis (2004:283) and Goodman and Evans (2006:359) refer to the facilitator as a moderator. The concept of independent facilitator was adopted for this study.

- **Conducting the focused group interview**

The session was relaxed (Pope & Mays 2006:26). In her opening remarks the facilitator extended a hearty welcome to all the participants, thanking each one for his/her willingness to participate in the FGI (Goodman & Evans 2006:359). An overview of the topic and outline of the purpose of the research was provided and the participants were allowed to ask

questions. This was done in accordance with the descriptions provided by Pope and Mays (2006:26). The participants were encouraged to talk freely during the group discussion (Bowling (2002:396).

The fieldworker was introduced to the group and the purpose of her taking notes was explained. The fieldworker sat outside the group and took field notes throughout the session (Stommel & Willis 2004:283).

Ground rules were set for the period of the interview. The independent facilitator reinforced the fact that the issues discussed would remain confidential to the participants and the researcher and that only one person was to speak at a time (Goodman & Evans 2006:359).

The same question as was asked during the naive sketch was asked during the FGI (see Section 2.5.1.3b). The facilitator was responsible for ensuring that the established questions were discussed and that all the participants took part in the discussion. The facilitator was aware of cues that participants provided and encouraged them to share their thoughts. Two essential techniques, namely pausing and probing, were used throughout the group discussion and were helpful in soliciting additional information from the group.

The independent facilitator used the following principles throughout the FGI as suggested by Goodman and Evans (2006:359):

- Encouraged participation by inviting group members to comment on an individual's views
- Promoted debate by asking questions such as "do you agree?" and "why do you not agree with this statement?"
- Probing was used to obtain more detail on points of interest
- Points were reflected on to confirm that these were understood
- Points were summarised to check that all the areas of interest had been covered
- Avoided expressing her own views or opinions

At the end of the discussion a summary of the discussion was provided, which took approximately 10 minutes. This provided an opportunity for the participants to offer further comments (Goodman & Evans 2006:359)

as well as to verify the content of the discussion. Timekeeping was regarded as essential as it showed respect for the participants' time (Goodman & Evans 2006:359). The FGI lasted three hours and was consistent with the timeframe allocated on the participant information leaflet (see Annexure D.1), with one break in between during which refreshments were served.

- **Recording the information**

An independent fieldworker was used to make notes during the FGI. The session was tape recorded (Goodman & Evans 2006:360; Pope & Mays 2006:27; Stommel & Willis 2004:283). Permission to audiotape the session was confirmed (Goodman & Evans 2006:359). Two audiotapes were used during the session in case one audiotape did not record the interview and both audiotapes were visible.

The data obtained via the audiotape was described (Goodman & Evan 2006:360). The data obtained during the naïve sketch and FGI was used during the data analysis.

2.5.1.4 Data analysis

The qualitative data collection techniques used (naïve sketch and FGI) dictated an inseparable relationship between the data collection and data analysis. Therefore, as qualitative data were collected, qualitative data analysis principles were followed.

The data analysis was regarded as a process of bringing order, structure and meaning to the mass of collected data obtained during the informal group discussion (De Vos, Strydom, Fouché & Delport 2002:339). Although software programmes are available for data analysis, their acquisition was regarded as unnecessary as handwritten notes could also be used. It was decided to do the coding by hand, written in the margin of the transcribed pages (see Annexure F.1). The data was analysed by the researcher as well as a skilled qualitative researcher.

Notes that were made during the FGI were used as units of analysis (Graneheim & Lundman 2004:105). The field notes, transcribed notes of the FGI and written feedback obtained during the naïve sketch were read and a coding system for the major topics and ideas was developed (Holloway & Wheeler 2002:116). This coding system was used to transform the raw data into a standardised form (Polit & Beck 2004:573).

A large margin was left on the notes for coding and categorising (Holloway & Wheeler 2002:116). First, the notes were read to obtain a sense of the comprehensiveness of the concerns expressed by the participants. The notes were read a second time. Then they were read for a third time, and the most important concepts written in the left-hand margins, while the concerns were noted in the right-hand margins. The notes regarding the concepts and concerns were read again. The analysers (researcher and external coder) then read through the concepts noted in the left-hand margins, and selected the themes. Throughout the analysis, reflective remarks were made. These were written on separate pieces of paper, or in the right-hand margins of the transcriptions, but in different colours. Making these notes and remarks assisted in interpreting and connecting parts of the transcripts, and in retaining a thoughtful stance (Burns & Grove 1997:55).

According to Polit and Hungler (1997:329) coding is used to transform the raw data into a standardised form. Graneheim and Lundman (2004:106) discuss the confusion surrounding terms used in qualitative research and explain the concept "meaning unit" as follows: A "meaning unit" has been referred to as a content unit or coding unit (Baxter 1991), an idea unit (Kovach 1991), a textual unit (Krippendorff 1980), a keyword and phrase (Lichstein and Young 1996), a unit of analysis (Downe-Wamboldt 1992), and a theme (Polit and Hungler, 1991)."

In this study, the term "theme" was used to refer to the first level of coding. At this level, an attempt is made to shed light on the specific "areas of content" but with little interpretation. Graneheim and Lundman (2004:106) define "areas of content" as follows: "*For level one coding,*

words, sentences or paragraphs that related to each other through their contents and context were considered".

In this study, the concept "cluster" was used to refer to the second level of coding. Level three coding or axial coding was done to link the themes to the clusters and explain the meanings inherent to the situation (Burns & Grove 1997:534; Graneheim & Lundman 2004:106; Holloway & Wheeler 2002:159). Concerning this study, the third level of coding is referred to as "categories". A category answers the question: 'What?' Clusters and themes within a category share a commonality, and therefore a category can be identified as a thread that runs throughout the codes (Graneheim & Lundman 2004:107).

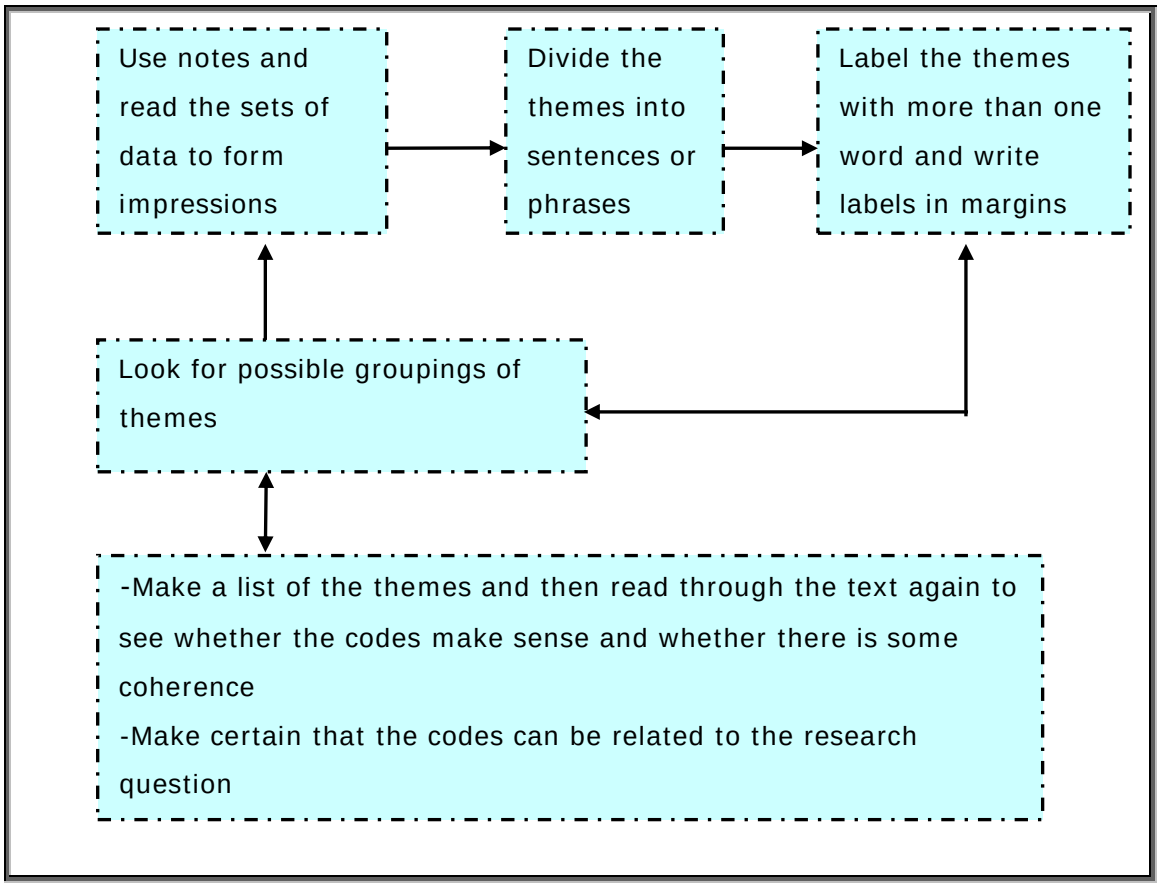

Figure 2.2: Process of coding (adopted from Henning, Van Rensburg & Smit 2004:104)

The process of coding was followed step by step (see Figure 2.2). By applying this process to raw data, the data was systemised (Henning *et al*.

2004:107). Coding entails the recognition of repetitive words, phrases, themes and concepts or the recognition of words, phrases, themes and concepts with similar meanings. This was done by paraphrasing the participants' words in order to identify themes (first level coding). By incorporating the themes into clusters (second level coding) and categories (third level coding) they were refined (Holloway & Wheeler 2002:239, 240). By comparing the themes to the whole, surplus themes were eliminated. The themes could then be represented visually. Figure 2.2 illustrates the process of coding.

2.5.1.5 Strategies applied to enhance trustworthiness

Rolfe (2006:304) states that the issue of quality in qualitative research has troubled nursing for at least a quarter of a century. Sandelowski and Barroso (2002:[2]) observed that:

"Scholars across the practice and social science disciplines have sought to define what a good, valid, and/or trustworthy qualitative study is, to chart the history of and to categorize efforts to accomplish such a definition, and to describe and codify techniques for both ensuring and recognizing good results."

The aim of trustworthiness in a qualitative inquiry is to support the argument that the inquiry's findings are "worth paying attention to" (Lincoln & Guba 1985:290). The authors Streubert-Speziale and Carpenter (1999:333) define ***trustworthiness*** as establishing the validity and reliability of qualitative research. Qualitative research is trustworthy when it accurately represents the experiences of the study participants. Rather than focussing on reliability, this study focussed on trustworthiness (Creswell 1998:197), and rather than seeking internal and external validity, the focus was on the ***authenticity*** of data.

The authenticity and trustworthiness of the research was enhanced by meeting evaluation criteria such as confirmability, meaning in context, recurring patterning, saturation, credibility and transferability (Morse

1994:105-7). In addition, Janesick (2000:379) is of the opinion that crystallisation offers a better lens through which to view qualitative research designs. The process of crystallisation entails viewing the data from different perspectives. According to Denzin and Lincoln (2000:5) the central image of qualitative inquiry is crystallisation and not the concept of triangulation.

Guba's model of trustworthiness (Krefting 1991:215-217) was combined with the principles of crystallisation and authenticity, as it applies to qualitative research, in order to ensure the trustworthiness of the qualitative approach used in Phase 1 of the study. The concepts of credibility, dependability, transferability and confirmability were used to describe the various aspects of trustworthiness.

a) Credibility

Credibility addresses the question of whether the research has established confidence in the truth of the results, and deals with the question of how the results of the research match the reality of the context of the study (Lincoln & Guba 1985:296; De Vos *et al.* 2002:351).

Credibility was addressed by doing an extensive literature review through all three phases of the research. Prolonged engagement was ensured as the researcher has been involved in the development of the original nursing record tool and has been working as an A&E nurse practitioner in the A&E unit for ten years.

During the data analysis stages of the research, a second analyst was employed to co-code the data and a third independent data analyst authenticated the coded data (Holloway & Wheeler 2002:173; Morse 1994:119). Member checking was enhanced through the involvement of peer consultation in the data analysis stage of the research (see Phase 1, Step 2), in which they read through the field notes and transcribed notes, and then discussed the data analysis through critical reflection (Graneheim & Lundman 2004:109; Morse 1994:105), which in turn enhanced credibility.

b) Dependability

The researcher ensured that a dense description of the research design and methodology was provided. Field notes, personal logs and audiotapes were kept throughout the research. Crystallisation was enhanced by comparing the independent coder's data analysis with the researcher's own version as well as using more than one source of data. The code-recode procedure was followed by means of a consensus discussion between the coder and researcher.

c) Transferability

Transferability refers to the degree to which the findings can be applied to other contexts or with other respondents (Babbie & Mouton 2001:277; De Vos *et al.* 2002:352). The nursing record tool was specifically developed for a public A&E unit and specifically for critically ill or injured patients. However, this does not necessarily mean that the findings of one specific context cannot be applied in other contexts. One should be able to utilise the nursing record tool in other A&E units of public hospitals and/or private hospitals. The aim of the research was not to generalise the findings, but to address a specific challenge in a specific context. The transferability of the findings of this study will depend on the individual who wants to use it for future research (Graneheim & Lundman 2004:109).

d) Confirmability

Confirmability is the degree to which the results of the study are the product of the enquiry (Babbie & Mouton 2001:278). Confirmability was evaluated by seeking repeated evidence from the naïve sketch and the data obtained from the FGI as well as by making use of an extensive literature review, expert supervisors, peer consultation and two independent coders.

A summary of how the trustworthiness of the research was enhanced is summarised in Table 2.3.

2.5.2 Step 2

The objective of Step 2 was to reach consensus regarding the components and layout of the nursing record tool.

2.5.2.1 Sampling

Purposive sampling and network sampling, a non-probability sampling method in qualitative research, was used during Step 2. The researcher consciously selected the A&E nurse practitioners working in the A&E unit to participate in Step 2. Their participation was valued as the nursing record tool was developed for the A&E unit specifically and the researcher realised that the inclusion of these participants would increase the ownership of the nursing record tool once completed. This in turn would increase the probability that the nursing record tool would be used in the A&E unit once completed.

Network sampling was used to identify two A&E nurse practitioners who have previously been involved in the development of similar tools for the private sector as well as an expert in the field of nursing record keeping. A summary of the participants involved during Step 2 is summarised in Table 2.2.

Table 2.2: Phase 1: Step 2: Experts contributing to the informal group discussion

Inclusion criteria	Experts
A&E nurse practitioners working in public A&E units for a minimum of two years	2
A&E nurse practitioners working in private A&E units for a minimum of two years and involved in developing similar nursing record tools for the private sector	1
Experts in the field of nursing record keeping	1
Total	4

2.5.2.2 Data collection technique

Data was collected by means of an informal group discussion. Group discussions between the experts and researcher were regarded as important as more ideas can be generated in groups, thus allowing for more choices. This increases the likelihood of higher-quality outcomes (Little-Stoetzel 2003:436). The generation of new and creative ideas was regarded as vital in the construction of the nursing record tool. The group, consisting of the experts in the field of A&E nursing (public and private) as well as a nursing record keeping specialist, used the informal group discussions as an opportunity to reach consensus regarding the findings obtained during the naïve sketch and FGI. This provided an opportunity for creative problem-solving to give inputs in the layout of the nursing record tool.

Brainstorming was created by AF Osborne (Kreitner & Kinicki 2007:390), who started with groundbreaking work in the field of brainstorming with group discussions. Osborne (1957:229) stated that the results produced by a group would be superior to the results produced by an individual. The informal group discussion was held mainly to reach consensus on the data analysis obtained from Step 1 and then 'brainstorm' the layout of the nursing record tool. Valuable data was captured during the group discussions.

2.5.2.3 Data analysis

Field notes were made during the informal group discussion. The content was analysed as discussed in Section 2.5.1.4.

2.5.2.4 Strategies applied to enhance trustworthiness

Consensus is defined by the Dictionary of the English language (2000:391) as *"an opinion or position reached by a group as a whole; general agreement or accord"*. Consensus means that all the group members can live with and support a decision regardless of whether they totally agree. In the informal group discussion, the group members

worked to support a final decision, and individual ideas and opinions were valued. The informal discussion and reaching of consensus was used to increase the trustworthiness of the findings of the analysis of the data obtained during Step 2.

The participants, as experts in the field of A&E nursing and nursing record keeping, enhanced the trustworthiness of the preliminary nursing record tool that was compiled based on the feedback obtained during this step (see Step 3).

2.5.3 Step 3

The objective of Step 3 was to compile a preliminary nursing record tool for the A&E unit. This step was conducted by the researcher and was based on the findings of Step 1 and 2 (see Section 2.5.1 and 2.5.2).

Phase 2: Evaluation phase

Phase 2 consisted of two steps (see Table 1.2). The steps will be discussed with reference to the objective, population and sampling, data collection techniques, analysis and trustworthiness as it applies to the research (see Sections 2.5.4 to 2.5.5.)

2.5.4 Step 1

The objective of Step 1 was to evaluate the nursing record tool.

2.5.4.1 Sampling

Purposive sampling was used to include the A&E nurse practitioners working in the A&E unit. A total of nine A&E nurse practitioners were contacted and invited to participate in the evaluation of the nursing record tool. This included the unit manager, which in turn enhanced the ownership of the nursing record tool. All nine the A&E nurse practitioners voluntarily took part in the evaluative phase of the research.

2.5.4.2 Data collection technique

The participants, regarded as peers, were asked to use the nursing record tool for the admission of a minimum of three critically ill or injured patients. Feedback concerning the nursing record tool was provided on the tool to enhance simplicity and ensure clarity of the feedback.

2.5.4.3 Data analysis

The suggestions and recommendations received were documented (see Section 4.2.4) and the nursing record tool was adjusted accordingly (see Annexure B.4).

2.5.4.4 Strategies applied to enhance trustworthiness

Trustworthiness was enhanced through the involvement of peers, namely A&E nurse practitioners working in the A&E unit. Their feedback and recommendations were regarded as valuable and meaningful. These experts were involved to not only enhance ownership of the nursing record tool, but also the trustworthiness of the research conducted.

2.5.5 Step 2

The objective of Step 2 was to construct the final nursing record tool for the A&E unit. This step was conducted by the researcher and based on the findings of Step 1.

2.6 Trustworthiness

Aspects of trustworthiness have been described during each phase. Table 2.3 summarises the application of these strategies as these have been applied throughout the study.

Table 2.3: A summary of the strategies utilised to ensure the trustworthiness of the study

Strategy	Actions	Application criteria
Credibility	Prolonged engagement	*Researcher profile:* -Actively involved in A&E unit for a period of 4 years as clinical facilitator -Various positions as A&E nurse practitioner in the emergency care environment over a period of ten years (pre-hospital, A&E unit, management and lecturer) *Expert profile:* -The A&E nurse practitioners involved in the process have been registered with SANC for more than two years -The nursing record keeping expert used in the research has written a book on the specific subject
	Persistent observation	-Consistently pursued interpretations in different ways -Followed a process of constant and tentative analysis
	Triangulation/ Crystallisation	Used more than one data collection technique -Naïve sketch -FGI -Informal group discussion -Written feedback
	Referential adequacy	-Made extensive field notes -Transcribed verbatim
	Peer debriefing	-Analysed data confirmed by peers -Discussed data analysis with critical friends
	Member checks	-Used independent coder -Used expert supervisors
Transferability	Thick transcription	-Provided rich, comprehensive description of data obtained -Provided in-depth description of research methodology and data collection technique
	Purposive sampling	-Purposively selected participants
Dependability	Dependability audit	-Kept personal logs and field notes -Used an independent coder
	Dense description	-Described research methodology in depth as well as the research process
	Triangulation / Crystallisation	Compared independent coder's data analysis with researcher's version to enhance correctness -Used more than one source of data (naïve sketch, FGI, informal group discussion and written feedback)
	Peer examination	-Data given to peers to review -Used independent coder -Used a critical friend to confirm the data

Dependability (continue)	Code-recode procedure	-Held a consensus discussion between independent coder and researcher -Involved peers to confirm the data collected
Confirmability	Confirmability audit	-Provided a dense description of the methodology and results -Included a literature control, more that one participant, co-controller and consensus meeting -Used independent coder -Used experienced supervisors
	Triangulation /crystallisation	-The researcher prevented over-involvement of own perceptions, background, views and interest by applying strict ethical guidelines and bracketing

2.7 Ethical considerations

In order to ensure high standards of research, ethical standards and measures are set to direct research. The research proposal was reviewed by the Research Ethics Committee of the University of Pretoria, Faculty of Health Sciences (see Annexure A.1). This was done to ensure that the rights and welfare of the participants involved were protected, that appropriate methods were used to secure informed consent and that the potential benefits of the investigation were greater than the risks (Burns & Grove 2005:199).

The conducting of research requires not only expertise and diligence, but also a high degree of honesty and integrity (Burns & Grove 2005:176). The researcher was responsible for conducting the research in an ethical manner.

In this section, a brief overview of the ethical issues regarding the study is provided.

Significant thought was given to the ethical considerations described by Bandman and Bandman (1988:67), Brink *et al* (2006:31-35), Burns and Grove (2005:176-210), Holloway and Wheeler (2002:47-66), Johnson and Long (2006:31-42) and Piper and Simons (2005:56-63) throughout the research.

2.7.1 Informed consent and autonomy

Burns and Grove (2005:193) state that obtaining informed consent is regarded as essential for the conduct of ethical research. Informed voluntary written consent was obtained from all participants. A participation leaflet accompanied the informed consent letter. This leaflet contained information regarding the research and enhanced the protection of the participants' human rights. The three fundamental principles that guide researchers, namely respect for persons, beneficence and justice (Brink *et al.* 2006:31) were adhered to. This leaflet included an informative letter for each participant that consisted of six important elements as indicated by Burns and Grove (2005:193-194). The elements included were:

- the title, purpose and objectives of the research,
- explanation of the procedures to be followed,
- risk and discomfort involved,
- benefits of the study,
- voluntarily participation and withdrawing from the study, and
- ethical approval.

The participants were ensured of their anonymity by a prominent statement in the letter that the data obtained from them might be reported in scientific journals, but that no information that could identify them as participants or their specific unit would be disclosed. Their rights of privacy and confidentiality would be strictly respected in any research reports.

2.7.2 Principle of beneficence

One of the most fundamental ethical principles of research is that of beneficence, which is encompassed in the maximum "above all, do no harm". It is the researcher's responsibility to secure the well-being of the participants (Brink *et al.* 2006:32). The risk of harm was minimal in the study as the researcher did not collect data relating to emotional or personal issues.

The risk/benefit ratio was considered in terms of whether the risks for the participants would be equal to the benefits for society and the nurse practitioners. There were no risks involved for the participants and the outcome of the research could benefit the A&E unit as well as the registered nurses involved in record keeping of critically ill or injured patients in the A&E unit for which the study was conducted.

2.7.3 Principle of respect for human dignity

This principle involved diminished autonomy, the right to self-determination, the right to full disclosure and the right to fair and equitable treatment.

Those individuals with diminished autonomy (in this research, each person who participated in the research) were protected by not having their identity disclosed in any way whatsoever.

The right to self-determination was guaranteed by ensuring the right of the participants to voluntarily participate in the research or to refuse to disclose information of any kind at any stage of the research. Participants could at any stage ask for clarification about the purpose of the research or any matter concerning the research. Had any person refused to participate, no means of coercion would be applied.

The right to full disclosure was never withheld at any time during or after the research. The full nature of the research, the participants' responsibilities, and the likely risks and benefits that could be incurred was fully disclosed in writing.

Each participant's right to fair and equitable treatment before, during and after his/her participation in this research, was ensured by adhering to the following measures:

- All the A&E nurse practitioners working permanently in the A&E unit were invited to take part in the research.

- Participants who declined to participate or who withdrew from the research did not suffer any ill effects whatsoever.
- All agreements between the researcher and the participants were honoured.
- Participants were treated with respect and courtesy at all times.

Other ethical considerations included managing the resources honestly and fairly, and acknowledging those who contributed guidance and assistance to this research project.

2.7.4 Publication of research results

The final report of the research findings is clear, accurate, objective – giving recognition to sources and people consulted, and admitting shortcomings. The respondents were informed about the findings, without impairing the principle of confidentiality, in order to express gratitude to and recognition of their participation and collaboration in the research process.

2.8 Conclusion

Chapter 2 outlines the research methodology and process implemented in this study. In includes an in-depth discussion of the objectives, population and sampling, techniques used during data collection and analysis as well as actions implemented to enhance the trustworthiness of the data collected throughout Phases 1 to 2. This is followed by a discussion on the specific ethical issues taken into consideration in the study.

In the next chapter a literature review on the content, as suggested by the experts in phase 1 and phase 2, and the validity of these suggestions will be discussed.

3 Literature Review

3.1 Introduction

This study is about developing a nursing record tool for critically ill or injured patients nursed in an A&E unit. This research was initiated after realising that the current tool used within the A&E unit where the study was done, was incomplete and needed to be revised.

Chapter 2 presented the proposed research methodology. In this chapter a literature review is done that relates to the context of this study. Due to the qualitative, explorative, descriptive and contextual nature of this study, literature will also be incorporated in chapter 4 to serve as literature control on study findings.

During the literature review the researcher came across the following statement that emphasises the need for change and improvement: "Today's healthcare delivery environment is marked by extreme turbulence and ever-increasing complexity", (Baker, Beglinger, Bowels, Brandt, Brennan, Engelbaugh, Hallock & LaHam 2000:98). This is consistent with the A&E unit for which the nursing record tool was developed. To understand this turbulent environment, it is important to take a closer look at the A&E unit and environment in which the critically ill or injured patient is managed.

3.2 The hospital

A&E units do not function alone or on their own, but form an important and interrelated part of a bigger hospital. The hospital referred to in the study is a level 3 (tertiary) academic hospital. This implies that the hospital provides in-patient services as well as specialist and sub-specialist care within the public sector. The hospital has sub-speciality representation in at least 50% of Group 1 specialities listed in Annexure F,

according to the classification of health establishments compiled by the Department of Health (2006:10). The A&E unit in this hospital is situated at one of the main entrances and serves as the starting point of entry for the critically ill or injured patient. A&E units are the front door of a hospital. The A&E unit of the hospital specialises in the treatment and care of priority one (P1) and priority two (P2) patients only. These terms will be discussed and defined in table 3.1 and section 3.3.2.

3.3 The A&E unit

The A&E unit is a unique environment with unique problems, including those pertaining to the documentation of the nursing care provided. It is a hectic turbulent environment in which minutes can be the decider between life and death. This is especially true when it comes to the assessment and life saving treatment of the critically ill or injured patient who is also sometimes referred to as a priority one (P1) patient. These P1 patients have a wide severity and variety of "concomitant" problems and present to the A&E unit in a non-uniform pattern any time of the day or night (Columb, Haji-Micheal & Nightingale 2003:459). Examples of such patients are mentioned and discussed in section 3.3.2.

The challenge in this hectic environment is to record all the treatment delivered to these critically ill and injured patients in a chronological sequence. Reddy and Spence (2006:649) define the A&E unit as fast-paced, information concentrated environments where the information needs of the multi-disciplinary team members must be addressed quickly and accurately. A&E units have also been described as units with a high patient turnover that leads to high levels of stress (Bruce & Suserud 2005:201). Gilboy (2002:36) notes that caring for the critically ill or injured patient of today, keeps the A&E health care professionals very busy and that this has a mounting effect on the recording requirements in the A&E unit that could also contribute to these stress levels. It is in this turmoil and challenging environment (A&E unit) that the critically ill or

injured patients' assessment starts and with this assessment also the recording of everything that is done for these patients.

3.3.1 The accident and emergency unit as the front door of the hospital

Around the world A&E units are referred to as the front door of the hospitals they are situated at, like in the case of Addenbrooke hospital that forms part of the Cambridge University Hospital (Cambridge University Hospital National Health Service (NHS) 2008:[1]. The Oxford Radcliffe Hospitals Trust refers to the A&E unit as the starting point of the pathway that the patient has to follow during hospitalization. This Trust describes the A&E unit as "the front door to the hospital system" (Oxford Radcliffe Hospitals Trust 2008:[1]). Referral to the A&E unit as the front door can be found in some post advertisements for doctors by the South Tyneside NHS foundation in the United States of America (South Tyneside NHS foundation 2008:[1]). In these advertisements emergency medicine is described as an exciting specialty that practices in the front door of the hospital. These advertisements refer to the A&E unit as the patient's first port of call into a hospital.

The critically ill or injured patient enters the hospital at this front door and management is started immediately.

3.3.2 The type of patient admitted in the accident and emergency unit

Woloshynowych, Davis, Brown, Wears and Vincent (2006:8) state that A&E units are complex and difficult environments where delivering medical care differs substantially from more traditional settings. Although an important and interrelated part of the hospital, the A&E unit's focus on patient care delivered is completely different from the other wards and critical care units (CCU) of the hospital. Factors influencing the difference include the dynamic environment with a high throughput of patients, presenting with considerable variations in their clinical stability (Williams & Crouch 2006:160).

As mentioned earlier in section 3.2, the A&E unit is classified as a tertiary or level 3 unit and therefore specialises in the management and care of priority one (P1) and priority two (P2) patients only.

To define the different priorities, it is advisable to start with an example of the pre-hospital dispatch protocols for calling out ambulances to the critically ill or injured patient. When referring to the dispatch of an ambulance in the USA to the different types of priority patients, the Department of Public Health Emergency Medical Services Agency's protocol (Volanti & Andrews 2008:4) defines the type of call as follow:

- Priority one (P1): A patient with potential life-threatening emergency needs help. An advanced life support ambulance will respond with sirens and lights on.
- Priority two (P2): Patient with non-life-threatening emergencies. An advanced life support ambulance will respond with sirens and lights on.
- Priority three (P3): Non-emergency calls. No advanced life support needed, and no lights or sirens to be used.

The priority system defined by Heyns (2008:46) is the system currently used in the hospital. A priority one (P1) patient requires immediate management, followed by a priority two (P2) and then a priority three (P3) patient. Priority four (P4) patients are regarded as unsalvageable or "dead on arrival" (Heyns 2008:46). The only other definitions found to be close to the priority definitions used in the hospital, are the definitions provided by the Department of Health of the United Kingdom (UK). These definitions were set out in a document used to streamline patients into one of four services delivered at A&E units in the UK (Department of Health 2008:10).

Table 3.1: Defining patient priorities as used in the A&E environment of the hospital and A&E units in the UK

Defining patient priorities in the A&E unit			
Priority 1 (P 1)	Patients that are admitted with life-threatening injuries or medical emergencies. These patients can die should they not receive immediate medical interventions. These include conditions affecting the airway, the ability to breathe and / or conditions affecting the patients' circulation.	**Priority 1 (P 1)**	Patients who require immediate resuscitation and those with major illnesses.
Priority 2 (P2)	These are patients that are admitted with potential life-threatening injuries or medical emergencies in a stable condition. Their condition is usually not as serious as in the P1 patients, but could turn the patient into a P1 if rapid deterioration occurs. P2 patients need constant observation done by trained / experienced staff, as well as frequent re-triaging to prevent deterioration.	**Priority 2 (P2)**	Patients with less urgent medical and surgical problems, but with the potential of becoming serious, who require detailed assessment before a decision can be made about their clinical management.
Priority 3 (P3)	These patients are usually referred to as the "walking wounded". They do not require immediate management at all. These patients present with minor injuries or medical conditions, and are usually discharged from the hospital after management.	**Priority 3 (P3)**	This includes patients with moderate illnesses or minor injuries, who are unlikely to require admission to hospital.
Priority 4 (P4)	These are patients that are either dead on arrival at the hospital or unsalvageable when they arrive at the A&E unit.	**Priority 4 (P4)**	Patients with "primary care problems". These are the type of conditions for which patients would visit their GP.

(Adapted from Heyns 2008:46 & Department of Health UK 2008:10)

In table 3.2 the different priorities of patients managed at the A&E unit of the hospital and in the United Kingdom are compared as defined by Heyns (2008:46) and the Department of Health of the United Kingdom.

To help differentiate between the different classifications used in the A&E unit for all patients entering the hospital environment, triage has become an important everyday assessment tool used in A&E units across the world as well as in this specific A&E unit (Cooper 2004:534). Due to this reason, triage will be discussed.

3.4 Triage

The use of triage originated from an environmental or war situation in the pre-hospital environment. Today triage is a vital part of the in-hospital environment and is used in the daily routine and functioning of the A&E staff (Bruce & Suserud 2005:201).

With reference to the origin of the concept, Holleran (2003:87) as well as Bruce and Suserud (2005:201) note that triage comes from the French verb "trier," which means to "sort, pick or select". Edwards (2007:73) describes triage as an exceptional form of nurse-patient interaction that demands a rapid and superficial yet accurate assessment. In medical terms triage can also be seen as the process of prioritizing medical care and treatment of patients (Holleran 2003:87). It is a formal process of instantaneous assessment of patients seeking medical care (Considine, LeVasseur & Villanueva 2004:515).

The primary aim of triage is to identify and assess patients with life-threatening conditions promptly and accurately. This assessment guides the A&E healthcare providers as to what the degree of urgency of the patient is, and the level of medical care the patient needs to meet their identified needs (Bruce & Suserud 2005:202). The process of triage is often used when existing resources are overwhelmed and medical institutions are unable to provide complete care to all patients (Holleran

2003:87). This is why the Department of Health of South Africa (2006:10) has classified all health establishments according to the South African National Health Act 61 of 2003 (RSA 2003) in order to manage their resources and finances appropriately. This aids the Department in budgeting for all hospitals according to their classification.
Triage could potentially reduce the long waiting times of patients at an A&E unit and ensure that timely emergency care can be rendered to those in greatest need of care (Bruijns, Wallis & Burch 2008:395). Triage can assist the emergency care practitioner as well as the A&E healthcare providers to get the right patient to the right facility at the right time in order that the best outcome and service at the least cost is provided to the patient (Nicholl & Munro 2000:955).

A number of triage systems have been developed over the years and are used by different categories of medical staff like air medical crews, pre-hospital staff and also A&E healthcare providers (Holleran 2003: 87). These systems are usually also influenced by the environment they are used in. In the pre-hospital environment the triage system differs from the triage system used in the hospital environment due to different situational circumstances.

Triage in the A&E unit is done by nurses. This is accomplished by using a specially designed triage form to simplify this process for the nurses. The use of a specialised triage form is not unusual, as stated by Göransson, Ehrenberg, Marklund and Ehnfors (2006:83). According to Holleran (2003:87), patients that were triaged used to be categorised on the basis of their specific injury types and assumed diagnosis (injury / diagnostic approach). An example of this approach of triage is where a patient with a tension pneumothorax would be prioritized higher than a patient with a femur fracture. Holleran (2003:87) continues that the new approach of response to injury and clinical presentation, where the patients' hemodynamic status in response to the injury is assessed, has been used since the early 1980's. This approach is called the Simple Triage and Rapid Treatment (START) approach.

As mentioned earlier, the START approach focuses on the patient's clinical response to an injury or trauma by evaluating the patient's vital data (blood pressure, heart rate, level of consciousness). Although there are some similarities in the criteria used with the START approach and the approach used in the hospital environment, the START approach was developed as a primary triage system and was not meant to be used in secondary or advanced triage areas (Holleran 2003:87) such as the hospital environment.

Until recently there was no triage system suited for use in the A&E units of South Africa (Bruijns *et al*. 2008:395). Although there has been lots of research done in developed countries on A&E unit triage scales, those scales may not be valid in the setting of developing countries like South Africa Bruijns *et al*. (2008:395). The Cape Triage Group (CTG) developed a triage scale that could be used in local A&E units and called it the Cape Triage Score (CTS). This triage system was based on a three-stage stepwise approach. These steps are as follow:

- **Step 1**

According to Bruijns *et al*. (2008:398) the first component that was used as the basis of this step, was the Medical Early Warning Score (MEWS). Physiological measurements where included following the developing world triage scale trend (Bruijns *et al*. 2008:398). The MEWS very accurately identifies medical inpatients that are at risk of deterioration or death. Table 3.1 summarises the physiological parameters of the MEWS scoring system as adopted from Bruijns *et al*. (2008:399) and Wallis, Gottschalk, Wood, Bruijns, De Vries and Balfour (2006:54).

- **Step 2**

The second component that is included in step 2 is the mobility factor. Bruijns *et al*. (2008:398) explains the mobility as follows:

- *Score of 0* Independently mobile or walking
- *Score of 1* Mobile with assistance or help
- *Score of 2* Requires a stretcher

In addition Bruijns *et al*. (2008:398) states that the MEWS together with the mobility score are also known as the Triage Early Warning Score (TEWS).

- **Step 3 / Component 3**

The third component consists of a short list of discriminators that cannot be accurately triaged by evaluating the physiological score alone, and acts as a safety net in cases without abnormal physiology (Bruijns *et al*. 2008:398). A colour code is used where the colour red is given to the patient with the highest score, followed by orange, yellow and lastly green (Bruijns *et al*. 2008:398). The discriminatory list used in the hospital is attached as Annexure E.2.

Table 3.2: Modified early warning score for adults

	Score	3	2	1	0	1	2	3
Physiological parameters	Mobility				Walking	With help	Stretcher immobile	
	Respiratory rate		< 9		9-14	15-20	21-29	30
	Pulse rate		≤ 40	41-50	51-100	101-110	111-129	≥ 130
	Systolic blood pressure	≤ 70	71-80	81-100	101-199		≥ 200	
	Temperature		< 35		35-38.4		≥ 38.5	
	AVPU				Alert	Reacts to voice	Reacts to pain	Unrespon-sive
	Over 12 year / taller than 150cm							

(Adopted from Bruijns *et al*. 2008:399 and Wallis et al. 2006:54.)

The triage system is not accepted positively by all researchers. Bruce and Suserud (2005:202) state that one of the disadvantages of using the triage system is that the assessment of each patient tends to be less individualised. On the positive side, Cooper (2004:524) explains that the prioritization does assure the safety of critically ill or injured patients since they are processed more quickly in order to receive emergency care.

Triage is a skill performed by registered nurses, but due to shortage of staff, this assessment is also done by less qualified staff in the hospital, as is also the case in Sweden (Göransson, Ehrenberg & Ehnfors 2005:1068). These circumstances are not unique, as is evident from the statement of Göransson *et al*. (2005:1068) that educational requirements vary greatly due to the fact that less qualified personnel also perform triage.

All of the patients that are triaged into the A&E unit are managed with a multi-disciplinary team approach. In the hospital and A&E environment of today the multi-disciplinary team is becoming an essential part of the management of the critically ill or injured patient (Reddy & Spence 2006:649).

3.5 Multi-disciplinary team

The A&E unit is described by Bruce and Suserud (2005:201) as a complex workplace with sets of inter-dependent facilities that involve many different members of the multi-disciplinary team in the treatment of a single patient. When critically ill or injured patients are brought to the A&E unit, the multi-disciplinary team members commence with prioritising assessment and management immediately. The multi-disciplinary team consists of several different types of healthcare workers that specialize in different areas, but who are all involved in the management of the critically ill or injured patient at some stage.

3.5.1 Members of the multi-disciplinary team

Within the often pressurised environment of the A&E unit it is essential to make timely information available to all the multi-disciplinary team members without interrupting their flow of work (Reddy & Spence 2006:649). During the treatment of the critically ill or injured patient by all the different members of the multi-disciplinary team it is easy for important information to get lost. Proper communication among the different team members is important to ensure continuation of care, especially when dealing with a critically ill or injured patient. According to

the Registered Nurses Association of British Columbia (2003:3) the nursing record tool used to record all data pertaining to the assessment and treatment of the critically ill or injured patient, is often the only link in the communication pathway between the various A&E nurse practitioners or other multi-disciplinary team members. Reddy and Spence (2006:650) state that in their study on the information needs of the multi- disciplinary team members done in a rural hospital, a multi-disciplinary team consisted of:

- physicians,
- registered nurses,
- a specialist,
- a paramedic and
- a unit secretary.

Woloshynowych *et al*. (2006:49) mention in their paper on enhancing safety in A&E care that the success of the A&E unit depends on a good working relationship with other departments, specialists and staff not based in the A&E unit, such as porters. All members mentioned form part of the multidisciplinary team.

Since the research is done from a nursing point of view, it is important to have a detailed look at the role of the registered nurse as part of this team.

3.5.2 The registered nurse as part of the multi-disciplinary team

Nursing in an A&E department as part of this multi-disciplinary team is different from any other kind of nursing delivered in other areas of a hospital. These differences were confirmed and set out in a paper presented by Wolf (2007), an A&E unit clinical facilitator, at the 39th Bienial Convention (November 3--7, 2007). Wolf (2007) states that the differences exist because A&E nursing requires a "specific skill set" that is related to the inherently unstable nature of the critically ill or injured patient. The RN have to work very closely with the other advanced specialities as part of the multi-disciplinary team involved in the management of the critically ill or injured patient and therefore need to

have additional skills. Some of the skills needed by the RN working in the A&E unit mentioned by Wolf (2007) include:

- Constant re-evaluation and reprioritising skills
- Quick but accurate assessment and prioritising skills, done according to the primary and secondary survey in the A&E unit used in this study
- Orderly and thorough documentation skills without traditional flow sheets
- Relevant communication skills necessary for both professional and determined advocacy for patients of all acuity levels.

Wolf (2007) states that to record the management and care of the critically ill or injured patients in an A&E unit in an orderly and thorough manner is a skill. The high patient turnover and the lack of recording skills can both be causes of high levels of stress in the A&E unit, as mentioned by Bruce and Suserud. (2005:201).

All RNs work according to the nursing process and recording is an integrated and extremely important part of this process. The nursing process is integrated in the methods that the registered nurse uses to keep good accurate records.

3.6 Overview of the nursing process

According to Kärkkäinen and Eriksson (2004:229) the development of the nursing process started in the 1960s in the United States of America (USA). The main aim of the process is to describe what nurses do. An overview of the nursing process follows and includes a definition of the process and a discussion of the components of the process.

One of the earliest definitions of the nursing process is that of Eriksson (1986), as cited by Kärkkäinen and Eriksson (2004:229), where the process of nursing care is referred to as an interactive process aimed at eliminating disorders in patients with ill health, with the ultimate aim of optimal health. According to Nettina and Mills (2006:5) the nursing

process is a deliberate approach to solve problems and meet the health care needs of patients. Through the years registered nurses have used the nursing process to guide their actions in caring for their patients. A discussion of the components of and steps in the nursing process as used by all registered nurses in practice is therefore important.

During the early stages of the use of the nursing process the components were assessment, planning, implementation and evaluation (Kärkkäinen & Eriksson 2004:229). In the USA the component of the nursing diagnosis was included in the process during the 1980s, and this country was soon followed by other countries like Canada, Sweden, Great Britain, Japan, the Netherlands and in 1991 also Iceland (Thoroddsen & Thorsteinsson 2002:373).

The nursing process as a whole is cyclical and continuous with interrelated and interdependent steps (Nettina & Mills 2006:5). The patient is assessed, a diagnosis is made, and nursing care plans are formulated, implemented and evaluated. If the care is not sufficient or the patient's needs change, the process starts again at the first step of assessment (see Figure 3.1). Although recording is not described as one of the steps in the nursing process, it is part of every phase and is continuous. The planning phase of the nursing process is the only component that can be documented before it actually happens, as the other components must be documented retrospectively after they have been completed (Yocum 2002:62).

3.6.1 Assessment

During the assessment data is collected systematically to determine the health status of the patient. This data includes a health history and a health assessment by means of a physical examination of the patient (Nettina & Mills 2006:5; Smeltzer & Bare 1996:28). The data is both subjective and objective. Subjective data is obtained from the patient him/herself, from the relatives if present or from the pre-hospital staff who accompanied the patient (Kuckyt 2006:[3]). Objective data can be seen and is measurable, and is usually obtained by the RN during the

physical examination and vital data recording. The assessment includes an assessment of the health history as well as a physical assessment.

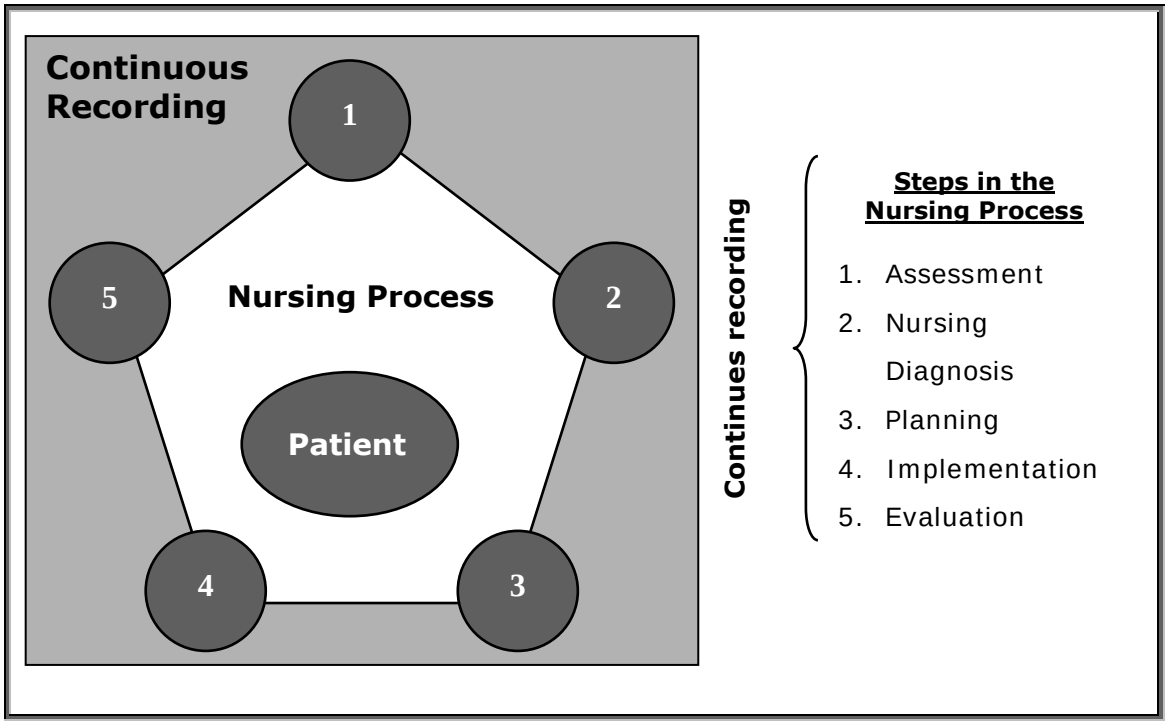

Figure 3.1: Components of and steps in the nursing process (Adopted from Kuckyt 2006:[1])

3.6.1.1 Health history

Taking down health history can be challenging when it comes to the critically ill or injured patient. Subjective data can be included in the history if collected from the patient, the relatives or the pre-hospital staff. Various mnemonics like the AMPLE mnemonic can be used in the pre-hospital and A&E unit to assist the RN in recording the history in a chronological manner (Urden *et al.* 2006:974; American College of Surgeons [ATLS] 2005:21). This mnemonic will be discussed in section 3.6.3.3.

3.6.1.2 Physical assessment

According to Kuckyt (2006;[5]) the physical assessment can be made easier by implementing four techniques often used in the nursing process, which are inspection, palpation, percussion and auscultation. These

concepts will be explained according to the definitions of each component given by Kuckyt (2006;[5]):

- Inspection: The physical visual examination of the patient and is done systematically.
- Palpation: The use of touch (the hand and fingertips) to assess various parts of the patient's body.
- Percussion: The striking or tapping of the patient's body with short strokes in order to produce sounds that are assessed for abnormalities.
- Auscultation: Listening to sounds produced by the body itself like heartbeat and breathing sounds, for abnormalities.

The nurse will then use the data obtained in the assessment phase to formulate a nursing diagnosis.

3.6.2 Nursing diagnosis

A nursing diagnosis is not a medical diagnosis. A nursing diagnosis is a clinical judgment about an individual's response to an actual or potential health problem (Kuckyt 2006;[8]; Smeltzer & Bare 1996:31). Although it has been in use since the early 1980s the use of the nursing diagnosis has not become general and is also not always supported as nurses internationally struggle to integrate this phase of the nursing process into their practice and documentation (Thoroddsen & Thorsteinsson 2002:374). During the assessment phase the patient's health problem with possible etiology is identified. A nursing diagnosis is formulated after the assessment data is organised, analysed, synthesized and summarized (Nettina & Mills 2006:5; Smeltzer & Bare 1996:28). The nursing diagnosis provides the basis for planning and implementing nursing interventions to achieve desirable outcomes for the patient.

3.6.3 Planning of interventions

During the planning of interventions a nursing care plan is formulated with clear goals or expected outcomes that are derived from the nursing diagnosis. Appropriate interventions are stipulated in the nursing care plan according to priorities. The nursing care plan is often included as part of the interdisciplinary or combined care plan for the patient (Nettina & Mills

2006:8). This is the planning of interventions that will be executed or implemented in the next phase of the nursing process.

3.6.4 Implementation of interventions

During implementation the actualization of the care plan becomes a reality through interventions (Nettina & Mills 2006:5). Implementation is the actual performance of the nursing interventions identified in the care plan. This is when nurses provide the planned care to achieve preset goals and communicate the nursing interventions by documenting and reporting (Kuckyt 2006:[11]). Every implemented action needs to be evaluated for effectiveness.

3.6.5 Evaluation of interventions

During evaluation of interventions the extent to which the goals have been achieved and the patient's response to the intervention is evaluated (Nettina & Mills 2006:5). Here the success of the care plan is evaluated. It is an ongoing process where the nurse observes the patient's response to the intervention and reports any new needs that might develop during the care of the patient (Kuckyt 2004:[12]). If the plan is found to not be adequate, re-assessment is done and the nursing process starts from step one (assessment) again.

3.6.6 Recording during the nursing process

It is assumed that what nurses have not recorded, they have not done either (Kärkkäinen & Eriksson 2005:203). According to the Registered Nurses Association of British Columbia (2003:10) records should be kept of all assessments or interventions carried out as well as the impact or outcome of such interventions. This implies that recording should take place during every phase of the nursing process in order to be complete. The critically ill or injured patient will need more comprehensive, in-depth and frequent documentation. Various formats have been used to organize the medical records in the past. Lyons, Martinez and O'Leary (2006:58) refer to the traditional SOAP format as an appropriate format to use to organize medical records. This format is used by the Registered Nurses Association of British Columbia together with the SOAPIER method as one

of their charting or recording methods (2003:11). The SOAPIER method is almost identical to the nursing process. This mnemonic used by RN's of British Columbia (2003:11) can be explained as follows:

- **S** Subjective data
- **O** Objective data
- **A** Assessment
- **P** Plan
- **I** Intervention
- **E** Evaluation
- **R** Revision

Record keeping is one of the duties of the RN working within the A&E unit, and includes ensuring that all emergency interventions, nursing assessments, specific nursing and medical management, and evaluation of all management of the patients admitted to the unit, are documented (O'Shea 2005:664).

3.6.7 Advantages and disadvantages of the nursing process

One of the advantages of the process for nursing care is the logical structure that it provides to guide the nurse when recording her actions in a systematic and purposeful way (Kärkkäinen & Eriksson 2004:229). It creates a basis for professional nursing.

One of the disadvantages of the nursing process is the use of the nursing diagnosis. This step has not become general, nor has it been supported without reservation and it has been found difficult to implement despite of training (Thoroddsen & Thorsteinsson 2002:379; Kärkkäinen & Eriksson 2004:230). According to Hellesö and Ruland (2001:799) another disadvantage of the nursing process is that it is very suitable for documenting non-problematic situations, but not for acute situations. In the A&E unit the nursing process is combined with the principles of Advanced Life Support (ALS).

3.6.8 Nursing process and the advanced life support principles

All doctors who complete the Advanced Trauma Life Support (ATLS) course get recognition in the form of a certificate, but presently nurses do not get recognition despite passing the examination. The RN working in the A&E unit forms an integral part of the multi-disciplinary team as stated by Woloshynowych *et al*. (2006:49). As early as the year 2000, registered nurses have been referred to as the backbone of the A&E unit (Sowney 2000:73). Sowney (2000:73) states that as the backbone of the A&E unit is formed by RNs it is equally important that they, as part of the multi-disciplinary team, should also learn the concepts and principles taught to the doctors in courses like the ATLS course. Since the nursing process forms the basis of the registered nurse's approach to problem solving (Kuckyt 2004:[1]), it has become obvious that a new approach is needed to guide the RN of today who works in the A&E unit, so that she will be able to marry the nursing process with ATLS principles.

3.7 Advanced Life Support principles

Several different courses presented in South Africa and in the rest of the world today are based on advanced life support principles. Some of these courses are offered by the Resuscitation Councils of Southern Africa (2008:[1]) and the Academy of Advanced Life Support (2008:[1]). Courses presented by these two leading training bodies in South Africa are:

- ACLS: Advanced cardiovascular life support
- PALS: Paediatric advanced life support
- ACLS part II: Advanced cardiovascular life support for experienced providers
- ANLS: Advanced neonatal life support
- AMLS: Advanced medical life support
- AELS: Advanced emergency life support

The American College of Surgeons (2008:[1]) offers the well-known ATLS course. Due to the wide variety of advanced life support courses available

only the principles taught in the ATLS courses will be discussed as background for the purpose of this study.

3.7.1 History and beginning of the advanced trauma life support course

According to Fildes (2008:[1]), the chairperson of the American College of Surgeons on Trauma, the ATLS program was initiated due to an accident that happened in 1976. Styner, an orthopaedic surgeon, and his family (wife and four children) were involved in a small airplane accident in the rural area of Nebraska. Styner and three of his children sustained serious injuries. His fourth child sustained minor injuries, but his wife was killed instantly in the crash. The care that the doctor and his children received in the small rural hospital was less than adequate. Fildes (2008:[1]) concluded that the reason for the less than adequate care was that the hospital and staff were not geared for an accident of this magnitude. He also added that the staff members were not trained properly in triage and injury management. Fildes (2008:[1]) cites that Styner stated, "…when I can provide better care in the field with limited resources than what my children and I received at the primary care facility, there is something wrong with the system and the system has to be changed." This incident led to a new systematic approach in the provision of care for critically injured patients in 1978, when the first ATLS course was presented (Fildes 2008:[1]). The ATLS course was introduced in the USA and taken abroad in 1980.

Today the ATLS program is offered in over 50 countries and has been presented to over one million doctors (Fildes 2008:[1]). This programme has made such a difference in the rendering of care that Fildes (2008:[1]) states that "ATLS has become the foundation of care for injured patients by teaching a common language and a common approach" .

3.7.2 Advanced trauma life support goals

ATLS programme goals have been summarised by the American College of Surgeons (2008:[1]) as:

- Assessing the patient's condition rapidly and accurately
- Resuscitating and stabilising the patient according to his / her priorities

- If the patient's needs exceed the facility, arranging appropriate inter-hospital transfers
- Providing optimal care and preventing deterioration during the assessment, resuscitation or transfer of the patient.

These goals can only be reached by applying the appropriate components in the management of the critically ill or injured patient. Therefore a more detailed overview of the components will follow.

3.7.3 Principles of advanced trauma life support

The critically ill and especially the critically injured patients present a unique challenge to the healthcare team members as their life-threatening conditions must be identified and treated rapidly (Petersen 2005:[1]). The critically ill and injured patients are often unresponsive or unconscious and can therefore not aid in providing event or history data. This was one of the reasons why the American College of Surgeons developed the ATLS course, in order to evaluate these critical patients by means of a systematic approach that utilises the primary and secondary surveys (Petersen 2005:[1]). This system is used in both the pre-hospital and hospital environment, which implies that this is a continuous process as is the nursing process. This approach will be discussed by looking at the primary survey, the resuscitation phase and the secondary survey.

3.7.3.1 Primary survey

This is a way of assessing, prioritising and treating a critically ill or injured patient. The primary survey is used in the pre-hospital and the A&E setting. The goal of pre- hospital care is immediate stabilization and then transportation to the nearest appropriate facility (Urden *et a*l. 2006:970). The primary survey is done or continued when the patient reaches the appropriate A&E unit.

The goal of the primary survey is to assess, identify and manage life-threatening conditions simultaneously and it is done systematically according to the steps of the mnemonic ABCDE (American College of Surgeons [ATLS] 2005:13). The primary survey must be stopped and life-

Table 3.3: Primary survey

Steps	Assessment & Management
A - Airway maintenance with ↓ cervical spine protection	➢ Check patency of airway [Patent airway = Open, maintained & protected] ➢ Ability of air to pass unobstructed into the lungs [check for foreign objects] ➢ Perform airway manoeuvres to open airway if indicated [head-tilt-chin-lift manoeuvre, intubation, cricothyroidotomy, emergency tracheostomy]
	➢ Establish cervical spine control if indicated manually or with the use of immobilizing devices [hard neck collars, head immobilizing blocks]
B - Breathing and ventilation	➢ Expose chest for assessment and evaluation ➢ Listen, look and feel for spontaneous breath sounds ➢ Look for adequacy of ventilation [rate, depth, difficulty] ➢ Evaluate if trachea is central
	➢ Initiate oxygen therapy if indicated [mask / bag-valve-mask, ventilator] ➢ Manage all abnormalities appropriately
C - Circulation with haemorrhage control	➢ Check for pulses present [radial, femoral, carotid] ➢ Initiate CPR if indicated ➢ Feel for skin temperature [signs of shock] ➢ Assess for external bleeding sources ➢ Control major external bleeding [pressure bandages, splinting] ➢ Insert intravenous line if necessary [for fluid resuscitation and to replace blood loss]
D - Disability: Assessing the neurological status	➢ Rapid neurological assessment to be done [use the Alert, verbal, pain, unresponsive (AVPU) scale or more formal the Glasgow coma scale (GCS)] ➢ Repeat GCS if patient status changes, even in secondary survey
E - Exposure / **E**nvironmental control	➢ Remove all clothes [Especially in the trauma patient] for complete secondary survey to follow ➢ Prevent hypothermia by controlling environment temperature [blanket, warm air-circulated blankets]

(Adapted from American College of Surgeons [ATLS] 2004:13; Proehl 2004:2)

threatening conditions must be treated immediately after having been identified. Subsequent steps can be resumed after the treatment of such conditions has been finalised.

The steps of the primary survey are very cleverly encapsulated by the mnemonic ABCDE.

Table 3.3 summarises the primary survey according to the literature found in the student manual of the ATLS course (American College of Surgeons [ATLS] 2004:13) as well as in the emergency nursing procedures written by Proehl (2004:2). This phase is followed by the resuscitation phase, which will be discussed next.

3.7.3.2 Resuscitation phase

The resuscitation phase is often used in the A&E unit as a second phase following the primary survey during the management of the critically ill or injured patient (Urden *et al*. 2006:973; ATLS 2005:18). This phase happens after the primary survey. During this phase, the patient is monitored continuously (Urden *et al*. 2006:973) for signs and symptoms of shock, especially hypovolemic shock.

Aggressive fluid resuscitation is essential to maximize the prognosis of the critically ill or injured patient (ATLS 2005:18). Peripheral or central intravenous lines are started, with warm fluids like Ringers, Voluven or Normal saline. The fluid type and amount varies according to the patient's condition (trauma or medical, stable or hypovolemic). According to Urden *et al*. (2006:973) urinary catheters are inserted to evaluate renal perfusion and volume status of the patient during this phase. Gastric catheters are inserted to prevent aspiration by reducing gastric distension. If aggressive fluid management with Ringers and other crystalloid and colloid fluids fails, O negative or type specific blood can be transfused (Urden *et al*. 2006:973).

Additional tests and procedures, like x-rays, blood tests and scans are done to assist in making a final diagnosis about the patient. The emphasis

is on optimizing the patient's hemodynamic variables (ATLS 2005:20). Although the resuscitation phase is started in the A&E unit, it may continue well into the critical care environment depending on the speed with which the patient is admitted (Urden *et al*. 2006:973). The main goal of this phase is to normalise hemodynamic variables such as blood pressure, heart rate, urine output, cardiac output, oxygen delivery and oxygen consumption.

The resuscitation phase is followed by the secondary survey.

3.7.3.3 Secondary survey

The secondary survey is initiated once the primary survey is completed and the patient is stabilised according to his / her vital signs (Urden *et al*. 2006:973). During the secondary survey a complete history, including mechanism of injury and vital signs is taken, a head-to-toe examination is conducted and the vital signs are continuously reassessed (American College of Surgeons [ATLS] 2005:21).

History taking in the critically injured patients is made easier by using the mnemonic SAMPLE (American College of Surgeons [ATLS] 2005:21), and for the critically ill patients adding DEATH to the mnemonic has proven helpful in obtaining a complete history of past and present medical problems (ATLS 2005:21; Urden *et al*. 2006:974):

- **S** Seatbelt

In the case of a critically injured patient it is an essential part of the mechanism of injury and heightens the suspicions of life-threatening chest injuries, if seatbelt was not worn by the patient during impact.

- **A** Allergies

Details regarding allergies are very important information to have before administering any drugs to the patient to try and prevent medication related complications like allergies or anaphylaxis.

- **M** Medication

Medication currently used by the patient could guide the RN in knowing the underlying conditions that the patient was being treated for prior to this incident, as well as the impact these conditions could have on the

current situation of the patient. Also the drugs used by paramedics on scene pre-hospital could explain some of the signs and symptoms that the patient presents with, such as hypoventilation due to sedative administration.

- **P** Past illnesses / pregnancy

This is helpful to know specially if the current condition can be related to past illnesses like cardiac disrhythmias due to mitral valve incompetence.

- **L** Last meal

Could help guide the treatment, as in the case of an insulin dependent diabetic patient that missed a meal and presents with hypoglycaemia.

- **E** Events / environment related to injury or incident

Could guide and help with the understanding of some injuries or symptoms like hypothermia in the patient found lying in the river during the winter season.

The last five letters of this mnemonic (DEATH) highlight the most prevalent medical conditions patients could present with or already be treated for. These conditions could lead to a variety of complications or could be complicated by new conditions that the patient presents with. For example, a patient with a gunshot wound to the abdomen could have wound healing problems in the long run if he is a diabetic patient, and this information could be used in the decision of antibiotic treatment for this patient. The only reference in the literature to this part of the mnemonic as used in the South African context in Gauteng is the explanation given by Heyns (2003:94). The author states that the last five letters of the mnemonic present the most prevalent medical conditions managed in the A&E unit, and continues to explain the mnemonic as follows:

- **D** Diabetes
- **E** Epilepsy
- **A** Asthma
- **T** Thrombus formations (Myocardial Infarction [MI], Deep Venous Thrombosis [DVT], Cerebral-Vascular Incidents [CVI])
- **H** Hypertension

Table 3.4: Secondary survey and observations

System	**Head-to-toe examination** (inspection, palpation, percussion and auscultation included)	**Additional observations and diagnostic procedures done and equipment used**
Neuro-logical	➢ Scalp and skull ➢ Maxillofacial area (ears, nose, mouth) ➢ Cervical spine / neck	➢ Level of consciousness (LOC) using the GCS ➢ Pupil response to light and size ➢ Electrolytes like sodium, potassium and glucose ➢ C-spine x-ray
Respiratory	➢ Anterior chest (clavicles, ribs, sternum) and posterior chest (scapulas) for abnormalities **(always compare left [L] to right [R])**	➢ Arterial blood gases (ABG) with attention to haemoglobin and hematocrit ➢ D-dimers blood test for detection of embolism ➢ Oxygen (O_2) masks / ventilators ➢ Peripheral saturation monitor (SpO_2) ➢ Chest x-ray (CXR)
Cardio-vascular	➢ Neck vein distension (cardiac tamponade, congestive heart failure)	➢ Continuous electrocardiograph (ECG) monitoring or 12 lead ECG ➢ Blood pressure monitors (BP) ➢ Cardiac enzymes monitoring
Gastro-intestinal	➢ All 4 quadrants of abdomen for injury, tenderness or abnormality and presence of bowel sounds	➢ Abdominal sonar / scan ➢ Electrolytes like sodium, potassium, magnesium, chlorides, phosphates ➢ Gastric drainage (colour, amount)
Genito-urinary	➢ Pelvis for fractures, instability ➢ Rectal / vaginal examination (blood, tonus)	➢ Femoral pulses (compare left to right) ➢ Urine analysis / Cystogram if blood present in urine analysis
Musculo-skeletal	➢ Extremities for pain, pallor, poikilothermia, paralysis, parestesis, pulses (6 P's)	➢ Doppler for detecting weak pulses ➢ X-rays for fractures ➢ Splints / Plaster of Paris (POP) for stabilisation of fractures ➢ Myoglobin to detect tissue damage that could lead to kidney failure

(Adapted from ATLS 2005:23; Manitoba Health G8 2005:1-7)

In the secondary survey, as in the primary survey, the components of the nursing process feature strongly in the assessment of the patient. The head-to-toe assessment in the secondary survey is simplified by implementing the four assessment components of the nursing process as explained earlier.

The components used for this assessment are inspection, palpation, percussion and auscultation (Kuckyt 2004[3]). It is important to include the comparison for bilateral symmetry during this assessment.

The head-to-toe examination should be done systematically. The combination of the ATLS (American College of Surgeons [ATLS] 2005:23) head-to-toe assessment done during the secondary survey, the systematic approach used and additional observations (equipment) used according to the guidelines of Manitoba Health (2005:4) of the secondary survey are summarised in Table 3.3.

3.8 Record keeping

According to Brooks (1998:191) it is impossible to capture the art of nursing in writing format only. Nurses' actions are described as compassionate, committed and caring, however, these characteristics that are used to describe the actions of nurses, are not always recognizable in the nursing record tool (Brooks 1998:190). In addition Liyanage, Thyagarajan, Khemka, Blades and Alwis (2006:187) agree that documentation is the key to providing quality care.

Good documentation not only ensures that all members of the multidisciplinary team can share relevant information about patients, but contributes to the safety of the patient as well as the clinician against litigation (Liyanage *et al*. 2006:187). "If it is not documented, it is not done." This is a well-known statement to nurses and can be traced back to various articles (Gilboy 2002:36; Geyer 2005:32). This statement also corresponds with the statement made by Kim and Park (2005:953) where

the authors mention that the effect of nursing cannot be proven if the delivered care is not documented. Ferrell (2007:61) postulates that "documentation of care is synonymous with care itself."

It is clear from all of these statements that nurses will not get away from recording care, no matter what the reason. Furthermore it is obviously the only way to protect the patient as well as the registered nurse, and must be seen as an important part of nursing duties. In this research the emphasis is on the nursing record tool as clinical record used in the A&E environment.

According to Baumann (2004:267) the nursing record tool is more than just descriptions of services or legal evidence to protect the healthcare provider. Baumann (2004:267) defines nursing records as "narratives about persons who are being confronted with mortality." Lowenstein (2005:452) defines a nursing record tool as a story where the patient is the main character and his/her episode of illness or injury is frozen in time by the clinician or health care worker recording this story. The critically ill or injured patient's story starts in the A&E unit with the recording of all of the findings and actions of his/her emergency management.

3.8.1 Recording in the accident and emergency unit

In the A&E environment of today where the A&E nurses are busier than in the past and have to nurse sicker patients, documentation requirements are expanding (Gilboy 2002:36). Trauma trained nurses are ideal to do the record keeping of the critically ill or injured patient due to their experience, knowledge and skills. Unfortunately they are in the minority and therefore are also needed to help with the physical treatment of these patients. This makes it more critical for the nursing record tool to be of such a format that the basic trained registered nurse working in the A&E unit will also know what to record. The record keeping duty of the registered nurse working within the A&E unit includes ensuring that all emergency interventions, nursing assessments, specific nursing and medical management, and evaluation of all management of the patients admitted to the unit, are documented (O'Shea 2005:664).

To have rich nurse sensitive information or data recorded is crucial for the A&E environment because of the complex, but often not documented care delivered by the A&E nurse practitioner in the A&E unit (Morales, Rodriquez, Terol, Torres & Alvarez 2003:38). Hoban (2005:21) stresses the importance of keeping some form of note which must be recorded on the legal document as soon as possible (within 24 hours) in the case of an emergency situation. The emergency record should have specific references to the actions taken as well as the time and dates these actions where implemented during the emergency treatment of the patient (Lyons *et al*. 2006:58).

Many registered nurses are of the opinion that when they are busy with the "real hands-on work" of patient care, this takes priority over documentation, which is seen as a chore resented by many (Geyer 2005:82; Hoban 2005:21). In addition Hoban (2005:21) points out the risk factor in the "being too busy" situation by stating that it is during this time of great pressure that things go wrong, and then the nursing record tool is the only proof of the standard of care delivered to the patient.

Definitive care in the A&E unit starts with the primary survey, the resuscitation phase and the secondary phase, and therefore these components should be included when definite care is ended with record keeping.

3.8.2 The nursing record tool as communication tool

According to Geyer (2005:70) clinical communication can be verbal, written or a combination of both. Nurses use richer verbal exchange to communicate their holistic practice, and do not record all the information as richly as communicated verbally (Brooks 1998:190). Pertinent nursing issues that could be discussed easily are not always documented in the nursing record tool because the charting format does not guide the nurse clearly (Brooks 1998:197).

Good records are essential to ensure good quality of care and communication of clinical information. The management of these records

is, however, a sensitive area where quality can be compromised and risks can be increased (Beaumont 2005:22). This author adds that a complete, information rich nursing record tool will promote not only effective communication, but will support reflective practice and make evaluation of the care given to the patient easier. Kärkkäinen and Eriksson (2004:268-272) make it clear that as the demand on nurses increases, especially in speciality areas of hospital care (such as the A&E unit), clear and concise communication by nurses becomes even more critical.

The nursing record tool facilitates communication between the registered nurses and the other members of the multi-disciplinary team when it contains all necessary information to ensure continuity of care of the critically ill or injured patient (Geyer 2004:40; Geyer 2005:7). The nursing record tool does not just serve as a communication tool, but also coordinates the care of the patient given by different providers or members of the multi-disciplinary team (Hellesö, Sorensen & Lorensen 2005:960). The nursing record tool also provides the nurse with a unique opportunity to measure the progress of the critically ill or injured patient in her care. This is of great assistance to the nurse, especially when caring for more than one patient at a time, as is often the case in an A&E environment (Geyer 2004:41).

Recording tools are not just good communication media, but protect the RN against medico-legal hazards.

3.8.3 Legislation for nursing records

In most countries recording of nursing care, management and actions is compulsory and is governed by the laws of these countries (Löfmark, Nilstun & Bolmsjö 2005:1105 and Geyer 2005:52). In addition South Africa's nursing practice acts and professional standards also require that nurses have to keep documents on their patient care world wide (Yocum 2002:59). A short summary of the most important laws that apply to the practice of the registered nurse in South Africa will now be discussed.

3.8.3.1 Constitution of the Republic of South-Africa (Act 108 of 1996)

The Bill of Rights is contained in this Act (RSA 1996). It identifies the rights of the healthcare users and nurses, as well as many other human rights. Section 24 (a) of this act describes the safe environment that every human being is entitled to. The safe environment is also one of the RN's main goals when caring for patients. Keeping complete, structured and factual records is just one of the ways nurses can ensure a safe environment for their patients (Geyer 2005:53).

3.8.3.2 The Nursing Act (33 of 2005) and its regulations

In this Act the Minister of Health makes provision for the establishment of a regulating body for the nursing profession, namely the South African Nursing Council (SANC). In Chapter one, Section 4 of this Act (RSA 2005), it becomes clear that one of the functions of the nursing council is to ensure that persons registered in terms of this Act treat users of health services in a manner that respects their constitutional rights. These are rights like the right to human dignity, bodily and psychological integrity and equality. It is also the nursing council's responsibility to take disciplinary action against persons who fail to respect these constitutional rights. Another function of the nursing council is to determine:

- "the scope of practice" of nurses
- the conditions under which nurses may practice their profession
- the acts or omissions in respect of which the Council may take steps against any person registered in terms of this Act
- the requirements for any nurse to remain competent in the manner prescribed"

This Act provides the primary legislative framework for nursing and midwifery practice that every registered nurse has to comply with.

a) Regulation 2598 (Scope of Practice)

The Scope of Practice (SANC 1984) regulates the practice of all persons registered or enrolled under the Nursing Act (SANC 1978; 2005). In this Scope there are several referrals to the nursing and midwife regime that should be followed by these practitioners. The definition of the "nursing

regime" in the scope includes recording and is set out in the introduction of the Regulation as follows:

- "*nursing regime means the regulation of those matters which, through nursing intervention have an influence on the preventive, promotive, curative or rehabilitative aspect of health care and includes the provision of nursing care plans, their implementation and evaluation thereof and* ***recording*** *of the course of the health problem, the health care received by a patient and its outcome whilst a patient is in the charge of the nurse*"

A safe environment is also mentioned in this Scope of Practice of the registered nurse (SANC 1984) in Chapter 2(p), as well as Chapter 3(r). It is obvious that the registered nurses, who want to ensure a safe environment for the patients in their care, cannot ignore the importance of keeping clear records.

b) Regulation 387 (Acts or Omissions)

This Regulation includes a set of rules called the acts or omissions in respect of which the South African Nursing Council may take disciplinary steps against all persons who are registered or enrolled under the Nursing Act (SANC 1978, 2005). This Regulation should always be read in conjunction with the Scope of Practice (SANC 1984). In Chapter 2, rule number 5 states that registered nurses can be disciplined if they "wilfully" neglect to keep clear and accurate records of all actions regarding a patient. In Chapter 3, rule number 31 states exactly the same pertaining to the practice of the midwife. This Act is very clear on what the responsibility of the registered nurse and midwife is pertaining to record keeping.

c) Regulation 2488 (Registered Midwives and Enrolled Midwives)

This Regulation stipulates the conditions under which the registered and enrolled midwives may carry on their profession (Geyer 2005:54). In Chapter 2, rule number 4 (SANC 1990) is very clear about the records that these professionals have to keep with regard to the pregnant female during the process of labour. The reason for keeping such clear records is

also stated in rule number 4 section 3, where the Regulation stipulates that these records have to be retained for a minimum of three years and should be produced to the council when required (SANC 1990). This strengthens the importance of the nursing record tool being the RN's only proof of care delivered when a medico-legal enquiry is investigated.

d) Regulation 2418 (Keeping, supplying, administering or prescribing of medicines by Registered Nurses)

This Regulation relates to keeping, supplying, administering and prescribing medicines by the registered nurse. The Regulation (SANC 1984) states clearly in rule number 3(a) that a registered nurse should keep specific records of the medicine she has supplied administered or prescribed. This rule is also applicable in the A&E unit as the registered nurse administers medication to the critically ill or injured patient, and has to record the name, dose, route of administration and effect the medicine had on the patient. The same instruction is also mentioned in the Scope of Practice (SANC 1984) under rule 2(c). Looking at this Regulation it is clear that all medication that is administered by the A&E nurse practitioner should therefore be recorded in the nursing record tool.

3.8.3.3 The National Health Act (Act 61 of 2003)

The National Health Act (RSA 61 of 2003:13), Chapter 2 number 13 clearly states that health care providers are obligated to keep and maintain records for every user of their health care service. The need for confidentiality of these records is also mentioned under point number 14 of this Act. Although confidentiality is important, the Act highlights the right of the health care provider to disclose necessary information to appropriate persons if it is done in the interest of the health care user. The Act aids to guide the nursing professionals with regard to record keeping and communication through documentation.

3.8.3.4 The Pharmacy Act (Act 53 of 1974)

This Act contains a definition of dispensing that relates to the registered nurse's interpretation and evaluation of a prescription. The Act make provision for a registered nurse taking medication from a container held in

the unit where the registered nurse works, to put the medication into another container in order to administer the medication to a patient under section 29(3)(a). This implies that nurses administrating medication according to prescription in the institutions where they work are covered by section 29 of the Pharmacy Act 53 of 1974 (RSA .1974).

When these Acts and regulations are taken into consideration it is clear that nursing, as many other professions, is governed by legislation to guide and protect the nursing practitioners, and to ensure the safety of the patient.

3.9 Conclusion

In this chapter the focus was on literature pertaining to the A&E environment and the research that has been done on record keeping. Special attention was given to the guidance and regulations provided for keeping clear and concise records when managing the critically ill or injured patient, and the importance of these nursing record tools to improve communication among the multi-disciplinary team members involved in the management of these patients. The ALS principles were discussed in order to highlight the reason why the current nursing record tool was found to be incomplete to record the management of the critically ill or injured patient according to the ALS principles. The nursing process and the steps in the process were incorporated into the principles used in the management of the critically ill or injured patient. Lastly the relevant legislation that guides the recording of all nursing care in South Africa was discussed.

From the literature review it is clear that the registered nurse who values the clinical part of nursing should have good communication tools (nursing record tool) in order to ensure the continuity of the care of the critically ill or injured patient. These registered nurses often see documentation as an unnecessary distraction from their "real business" of providing nursing care. After studying the literature it is obvious that such statements speak

of major misconceptions.In chapter 4 the results of the study will be discussed.

4 Research results and data analysis

4.1 Introduction

This chapter reviews and discusses the research results and the data analysis of the qualitative data gathered during Phase 1 and Phase 2 of the study.

4.2 Results and analysis

The data that will be analysed in this chapter were gathered during two phases. Phase 1 consisted of three steps and Phase 2 of only two steps. Data was gathered during both these phases, and will be discussed in detail in Section 4.2.1 to Section 4.2.6.

Phase 1: Explorative phase

4.2.1 Step 1

During Step 1 of the explorative phase of the research the data was gathered by means of a naïve sketch and an FGI. Six themes were identified in this step, namely:

- **Theme 1:** Patient information
- **Theme 2:** Pre-hospital information
- **Theme 3:** Pre-hospital management
- **Theme 4:** Patient history
- **Theme 5:** In-hospital multi-disciplinary team members
- **Theme 6:** A&E unit management

An overview of the themes, categories, clusters and sub-clusters is found in Table 4.1.

Table 4.1: Summary of identified themes, categories, clusters and sub-clusters

Theme 1: Patient information		
Category	**Cluster**	**Sub-cluster**
Patient identification	Patient sticker Patient identification bracelet	-Name -Surname -Hospital number -Date of admission -Date of birth -Address
Preliminary diagnosis		
Contact details		
Triage	Score Colour Admission priority	 -P1 -P2
Theme 2: Pre-hospital information		
Category	**Cluster**	**Sub-cluster**
Mode of transport	Walk in Ambulance Helicopter	
Call type	Medical Trauma Primary Transfer	 -Hospital name -Referring doctor -Contact number -Notes on management
Ambulance service	Identified	-Name
Emergency care practitioner	Pre-hospital record Identification	 -Name -Qualification -Practice number

Theme 2: Pre-hospital information (continue)		
Timeframe	Call received Time at scene Time at hospital	
Incident	Critically ill patient Critically injured patient	-Medical incidents -Trauma incidents
Theme 3: Pre-hospital management		
Category	**Cluster**	**Sub-cluster**
Primary survey	**A**irway	Open, maintained and protected by patient Actions (advanced airway management)
	C-spine	Assess Actions (equipment used for immobilising)
	Breathing	Assess Actions
	Circulation and haemorrhage control	Assess Actions (Vascular access, fluid resuscitation)
	Disability	Assess (neurological assessment scales) Actions (drugs)
	Drugs	
	Defibrillate	
	Expose/Environment	
Theme 4: Patient history		
Category	**Cluster**	**Sub-cluster**
SAMPLE DEATH history		
Theme 5: In-hospital multi-disciplinary team members		
Category	**Cluster**	**Sub-cluster**
A&E nursing personnel	Name Signature Practice number	 SANC

Theme 5: In-hospital multi-disciplinary team members (continue)		
Category	**Cluster**	**Sub-cluster**
A&E doctors	Name Signature Practice number	 HPCSA
Specialists	Name Signature Practice number Speciality	 HPCSA
Other	Name Signature Speciality	
Time frame	Time called Time arrived	
Theme 6: A&E unit management		
Category	**Cluster**	**Sub-cluster**
Primary survey	Airway	Open, maintained and protected by patient Actions (advanced airway management)
	C-spine	Assess Actions (equipment used for immobilising)
	Breathing	Assess Actions
	Circulation and haemorrhage control	Assess Actions (Vascular access, fluid resuscitation)
	Disability	Assess (neurological assessment scales) Actions (drugs)
	Drugs	
	Defibrillate	
	Expose/Environment	
Resuscitation phase	Procedures preformed	
	Diagnostic procedures	
	Laboratory assessments	

Theme 6: A&E unit management (continued)		
Category	**Cluster**	**Sub-cluster**
Secondary survey	Head-to-toe examination	Neurological system Respiratory system Cardiovascular system Gastro-intestinal system Genito-urinary system
	Patient picture summary	Discriminatory list Head, body, hands and feet
Continuous observation chart	Vital signs	Blood pressure (graphical) Pulse rate Respiratory rate Temperature SpO_2 Capillary refill CVP Blood glucose
	Continuous infusions Pupils	
	Glasgow coma scale Mechanical ventilation	
Continuous observation chart (continued)	Arterial blood gas Output	
Intravascular fluid chart	Fluid management Blood products	
Drug chart A&E unit	Prescription chart Administration chart	
Discharge notes	Date Final diagnosis Name of admitting doctor Responsible nursing staff Summary report on patient's current medical status	A&E unit Ward
Clothing and valuables		

Each theme with its categories, clusters and sub-clusters will be discussed in detail.

The first theme that was identified by the experts as important information to record on the nursing record tool was the patient information. This theme will be discussed in section 4.2.1.

4.2.1.1 Theme 1: Patient information

Patient information was the first theme identified by the experts. The experts felt that correctly identifying a patient could reduce the chances of medico-legal risks.

The categories, clusters and sub-clusters that were identified with regard to patient information are summarised in Table 4.2. Each category with its clusters and sub-clusters are discussed in Sections a to d.

a) Patient identification

The first category with regard to patient identification was stressed by the experts as the most important step when a patient is admitted to an A&E unit. This step is to identify the patient. In the A&E unit the current practice for identifying a patient is to make use of a patient sticker as well as an A&E unit number system. The patient sticker contains details of the patient such as surname, initials, age, sex, physical address, date of birth and contact details.

The A&E unit number system is used as an additional measure of identification in the A&E unit for all patients, especially for the patients that are unknown. The majority of patients admitted to the A&E unit are unknown as they are critically ill or injured and unable to provide their details. The issue of patient identification receives high priority in the A&E unit, to ensure that especially the critically ill or injured patients are correctly identified during their management.

Table 4.2: Theme 1: Patient information: Summary of categories, clusters and sub-clusters

Theme 1	Category	Cluster	Sub-cluster
(4.2.1.1) Patient information	a) Patient identification	-Patient sticker -Patient identification bracelet	-Name -Surname -Hospital number -Date of admission -Date of birth -Address
	b) Preliminary diagnosis		
	c) Contact details		
	d) Triage	-Score -Colour -Admission priority	 -P1 -P2

The importance of identifying the A&E unit patients was confirmed by the group members. Similar identification practices are currently in use in other public and private A&E units, as was gathered from the group with comments such as:

- *…look sometimes our (public A&E unit) patients are not identified and they are then identified on the hospital sticker as John Doe…*
- *…we've (A&E unit in private sector) got that information on the sticker (patient sticker)…*
- *…they've (the patients) got a number tag (identification bracelet)…*
- *…make sure that the tag, (identification bracelet) or that the patients are numbered with a tag (identification bracelet)…*
- *…in fact it (patient identification) should be at the top of the nursing record tool…*

Supportive literature: The literature confirms that identifying a patient correctly is one of the first steps in the management of the patient (Reeves 2005:3). This is set out by the SANC in the section on acts or omissions (SANC 1985:2) where it stipulates that a person can be disciplined if that person neglects to identify a patient correctly.

Identification of the critically ill or injured patient presents unique challenges due to the "fast paced nature" of the clinical environment they are managed in (Beyea 2003:478). This environment includes the A&E unit. The critically ill or injured patient should be correctly identified on admission. Reeves (2005:1) reminds readers that identification data is only as good as the information that is captured on admission. Actions taken in the A&E unit pertaining to patient identification to prevent medico-legal mistakes include:

- making use of a patient sticker
- using an identification bracelet or band

Beyea (2003:481) supports the use of the patient sticker and the identification bracelet in the A&E unit.In a policy developed by her, Reeves (2005:7) describes the criterion that should be used for patient identification. This criterion had striking similarities to the information used on the patient sticker in the hospital where the study was done. According to Reeves (2005:7) the information needed, whether on an identification bracelet or patient sticker, to safely and correctly identify a patient is as follows:

- name and surname
- date of birth
- ward
- hospital number

This information is included on the patient sticker, which is printed once the patient is registered on the hospital's information system, together with the patient's address. All nursing record tools in the hospital should be identified with the correct patient sticker at the top or on the front page of the nursing record tools.

The second identifier used in the hospital is the patient identification bracelet. In the A&E unit where the management of the patient takes priority over recording of information, including identification measures, the A&E unit identification number is used as the second identifier (Reeves 2005:9). The allocated number is written on a temporary identification

bracelet that is put around the patient's wrist. In the hospital these numbers are used for all patients on a day to day basis. The numbering system starts at number 1 every morning at 07h00, and at the end of the day represents the total number of patients seen during the past twenty four hours. The number corresponds with the number allocated to the patient's file. This is a further measure to ensure that patients are identified correctly.

Beyea (2003:478) states that although both the patient sticker and the A&E unit identification numbered bracelet are used, it is evident that there is no failsafe approach or solution to ensure patient safety when it comes to identification. This implies that mistakes do happen pertaining to identifying a patient and that there is no bullet-proof method of safeguarding this procedure anywhere. However, it should be implemented as rigorously as possible to address this challenge.

b) Preliminary diagnosis

The second category that was identified was the preliminary diagnosis. The group of experts stressed the importance of a preliminary diagnosis on admission of the patient to the A&E unit. The preliminary diagnosis is usually obtained from the emergency care practitioners as part of the scene information. The experts commented:

- *…we need to know their (the emergency care practitioner's) differential diagnosis…*
- *…that is important because it (preliminary diagnosis) gives us an idea already of what's going on with the patient…*
- *…and maybe what preliminary problem they (emergency care practitioners) diagnosed…*

Supportive literature: The Free Dictionary Online (Thesaurus 2008:[1]) defines a preliminary diagnosis as a working diagnosis, provisional diagnosis or differential diagnosis. This is a decision-making process of making a diagnosis based on experience, clinical epidemiology, and early

confirmatory evidence provided by ancillary studies such as radiological findings. The preliminary diagnosis allows for early management, while awaiting special or more definitive investigations to confirm a final diagnosis.

c) Contact details

The third category that was identified was the recording of the contact details of the family or person accompanying the patient. Although obtaining a contact number of a family member or friend accompanying the patient was mentioned at the end of the FGI, the experts agreed that this information should be placed under the patient information at the beginning of the nursing record tool. The experts continued that it was mentioned so late due to the fact that they assumed this information would be in place:

- *…that's the first thing, we didn't mention it because we assumed it (patient identification) was done already…*
- *…who (name) accompanied the patient and a telephone number is important to obtain…*
- *…a space where you have telephone numbers for family or friends and other details…*

***Supportive* literature:** In supporting this view of the experts, one can start with Regulation 2598 that is known by South African registered nurses as the Scope of Practice (SANC 1984). In Chapter 2 nr 2 (o) of the Scope of Practice (SANC 1984:3) the family is mentioned as a part of the holistic approach in the management of all patients.

The contact details are important in order to obtain informed consent from a direct family member for procedures like blood transfusions or any of the procedures that are done in the theatre.

In booklet number 10 of the HPCSA on patient's informed consent (HPCSA 2007:7) the HPCSA states that informed consent can be given by other people than the patient him/herself in case of an emergency where the

critically ill or injured patient is unconscious or unable to make a decision him/herself.

The critically ill or injured patient could be unable to sign consent due to his/her altered level of consciousness. Family members may also be able to assist with providing an appropriate health history of the patient that could be helpful during the management of the critically ill or injured patient.

d) Triage

The fourth category that was identified was triage. The consequences of not triaging in an A&E unit, or triaging wrongly was emphasised by the experts. The group added that a patient can be classified as a critically injured patient by taking the injuries sustained by the other passengers involved in the same incident into consideration. The group members commented as follows:

- *…this guy (patient) comes in no scrape no bleeding but the other guy (patient) in the same accident is P4 (diseased patient)…*
- *…so then you must look deeper and harder to find something on this guy (patient)…*
- *…fifteen patients at once that is all triaged as P2's. Later you find that it is because they (the patients) were triage wrongly…*
- *…each patient should be triaged on an individual basis…*
- *…only you and the doctor with a P1 and you are busy…*

***Supportive literature*:** Literature supporting these views was mentioned in Chapter 3, where Bruce *and* Suserud (2005:201) state that triage is a vital part of the in-hospital environment of today, and is used in the daily routine and functioning of the A&E unit health care providers. Edwards (2006:73) defines triage as a form of nurse-patient interaction where a rapid, superficial but structured assessment is done by the registered nurse with minimal information. This could be seen as a disadvantage since this form of assessment is separated from the rest of the care process. Bruce *and* Suserud (2005:202) mention that one of the disadvantages of using the triage system is that the assessment of each

patient tends to be less individualised. The triage system ensures the safety of critically ill or injured patients since their condition is processed and prioritised more quickly in order to receive immediate emergency care. In addition Funderburke (2008:180) states that the nursing judgement made during triage is aimed at choosing the sickest patients for earlier treatment.

Triage is not referred to in the Scope of Practice of the registered nurse in South Africa, but it is mentioned in the Scope of Emergency Nursing Practice in the United State of America. The Emergency Nurses Association (ENA) in collaboration with the American Nurses Association (ANA), describes triage as one of the characteristics of the emergency nursing practice (ENA 1999:5).

A number of triage systems have been developed over the years and are used by different categories of medical staff like air medical crews, pre-hospital staff and also A&E healthcare providers (Holleran 2003:87). These different types of triage systems were discussed in detail in Chapter 3 (see Section 3.4)

It is evident that triage is of paramount importance in the A&E environment, and should therefore be included on the nursing record tool. The component that appears on the nursing record tool pertaining to triage is the triage score, triage colour and priority of the critically ill or injured patient. This is due to the fact that in the A&E unit for which this nursing record tool was developed, there is a separate triage form being used by the hospital (see Annexure E.2).

The next theme that was identified by the experts was recording the pre-hospital information. This theme will be discussed in Section 4.2.2.

4.2.1.2 Theme 2: Pre-hospital information

The second theme that was identified was pre-hospital information. The experts concentrated on a variety of information that should be included in the nursing record tool specifically pertaining to pre-hospital

information. The information that the experts wanted recorded is usually found on the emergency care practitioner's pre-hospital records. Due to the fact that these records are seldom handed to the A&E unit health care providers, the experts decided to include it in the nursing record tool to ensure that the information is not lost.

The categories, clusters and sub-clusters that were identified with regard to pre-hospital information are summarised in Table 4.3 and discussed in Sections a to d.

Table 4.3: Theme 2: Pre-hospital information: Summary of categories, clusters and sub-clusters.

Theme 2	Category	Cluster	Sub-cluster
4.2.1.2) Pre-hospital information	a) Mode of transport	Walk in Ambulance Helicopter	
	b) Call type	Medical Trauma Primary Transfer	-Hospital name -Referring doctor -Contact number -Management notes
	c) Emergency care practitioner	Pre-hospital record Identification	-Name -Qualification -Practice number
	d) Timeframe	Call received Time at scene Time at hospital	

a) Mode of transportation

The discussion started with the way the critically ill or injured patient arrives at the hospital. The experts mentioned the different ways in which a patient can arrive at the A&E unit. It includes patients walking into the unit or being brought by family or friends on a chair, which implies that the patient came to the hospital with his/her own transport. In addition

patients are transported to the A&E unit by road with an ambulance (private or public services) or by air ambulance (helicopter):

- *…when they (the patients) come with their own car, there is usually a big noise in front of the entrance…*
- *…whether the patient came in with a stretcher or walking…*
- *…normally they arrive via ambulance…*
- *…here comes the patient with the ambulance, what now…*
- *…could be transfers with the helicopter, we (public A&E unit) get a few of those…*
- *…accompanied by doctors yes, especially with the helicopter transfers…*

Supportive literature: The patients in South Africa can arrive at the A&E unit as a walk-in via own transportation, via ambulance or road transportation or via air transportation (helicopter). In South Africa the distribution of the population and the tertiary facilities is problematic, and the ideal "golden hour" for definitive care of the critically ill or injured patient is not always achievable in this context (Brysiewicz & Bruce 2008:128). The average pre-hospital time in South Africa is estimated at 120 minutes (Goosen, Bowley, Degiannis & Plani 2003:705). The authors explain that the prolonged time period could impact negatively on the survival rate of the critically ill or injured patient (Goosen *et al*. 2003:705). It is this problematic distribution of facilities that causes difficulties and affects the mode of transportation with which the critically ill or injured patient may arrive at the A&E unit. Goosen *et al*. (2003:705) states that the main reason why patients arrive at the A&E units via private or own transport is due to the lack of access to pre-hospital care.

However, the American College of Surgeon states that it is common practice for patients that make use of the emergency services to be transported to hospital via the road by an ambulance (PHTLS 2008:358). Ambulances transport all categories of patients, for example medical or trauma, adult or paediatric and urgent or non-urgent patients. According to Ahmed and Majeed (2008:502) ambulances are vulnerable to accidents and unforeseen circumstances, since they make use of the road.

Brysiewicz and Bruce (2008:127) remark that in South Africa speedy pre-hospital transportation of patients is hindered by environmental hurdles like the immense distance that has to be travelled to reach appropriate care.

There are other modes of transporting the critically ill or injured patient to the appropriate facility in the South African context, for instance air transportation. Helicopter services are considered by many as an extension of the A&E unit (Mistovich *et al*. 2004:896).

Several guidelines should be considered before helicopter transport is requested. Mistovich *et al*. (2004:896) mentions a few conditions pertaining to the critically ill or injured patient that could justify a helicopter transfer. These conditions are:

- shock,
- head injuries with altered levels of consciousness,
- chest or abdominal trauma that includes signs or respiratory distress or shock,
- penetrating injuries to the body cavity,
- critical time-illnesses such as severe carbon monoxide poisoning, traumatic amputation of limbs or heart attacks.

Although there are different call-out criteria for helicopter assistance in every service, the focus of the researcher's argument is that the critically ill or injured patient could arrive at the hospital by helicopter, instead of via ambulance. This possibility is evident by studying the example of call-out criteria by Mistovich *et al*. (2004:896) that the acuity level of the patient who might need the helicopter is very high, and these patients can all be classified as priority number one (P1) patients.

b) Call type

The second category identified was the call type. It was regarded as important to know in advance whether it was a medical (critically ill) or trauma (critically injured) patient that was on route to the A&E unit. In addition the experts regarded it as important to distinguish between

whether it was a primary call, thus directly from the scene, or a secondary call (inter-hospital transfer) from another hospital. This could aid the A&E heath care practitioners to properly prepare for the patient before he/she arrives in the A&E unit.

The experts explained that the fact that the patient has been transferred from another hospital affects the initial management that this patient will need. Transferred patients usually have some diagnostic test information such as X-rays or scans available, as well as laboratory results that could make the management of these patients straightforward. In addition, the patient may have invasive lines and tubes in situ that had been inserted by the transferring hospital during their management of the critically ill or injured patient.

The experts insisted on an area on the nursing record tool where notes on interventions performed at the transferring hospital could be written down. It was also stressed by the group that the receiving unit should know who the transferring hospital and doctor is. Statements that where made included:

- *…it (nursing record tool) has to, like incorporating trauma as well as medical patients…*
- *…it is important to know if it is a primary call or a transfer, because it gives us (A&E unit health care providers) an idea already of what is going on with the patient…*
- *…get them (patients) from another hospital. It is not always a primary call so…*
- *…indicate whether it was a transfer, from where and transferred by whom…*
- *…usually the transfers are the worst cases, they (patients) are the serious ones. Remember they (critical ill or injured patients) are transferred for a reason…*
- *…especially when transferred with the helicopter….*
- *…record there that you can see three entries or puncture wounds, or like a haematoma or something…*

- *…because of the medico-legal risks, I mean this guy (patient) has arrived with a pressure sore…*
- *…it must be said that the comment box is not for general admission notes, only to comment on the transferring hospital's treatment…*
- *…if the patient is a transfer, then the patient might have a nasogastric tube…*
- *…because the other day I (private hospital A&E nurse practitioner) got a transfer, with c-spine fracture and with a pillow and no collar. Where do I record this…*

Supportive literature: There are basically four call types in the emergency care environment. These call type are broadly classified as trauma or medical calls, and could be further divided into a primary call (from the scene) or secondary (transfer) call (O'Shea 2005:71).

Patients are usually transported from the scene of the incident (primary call) to the A&E unit. These call types include for example motor vehicle accidents (trauma call) on the highway or an acute myocardial infarction (medical call) from home, like an informal urban settlement (Goosen *et al*. 2003:705). If the patient is transported from the scene of the incident, whether by ambulance or helicopter, it is called a primary call since this is where the patient encounters his/her first contact with the pre-hospital emergency care practitioners (Elmqvist, Fridlund & Ekebergh 2008:186).

The next type of call that can be managed at the A&E unit is a secondary call, also known as an inter-hospital transfer (O'Shea 2005:72). The inter-hospital transfer of the critically ill or injured patient can be hazardous unless the focus of management is on proper pre-transfer stabilisation (Ahmed & Majeed 2008:502). In the A&E unit in this context, the concern is that pre-transfer stabilization does not always realise. This was also mentioned in the FGI by all the experts working in the public hospitals when they stated:

- *…usually the transfers are the worst cases, they (patients) are the serious ones. Remember they (critical ill or injured patients) are transferred for a reason…*

The inter-hospital transfer could be complicated due to the management the critically ill or injured patient received at the previous hospital. With the start of invasive management like mechanical ventilation, or inotropic intravenous agents, this management would need to be continued during the transfer of the critically ill or injured patient. This would require more ALS equipment to be used by the emergency care practitioner, and a higher level of skill needed to operate this equipment (Ahmed & Majeed 2008:502). It is thus very important to record all previous management that was delivered to the patient in order to assign responsibility to the individuals involved, and to ensure that the continuity of care is not interrupted.

c) Emergency care practitioner

An emergency care practitioner takes on the full responsibility for patient management on scene as well as during transportation from the scene to the hospital.

This emergency care practitioner should be identified on the ***pre-hospital record*** as the person taking responsibility as well as accountability for the pre-hospital management of the patient. The experts debated that when it came to pre-hospital record keeping, this aspect presented serious problems since pre-hospital staff (public and private sector) seldom hand in any records on the management that the critically ill or injured patient received whilst in their care. This would make it difficult to identify the emergency care practitioner when future enquiries occur. This was evident from remarks like:

- *…the ambulance service is using electronic forms now, not paper anymore…*
- *…the problem with that is that we (A&E nurse practitioner public hospital) don't get printouts…*
- *…now much more important to have that detail of the patient…because we don't receive the information anymore…*
- *…how do you find the people responsible for the patients with no records to trace them with…*

- *…or you want to trace them back and then they say they don't know who was on shift B…*
- *…they leave for another call, and hands no records to the A&E health care staff…*
- *…remember the one that is doing the records is taking over from the paramedic…*

Supportive literature: According to Mistovich *et al*. (2004:271) the emergency care practitioner has to keep record of the call and the treatment given to any patient. The main goal of keeping simple, but complete records is to ensure the continuity of care for the patient during his journey of medical attention (Mistovich *et al*. 2004:271).

The authors stressed the importance of pre-hospital records by explaining some of the reasons or functions for pre-hospital records as follows:

- To ensure a high quality of patient care
- Aiding the A&E unit staff in giving the most appropriate management in a sensible manner
- Serves as a baseline used to measure the critically ill or injured patients' progress against
- Serves as information to scientists and researchers who have never seen the patient.

Mistovich *et al*. (2004:272) further state that the pre-hospital record forms a part of the patients' hospital record that can have various uses in the A&E environment, and that all pre-hospital records or transfer information records should be handed to the A&E unit staff (Mistovich *et al*. 2004:892). Bruce and Suserud (2005:201) explain that during the handover process of the emergency care practitioner there is significant information exchanged amongst the health care providers. The authors explain that although information is reported verbally, it should also be recorded to provide a legal record of care and ensure quality continuation (Bruce & Suserud 2005:201). These records make it easy to identify the emergency care practitioner responsible for the management of the

critically ill or injured patient in the pre-hospital environment, since their names appear on these forms.

The experts then stated that it was important to ***identify*** the emergency care practitioner. This included knowing the emergency care practitioner's name, qualifications as well as his/her practice number.

The experts continued to stress the importance of getting hold of and recording the ***name*** of the emergency care practitioner that was responsible for the management of the patient in the pre-hospital environment. This ensures that everybody accepts responsibility as well as accountability for their own actions. It is common practice in the hospital that the A&E unit health care providers have to sign the emergency care practitioners' recording form when receiving a patient from them. It is for this reason that the experts remarked that this practice should go both ways. The emergency care practitioner has to sign on the nursing record tool as well. This was important since the pre-hospital record does not always accompany the patient and no proof of pre-hospital care, or of who delivered the care, is filed in the patients' file. Remarks that were made by the experts featured:

- *…once you (A&E nurse practitioner) have taken the patient over, he/she becomes your responsibility and you have to sign on his (emergency care practitioner) record (pre-hospital record)…*
- *…Yes, and then the paramedic (emergency care practitioner) can sign our form (nursing record tool)…*
- *…the person (emergency care practitioner) who actually brings in the patient, we should have his/her name and he/she should sign our document (nursing record tool) as well…*
- *…another big issue from a legal point of view is also signatures, and who the people (emergency care practitioners) are that brought the patient in…*
- *…take signature out completely and just write their (emergency care practitioner's) names…*
- *…because their (emergency care practitioners) names are on the form, we (A&E nurse practitioners) will be able to refer medico-legal*

liability issues back to the specific or responsible person (emergency care practitioner)…

With the last remark on the emergency care practitioners' council status, it was decided that knowing the ***qualifications*** of the emergency care practitioner could shed some light on the quality of care rendered to the critically ill or injured patient. This was due to the different responsibilities set out for each of the different categories of pre-hospital staff (BLS, ILS, ALS), and could help in evaluating the management given to the patient in the pre-hospital environment. The experts concluded this with statements as follows:

- *…so is he/she (emergency care practitioner) a BAC (BLS), a CCA (ALS) or an ANA (ILS)…*
- *…I'm talking nurses (nurse practitioners) and doctors (medical practitioners) as well…*
- *…doctors yes, especially with the helicopter transfers…*
- *…patient (critically ill or injured) was not intubated (endotracheal intubation) on scene because it is not in his/her (emergency care practitioner's [BLS or ILS]) job description…*

The experts were adamant that the emergency care practitioner responsible for the pre-hospital management should sign the nursing record tool. The experts then reflected that having the signature of this responsible person, either in the pre-hospital or hospital environment is not enough. They concluded that the ***practice number*** of the emergency care practitioner, medical practitioner and the registered nurses should be included on the nursing record tool, as this would be of more value. This would make it much easier to identify the person if necessary. The experts also confirmed that in many of the A&E units in the private sector, the emergency care practitioners were obliged to fill in an ambulance register when bringing a patient to the A&E unit. The experts were concerned that specifically the medical practitioners and nurse practitioners would be unwilling to provide this detail at first. It was noted that the change should be regarded as important to ensure that the right health care

providers take responsibility for their actions as well as omission thereof in future. Remarks from the experts included:

- *…names and practice numbers…*
- *…practice numbers; it's a nice one…*
- *…his/her (emergency care practitioner, medical practitioner and nurse practitioner) name, his/her (emergency care practitioner, medical practitioner and nurse practitioner) council status and council number…*
- *…in the future we (A&E nurse practitioners) will, for the nursing council (SANC), we will use cards. We are going to wear cards with our council numbers (SANC registration numbers) on it…*

Supportive literature: In Regulation 717 (HPCSA 2006:5) the identification by name of health care providers is mentioned. Firstly this Regulation (R717) explains that a practitioner should use his/her own name for their private practice. This will make identifying the responsible person that the practice belongs to easier. Regulation 717 (HPCSA 2006:8) also states that a practitioner should sign all official records used during the execution of their duties and also write their name in block letters next to their signature. This proves that the HPCSA aims to simplify the process of identifying the responsible practitioner involved in the management of all patients.

According to Regulation 717 (RSA 2006:10) section 21(a) stipulates that an emergency care practitioner, medical practitioner or medical specialist is only allowed to perform acts for which he/she is adequately trained, educated or experienced in, except in an emergency. This sets apart the different skills that each category of emergency care practitioner is able to perform according to his/her qualifications, when managing the critically ill or injured patient. Each practitioner should stay within the restrictions of their scope of practice. This is an important point since the emergency care practitioner in this study is represented by a variety of qualified people as explained in the definition of the emergency care practitioner (see Section 1.7.5).

Similar principles apply to all types of nurses working in the A&E unit, like the nursing auxiliary, enrolled nurse, the registered nurse and the A&E nurse practitioner. The nursing auxiliary's practice is guided by Regulation 2176 (SANC 1993) and the enrolled nurse's practice is informed by Regulation 2175 (SANC 1993). The registered nurse as well as the A&E nurse practitioners should practice according to their Scope of Practice, also known as Regulation 2598 (SANC 1984). This Regulation and many others that regulate the practice of the registered nurse were discussed in detail in Chapter 3 (see Section 3.8.3).

The importance of the registration (practice) number as a unique identifier for every nurse registered in South Africa is highlighted by Subedar (2008:[1]) in an circular (circular 1/2008) under the section e-Register on the SANC webpage. Subedar (2008:[1]) explains that by making use of the nurse's registration (practice) number, all his/her qualifications can be verified. This also applies to the emergency care practitioner and the medical practitioner. Using the practice number is an easy way of identifying which health care providers were involved in the management of the critically ill or injured patient and explains why the experts felt that the practice number should be written on the nursing record tool.

d) Timeframe

Timeframes were regarded as important, specifically concerning the call-out time of the emergency care practitioners, as well as the time it took to reach the scene and the time they arrived at the hospital. The remarks made by the experts pertaining to the timeframes were:

- *…what about the time they (emergency care practitioners) received the call…*
- *…the time on scene…*
- *…time they (emergency care practitioners) reached the hospital…*

Supportive literature: Mistovich *et al*. (2004:275) state that the administrative information that should be gathered by the emergency care practitioners when responding and attending to a call includes:

- time the incident was reported,

- time the ambulance was notified,
- time of arrival at the patient,
- time the ambulance left the scene,
- time the ambulance arrived at the hospital/destination,
- time of transfer of the patient's care.

From this information it is clear that the emergency care practitioner will have all the relevant information to report to the A&E healthcare providers at the A&E unit, who in turn can record the information.

This information plays a crucial part in the in-hospital management of the critically ill or injured patient as waiting longer than an hour for medical care could increase the mortality rate of the critically ill or injured patient (Goosen *et al*. 2003:705). The American College of Surgeons stress that the time of injury is important information for the receiving hospital to have (ATLS 2005:12).

The American College of Surgeons (PHTLS 2005:371) agrees with Goosen *et al*. (2003:705) that delaying the transportation of a critically ill or injured patient to the closest appropriate facility leads to an increased mortality rate. As the timeframes and mortality are so closely linked to each other, it is important for the A&E unit staff to know how much time was spent on scene, in order to predict the possible complications that could also increase the patient's mortality rate. This could prove valuable in predicting or suspecting possible complications due to long scene time, such as blood loss or hypothermia (Smith, Bland & Mullet 2005:247). Mistovich *et al*. (2004:271) mention that the time statistics could also be seen as a great source of information for future research.

The next theme that was identified by the experts as important information to record on the nursing record tool was the pre-hospital management. This theme will be discussed in Section 4.2.3.

4.2.1.3 Theme 3: Pre-hospital management

The third theme that was identified in the FGI was pre-hospital management. The goal of pre-hospital care is the immediate stabilization of the critically ill or injured patient, and then transportation to the nearest appropriate facility (Urden *et al.* 2006:970). The management approach for these patients, in order to reach this goal, is the primary survey with the systematic assessment and management of the ABCDE's. The experts in the FGI also concentrated on this well-known mnemonic as a systematic approach. ABCDE is the abbreviation used for airway, breathing, circulation, disability/drugs/defibrillate and exposure or environmental control. The familiarity of this management approach made the categorisation for this theme easier.

The categories, clusters and sub-clusters (see Table 4.3) that were identified with regard to pre-hospital management and the primary survey are summarised and discussed in Section 4.2.3.1.

a) Primary survey

The primary survey is an approach used in the pre-hospital and in-hospital environment. The primary survey must be stopped as soon as life-threatening conditions are identified for immediate life-saving interventions. This well-known systematic approach was referred to by the experts in a confident manner:

- *…there should be a block pre-hospital with primary survey in…*
- *…it's a primary assessment…*
- *…place for primary survey or cause…*
- *…what did they (emergency care practitioners) assess for, and what was their specific treatment…*
- *…if you follow the ABC's (Airway, Breathing and Circulation) you should get at everything…*
- *…the primary survey with all the things you have mentioned pre-hospital, but also the drug…*
- *…ABC (Airway, Breathing and Circulation), SAMPLE DEATH (history taking method)…*

- *…some people (health care providers) go ABC (Airway, Breathing and Circulation) and then go…*
- *…now the patient is yours (A&E nurse practitioner), now you can start with primary survey…*
- *…airway, breathing, circulation… included in primary survey…*
- *…then starts primary survey, what did you (health care providers) do for primary survey…*
- *…where we (A&E unit in the private sector) come from we stabilise the patient first…*

Table 4.4: Theme 3: Pre-hospital management

Theme 3	Category	Cluster	Sub-cluster
4.2.1.3) Pre-hospital management	a) Primary survey	**A**irway	Open, maintained and protected by patient Actions (advanced airway management)
		C-spine	Assess Actions (equipment used for immobilising)
		Breathing	Assess Actions
		Circulation and haemorrhage control	Assess Actions (Vascular access, fluid resuscitation)
		Disability	Assess (neurological assessment scales) Actions (drugs)
		Drugs	
		Defibrillate	
		Expose/Environment	

Supportive literature: The literature provides evidence of why the pre-hospital management is based on the primary survey. Urden *et al*. (2006:970) state that the goal of the pre-hospital management is immediate stabilisation and transportation of the patient. Elmqvist *et al*. (2008:185) state that a common feature of emergency care is short, fragmented encounters with great demands for rapid management.

As discussed in Section 3.7.3.1 the goal of the primary survey is to assess, identify and manage life-threatening conditions simultaneously

and is done systematically according to the steps of the mnemonic ABCDE (American College of Surgeons [ATLS] 2005:13).

The experts identified the ABCDE as the main components of the primary survey. Each component will be discussed.

- **Airway**

Airway (**A**) is the first priority that receives attention during the primary survey. It includes ensuring an open airway as well as cervical spine (c-spine) control. The experts all agreed that the assessment of the airway should be based on the ability of the patient to open, maintain and protect his/her airway. If the patient has any reason that prevents him/her from maintaining a patent airway, advanced airway management will be initiated by the emergency care practitioners pre-hospital or in-hospital by the A&E unit personnel. Some of the advanced airway management procedures that could be used if the airway was found not patent were mentioned by the experts:

- *…include you can have like an airway (A) and c-spine, what was assessed for…*
- *…just say ok for airway is it open, maintained…*
- *…yes or no prompts, make it a tick off list…*
- *…what did they (emergency care practitioners) assess for, and what was their specific treatment…*
- *…quickly say his airway is maintained…*
- *…gunshot wound mouth…or what ever…and then management is insertion of endotracheal tube…*
- *…my (A&E nurse practitioner public hospital) airway management would be suctioning and then the insertion of endotracheal tube*
- *…some people (health care providers) go ABC (Airway, Breathing and Circulation) and then go…*
- *…so they (health care providers) go quick ABC (Airway, Breathing and Circulation)…*
- *…intubated (endotracheal intubation) with a 7,5 mm ET-tube (endotracheal tube)…*
- *…you have to intubate (endotracheal intubation) so you intubate…*

- *…with an OP (oropharyngeal) tube down his throat…*

The experts also wanted more information concerning the patient that was intubated due to an inability to maintain a patent airway. This information included things like the depth of the endotracheal tube (ET-tube) at the patients' teeth. This is usually a good indicator to monitor the movement of this tube, especially when the patient has been moved, for example, when the patient is moved from the ambulance trolley to the A&E unit trolley or from the A&E unit trolley to the scan table and so on. The experts mentioned that this was an observation that needed to be recorded at least once:

- *…now intubate with 7 mm ET-tube (endotracheal tube), 21 mm at the teeth…*
- *…you have to intubate (endotracheal intubation) so you intubate…*
- *…so record the size of tube and the type of intervention…*
- *…when coming back from scan, now the tube (endotracheal tube) is longer. How do you know to look if it is still in…*
- *…Depth at teeth can help…*

Supportive literature: The literature confirms that the aim during the management of the airway for critically ill or injured patients, pre-hospital or in-hospital, is to ensure that the airway is patent. This implies that the patient should be able to open, maintain and protect his/her airway at all times (American College of Surgeons [ATLS] 2005:15).

The assessment of the airway is based on the ability of the critically ill or injured patient to open, maintain and protect his/her own airway. A patent airway can be threatened in various ways. According to the American College of Surgeons (ATLS 2004:15) the airway should be assessed for any kind of obstruction like foreign bodies, facial fractures, mandible fractures or tracheal fractures that can obstruct the airway partially or completely. The tongue in the posterior pharynx is usually the main obstructer of the airway (Proehl 2004:10). Airway oedema can also lead to obstruction and is as dangerous as direct injury to the airway. Airway patency can also be effected by the critically ill or injured patient's

Glasgow coma scale (GCS), as a GCS of 8 or less requires advanced airway management (American College of Surgeons [ATLS] 2005:15). The GCS concentrates on the critically ill or injured patient's inability to protect and maintain his/her airway, due to a depressed level of consciousness.

No airway can be managed without proper airway positioning, as the tongue is one of the biggest reasons for the obstructed airway of the critically ill or injured patient (Proehl 2004:10). Although these airway positioning maneuvers were not mentioned in the FGI by the experts, they are used in practice on a daily basis. For this reason the researcher included the two most common maneuvers in the nursing record tool. These airway positioning maneuvers include:

- Head-tilt chin-lift maneuver
- Jaw thrust maneuver

Due to the many different ways to manage an airway in practice, the researcher used the advanced airway management algorithm of the Resuscitation Council of Southern Africa (2006) as basis. This algorithm is included in the protocol manual of the Advanced Life Support emergency practitioner (2006:114) as a protocol and forms the basis for advanced airway management for the pre-hospital environment. This algorithm is also used in the A&E units by the A&E healthcare providers when doing advanced airway management.

The advanced airway management procedure that ALS practitioners should be skilled in, according to the algorithm, includes the use of a variety of advanced equipment that can be used to manage the critically ill or injured patient's airway.

The Advanced Life Support emergency practitioner (HPCSA 2006:114) manual includes the following airway management procedures:

- Use of a oropharyngeal or nasopharyngeal airway
- Placement of a Laryngeal mask airway
- Tracheal intubation
- Needle or surgical cricothyroidotomy

After tracheal intubation of the critically ill or injured patient it is important to record the size of the tube used, as well as the markings of the tube at the level of the teeth (McCorstin, Cottrell, Rose and Dwyer 2008:122). This is mentioned as one of the observations that should be done in order to ensure the placement of the tube. Depth at the teeth can indicate whether the tracheal tube has moved or not. These advanced airway skills are skills that all advanced life support practitioners can use as interventions to open, protect or maintain the airway of the critically ill or injured patient.

- **Cervical spine control**

As mentioned when airway management is discussed, the cervical spine management (**c-spine**) goes hand in hand with airway management. This highlights the importance of protecting the c-spine. The experts all mentioned the importance of protecting the c-spine. Log rolling a patient with suspected or confirmed c-spine injuries was highlighted by the experts in order to ensure the protection of the critically injured patient's c-spine. The experts then discussed some of the equipment used to protect the c-spine in the pre-hospital and the in-hospital phase that should be recorded on the nursing record tool in order to manage medico-legal risks. Due to the fact that the equipment is used pre-hospital and in the A&E units, it was included under the pre-hospital section and in the A&E unit management section on the nursing record tool. Some of the statements made by the experts include:

- *…then you (A&E unit health care providers) start with c-spine management…*
- *…you (health care providers) have to write there airway plus c-spine, because sometimes people (health care providers) forget completely that c-spine is part of airway…*
- *…how the patient was packaged (immobilized)…*
- *…where are we (health care providers) going to put log roll…*
- *…I think we (health care providers) have to log roll left and right…*
- *…into the primary, just after immobilizing of the head…*
- *…where are we (health care providers) going to write stuff that is wrong, because the other day I (A&E nurse practitioner private*

hospital) got a transfer with a c-spine fracture with a pillow under his head and no neck collar…

- *…the ambulance guys (emergency care practitioners) did not apply a neck collar…*
- *…was there a collar, because the c-spine will be cleared later on…*
- *…when taking the patient of the spine board...*
- *…the spine board, we (A&E nurse practitioner private hospital) do that too…*
- *…while the patient is in the spider harnass…*
- *…as you (health care provider) take the head blocks (HID) off…*
- *…then you (A&E unit health care provider) will say no neck collar…*
- *…head immobilising device or what ever…*

Supportive literature: The American College of Surgeons (ATLS 2005:15) confirms the viewpoint of the experts with an imperative statement that protecting the spine and spinal cord is an equally important principle to follow during airway management and should not be neglected. This is also concurrent with Proehl (2004:2) who states that the primary survey starts with assessing the patency of the airway while simultaneously maintaining cervical spine immobilization with manual stabilization. C-spine protection is connected with airway due to the fact that respiratory muscles might be paralysed with a c-spine injury, causing inadequate breathing or no breathing at all (Mistovich *et al*. 2004:727).

The goal for c-spine immobilization is to limit the movement of the spine in order to prevent further harm. There are several methods used to establish c-spine protection. Manual inline stabilization is where spinal immobilization starts pre-hospital as well as in-hospital, but is only one way of immobilizing the spine (Campbell & Chapter [ITLS] 2008:186, American College of Surgeons [PHTLS] 2005:249). This is where the emergency care practitioner or A&E unit health care provider holds the head of the patient in-line with the rest of his spine. This procedure is explained in detail in pre-hospital handbooks (Campbell & Chapter [ITLS] 2008:186, American College of Surgeons [PHTLS] 2005:250 & Mistovich *et al*. 2004:728), thus it is safe to assume that it is one of the most

common and important skills for all emergency care practitioners, pre-hospital as well as in-hospital.

Mistovich *et al*. (2004:728) also state that one of the first priorities of the emergency care practitioner, when arriving on the scene of a trauma incident, is to do manual in-line spinal immobilization. The authors explain that in-line immobilization should continue until the patient is immobilized onto a spine board (Mistovich *et al*. 2004:728).

Equipment used pre-hospital to further immobilize the spine includes cervical collars that are used in the pre-hospital and in-hospital environment (Campbell & Chapter [ITLS] 2008:186, American College of Surgeons [PHTLS] 2005:251, Mistovich *et al*. 2004:729). The head immobilizing device (HID) is another spinal immobilization device used by emergency care practitioners pre-hospital, as well as in-hospital by A&E unit personnel. This piece of equipment immobilizes the patient's neck and is attached to the spine board or A&E unit trolley on bilateral sides of the head when a c-spine injury is suspected (Mistovich *et al*. 2004:735).

The only piece of spinal equipment that is not really used in-hospital, but regularly used by the emergency care practitioner pre-hospital, is the Kendrick extrication device (KED). The American College of Surgeon explains that this device is used to safely immobilize the c-spine of a patient involved in a motor vehicle accident (MVA) before moving the patient from a sitting position (PHTLS 2005:260). Spinal immobilization should be sustained in-hospital, even in the critical care environment, with the prescribed stabilization device like a cervical collar (Alspach 2006:511).

The skill to log-roll a patient with a c-spine injury is also commonly mentioned in the literature when spinal immobilization is discussed (Campbell & Chapter 2008:195, American College of Surgeons [PHTLS] 2004:251 & Mistovich *et al*. 2004:738). This skill is used on a daily basis by the emergency care practitioners pre-hospital, by the A&E healthcare providers as well as by the CCU personnel (Mistovich *et al*. 2004:741). It

is thus evident that c-spine protection is a skill that is used by all categories of medical personnel, from pre-hospital, to the A&E unit personnel, all the way to the CCU personnel. Its place on the nursing record tool could be validated by the experts and by the literature, and therefore the researcher included it.

- **Breathing**

Breathing (**B**) is the next step in the systematic ABCDE approach to the management of the critically ill of injured patient (American College of Surgeon [ATLS] 2005:16). Breathing has a lot of different approaches, but from a nursing point of view it seems like the experts agreed that it should include assessment and management. This could be coupled to the nursing process's approach of assessment and intervention. The nursing process steps were discussed in Chapter 3 (see Section 3.6). The management of breathing can be effected by the management of airway. If the patient was intubated during "A", then "B" will include mechanical ventilation.

The experts mentioned a lot of examples of breathing assessment, as well as actions that can be taken. The experts discussed the assessment of breathing of the critically ill or injured patient with remarks like:

- *…Just follow the ABC…*
- *…now you (health care provider) can start, airway, breathing, circulation…*
- *…assessment and management of breathing is next…*
- *…What did they (emergency care practitioners) assess for, and what was their specific treatment…*
- *…now you (health care provider) need to know if the patient is breathing, at what rate…*
- *…the lungs must be auscultated bilateral, apical and basally…*
- *…listen, look and feel for breathing…*
- *…he (the patient) is breathing, then go to C (circulation)…*
- *…the paramedic (emergency care practitioner) that brought the patient in will say that he (the patient) took his breath, his last breath outside the gate…*

- *…you (health care provider) look at the patient and you can see but the patient is not breathing…*
- *…the emergency care practitioner will hand over with the comment that the patient definitely did not aspirate, but when you (health care provider) auscultate there are crepitus (abnormal breath sounds) everywhere…*
- *…the trachea (of the patient) that has been checked…*
- *…now you (health care provider) see okay the trachea is deviated…*
- *…medical patient has a distended JVP, that's right…*
- *…crackles (abnormal breath sounds) or rhonchi (abnormal breath sounds) or whatever…*

Supportive literature: The normal spontaneous breath rate for an adult patient is 8-24 breaths per minute (Mistovich *et al.* 2004:113). The American College of Surgeons (ATLS 2005:16) remarks that breathing is coupled with ventilation. Urden *et al*. (2006:567) define ventilation as the movement of air in and out of the lungs. A patent airway alone, however, does not ensure adequate ventilation. There has to be adequate gas exchange as well (American College of Surgeons [ATLS] 2005:16).

The American College of Surgeons further suggests that the chest should be exposed in order to ensure a proper assessment of the patient's ability to breathe normally. This source (American College of Surgeons [ATLS] 2005:16) explains that one should start the management of breathing with an assessment of the patient's ability to inhale oxygen into the lung. Trauma and illness can affect the ability of the respiratory system to provide oxygen and eliminate carbon dioxide (American College of Surgeons [PHTLS] 2008:97). The American College of Surgeons describes the assessment of breathing in detail in the manual used during the education of the ATLS course (American College Of Surgeons [ATLS] 2005:16), but in summary it comes down to a listen, look and feel assessment, as also stated by one of the experts.

The primary assessment for breathing was also summarised in Chapter 3 (see Table 3.3). Auscultation (***listen***) is used during this phase and

involves listening for normal or abnormal breath sounds. These abnormal sounds are explained by Urden *et al.* (2006:587) as sounds that can be heard with auscultation, and listed as:

- Decreased breath sounds (little airflow to certain areas of the lung)
- Wheezes (high-pitched, squeaking or whistling sounds)
- Rhonchi (coarse, rumbling, low-pitched sounds)
- Crackles (short, discrete popping or crackling sound)
- Silent chest (no airflow).

With inspection (***look***) of the chest the emergency care practitioner should expose the chest completely (American College of Surgeons [ATLS] 2005:16), and then look for the major signs and symptoms of chest emergencies during "B". Table 4.5 includes life-threatening signs and symptoms in the critically ill or injured patient (Campbell & Chapter [ITLS] 2008:97), and was therefore included on the nursing record tool as assessment prompts under primary survey, were the aim is finding and treating these life-threatening conditions (American College of Surgeons [ATLS] 2005:13).

Table 4.5: Major signs and symptoms of breathing emergencies

○ Shortness of breath	○ Nasal flaring
○ Distended neck veins	○ Abnormal abdominal muscle use
○ Tracheal deviation	○ Abnormal rib retraction
○ Asymmetrical chest movements	○ Chest wall contusion (wounds)
○ Cyanosis	○ Open wounds

(Adapted from Campbell & Chapter [ITLS] 2008:97; American College of Surgeons [PHTLS] 2005:142)

These signs and symptoms where chosen because they can be directly connected to the twelve most deadly chest conditions, known as the "deadly dozen". The twelve conditions can compromise breathing in the critically ill or injured patient, especial the injured patient, and are listed in the ITLS manual (Campbell & Chapter [ITLS] 2008:97) according to priority (see Table 4.6).

Table 4.6: The deadly dozen

1	Airway obstruction	**7**	Myocardial contusion
2	Open pneumothorax	**8**	Traumatic aorta rupture
3	Flail chest	**9**	Tracheal or bronchial tree injury
4	Tension pneumothorax	**10**	Diaphragmatic tears
5	Massive hemothorax	**11**	Oesophageal injury
6	Cardiac tamponade	**12**	Pulmonary contusion

(Adapted from Campbell & Chapter [ITLS] 2008:97)

These are the conditions the emergency care practitioner and the A&E unit personnel have to assess for under breathing during the primary survey (American College of Surgeons [ATLS] 2005:16; Campbell & Chapter [ITLS] 2008:97).

The last step in the assessment of breathing involves the palpation (***feel***). Palpation of the chest involves finding abnormalities that could compromise ventilation (American College of Surgeons [ATLS] 2005:16). During palpation Campbell & Chapter (ITLS 2008:97) and the American College of Surgeons (PHTLS 2005:142) recommend that the emergency care practitioner palpate the neck and the chest for tenderness, instability, crepitations and subcutaneous emphysema.

It is evident from the literature why the researcher had to include the most important assessment findings as prompts which the emergency care practitioner had to listen, look and feel for, on the nursing record tool. There are other signs that can not be seen, but that the emergency care practitioner and the A&E unit personnel should assess for.
This can only be done if the patient is awake and able to answer questions. This includes the assessment of chest pain (Urden *et al*. 2006:454). Chest pain could be due to injury of the chest (critically injured patient), or ischemia of the heart muscle (critically ill patient). It should however be included in the assessment phase.

The use of the saturation monitor in the pre-hospital and in the in-hospital environment was mentioned by the experts under breathing management. Remarks made here included:

- *…put the patient on all the possible monitors…*
- *…put the patient on the monitor (cardiac monitor), saturation monitor…*

Supportive literature: One of the tools used to aid in assessing whether the critically ill or injured patient is breathing and oxygenating adequately, is the peripheral saturation monitor (American College of Surgeons [PHTLS] 2004:109). Due to the fact that this monitor is used in the pre-hospital environment on a regular basis, there was a space left on the nursing record tool where the person doing the record keeping can indicate whether pulse oximetry was used in the pre-hospital setting. The saturation measurement is an essential part of in-hospital vital signs and is done continuously on a critically ill or injured patient. This observation is done continuously due to the fact that it is an easy non-invasive way of measuring the patient's oxygenation (Proehl 2004:97). It was therefore also included under Theme five on the continuous observation chart.

The experts then mentioned different ways of delivering oxygen to a patient as part of the breathing management. The easy and most common non-invasive way to deliver oxygen to the critically ill or injured patient is with an oxygen mask. When the patient is intubated, the most familiar way for the pre-hospital environment is by making use of the ambubag as oxygen delivering device. In-hospital the critically ill or injured patient's breathing after intubation is managed via a mechanical ventilator. All of these methods were mentioned by the experts with remarks like:

- *…one patient came in with a rebreather mask on his face and an OP-tube (oropharyngeal tube) down his throat…*
- *…if airway is clear, you (A&E health care provider) do nothing, but put on an oxygen mask…*
- *…put on a mask for oxygen delivery…*
- *…because then he (emergency care practitioner) will want his ambubag…*

- *…but usually then you (A&E health care provider) are busy with bag-valve-mask ventilation, getting the mechanical ventilator ready, obtaining an arterial blood gas…*
- *…what about the ventilator settings. No put it in a block with the continuous observations…*

Supportive literature: When managing the critically ill or injured patient's breathing, the patient might not always be intubated and on invasive breathing management. The important rule is to deliver oxygen to the patient in some way (Proehl 2004:114).

The non-invasive management procedures include the administering of oxygen via a face mask. There are different types of face masks on the market and the emergency care practitioner and A&E healthcare provider should know the criteria and indications for each mask (American College of Surgeons [PHTLS] 2008:108: Proehl 2004:116). Another non-invasive ventilation method and device that is used pre-hospital as well as in-hospital is the bag-valve-mask ventilation device (Proehl 2004:154). This is a manual ventilation procedure that all emergency care practitioners should be able to perform. During this method of ventilation, the emergency care practitioner delivers oxygen manually to a patient with a bag-valve-mask device (ambubag). This procedure is usually used in the in-hospital setting as well, preceding the endotracheal intubation of a critically ill or injured patient. Effective ventilation with a bag-valve-mask device requires a high degree of skill, and can be very problematic (Campbell & Chapter [ITLS] 2008:74 & Mistovich *et al*. 2004:121).

Invasive breathing procedures usually follow after the critically ill or injured patient has been intubated. The emergency care practitioner can use the bag-valve-mask device connected to the endotracheal tube to manually ventilate the patient, or make use of a mechanical ventilator (Urden *et al*. 2006:671). Although mechanical ventilators are not commonly used in the pre-hospital setting, the emergency care practitioner of today is taught the basic knowledge needed to do mechanical ventilation. This knowledge includes the calculation of the tidal

volume and minute volumes needed to control the amount of air being pushed into the lung with each breath (American College of Surgeons [PHTLS] 2004:95). The emergency care practitioner will need this basic knowledge of ventilation, especially when doing an inter-hospital CCU transfer of a ventilated patient.

The helicopter services of today are all equipped with ventilators, and their personnel is trained in using the mechanical ventilator. That is why the helicopter services are considered by many as an extension of the A&E unit (Mistovich *et al*. 2004:896). Mechanical ventilation in the A&E unit will be discussed in detail under Theme six (see Section 4.2.6.4).

- **Circulation and haemorrhage control**

Circulation and haemorrhage control (**C**) is the next step in the systematic ABCDE approach to the management of the critically ill or injured patient (American College of Surgeons [ATLS] 2005:16). The experts also agreed that this is the next step in the primary survey. The assessment of the circulation featured in the discussion and was then followed by the action that can be taken during this phase of the management. The experts were all of the opinion that circulation and haemorrhage control goes hand in hand. They then mentioned a few actions for controlling blood loss that is applicable to both the pre-hospital and the in-hospital environment. The role blood pressure plays in assessing the circulation of the critically ill or injured patient in shock was also highlighted. The importance of identifying and managing haemorrhaging in advance was stressed by the experts. Remarks that were elicited pertaining circulation were:

- *…Just follow the ABC (Airway, Breathing, Circulation)…*
- *…now you (A&E health care provider) can start, airway, breathing, circulation…*
- *…he (the patient) is breathing and then go to C (circulation)…*
- *…remember to include blood loss…*
- *…yes and on the scene blood loss is a big problem…*
- *…splinting can also be used to stop bleeding…*
- *…or suturing the bleeder (vein) is a good choice…*
- *…control of arterial bleeding at this stage is important…*

- *…and palpable radial pulses will tell you (A&E health care provider) more about the blood pressure during shock…*
- *…pulses yes, because then you (A&E health care provider) already know the blood pressure…*
- *…non-palpable pulses means we (A&E health care providers) are in big trouble…*
- *…check the perfusion (blood flow to the periphery)…*
- *…if there are peripheral pulses then you (A&E health care provider) can estimate the blood pressure…*
- *…but then you (A&E health care provider) know what the blood pressure is, if there are pulses palpable, just add where they were palpable, like radial, femoral or carotid…*
- *…chart your (A&E health care provider) first blood pressure here under circulation, but with the monitor…*

Supportive literature: The American College of Surgeons states that haemorrhage is the leading preventable cause of deaths in the critically injured patient (American College of Surgeons [ATLS] 2005:16). Blood loss slows down the perfusion to the tissue, and this can be assessed by looking at the area that is usually affected first, like the patient's level of consciousness, skin colour and pulse (American College of Surgeons [ATLS] 2005:17). This opinion is shared by Mistovich *et al*. (2004:176) who remarks that assessment of circulation during the primary survey should include the following steps:

- Assess for palpable or non-palpable pulse: Assess pulses bilaterally for the quality, the rate and the regularity of the pulse (full, slow and regular are seen as normal).
- Assess for major bleeding externally, or possible bleeding internally: Mistovich *et al*. (2004:611) also state that external bleeding can be very severe, and that would mean that the patient could have lost a lot of blood on the scene.
- Assess the colour and temperature of the skin: At the mouth, lips, eyelids and under the tongue. Check for abnormal signs like paleness, cyanosis or yellow colour discolouration. The skin is assessed for

abnormalities like being hot (infection, heat exposure) or cold (external cold environment) and clammy (shock).

- Assess for the capillary refill time: Quickly checking the peripheral perfusion by pressing on the nail bed, the fleshy part of the palm or the forehead followed by releasing and assessing the time it takes to return to the normal colour of pink (normal >3 seconds).
- Assess the blood pressure (American College of Surgeons [PHTLS] 2005:179): Although it is known that blood pressure is not a good indicator of shock and only decompensate with a fluid loss that exceeds 30% of blood volume, it can be an indicator of when the resuscitation reaches a crucial phase.

All of these assessment steps are focussed on assessing the critically ill or injured patient in order to find and recognise any type of shock (American College of Surgeons [ATLS] 2005:16). Mistovich *et al*. (2004:610) define shock as the insufficient supply of oxygen and nutrients to the body cells, and the ineffective removal of carbon dioxide and other waste products, due to inadequacy of blood. It is then obvious that shock can lead to death.

Blood loss on the scene was mentioned by one of the experts as necessary information that the emergency care practitioner must communicate to the A&E unit staff. This will give the A&E unit receiving the patient time to prepare by notifying the surgeon on standby, or ordering blood to replace the losses (Mistovich *et al*. 2004: 271). External bleeding can be controlled easier than internal bleeding. With external bleeding the emergency care practitioner or A&E unit personnel can apply direct pressure to the bleeding site (Campbell & Chapter [IHTLS] 2008:129) or splint areas like the pelvis to stabilise it and lessen further injury or bleeding. Internal bleeding is not controllable in the pre-hospital environment, and the critically ill or injured patient who is suspected to have such a bleeding, should be transported to the nearest appropriate A&E unit for definitive care (Campbell & Chapter [ITLS] 2008:131).

The next component that was mentioned by the experts was the actions or management taken during the primary survey to control circulation. Here they were in agreement once again that fluid resuscitation plays an important role in the management of shock, especially hypovolemic shock. For the critically ill patient fluid restrictions could also be considered, depending on the type of shock they present with.

The experts also concentrated on the different vascular access procedures that could be necessary to follow in order to manage the critically ill or injured patient. The first set of vital signs taken by the emergency care practitioner pre-hospital, and the first set of vital signs taken by the A&E healthcare providers were mentioned as very important. These two sets of vital signs form the baseline observations that would be used to measure the success of the pre-hospital management, and serve as the basis from where the in-hospital management starts. Remarks from the experts were:

- *…now we (A&E health care providers) need a drip to manage the possible shock…*
- *…give me (A&E nurse practitioner private hospital) a high cap (large bore intravenous line)…*
- *…you (A&E health care provider) can include CVP (central venous pressure line)…*
- *…The name of the person (A&E health care provider) who has inserted the CVP (central venous pressure line) is also important…*
- *…anything else under circulation…all we (experts) have is lines…*
- *…Yes, what about the fluids that was used…colloids or blood or…*
- *…then start Ringers as soon as possible, unless blood is indicated…*
- *…we (A&E nurse practitioner private hospital) also use Ringers or in some cases Normal Saline…*

Supportive literature: The American College of Surgeons (PHTLS 2005:185) starts the section on vascular access by explicitly stating that unless the extrication time is prolonged, or the emergency care practitioner is waiting for air transport, vascular access must not delay the critically ill or injured patient's transport to the nearest facility. In fact, the

authors suggest that vascular access should be established in the back of the ambulance (American College of Surgeons PHTLS 2005:185). This is due to the fact that although vascular access and fluid resuscitation of the critically injured patient can be rationalised, there has been no positive research proving that vascular access and fluid resuscitation increases the survival rate if initiated in the pre-hospital environment. In a study done by Siriwardena, Iqbal, Shaw, Spaight and Stephenson (2008:2) in the United Kingdom (UK), it was shown that although there is no proof that vascular access increases survival rates in the pre-hospital environment, vascular access was done more often than necessary.

The golden rule when using vascular access for the critically injured patient is to insert two large-bore intravenous catheters (Mistovich *et al*. 2004:185 & American College of Surgeons [ATLS] 2005:18). Peripheral intravenous access of the upper extremities is the preferred choice for fluid resuscitation, but according to Langley and Moran (2008:318) other areas of access that are useful in the pre-hospital environment as well as in the A&E unit are:

- antecubital fossa,
- hands,
- cephalic vein (on the upper arm), and
- intraosseous areas.

Proehl (2004:302) specifies the intraosseous access areas as the tibial tuberosity area, external femoral condyle knee area and medial malleolus in the sapheneous vein. The author mentions the internal or external jugular veins as additional access area used in the pre-hospital and in-hospital environments (Proehl 2004:283, 291). Langley and Moran (2008:318) claim the use of intraosseous access in adults as a faster alternative during resuscitation. Intraosseous access used to be utilised during resuscitation of the critically ill child, but according to the authors can be an easy option for adults as well (Langley & Moran 2008:318).

American College of Surgeons (ATLS 2005:18) supplements these remarks of the above authors with the mentioning of the use of venous

cut-downs or central venous lines for fluid resuscitation. The American College of Surgeons (ATLS 2005:18) clearly states that these vascular access options depend on the skill level of the emergency care practitioner or A&E healthcare provider. This is, however, not recommended for pre-hospital use. It was also stressed by the experts in the FGI that they wanted the person responsible for the procedure identified on the nursing record tool. Since there are so many ways of establishing venous access, the researcher mentioned all of the discussed access routes on the nursing record tool.

The fluid of choice to resuscitate the critically injured patient with blood loss in hypovolemic shock would be blood. This is feasible in the A&E unit where blood can be kept in a temperature regulated fridge for emergency use. In the pre-hospital environment this is impractical (Mistovich *et al*. 2004:187) and other fluids should be used for resuscitating the patient with volume losses, like:

- Isotonic crystalloid solutions, for example Ringer Lactate
- Hypertonic crystalloid solutions, for example Saline
- Colloid solutions, for example Gelofusine or Voluven.

According to the American College of Surgeons (ATLS 2005:19) the preferred and most affordable crystalloid used is the crystalloid Ringers Lactate. The experts that were specifically chosen from different hospital groups and backgrounds agreed that crystalloids are the chosen resuscitation fluid. These fluids are used both in the pre-hospital environment and in the A&E units.

The next section that was agreed upon by the experts was the assessment and management of the critically ill or injured patient's neurological status (disability). This step will now be discussed.

- **Disability / Drugs / Defibrillation**

In the primary survey mnemonic the next letter used is "**D**". This letter represents disability, drugs and defibrillation. Each of these concepts will be discussed separately.

Disability (D) is the next step in the systematic ABCDE approach to the management of the critically ill of injured patient (American College of Surgeons [ATLS] 2005:17). The experts also agreed that this is the next step in the primary survey. The Glasgow coma scale (GCS) was mentioned as primary tool used to assess the neurological functioning of the critically ill or injured patient. The experts also brought the important relationship between the GCS and the airway to the table. The AVPU scale was mentioned as another neurological assessment scale. Some of the remarks made by the experts pertaining to disability were:

- *…the A (airway) B (breathing) C (circulation) D (disability), something about E (exposure and environment)…*
- *…assessment, management of the neurological system is next…*
- *…yes, the next assessment should be disability…*
- *…we (A&E health care providers) must know the reason for intubation, the original GCS (Glasgow coma* scale) before intubation *and…*
- *...cause I (A&E nurse practitioner in private hospital) mean with a head injury you do not know if the patient is drunk, or if he (patient) has a brain bleeding due to his (patient) mechanism…*
- *…before the GCS a quick AVPU (Alert, Verbal, Pain, Unresponsive)…*
- *…it's easier, here and there just write or mark GCS (Glasgow coma scale)…*
- *…I (A&E nurse practitioner public hospital) actually like that, because if the guy (patient) "cones" (herniated)…*
- *…if he (patient) has raised intra-cranial pressures you (A&E health care provider) see the GCS drop…*
- *…quickly assess. Most of the time it is like eyes open, GCS and what ever…*
- *…GCS yes, but remember if they (patients) are sedated…*
- *…make some other lines to write neuro-vascular observations…*
- *…somewhere the Glasgow coma scale should also be explained, but…*
- *…with the GCS you (A&E health care providers) will obviously have the three components…*
- *…GCS and pupils with a graphical picture somewhere…*

- *…did we (A&E health care providers) look at the pupils…*
- *…yes, GCS and pupils, but you (A&E health care provider) have to say size, left and right, equal and sluggish reaction to light…*

Supportive literature: The American College of Surgeons (ITLS 2008:153) highlights the importance of the pre-hospital GCS by explaining that it is used as the baseline of the patient's continuous care. The American College of Surgeons (ATLS 2005:17) also defines the GCS as a quick and simple method to determine the critically ill or injured patient's level of consciousness, and explains that the patient's outcome can be predicted by using this scale.

There is a very close relationship between the GCS and the airway patency of the critically ill or injured patient. If there is a decrease in the level of consciousness, it implies that there is a decreased cerebral oxygenation or perfusion. The airway patency can be affected by the critically ill or injured patient's level of consciousness, as a GCS of 8 or less implies that the patient cannot maintain a patent airway and requires advanced airway management (American College of Surgeons [ATLS] 2005:15).

When using the GCS the best score an un-intubated patient can get according to this scale is 15/15, and the worst score for the un-intubated patient is 3/15. When intubated, only the eye response and motor response is assessed (PHTLS 2005:213) due to the pressure the endotracheal tube exerts on the vocal cords. The best score an intubated patient can then obtain is 10/10 and the worst score is 2/10. The GCS is summarised in Table 4.7.

Although the GCS is a valuable tool, it cannot be considered as a full neurological assessment, and a full assessment should be done in the secondary survey (Urden *et al*. 2006:721). There are pitfalls in the use of the GCS and the emergency care practitioner and A&E healthcare providers should keep this in mind when using the scale.

Table 4.7: The Glasgow Coma Scale

Eye opening	Points	Verbal response	Points	Motor response	Points
Spontaneous	**4**	Oriented	**5**	Obeys commands	**6**
To voice	**3**	Confused	**4**	Localizes pain	**5**
To pain	**2**	Inappropriate words	**3**	Withdraws from pain	**4**
None	**1**	Incomprehensible sounds	**2**	Abnormal flexion	**3**
		None	**1**	Abnormal extension	**2**
				None	**1**

(Adapted from Campbell & Chapter [ITLS] 2008:154; Alspach2006:418)

The GCS can be influenced by the patient's blood glucose, alcohol, narcotics or other drugs that can all alter the patient's GCS (American College of Surgeons [ATLS] 2005:17). This fact should be kept in mind when assessing the GCS, especially in the A&E unit if the patient has been sedated for intubation in the pre-hospital environment.

Another scale that is sometimes used during the primary survey is the AVPU scale. This is a faster and less comprehensive scale that is sometimes used to assess the level of consciousness in the primary survey. Each letter in the AVPU scale represents an action that the patient has performed during the assessment of the patient's level of consciousness.

- **A** Alert (Patient alert)
- **V** Verbal (Patient reacting to verbal command only)
- **P** Pain (Patient reacting on painful stimuli only)
- **U** Unresponsive

The emergency care practitioner and the A&E unit staff must also assess the pupils during the quick neurological assessment done in the disability phase, especially if the critically ill or injured patient is not awake (American College of Surgeons [PHTLS] 2005:73). The pupils are assessed for equality, size and reaction to light. It is also important to remember that the pupils, like the GCS, can be affected by other factors, for example drugs administered to the patient (Campbell & Chapter [ITLS] 2008:153).

Since disability involves the assessment of all three these components (GCS, AVPU & pupils) discussed, and since they were all mentioned by the experts, the researcher decided to include them in the nursing record tool.

Drugs (**D**) is the second component represented by the "**D**" of the mnemonic ABCDE (American College of Surgeons [ATLS] 2005:17). Although the experts did not elaborate a lot on this point, the researcher thought it to be an important section to include in the nursing record tool, after finding evidence that drugs used in the primary survey affect both the GCS and the pupil reaction and size. A space was left where the drugs used by the emergency care practitioner could be recorded. The experts mentioned that the patient could be sedated and that this could influence the GCS. They also wanted the A&E unit to have a separate drug chart due to the vast amount of drugs administrated in the A&E unit during the management of the critically ill or injured patient.

- *…GCS (Glascow coma scale) yes, but remember if they are sedated…*
- *…pre-hospital and A&E unit must have a drug section, maybe on separate forms…*
- *…we (A&E nurse practitioner private hospital) use a separate drug chart that accompanies the patient to the ICU, a little pink one…*
- *…we (A&E nurse practitioner public hospital) have only one, and the problem with this is that when the neuro-surgeon prescribed Mannitol after the emergency doctor prescribed something on the form first, it now seems like it was the casualty officer that prescribed everything…*
- *…all the things you (experts) have mentioned pre-hospital, but also the drugs…*

Supportive literature: As already discussed under disability, it is important to remember that the pupils, like the GCS, can be affected by other factors, for example drugs (Campbell & Chapter [ITLS] 2008:153). An example of such drugs that dilates the pupils and affects the reaction of the pupils was mentioned by Campbell & Chapter (ITLS 2008:153) as atropine. The American College of Surgeons (ATLS 2005:17) mentions

that some narcotics used by the patient as an addiction, could also affect the pupils and the GCS. If one looks at the ALS practitioner's protocol manual (2006:19) there is a list of drugs that can be given by the emergency care practitioner that could affect the GCS as well as the pupil reaction of the critically ill or injured patient (HPCSA 2006:24).

According to R 2598 (SANC 1984:2) it is one of the registered nurse's duties to record all the treatment and care given to the patient. The Regulation (SANC 1984:2) states that the registered nurse should monitor a patient after medication has been administered by assessing the vital signs as well as the patient's reaction to the medication. It is thus imperative to include an area to record the drugs administered by the emergency care practitioner and by the A&E healthcare providers in the A&E unit, since the patient might have a reaction to those drugs, and in order to know what to monitor after administration of these drugs.

Defibrillation (**D**) is also the abbreviation used for defibrillation done during the primary survey, and forms part of the ABCDE mnemonic (American College of Surgeons [ATLS] 2005:17). Although the experts did not mention defibrillation or cardio pulmonary resuscitation (CPR) directly, it is something that happens on a regular basis in the pre-hospital environment as well as in the A&E unit. CPR is a skill that every person working with patients should have mastered. Defibrillation is an advanced life support skill used during CPR

The experts did mention that the patient could present with non-palpable pulses, which would lead to the initiation of CPR:

- *…non-palpable (pulses), then we (A&E healthcare providers) are in big trouble…*

Supportive literature: Defibrillation is the procedure where an electrical current is sent through the chest and the heart, in order to convert a heart that is in an abnormal or lethal rhythm (Mistovich *et al*. 2004:351). There are basically two types of external defibrillators (Mistovich *et al*. 2004:352):

- The manual defibrillator: This type requires the emergency care practitioner or A&E unit staff to be extensively trained in the interpretation of lethal rhythms, as well as in the use of a defibrillator. This type of external defibrillator is currently in use in the hospital's A&E unit, as well as in the other advanced life support areas (CCU, theatre).
- The automated defibrillator (AED): This defibrillator is very simple to use and can therefore be used by a larger population, including a lay person. These defibrillators are found in the general wards of the hospital at present.

Defibrillation forms part of the chain of survival that is part of the guidelines of the American Heart Association for resuscitation. The steps of the chain of survival are set out by Mistovich *et al*. (2004:351) and by Nolan, Soar and Eikeland (2006:270) as follows:

- Early access
- Early CPR
- Early defibrillation
- Early advanced care (post-resuscitation care)

In the pre-hospital environment the ambulances are equipped with AED's as well as manual defibrillators that can be used for defibrillation. The advanced life support protocol (2006:104) that is used by the ALS emergency care practitioner (paramedic) includes defibrillation as part of the management of the patient receiving CPR. Since the hospital for which the nursing record tool was intended has a separate form that is completed during CPR (see Annexure E.3), the researcher only prompted nurses recording the management of the critically ill or injured patient to complete the A&E unit's CPR form if applicable.

It is thus evident that defibrillation is an important part of the primary survey when the patient presents with a lethal rhythm for which this management is indicated.

- **Expose / Environment**

Exposure and/or Environment (**E**) is the next step in the ABCDE approach used during the primary survey (American College of Surgeons [PHTLS] 2005:73). The experts did not elaborate extensively on this section, but they did acknowledge it as part of the primary survey. During this step, the patient is exposed in order to aid the assessment process in the identification of critical or additional injuries (American College of Surgeons [PHTLS] 2005:73). This can lead to hypothermia if the environment is not properly controlled. Some of the remarks the experts made was:

- *…the ABCD, something about E…*
- *…environment, yes that's next…*
- *..now we (A&E healthcare providers) undress the patient before we (A&E healthcare providers) start with the next phase…*

Supportive literature: The American College of Surgeons (PHTLS 2005:74) suggests that in the pre-hospital environment the emergency care practitioner should remove the patient's clothes only when necessary to evaluate the conditions or injuries of the patient. In the pre-hospital environment only the necessary areas should be exposed in order to try and prevent hypothermia. Sometimes exposing the critically injured patient is done by cutting the clothes, especially if a c-spine injury is suspected in order to continue spinal immobilization (American College of Surgeons [PHTLS] 2005:74).

The authors further explain that once the patient is in the controlled A&E environment, full exposure is recommended in order to perform a complete examination (American College of Surgeons [PHTLS] 2005:74). It is vital to the survival of the critically ill or injured patient to maintain a homoeothermic state (Smith *et al*. 2005:248).

In the A&E unit the critically ill or injured patient can be warmed with air or water blankets until their temperature is normal (Urden *et al*. 2006: 538). Controlling the temperature of the hyperthermic critically ill or injured patient can be attained by using light loose bed linen, circulating fan / air conditioning or by using cold packs. The point is that in the A&E

unit, as in the CCU units, environmental control should form a part of the management of the critically ill or injured patient (Urden *et al*. 2006:958).

The next theme that was identified by the experts as important information to record was taking a complete history of the patient. This theme will be discussed in Section 4.2.4.

4.2.1.4. Theme 4: Patient history

The fourth theme identified by the experts was patient history taking. The experts felt very strongly that a good, complete history should be obtained pertaining to the critically ill or injured patient. They also mentioned that the family could be a source of information if and when they arrive at the A&E unit and then the history should be obtained from them.

The categories, clusters and sub-clusters (see Table 4.8) that were identified with regard to patient history are summarised and discussed in Sections a.

Table 4.8: Theme 4: Patient history

Theme 4	Category	Cluster	Sub-cluster
4.2.1.4) Patient history	a) SAMPLE DEATH history		

a) SAMPLE DEATH history

All the experts were in agreement that the SAMPLE DEATH method of obtaining the patient's history is the preferred method to use in the A&E unit. There was, however, uncertainty amongst the experts about where during the assessment the history of the patient should be taken. Some wanted this to happen in the primary survey, while others felt that it could form part of the later secondary survey. At the end of the day it was

decided to include this part between the pre-hospital management and the in-hospital multi-disciplinary team members. This would make the history part of the pre-hospital phase.

SAMPLE is a mnemonic used in the pre-hospital and also in-hospital in the A&E units in the South African context. In Gauteng DEATH has been added to this mnemonic and is used in both these environments. This was also evident as the experts, all from Gauteng, referred to the SAMPLE DEATH history. Remarks elicited from the experts include:

- *…or are we (experts) now going to do the SAMPLE DEATH history…*
- *…all the things you (experts) have mentioned pre-hospital, like the drugs, ABC and then SAMPLE DEATH…*
- *…are we (experts) now going to do the SAMPLE DEATH…*
- *…where shall we (experts) put the SAMPLE DEATH, in the primary or secondary…*
- *..Should SAMPLE DEATH be included in two places, or just one place…*
- *…once it's written, it's written. Why replicate information…*
- *…what I (A&E nurse practitioner of a private hospital) felt that gets neglected very often in our unit (private A&E unit), especially with P1 (priority number one) patients, is the previous medical and surgical history…*
- *…if there is little info, ask the family as soon as they arrive, but we (health care providers) often forget or do not get time…*
- *…It (SAMPLE DEATH) has to also include allergies for that matter…*
- *…medication used by the patient for high blood pressure, and all those things should also be included…*

Supportive literature: It was not difficult to find literature on the SAMPLE part of the history mnemonic. According to Vinen and Joseph (2002:23) a brief and quick history can be taken by using the mnemonic AMPLE:

- **A** Allergies
- **M** Medication currently taken
- **P** Past medical and surgical history

- **L** Last meal or drink
- **E** Events or environment related to the current incident

More recent literature (Campbell & Chapter [ITLS] 2008:36) adds an "**S**" to this mnemonic, representing "seatbelt" or "symptoms", in order to gather more information pertaining to the patient's history (Mistovich *et al*. 2004:83).

Finding literature pertaining to the DEATH part of the mnemonic used to gather the patient's history with proved to be a bigger challenge. From the experts' remarks the researcher could gather that DEATH is a generally used mnemonic in the South African emergency care environment of Gauteng. It is used as a prompt to gather information on the most prevalent medical conditions found within the South African context. The only reference that the researcher could find that had the same meaning for this mnemonic as used in Gauteng was from a study done by Heyns (2003:94) that defines DEATH as follows:

- **D** Diabetes
- **E** Epilepsy
- **A** Asthma
- **T** TB / Thrombosis
- **H** Hypertension

Due to the popularity of this history taking mnemonic in Gauteng, it was included in the nursing record tool at the end of the pre-hospital primary survey, where it is gathered by the emergency care practitioners. Although the history is taken by the A&E unit healthcare workers as well, the experts agreed that this information needed to be recorded only once. The primary survey concludes the pre-hospital management, and includes the first part of the A&E unit management that is also focussed on the primary survey.

The next theme that was identified by the experts as important information to record was the identification of the multi-disciplinary team

members involved in the management of the critically ill or injured patient. This theme will be discussed in 4.2.5.

4.2.1.5 Theme 5: In-hospital multi-disciplinary team members

The fifth theme that was identified by the experts was the in-hospital multi-disciplinary team members involved in the management of the critically ill or injured patient. As mentioned in Chapter 3 (see Section 3.3), the A&E unit is described by Bruce and Suserud (2005:201) as a complex workplace with sets of inter-dependent facilities that involve many different members of the multi-disciplinary team in the treatment of a single patient. The multi-disciplinary team consists of several different types of healthcare providers that specialize in different areas, but they are all involved in the management of the critically ill or injured patient at one stage or another. These different members were discussed with special attention given to the RN as part of this multi-disciplinary team in Chapter 3 (see Section 3.5.2).

Table 4.9: Theme 4: In-hospital multi-disciplinary team members

Theme 5	Category	Cluster	Sub-cluster
4.2.1.5) In-hospital multi disciplinary team members	a) A&E nursing personnel	Name Signature Practice number	SANC
	b) A&E doctors	Name Signature Practice number	HPCSA
	c) Specialists	Name Signature Practice number Speciality	HPCSA
	d) Other	Name Signature Speciality	
	4.2.5.5) Timeframe	Time called Time arrived	

The categories, clusters and sub-clusters (see Table 4.9) that were identified with regard to in-hospital multi-disciplinary team members are summarised and discussed in Section a to e.

a) Accident and emergency nursing personnel

The A&E nursing personnel was the first category identified as part of the multi-disciplinary team members and was also identified as the persons responsible for keeping records during the management of the critically ill or injured patient. The experts added that all members of the multi-disciplinary team involved in the management of the critically ill or injured patient must be identified by their names, signatures, practice numbers and speciality where applicable. This included the nursing personnel that consist of the registered A&E nurse practitioner, registered, enrolled or auxiliary nurse working as part of the multi-disciplinary team in the A&E unit.

The experts, all registered nurses, acknowledged the registered nurse as part of the multi-disciplinary team by referring to the registered nurse in the first person during the FGI with remarks like:

- *…In our (A&E unit public hospital) unit…*
- *…we (A&E nurse practitioner private hospital) usually stabilize the patient first…*
- *…oh we (A&E nurse practitioner private hospital) called the orthopaedics doctor; he did not arrive up to now…*
- *…we (A&E nurse practitioner private hospital) need to have times, cause in court the doctor will just say I never received your call, and then nothing has been recorded…*
- *…remember the one (A&E health care provider) that is doing the records is taking over from the paramedic (emergency care practitioner)…*
- *…so we (A&E nurse practitioner private hospital) have a block and everybody (A&E health care providers, medical specialists) signs next to your responsibility, like if you are sister (registered nurse) one for airway…*

- *…at the end we (private A&E unit) have sister (registered nurse) one, sister two (registered nurse), sister three (registered nurse), and everybody (A&E health care providers) signs…*
- *…another big issue from a legal point of view is also signatures, and who the people (A&E health care providers) are…*
- *…take signature out completely and just write their (A&E health care providers) names…*
- *…because their (A&E health care providers) names are on the form then…*
- *…and if it is private nurses…*

Supportive literature: Vinen and Joseph (2002:7) remark that an A&E unit team consists of more than one doctor and one nurse. The authors acknowledge that such a team will be influenced by the available number of healthcare providers in the facility, but suggest strongly that there must be a nurse to assist every doctor in the team.

Regulation 2598 (SANC 1984:3) recognizes the RN as the multi-disciplinary team member who co-ordinates the prescribed management of a patient. In Chapter 3 the important role the registered nurse plays in the multi-disciplinary team is made evident and discussed in detail (see Section 3.5.2). In an editorial letter by McClelland (2008:72) the registered nurse is referred to as the key member who advocates for the patient and plays the role of the driving force within the multi-disciplinary team. The author continues by stating that the multi-disciplinary team cannot exist without the registered nurse (McClelland 2008:72).

In order to know who the responsible person performing the interventions on a patient is, it is an important and legal requirement, for the responsible person to sign all documents where that action is recorded. If it is not signed in a legible way, the responsible person cannot be identified. One is reminded by Nicol & Steyn (2004:451) stating that if any intervention is not recorded, it is considered not done. To overcome this problem, it was suggested by the experts that names, signatures and

practice numbers should be used on the nursing record tool for future queries.

The next category of members of the team that was identified because of the close working relationship with the A&E nursing personnel was the A&E doctors.

b) Accident and emergency doctors

The experts mentioned the A&E doctor as part of the multi-disciplinary team, as well as a few of the other members that are consulted during the management of the critically ill or injured patient. It was clear from the experts' comments that there is a close working relationship between the A&E doctor and the A&E nursing personnel. The experts mentioned that each member of the multi-disciplinary team should be identified by means of their names, signatures, practice numbers and speciality where applicable. Comments from the experts included:

- *…only you (A&E nurse practitioner) and the doctor (A&E unit medical practitioner) with a P1 (priority number one) patient, and you (A&E health care providers) are busy…*
- *…I'm (A&E nurse practitioner public hospital) talking nurses and doctors (medical practitioners) as well…*
- *…at the top should be the doctor (medical practitioners), the sister (registered nurses) who's actually looking after the patient names should be somewhere…*
- *…then a little block for the doctor (medical practitioner)…*
- *…another big issue from a legal point of view is also signatures, and who the people are…*
- *…take signature out completely and just write their (A&E health care providers) names…*
- *…because their (A&E health care providers) names are supposed to be on the form (nursing record tool) then…*

Supportive literature: In the A&E unit of the hospital there is a good working relationship between the A&E doctors and the A&E nursing staff. Vinen and Joseph (2002:7) remark that an A&E unit team consists of

three to four doctors that are assisted by one nurse each. This also highlights the relationship between doctor and nurse in the A&E unit. Concerning the identification with signature, name and practice number requested by the experts, the HPCSA states in R717 (HPCSA 2006:8) point number 15 that all students, interns and practitioners must sign all official documents relating to patient care with their initials and surname in print next to it. This was restated by the HPCSA in booklet nr. 15 on the guidelines for the keeping of patient records (HPCSA 2007:2) that is available on the HPCSA website.

c) Specialists

The experts mentioned that doctors from other specialities are also consulted during the management of the critically ill or injured patient. Although they did not elaborate in detail on the different specialities involved, they again stressed the importance of identifying the specialist as part of the multi-disciplinary team with a name, signature, practice number as well as speciality.

The specialists involved in the management of the critically ill or injured patient depend on the system that is found to be abnormal or injured in the patient. This implies that if the critically ill or injured patient has multiple system abnormalities, there will be multiple specialists consulted to help with the management of the patient. The experts all agreed that these specialists must also be identified on the nursing record tool. Some of the remarks elicited from the experts were:

- *…the neuro-surgeon prescribed Mannitol for the patient…*
- *…for the specialist (specialist medical practitioner), who is he (specialist medical practitioner), what time did you (A&E nurse practitioner, medical practitioner) call him (specialist medical practitioner), what time did he (specialist medical practitioner) arrive*
- *or sometimes the internal doctor prescribes something different…*
- *…another big issue from a legal point of view is also signatures, and who the people (A&E health care providers) are…*

- *…take signature out completely and just write their (A&E health care providers) names …*
- *…because their (A&E health care providers) names are on the form (nursing record tool) then…*
- *…oh we (A&E nurse practitioner private hospital) called the orthopaedics doctor; he did not arrive up to now…*

Supportive literature: As mentioned in chapter one of the National Health Act (Act 61 of 2003) with regard to classification of health establishments, it is stated that a tertiary hospital is a facility that provides in-patient services as well as specialist and sub-specialist care within the public sector. The hospital will have sub-speciality representation in at least 50 % of Group 1 specialities listed in Annexure C.1. The hospital where the research was conducted is represented in every sub-speciality mentioned in this document (see Annexure C.1), and therefore the multi-disciplinary team members could include a doctor from every speciality needed to manage the critically ill or injured patient.

Just like the A&E unit doctors, these specialists are registered with the HPCSA and therefore also regulated by R 717 (HPCSA 2006:8) to identify themselves on all patient records, including the nursing record tool, with a signature and their name in print. The inclusion of the specialist in the in-hospital multi-disciplinary team is therefore a good and valid idea as in the context of this study this category forms an important part of the management of the critically ill or injured patient.

d) Other

The experts mentioned that in some cases there are other non-medical specialities involved in the management of the patients. The category of other members of the multi-disciplinary team can include any type of service needed pertaining to the patient, or the patient's family's needs. The experts mentioned one group that is utilised in the A&E unit of today on a regular basis, and that is the trauma counsellor. The experts also mentioned other specialities that could be involved in the management of the critically ill or injured patient like the social workers. Although they are

not so involved in the immediate management of the critically ill or injured patient, they could be involved in a later stage. Remarks from the experts pertaining to these members of the multi-disciplinary team included:

- *…there should be a space (on the nursing record tool) for ad hoc things, like the social worker or counsellor…*
- *…if you (A&E health care provider) get out a counsellor or a trauma counsellor we (A&E health care providers) write it…*

Supportive literature: According to Reddy and Spence (2006:650) the multi-disciplinary team starts with the emergency care practitioners managing and transporting the critically ill or injured patient to the A&E unit, and can then include a variety of specialities. Due to the fact that the emergency care practitioners have already been identified in the pre-hospital information part of the tool, they were not included in this section to prevent duplication.

Reddy and Spence (2006:650) includes other multi-disciplinary members like the A&E unit secretary, who was not mentioned in this study as part of the multi-disciplinary team members. Because of their inconstant presence in the A&E unit, the secretary of the A&E unit was not included on the nursing record tool. However, this argument could also be applied to all other specialities involved in the management of the critically ill or injured patient.

e) Timeframes

The next category that was identified was timeframes. These timeframes were focussed on the time from when the multi-disciplinary team members were called to come and assist in the management of the patient, up to the time they actually arrived in the A&E unit to assist. The experts were very adamant about this category, and all agreed that this is a dilemma that exists in the A&E units of today. The experts also stated that these timeframes could be useful to the registered nurse during a medico-legal query. Remarks made by the experts were:

- *…for the specialist (specialist medical practitioner), who is he (specialist medical practitioner), what time did you call him*

(specialist medical practitioner), what time did he (specialist medical practitioner) arrive…

- *…oh we (A&E nurse practitioner private hospital) called the orthopaedics doctor; he did not arrive up to now…*
- *…we (A&E nurse practitioners) need to have times, cause in court the doctor (medical practitioner) will just say I never received your call, and then nothing has been recorded…*

Supportive literature: This specialist is the one who takes responsibility for the management and admission of the critically ill or injured patient once the resuscitation has been done by the A&E unit doctors. In many cases the critically ill or injured patient arrives at the A&E unit as a direct transfer to the specialist. The specialist then gets contacted by the A&E unit to inform him/her of the patient's arrival. Sharon (2008:[1]) states that there is a direct relationship between the time the critically ill or injured patient has to wait to see a doctor or specialist, and the outcome of the patient. This delay has a negative effect on the patient's outcome. Sharon (2008:[3]) claims that the successful outcome of the critically ill or injured patients is entirely dependent on the prompt response of the specialist. The timeframes used on the nursing record tool under this section are intended to make it easy to see where the delay in treatment was, and can be used to improve the overall management from the multi-disciplinary team.

4.2.1.6 Theme 6: accident and emergency unit management

The sixth theme that was identified by the experts was the A&E unit management. The initial management of the A&E unit is also based on the systematic approach of the ABCDE's in an identical manner as the primary survey during the pre-hospital management. According to the experts, the A&E unit management involves much more than just the ABCDE, and should include the resuscitation phase as well as the secondary survey.

The categories, clusters and sub-clusters (see Table 4.10 - Table 4.14) that were identified with regard to A&E unit management are summarised and discussed in Section a to h.

Table 4.10: Theme 6: A&E unit management (Primary survey)

Theme 6	Category	Cluster	Sub-cluster
4.2.1.6) A&E unit management	a) Primary survey	**a)** Airway	Open, maintained and protected by patient Actions (advanced airway management)
		b) C-spine	Assess Actions (equipment used for immobilising)
		c) Breathing	Assess Actions (oxygen therapies)
		d) Circulation and haemorrhage control	Assess Actions (Vascular access, fluid resuscitation)
		e) Disability	Assess (neurological assessment scales) Actions (drugs)
		f) Drugs	
		g) Defibrillate	
		h) Environment	

a) Primary survey

As explained in Section 4.2.3.1, the primary survey is an approach to manage the critically ill or injured patient which is used in the pre-hospital environment as well as in the A&E unit (American College of Surgeons [ATLS] 2005:13). The primary survey is a quick assessment that stops only if a life-threatening condition is identified that warrants immediate intervention. This well-known systematic approach was referred to by the experts as the starting point of the A&E unit management:

- *…it's a primary assessment…*
- *…place for primary survey or cause…*
- *…If you (A&E health care provider) follow the ABC's you (A&E health care provider) should get at everything…*
- *…all the things you (experts) have mentioned, but the drugs, ABC, SAMPLE DEATH…*
- *…some people (A&E health care providers) go ABC and then…*
- *…so they (A&E health care providers) go quick ABC…*
- *…now the patient is yours (A&E health care provider), now you (A&E health care provider) can start with primary survey…*
- *…airway, breathing, circulation are included in all primary surveys…*

- *…then starts primary, what did you (A&E health care provider) do for primary…*
- *…where we (A&E nurse practitioner private hospital) come from we (A&E health care providers) stabilise the patient first…*

Supportive literature: Elmqvist, Fridlund and Ekebergh (2008:185) state that a common feature of emergency care is short, fragmented encounters with great demands for rapid management. This statement summarizes the primary survey with its quick assessment in order to identify and treat life-threatening conditions (American College of Surgeons [ATLS] manual 2005:13).

The steps of the primary survey were discussed in detail under Theme 3 pertaining to pre-hospital management. This included the assessment and actions of the airway, breathing, circulation, disability, drugs, defibrillation and exposure / environmental control steps that make up the primary survey. The areas in which the A&E unit's primary survey differs were highlighted in the discussion under every step. For this reason the primary survey will not be discussed again (see Section 4.2.1.3 a).

Table 4.11: Theme 6: A&E unit management (Resuscitation phase)

Theme 6	Category	Cluster	Sub-cluster
4.2.1.6) A&E unit management (continued)	b) Resuscitation phase	Procedures performed	
		Diagnostic procedures	
		Laboratory assessments	

The next section that was agreed upon by the experts was the Resuscitation phase. This phase was also referred to as the "lines and tube" phase by one of the experts, due to all the actions that make up the insertion of a line or a tube of some sort during this phase. This phase will be discussed in Section b.

b) Resuscitation phase

During the FGI the next category was identified, namely the resuscitation phase. The experts all recognised this phase as the period where all the necessary lines and tubes needed to stabilize the critically ill or injured patient with, are inserted by the A&E healthcare providers. They also referred to it as the "lines and tube" phase due to the procedures done during this phase. The experts mentioned a number of diagnostic procedures and laboratory assessments that are done during this phase to confirm the patient's diagnosis, and guide the definitive care of the patient further. The experts definitely wanted the person responsible for doing the procedure identified by name on the nursing record tool. Remarks that were made pertaining the resuscitation phase were:

- *…what do we (experts) do next, resuscitation phase or secondary survey…*
- *…the tubes, lines and tube phase (resuscitation phase) will be next…*
- *…now you (A&E health care provider) see this is a problem, and you (A&E health care providers) do x-rays, ventilator, catheter, a-line (arterial line), central line…*
- *…yes this is now the drips and drains stage…*
- *…then x-rays and bloods, and also blood gas needs to be done here…*
- *…basic bloods for a possible MI (myocardial infarction) mean your taking cardiac enzymes, doing a 12 lead ECG (electro cardio graph)…*
- *…for trauma patients you (A&E health care provider) put up a high cap line, you put in a CVP (central venous pressure) line…*
- *…when you (A&E health care provider) identify a pneumothorax, you (A&E health care provider) put in an underwater drain…*
- *…do urine dipsticks to see if he's (patient) got a pelvis fracture and look for blood in the urine, then do a cystogram…*
- *…yes, it's all just diagnostic procedures basically…*
- *…we (A&E nurse personnel) have to put in there who was the person (health care provider) that did the procedure…*

- *…who put in the IC (Intercostal) drain, the central line, who was the person (health care provider) that put in the arterial line…*
- *…routine x-rays, because routine x-rays are routine x-rays. Just tick them off…*
- *…the patient could be lying in the scan department…*
- *...then you (A&E nursing personnel) have a tick off space for extras like MRI (magnetic resonance imaging) scans or whatever…*
- *…remember the size of the tubes that was used must also be recorded…*
- *…yes, nasogastric or orogastric tubes with sizes…*

Supportive literature: The American College of Surgeons (PHTLS (2005:74) define the resuscitation phase as steps taken to correct life-threatening problems identified in the primary survey. Urden *et al*. (2006:973) agree that the resuscitation phase follows after the primary survey. The strongest literature support, however, came from the American College of Surgeons (ATLS 2005:18) where it is stated that aggressive resuscitation and proper management of life-threatening conditions that were identified in the primary survey, happens in the resuscitation phase and that this phase is crucial to the critically ill or injured patient's survival.

Urden *et al*. (2006:973) summarise the goal of the resuscitation phase as optimising hemodynamic variables (lactate, pH), oxygen delivery and oxygen consumption. The authors suggest procedures that should be considered to help the A&E unit staff achieve the resuscitation goal, namely the placement of an intravenous line, central venous lines, a urinary catheter and gastric catheters (Urden *et al*. 2006:973). The American College of Surgeons (ATLS 2005:19) adds adjuncts that coincide with these suggestions, and states that these adjuncts should be considered as important when assessing and monitoring the critically ill or injured patient. These adjuncts were added to the nursing record tool on a separate page called the "continuous observation chart". The reasoning behind this is explained in Section 4.2.6.4.

It is suggested by American College of Surgeons (ATLS 2005:18) that blood samples should be obtained during the resuscitation phase at the time of insertion of any type of intravascular line. The authors listed the initial samples that are needed for type and cross matching (to order correct type of blood when needed) and baseline haematological studies that include a pregnancy test for females of child-bearing age (American College of Surgeons [ATLS] 2005:18). Since the nursing record tool was intended for critically ill and injured patients the researcher listed these and other most prevalent samples taken in the hospital during the management of critically ill or injured patients in a tick-off format (see Annexure B.2).

The next section that was agreed upon by the experts was the secondary survey. This involved a head-to-toe examination done in the A&E unit. This phase will be discussed in Section c.

Table 4.12: Theme 6: A&E unit management (Secondary survey)

Theme 6	Category	Cluster	Sub-cluster
4.2.1.6) A&E unit management (continue)	c) Secondary survey	Head-to-toe examination	Neurological system Respiratory system Cardiovascular system Gastro-intestinal system Genito-urinary system
		Patient picture summary	Discriminatory list Head, body, hands and feet

c) Secondary survey

The next category that needs to be discussed as it was mentioned by the experts is the secondary assessment of the critically ill or injured patient. In the A&E unit a complete assessment is done on each body region of the patient in order to identify and manage injuries not identified in the primary survey (American College of Surgeons [PHTLS] 2005:78). The skills used to do this assessment is inspection, palpation, percussion and auscultation, as discussed in chapter 3 (see Section 3.7.3.3 and Table 3.4).

The experts agreed that the next phase of the management of the critically ill or injured patient was the secondary survey. The experts did not discuss the secondary survey in a systematic manner, but mentioned that the assessment should be done in a systematic manner.

They suggested new ways of making the record keeping during this phase quicker, but still accurate and complete. One innovative idea that came from the experts during the FGI was the use of pictures and tick boxes instead of long essay types of records. The expert's annotations as noted in this regard were:

- *…Then moving from the resuscitation phase, where to?...*
- *…then it is the secondary survey…*
- *…and the secondary survey is a head-to-toe assessment…*
- *…a systematic assessment of the patient, as we (A&E nurse practitioners) are used to…*
- *…the secondary survey must include a complete assessment with tick boxes to make this assessment's recording easier…*
- *…yes tick boxes or pictures…*
- *…Pictures are a great idea for the secondary survey. One can put these pictures with a front and back or anterior and superior view in the nursing notes (nursing record tool)…*
- *…make a nice little man…*
- *…we (A&E unit private hospital) use a list of preset signs and symptoms that are numbered, and then we (A&E nursing personnel) just draw in the number on the picture…*
- *…but if you (researcher) code it (picture), it will be easy…*
- *..yes a coded list of injuries or signs and symptoms…*
- *…the picture gives you an overview of the patient and his injuries…*
- *…there are about fifteen differentiations on our (A&E unit private hospital) nursing notes…*
- *…will it (pictures) be acceptable…*
- *…the J88 (legal medical record completed by medical practitioners to be used in a court case) has pictures and that is accepted in a court of law…*

- *…I (recording expert) think times have changed and we (nurses) must get the minds of people to change and stop using the horrible phrase "nursing process". We (nurses) should chuck it out…*
- *…when the patient has a fracture, complete on the record (nursing record tool) the pulse, perfusion, pallor, poikilothermia and so on of the injured limb in a tick-off box….*
- *…make a big line and write neuro-vascular observations, because that is actually what you are doing then…*
- *…how do you (A&E nurse practitioner) know if your patient has parestese (needles and pins sensation) when he (the patient) is sedated and ventilated…*

Supportive literature: The secondary survey will only be started once the primary survey is completed, resuscitation is well established and the patient has stabilizing vital signs (Urden *et al*. 2006:973). This statement is confirmed by the American College of Surgeons (PHTLS 2005:78) that suggests that the head-to-toe secondary survey can be done once the primary survey is complete and resuscitation is initiated.

Proehl (2004:4) has given the secondary survey two goals that enhance the goal of this study. The author highlights the difference between the medical and trauma survey by stating:

- The secondary survey is a rapid, systematic assessment of the critically ill patient with unclear etiology of signs and symptoms.
- The rapid, systematic head-to-toe assessment in the critically injured patient is to identify all possible injuries present.

The secondary survey on the nursing record tool has been developed with an area for writing core notes, and reminders or prompts of the most important vital signs to be reassessed. Although the secondary survey starts with a SAMPLE DEATH history, this history taking method has already been discussed in Theme 4 Section a, pertaining to the pre-hospital management.

The American College of Surgeons (ATLS 2005:21) refers to the secondary survey as a head-to-toe examination or assessment. This assessment has been discussed in a systematic manner in Chapter 3, Section 3.7.3.3, and tabulated in Table 3.4. The American College of Surgeons (ATLS 2005:21) recommends that a reassessment of all vital signs is done after the history has been taken followed by a head-to-toe examination. It is important to remember that a life-threatening abnormality in one system could influence vital signs of another system (American College of Surgeons [ATLS] 2005:25), for example: An abdominal injury that causes hypovolemia may be recognised when the patient presents with unexplained hypotension and changes in the level of consciousness.

The secondary survey will be briefly discussed under the following six systems:

- Neurological system
- Respiratory system
- Cardiovascular system
- Gastro-intestinal system
- Genito-urinary system
- Muscular-skeletal system

Firstly a ***neurological*** *assessment* is done where the head (scalp and skull) and neck is examined for lacerations, contusions, fractures or any other abnormalities (American College of Surgeons [ATLS] 2005:23). With regard to the critically injured patient a spinal injury is always assumed until the spine has been cleared by radiological studies. It is important to repeat the GCS as well as the pupil observations, to identify any deterioration in the level of consciousness. This aspect (GCS) was indicated as a prompt on the nursing record tool.

An assessment of the ***respiratory*** *system* then follows that includes an examination of the anterior and posterior chest (American College of Surgeons [ATLS] 2005:24). The A&E healthcare providers should assess the chest for possible lacerations or open wounds, contusions, fractures of

the ribs, clavicles or sternum or any other abnormalities. Important additional observation that was prompted here, due to the fact that it is not done continuously in the A&E unit, was the arterial blood gas (ABG).

Assessment of the ***cardiovascular*** *system* is also done when examining the chest (American College of Surgeons [2005]:24). This includes an assessment of the heart sounds and a reassessment of the neck for jugular vein distension (JVD) as suggested by Urden *et al*. (2006:995). Important additional observation to be done here for diagnostic reasons would be the 12 lead ECG. There were no other additional prompts used in this section on the nursing record tool.

The assessment of the ***gastro-intestinal*** *system* includes an assessment of all four quadrants of the abdomen. Urden *et al*. (2006:996) state that it is important to reassess the abdomen of the critically injured patient whenever there are no obvious explanations for unstable vital signs, since the initial assessment may be unreliable due to factors like alcohol, sedation and level of consciousness changes. Additional prompts used here were assessing for bowel sounds, asking or expecting pregnancy in the child-bearing female, and evaluation of the fetal heart rate (Vinen & Josef 2002:62).

The next system to be assessed was the ***genito-urinary*** *system* (American College of Surgeons [ATLS] 2005:25). The authors advise that the A&E healthcare provider should start with the perineum and assess for contusions, haematomas, laceration or urethral bleeding. The rectal examination is an important part of this assessment where the presence of blood in the bowel lumen, high riding prostate or absence of the tonus indicates injury (American College of Surgeons [ATLS] 2005:25). The pelvis should be examined for stability and pelvis x-rays are routinely taken of all trauma patients (Vinen & Josef 2002:28). Additional observations include a urinary test that could also have been done in the resuscitation phase while the urinary catheter was inserted. The goal would be to identify renal injury or abnormality. Prompts that were

included on the nursing record tool were rectal tonus presence (indicating spinal injury), vaginal examination done and pelvis stable or not.

The last system to be assessed is the ***muscular-skeletal*** *system*. This involves the examination of the extremities for tenderness, deformities and fractures. The assessment prompts in this system were based on a vascular assessment as suggested by Mistovich *et al*. (2004:679). Pain in an extremity could heighten the suspicion of a fracture. Pulses that are not present and paralysis distal from the fractured extremity could be a sign of vascular or nerve injury. A cyanotic limb could also be due to a vascular injury and can be seen as a priority (Mistovich *et al*. 2004:683). The researcher used these signs of vascular or nerve injuries as prompts on the nursing record tool.

The experts mentioned the use of ***pictures*** to indicate injuries, so that these could provide an overall summarised picture of the patient. The use of a picture as an overall summary of the critically ill or injured patient's condition was one idea that had all the experts in the group, especially the experts with a provincial hospital background, very excited.

In the South African context the most frequently used documentation that includes pictures is the report completed by authorised medical practitioner on the completion of a medico-legal examination (J88). This document consists of four pages that are completed by a medical practitioner, and is used in legal court cases during trials in South Africa. On page four of this document there are no less than twenty three pictures that the medical practitioner completes to summarise his/her written report. This document could not be attached due to the legal issues involved.

This concluded the assessment and the primary survey, the resuscitation phase as well as the secondary survey of the management of the critically ill or injured patients in the A&E unit. The last part of the nursing record tool that includes various other types of information (see Table 4.13) will now be discussed in Sections d to h.

The next major section that the experts agreed should be recorded on the nursing record tool was the continuous observations done during the management of the critically ill or injured patient. This component will be discussed in Section d.

Table 4.13: Theme 6: A&E unit management (continuous observations)

Theme 6	Category	Cluster	Sub-cluster
4.2.1.6) A&E unit management (continued)	d) Continuous observation chart	Vital signs	Blood pressure (graphical) Pulse rate Respiratory rate Temperature SpO_2 Capillary refill CVP Blood glucose
		Continuous infusions	
		Pupils	
		Glasgow coma scale	
		Mechanical ventilation	
		Arterial blood gas	
		Output	

d) Continuous observation chart

During the FGI there were a lot of remarks about observations that need to be done continuously for the length of the patient's stay in the A&E unit. When discussing the length of stay and the total time or space needed to record these observations, the different backgrounds of the experts became evident. The experts from a provincial background remarked that more space should be left on the nursing record tool due to the elongated periods of stay of the critically ill or injured patient in the A&E unit. The experts from a private background, on the other hand, mentioned that they do not need that much observational space on the nursing record tool.

Remarks from the experts pertaining to this section were:

- *…can I (A&E nurse practitioner public hospital) just ask a question because the context is different…*
- *…okay but now do you (A&E unit health care provider) keep writing on the P1 (priority one) form all that time…*
- *…our (A&E nurse practitioner public hospital) patients stay longer than an hour, a day or maybe even two or three…*
- *…so after how many hours should we (A&E health care providers) go over to a CCU (critical care unit) chart…*
- *…six hours would be sufficient, then start using the CCU chart…*
- *…sometimes we (A&E nurse practitioner private hospital) have the same problem with extended waiting times. Like when you (A&E unit health care provider) wait for the ambulance to come and transfer the patient, but it's rare…*
- *…total output with things like urine, nasogastric drainage, what else do you (A&E nurse practitioners) think should be included in the observations chart…*
- *…with the vital signs we (A&E nurse practitioner private hospital) write 120/80, then 150/60 and pulse, respiration, temperature and so on…*
- *…the vital signs need a whole page…*
- *…yes and it (vital signs) must be graphical…*
- *…we (A&E unit health care providers) like the graphics on the nursing notes (nursing record tool)…*
- *…you (A&E unit health care providers) have to have a visual trend so in order to see the patient deteriorating…*
- *…ok then we (A&E unit health care providers) got the vitals, so then FiO_2 (fraction of inspired oxygen), CVP (central venous pressure)…*
- *…CVP is unnecessary because we (A&E nurse practitioner private hospital) never take a CVP because our patients never stay that long…*
- *…our (A&E nurse practitioner public hospital) patients are from four to ten days…*
- *…Ok what else? Saturation, GCS, pupils…*

- *…divide those vital signs like start with blood pressure, pulse, CVP and then his (the patient) respiration and ventilator settings…*
- *…blood gas is a diagnostic tool, why should it be included here. We (A&E nurse practitioner private hospital) do maybe one…*
- *…blood gas if you (A&E unit health care providers) want to see your ventilation management with things like Hb (haemoglobin)…*
- *…ventilator setting and blood gas together to simplify the visual observations…*
- *…we (A&E nurse practitioner public hospital) have a block for ventilator settings, and we write things like PEEP (positive end expiry pressure), your blood pressure all under the same time hourly, or what…*
- *…and blood glucose must be included on the record (nursing record tool) too…*
- *…what about the urine dipsticks, where does it go…*
- *…we (experts) said under the diagnostic procedures, because you (A&E unit health care providers) do it only once, isn't it…*

Supportive literature: Boldt (2002:52) states that the most important aspect of hemodynamic monitoring of the critically ill or injured patient is the recognition of life-threatening irregularities or vital signs. Hemodynamic monitoring is a major diagnostic procedure or tool used in the critical care setting of today. The optimization of monitoring the critically ill or injured patients is challenging (Boldt 2002:53).

Assessment of hemodynamic status is used by clinicians to direct therapy in critically ill or injured patients and is a cornerstone of critical care medicine. Boldt (2002:56) reminds us of the variety of traditional variables that can be monitored. These are global hemodynamic observations like blood pressure, pulse, temperature, respiratory rate, pulse oximetry, capillary refill and urine output (Boldt 2002:56). These vital signs were grouped together due to their close relationship with and effect on each other. For instance hypothermia will have an effect on the cardiovascular, pulmonary and neurological hemodynamic observations as mentioned by Smith *et al*. (2005:247). All of these variables are present

on the current nursing record tool, and were therefore included in the new continuous observation chart.

Another very important piece of literature to consider in the context of the South African registered nurse is Regulation 2598, also known as the Scope of Practice (SANC 1984:2), where it is clearly stated that the registered nurse must monitor the vital signs of the patient. The Acts or Omissions also known as Regulation 387 (SANC 1985:3) of the registered nurse also reflect the monitoring of the vital signs as the registered nurse's duty for which she or he will be held responsible. McCorstin *et al*. (2008:124) also mention that the registered nurse should keep clear and concise documentation of the observations done for the critically ill or injured patient.

The relationship between the arterial blood gas (ABG) and the mechanical ventilator have been explained by various sources of literature. McCorstin *et al*. (2008:121) highlight this relationship by stating that the arterial blood gas results are used to determine the initial settings of the ventilator. The ABG is also used as a method to assess and evaluate mechanical ventilation (Proehl 2004:88).

One of the new values included on the nursing record tool was the blood lactate. Lactate is a general indicator of inadequate or impaired tissue oxygenation due to circulatory failure in the critically ill or injured patient (Boldt 2002:56). Lactate was one new observation value included on the nursing record. Other additional information that was integrated under this section was included after consideration of all the new observational equipment installed in the A&E unit that enable the A&E unit health care providers to observe more parameters. The new equipment that was considered included a new blood gas machine and mechanical ventilators that allowed a larger variety of observations to be done, due to the larger variety of ventilation modes and settings to be used. The additional information on the continuous observation chart is:

- $AaDpO_2$
- pO_2 / FiO_2 ratio

- Lactate
- electrolytes (Na^+, K^+)
- inspiratory tidal volume (V_t)
- expiratory tidal volume (V_e)
- Pressure control setting (PC)
- Pressure support setting (PS)
- Inspiratory / expiratory (I:E) ratio or time

The next two major Sections that the experts suggested should be recorded on the nursing record tool was the section on intravascular fluid management and the A&E unit drugs. These components will be discussed in Section e to f.

Table 4.14: Theme 6: A&E unit management (Intravascular fluid chart & A&E unit drug chart)

Theme 6	Category	Cluster	Sub-cluster
4.2.1.6) A&E unit management (continued)	e) Intravascular fluid chart	Fluid management Blood products	
	f) A&E unit drug chart	Prescription chart Administration chart	

e) Intravascular fluid chart

This category was not discussed by the experts as a separate section, but was mentioned by referring to fluid types during the discussion of other categories like primary survey. This section involves the recording of all fluids administered to the critically ill or injured patient during the A&E unit management. The experts mentioned the administration of blood and the issue of informed consent briefly under this category to be considered for the nursing record tool. They also mentioned other fluid choices that could be considered during the fluid management of the critically ill or injured patient. Remarks made by the experts included:

…fluids like Ringers, Normal Saline, and so on…

- *…as well as the fluids, then record the accumulated totals of all the fluids administered…*
- *…if you (A&E unit health care provider) give blood or something…*
- *…just remember the informed consent…*
- *…we (A&E nurse practitioner public hospital) use separate forms for consent for things like operations or procedures…*
- *…if you (A&E unit health care provider) do give blood, just write something like informed consent obtained from patient or whoever…*

Supportive literature: The South African blood transfusion service compiled a booklet with information on blood products for all blood users (Heyns 2003). One of the legal aspects to take into consideration when transfusing blood products mentioned in this booklet, is obtaining informed consent from the patient (Heyns 2003:6). This matter was also mentioned in the FGI, and a tick-off space to confirm the signing of consent was left at the bottom of the fluid chart. No provision was made on the nursing record tool to sign consent due to the fact that in the A&E unit the A&E unit health care providers make use of a separate consent form. The tick-off was left at the bottom of the fluid chart as a prompt to remind the A&E unit health care providers to complete a consent form. Regulation 2598 (SANC 1984:3) also mentions the duty of the registered nurse to look after the fluid, electrolyte and acid base balance of the patient. This is thus a valid chart that could help the registered nurse to perform his/her regulated duties.

f) Accident and Emergency unit drug chart

As the experts discussed the recording of drugs, it became clear that there are several types of drug charts in the different hospitals that are used according to hospital protocols. All of the experts where in agreement that only the doctor should prescribe on the prescription part, and the registered nurse should administer the prescribed drug. Signatures where once again mentioned as important information to have on the drug chart. Everybody has to sign the part of the prescription they are legally responsible for. It was concluded from the experts' remarks

that all patients who are admitted in the CCU or wards of hospitals in Gauteng, receive a separate ward prescription chart. The drug chart on the A&E unit's nursing record tool would then only be used for a period of six hours, where after the patient's management will be charted on a CCU chart and a separate prescription chart. There were a lot of remarks made on this topic by the experts such as:

- *…the doctor (medical practitioner) must make sure that everything he (medical practitioner) wants is on that prescription chart…*
- *…because then you (A&E nursing personnel) can tick that mannitol, decadron, solu-cortef, and so on was given…*
- *…if the doctor (A&E unit medical practitioner) accepts a verbal prescription from the specialist, he (A&E unit medical practitioner) must transcribe it to the form. It covers us (A&E nurse practitioner private hospital) to an extent…*
- *…our (A&E nurse practitioner public hospital) chart has only one place for the signature of the doctor, and that means that our doctor (A&E unit medical practitioner) signs for all the meds, even if the neuro-surgeon (specialist) prescribed it…*
- *…that is not legal…*
- *...he (A&E unit medical practitioner) must only sign his own prescription of drugs…*
- *…we (A&E nurse practitioner private hospital) have separate prescription charts, small day charts…*
- *…it's legal, it's a prescription chart, so you indicate the hospital number, allergy, and identify with a sticker…*
- *…we (A&E nurse practitioner public hospital) have separate blocks where you write your medication, routes, and what ever, but only one place for signature of the doctor (A&E unit medical practitioner)…*
- *…we (A&E nurse practitioner private hospital) administer really often on verbal prescription during resuscitation, but at the end of the day it is the doctor leading the resuscitation's legal responsibility to prescribe and sign the drugs given…*
- *…just remember, we (registered nurses) are not allowed to prescribe…*

Supportive literature: It seems fitting to start with the Scope of Practice of the registered nurse(R 2598) once again (SANC 1984:2). In this Regulation the responsibility of the registered nurse to execute a program of treatment or medication prescribed by a doctor is stated clearly. The Regulation (R2598) continues to describe the responsibilities of monitoring the patient for any adverse effects after medication has been administered according to prescription (SANC 1984:2). R2598 should be read together with the Acts or Omissions of the registered nurse, where the wilful neglect to administer treatment and medication is mentioned as one of the terms that could lead to disciplinary steps taken against the registered nurse (SANC 1985:3). Another legal aspect to consider is completeness of the prescription. The doctor should write the actual dose in milligrams (mg), not in volume, of the medication to be administered (Paparella 2004:157). The author states that the route and frequency of administration should also be clearly stated on the prescription chart (Paparella 2004:157).

The doctor is also bound by legalities under the Health Professions Act (number 56 of 1974) concerning records (HPCSA 1974: 11). This Act states that a hand-written, type-written or computer-generated prescription can be issued under the doctor's own name. Such a prescription should be signed, and the doctor should write his or her name, surname and initials in print next to their signature (HPCSA 1974:9).

It is evident that a drug chart forms part of a patient's legal records and should be retained for future references or queries. The researcher divided the drug chart into a prescription part for doctors of the multi-disciplinary team to prescribe drugs on, and an administration part where the A&E nursing personnel could record when they administer the prescribed drugs.

The next categories of the nursing record tool that was identified by the experts as necessary to record during the management of the critically ill

or injured patient was the discharge notes and the patients' clothing and valuables. These components will be discussed next in Section g to h.

Table 4.15: Theme 6: A&E unit management (Discharge notes & clothing and valuables)

Theme 6	Category	Cluster	Sub-cluster
4.2.6) A&E unit management (continued)	g) Discharge notes	Date Final diagnosis Name of admitting doctor Responsible nursing staff Summary report on patient's current medical status	A&E unit Ward
	h) Clothing and valuables		

g) Discharge notes

The experts commented that when the patient is discharged from the A&E unit, there should be a summary report on the discharge condition of the patient. In the context of the critically ill or injured patient, discharge did not imply out-of-hospital discharge, but merely transfer to another unit for continuation of care. The experts felt that this discharge report should include a short summary of the patient's vital signs, medication given, general condition and a brief history of the main complaint or mechanism of injury. The responsible admitting doctor should be identified together with the final diagnosis of the critically ill or injured patient. The experts felt that the responsible healthcare providers working in the ward or CCU that receive the patient from the A&E unit should also sign the nursing record tool after the patient has been handed over to them for completeness.

Remarks elicited from the experts pertaining discharge notes were:

- *…discharge the patient from the A&E unit to where ever…*
- *…with the discharge you (A&E health care provider) need a comprehensive report of sorts to say what the status of the patient is on discharge…*

- *…they (CCU health care providers) always complain and say the patient did not have this, or that when handed over to them. This section could help protect us (A&E unit health care providers)…*
- *…there must be a final diagnosis, and the responsible doctor must sign…*

Supportive literature: The transfer of the critically ill or injured patient from one area to another within the in-hospital environment occurs on a daily basis (Boutilier 2007:137). This implies that the discharge from the A&E unit to another area of care is just the next step in the continuity of the patient's management. The registered nurse has to communicate properly with other members of the multi-disciplinary team in order to ensure that the transition of the patient and his/her care is just a continuity of care (Watts, Pierson & Gardner 2005:40). During the transfer of the patient registered nurses are the persons who disseminate information about the patient to one another in different ways (Boutilier 2007:141). The author acknowledges the importance of nurse-to-nurse or face-to-face reports, but also states that all additional information must accompany the patient to his/her next stop.

According to Jual Carpenito-Moyet (2005:25) a discharge summary must include instructions given to the patient, all referrals during the management of the patient, patient current status and the patient's understanding of the instructions (if applicable) given on discharge. Although the author was referring to a patient being discharged out of the hospital environment, the information can be of value if made applicable to the context. Boutilier (2007:139) mentions a more appropriate list of information that should be recorded and communicated. This list includes a summary on the patient's current health status, background and history, physical assessment findings (including a set of vital signs) and outstanding orders or prescriptions (Boutilier 2007:139). It is evident from the literature that to include a discharge component would aid in making the nursing record tool more accurate and comprehensive in order to protect the patient as well as the A&E healthcare practitioners.

h) Clothing and valuables

The next category that the experts mentioned was the well-known clothing and valuables dilemma in the A&E unit. This dilemma is often experienced when there are no family members accompanying the patient and the question of what to do with the patient's clothes and valuables becomes a problem. Since most of the critically ill or injured patients are too sick to look after their own belongings, it becomes the responsibility of the A&E unit's nursing personnel. The experts gave various descriptions as to what is included under valuables. Recording of the clothes and valuables was an item that all the experts agreed needed to be included in the nursing record tool.

- *…where do we (A&E unit health care providers) fill the valuables of the patient in…*
- *…what specifically should be under valuables…*
- *…what do they (the patients) have with them, like money, jewellery, clothes, cell phones, glasses…*
- *…and teeth, don't forget the teeth…*
- *…does the scope (R2598) not say we have to look after the patient's belongings…*
- *…it's got nothing to do with the scope (R2598), it is a general human rights thing…*
- *…even if there was no valuables taken, there should be a block where two sisters (registered nurses) sign…*
- *…you (A&E unit nursing personnel) must describe what you took, like silver earrings. We (A&E nurse practitioner public hospital) usually try and hand it (valuables) to the family…*
- *…we (A&E unit nursing personnel) must have another handover block, like if you take it to CCU the CCU sister must sign…*

Supportive literature: At the back of the nursing record tool currently in use, there is a whole page assigned to recording the clothes and valuables of the orientated and disorientated or unconscious patients (see Annexure B.1). Taking care of the critically ill or injured patient's clothes and valuables has always been difficult in the A&E unit. Hubbell, Massey and Novak and ENA (2002:8) agree that controlling patients' belongings in the

A&E unit is difficult, and the belongings get lost quite often. The authors suggest that the patient's belongings should be listed and given to a family member or associate as soon as possible (Hubbell *et al*. 2002:8). In such a case the name and relationship of the person to whom the belongings are handed over should be recorded as well (Hubbell *et al*. 2002:8). Since this book of Hubbell *et al*. (2002) was written for the American context, it is evident that controlling the clothing and valuables of the critically ill or injured patient in the A&E unit is not just a South African dilemma.

This concludes Phase 1 Step 1 where the researcher explored the compilation of a nursing record tool. The next step before compiling a preliminary nursing record tool that could be tested in practice was to reach consensus on the content and layout of such a tool.

4.2.2 Step 2

In Phase 1 Step 2 data was collected in the form of field notes kept during an informal group discussion. During this informal group discussion with A&E nurse practitioners working in both the public and private sectors as well as an expert in nursing record keeping, consensus was reached regarding the themes, categories, clusters and sub-clusters identified in Phase 1 Step 1.

The group discussed the content and layout of the preliminary nursing record tool. The experts in this step (Step 2) agreed with almost all the suggestions made by the experts in Step 1 Phase 1. There were minimal changes suggested to the content during the informal discussion. Some of the suggestions from the experts included:

- Combine the preliminary diagnosis with the words ″chief complaint″ or ″differential diagnosis″ in order to prevent confusion, as these words are better known in the A&E environment. The Free Dictionary Online (2008:[1]) defines a preliminary diagnosis as a working diagnosis, provisional diagnosis or differential diagnosis. Lyons *et al*. (2006:58) state that the chief complaint entails more than just the primary grievance, and could be a paragraph written on why the patient

needed to be examined. First, Frances and Pincus (2002:1) explain that a differential diagnosis is done when there is more than one symptom that can be caused by a variety of conditions. It is thus evident that any one of the suggestions would be acceptable. Therefore the researcher decided to combine the preliminary diagnosis with the chief complaint since it was also mentioned in the FGI by one of the experts.

- One of the experts suggested that the nursing record tool should include an area to write down notes in the traditional format. This expert based this suggestion on recent experience with a new A&E nursing record tool utilised in one of the private hospital groups in Gauteng. The expert remarked that one always needs such a space for unforeseen circumstances in the unpredictable A&E environment. The researcher decided to include such an area in the nursing record tool.

- It was also suggested that an area should be created where the emergency care practitioner could sign after handing the critically ill or injured patient over to the A&E unit health care providers. This would imply that the emergency care practitioner agrees with the information that was recorded by the A&E unit personnel during his/her verbal report and would give the information more credibility. Regulation 717 (HPCSA 1974:8) that is printed in the ALS protocols (HPCSA 2006:7) states that the emergency care practitioner should sign all official documents relating to patient care in the execution of his/her duties. This suggestion was implemented in the nursing record tool.

- The experts all agreed that the format or layout should be guided by the primary survey, resuscitation phase and the secondary survey as basis. They remarked that the rest of the layout would be influenced by the size of the paper used for the nursing record tool and the available space on the space paper. It was then decided that the A4 size would be best as it would be easy to bind into the patient's file for safekeeping. Another advantage of the A4 paper mentioned by the experts was the fact that it would make the copying of such a tool

easier. Copying the nursing record tool was mentioned as practice in some of the private hospitals and privately owned A&E units, in order to file a copy in the A&E unit's private filing system.

Overall the two sets of experts agreed on almost all the areas that should be included in a nursing record tool in order to assist the A&E unit nursing personnel on what to record when managing the critically ill or injured patient.

4.2.3 Step 3

Based on the data collected during Step 1 and Step 2 the researcher compiled a preliminary nursing record tool (see Annexure B.2).

Phase 2: Evaluation phase

Phase 2 consisted of two steps. The data collected during Step 1 is discussed in Section 4.4.

4.2.4 Step 1

During this step the A&E nurse practitioners working in the A&E unit were asked to evaluate the preliminary nursing record tool and gice feedback on the usability of the tool.

The A&E nurse practitioners used the nursing record tool during the admission of critically ill and injured patients admitted to the A&E unit in order to see if it was usable in the context that it was constructed for. The A&E nurse practitioners also concentrated on the content and the layout of the nursing record tool, and gave written feedback after using the nursing record tool at least three times in the A&E unit on a critically ill or injured patient. Recommendations made by the A&E nurse practitioners in this step will be discussed in Sections 4.2.4.1 to 4.2.4.7.

4.2.4.1 General recommendations

General feedback from the A&E nurse practitioners working in the A&E unit of the hospital pertaining to the nursing record tool was very positive. They acknowledged that this nursing record tool, although much more comprehensive than the current nursing record tool used in the A&E unit, summarized the actual systematic approach used in the A&E unit when managing a critically ill or injured patient. The A&E nurse practitioners did however remark that it would take some getting used to before the tool would be accepted by all the other A&E healthcare professionals working in this particular A&E unit. This was an anticipated problem that the researcher planned to overcome by making use of in-service training sessions with scenario's on how to complete the nursing record tool once it is in use.

The A&E nurse practitioners did make some general recommendations that proved to be very helpful. They suggested the use of either colour or double lines to distinguish better between the themes, assessment sections and the action sections. The researcher to definite the theme with visible lines due to the fact that colour for a paper-based nursing record tool would not copy well. It was remarked in the FGI that copies are made of all nursing record tools of patients that are admitted in the private sector. The A&E nurse practitioners also recommended that the last additional notes pages should be changed in order to record a date, time and a signature, as this was omitted in the preliminary nursing record tool. These recommendations were taken into consideration and changes where made accordingly on the final nursing record tool (see Annexure B.4).

Other recommendations that were made will now be discussed under the different themes identified in Phase 1, Step 1.

4.2.4.2 Theme 1: Patient information

The A&E nurse practitioners did not have anything new to add to this section, and agreed on the content and layout of the information on the nursing record tool.

4.2.4.3 Theme 2: Pre-hospital information

This section did not elicit many remarks from the A&E nurse practitioners. They agreed with the content and the layout of this section with minimal recommended changes that could be considered. These recommendations were:

- The first recommendation was to change the wording "person in charge" to emergency care practitioner. This recommendation was strengthened by the definition of an emergency care practitioner by the Department of Health Regulation 432 (RSA 2005:4) that includes all persons registered as a paramedic with basic, intermediate or advanced life support skills (see Section 1.7.5). It would also accommodate the definition used in this research for the emergency care practitioner as defined in Chapter 1 (see Section 1.7.5).
- "Mechanism of injury" and "main complaint" are confusing headings for this section. They suggested that the heading for both medical and trauma patients should rather be replaced with something like "diagnosis". According to Mistovich *et al*. (2004:153) the mechanism not only refers to how the patient was injured, but includes factors like the strength, direction and nature of the forces involved in the injury. Although this definition is best suited for the information included under this section, it does not include these forces and was therefore replaced with the word "incident". According to the Merriam-Webster Online Dictionary (2008:[1]) an incident is an "occurrence of an action or a situation that could be a separate unit or experience". The researcher then decided to use the wording "incident".
- It was recommended that the nursing record tool should start out with a section that explains clearly that if the emergency care practitioner hands in a complete pre-hospital record, the section on pre-hospital management would not be applicable, and could be crossed out and signed to make it legal. This would prevent duplication, save time and prevent unlawful late entries. This recommendation was included on the first page with the abbreviation list and instructions on the completion of the nursing record tool (see Annexure B.4).

4.2.4.4 Theme 3: Pre-hospital management

The A&E nurse practitioners were very familiar with the systematic format of the primary survey with its ABCDE steps. They agreed completely with the use of this format as this is the format currently used during the primary management of a critically ill or injured patient in the pre-hospital and in-hospital environment. The recommendations pertaining to the layout of the nursing record tool were:

- The emergency care practitioner should have a space where he/she can sign in the pre-hospital management section to confirm that they agree with the information. This would imply that the information is correct and make this section more valid. This recommendation was included as suggested at the end of the pre-hospital management section.
- The section on the pre-hospital drug management needs to be clarified. It was suggested that the line layout should be changed or another way used to indicate exactly how to use this section. The line use in the layout of this section was changed to clarify this section as recommended.
- The pre-hospital drugs must be included under the pre-hospital management section, and not under the A&E unit management section. This was recommended in order to keep all the pre-hospital information together. This recommendation was made by one of the nine experts used in this phase, while the other eight experts agreed on the inclusion of the pre-hospital drugs as a component close to the A&E unit drug chart in order to give an overall picture of all drugs administered to the patient, pre-hospital as well as in-hospital. Therefore the recommendation to move this component to the pre-hospital management section was not applied.

4.2.4.5 Theme 4: Patient history

Under this section the A&E nurse practitioners had just one recommendation and were in total agreement on the rest of the components, as well as the layout of the nursing record tool. The recommendation was actually a correction that needed to be made. The "L" of SAMPLE could not be answered in a yes/no format and the experts

recommended that only the time of the last meal be recorded. This correction was made on the final nursing record tool.

4.2.4.6 Theme 5: In-hospital multi-disciplinary team members

This was another section that the A&E nurse practitioners agreed on. They had no recommendations for this section. They did make some remarks on the part where all members of the multi-disciplinary team were obligated to write down their practice numbers. They remarked that not all doctors would be willing to complete that part. Other remarks were that as A&E nurse practitioners they would feel anxious to write down their own practice numbers as it would leave them exposed to people memorizing their practice numbers, and using them falsely. The inclusion of the practice numbers was a suggestion that was made during the FGI in Phase 1, Step 1 (see Chapter 2, Section 2.5.1.3) by a record-keeping expert that referred to this as a future recommendation the SANC is considering. Therefore the researcher decided to leave this component on the nursing record tool but not make it compulsory for now. The reason is that if this is going to be expected of each and every nurse registered with the SANC in future, the form could and would be able to accommodate that recommendation.

4.2.4.7 Theme 6: Accident and emergency unit management

The A&E nurse practitioners once again agreed that this section should follow the ATLS stepwise approach of primary survey, resuscitation and then secondary survey (American College of Surgeons [ATLS] 2005:12). The experts had recommendations to help clarify some of the components under this section. The aim of these recommendations was to make the nursing record tool more user-friendly for their context. Recommendations made included:

- The experts agreed that vascular access should be a component under circulation, but recommended that the term ″vascular access″ be changed to intravenous access as this is what they call it in their context. The A&E nurse practitioners also recommended the inclusion of the intravenous catheter size or gauge used to obtain vascular access with. This recommendation was included in the final tool as the

researcher agrees that this is important information that should have been included under circulation from the start.

- Under the section on disability/drugs/defibrillation, the recommendation was to include synchronised cardioversion and cardiac pacing in a tick-off format. This recommendation made a lot of sense as both these electrical interventions are prescribed treatments for unstable arrhythmias in the critically ill patient. These treatments are prescribed by the Resuscitation Council of Southern Africa (2006:4) and form part of the adult emergency arrhythmia management algorithm and the advanced life support for health care providers. These recommendations were included as suggested due to the usefulness of the information.

- The "E" should also include exposure and not just environment. One of the first things done during the management of the critically ill or injured patient after the primary survey has been completed, is to undress the patient completely. This facilitates the secondary head-to-toe assessment of the patient, especially in the case of the critically injured patient where the A&E unit health care providers must look for other injuries. This recommendation was applied onto the nursing record tool as suggested.

- The blood test that is done must rather be called the "laboratory assessment" as pathology has another meaning. According to Stedman's Medical Dictionary for the Health Professions and Nursing (2005:1093), pathology is defined as: "*the medical science, and speciality practice, concerned with all aspects of disease with special reference to the essential nature, causes and development of abnormal conditions, as well as the structural and functional changes that result from the disease processes.*" The Stedman's Medical Dictionary for the Health Professions and Nursing (2005:804) defines laboratory as: "*A place equipped for the performance of tests, experiments, and investigative procedures and for the preparation of reagents and therapeutic and chemical materials*." It is obvious that the A&E nurse

practitioners were right about the meaning of pathology and this motivated the researcher to accept the recommendation and change the category name to laboratory assessments.

- Add the inspiratory/expiratory (I:E) ratio on to the continuous observation part under mechanical ventilation. According to McCorstin *et al*. (2008:122) I:E ratio is the amount of time allowed for inspiration compared to the amount of time allowed for expiration. Normal I:E ratio is 1:2 (McCorstin 2008:122). This information is necessary to be able to record when inverse ration ventilation is used. The length of stay of the critically ill or injured patient awaiting a CCU bed has increased due to the bed shortage in the hospital where the study was conducted. Although this nursing record tool was only intended for the first six hours of management in the A&E unit, some of the critically ill or injured patients do get ventilated on an inverse ratio mode when very unstable and hypoxic. It was for this reason that the researcher included this on the nursing record tool as recommended.

- Differentiate between the patient's spontaneous respiratory rate and the set respiratory rate of the ventilator on the continuous observation chart.

- Another suggestion from the experts was to give more information about the GCS on the nursing record tool, like the marks allocated under the three different components of the GCS. The researcher added the mark allocation next to each component.

- Include the patient's dentures in the clothes and valuables section of the nursing record tool. This recommendation was made by the A&E nurse practitioners as they identified the loss of dentures as a common problem in the A&E unit.

4.2.5 Step 2

During this step the researcher adapted the final tool based on the recommendations obtained from the experts in Phase 2, Step 1. The

researcher is planning on sending the final nursing record to the SANC for approval by their legal department. Thereafter the tool will be used in the A&E unit as the official nursing record tool for all critically ill or injured patients managed in the A&E unit of the hospital.

This concludes the data analysis and discussion of the results of this research.

4.3 Conclusion

In this chapter the data findings was explained and validated with literature. The format of the nursing record tool followed the ABCDE steps of the American College of Surgeons' ATLS course. The experts added suggestions like the use of pictures on the nursing record tool, as well as the use of practice number as identification of the multi-disciplinary team members involved in the management of the critically ill or injured patient.

The old nursing record tool did not include all aspect of the management of the critically ill or injured patient that needed to be recorded in order to ensure continuity of care. These aspect include the pre-hospital management, nursing assessment and findings, emergency interventions, specific nursing and medical management, as well as the evaluation of the outcome of the critically ill or injured patient nursed in the A&E unit.

The researcher envisions that the final nursing record tool, that was the result of the research, will simplify the burden of keeping proper, information-rich nursing records during the turbulent and fast-paced management of the critically ill or injured patients in the A&E unit. A&E nurse practitioners are the vital link and key role players of the multi-disciplinary team that ensures continuity of care for all patients, and therefore the researcher hopes to contribute to the communication role of the A&E nurse practitioner.

5 Conclusions, limitations and recommendations

5.1 Introduction

In chapter 4 the results of the research were discussed and validated with relevant literature in order to contextualise the research findings. This chapter concludes the study. It includes a summary of the research, which contains a discussion of the findings, conclusions as well as recommendations referring to the development and implementation of a nursing record tool in an A&E unit.

5.2 Research aim and study objectives

The overall aim of this study was to develop a nursing record tool to record the management of critically ill or injured patients nursed in an A&E unit.

To attain the aim of this research, the following objectives were set in the study:

- **Objective 1:** This objective was to explore the compilation of a nursing record tool.
  - Describe the components of the nursing record tool.
  - Reach consensus on the content and layout of the nursing record tool.
  - Compile a preliminary nursing record tool.
- **Objective 2:** The objective here was to evaluate the nursing record tool.
  - Evaluate the preliminary nursing record tool.
  - Construct the final nursing record tool.

In chapter two the researcher explained the methodology that assisted with reaching the set objectives. Objective one was reached with the active participation of the experts (see Table 1.2; Figure 2.1).

The realisation of the second objective was reached by utilising the A&E nurse practitioners working in the A&E unit to evaluate the nursing record tool in the clinical setting. The end product of this research was a nursing record tool that can be utilised in an A&E unit for recording the management of critically ill or injured patients.

5.3 Conclusions

The overall conclusions of the research are summarised and are based on the two phases of the study.

5.3.1 Phase 1: Explorative phase

During Phase 1 six themes were identified. These are summarised below.

5.3.1.1 Theme 1: Patient information

Critically ill or injured patients admitted to an A&E unit often present with a decreased level of consciousness. For this reason these patients are admitted without being identified, creating a potential medico-legal liability. Rigorous implementation of ensuring that a patient is identified by utilising a patient sticker as well as an identification bracelet may decrease the medico-legal liability. However, no bullet-proof method currently exists pertaining to the identification of a patient presenting to an A&E unit with an abnormal level of consciousness.

5.3.1.2 Theme 2 and Theme 3: Pre-hospital information and management

It is imperative that pre-hospital information regarding the identification of the responsible emergency care practitioner as well as the management provided during this phase is documented. A copy of the pre-hospital

documentation should be made available to the A&E unit if the patient is handed over to the A&E healthcare providers.

The documentation provides important base-line information on the patient's history, assessment findings and pre-hospital initial management on which the management in the A&E unit will be based. The information is used to measure the patient's progress during the in-hospital management. The pre-hospital record is, however, not always provided to the A&E unit health care workers by the emergency care practitioners in the clinical setting.

Despite the complaints received by the A&E nurse practitioners during Phase 2 of the research (see Section 4.4.3), following consultation with the unit manager it was concluded that the pre-hospital information and management should remain documented as part of the nursing record tool until the current practice of the emergency care practitioners is changed.

5.3.1.3 Theme 4: Patient history

During this study it was emphasised by all the participants that the history of a critically ill or injured patient provides the framework into which the comprehensive management is placed. It is used to make differential diagnosis as well as guiding A&E health care workers in the further management of the patient.

The patient history provides important information regarding the patient's pre-admission health status (e.g. chronic medication and diseases) and is regarded as vital data for medical specialists.

5.3.1.4 Theme 5: In-hospital multi-disciplinary team members

The management of a critically ill or injured patient is essentially a multi-disciplinary approach. In this study the participants emphasised the importance of documenting details about the individuals (name, qualification and practice number) involved in the management of the patient.

5.3.1.5 Theme 6: Accident and Emergency unit management

The ABCDE principles of the pre-hospital and in-hospital assessment and management in this study were found to be similar. However, the primary as well as the secondary survey recorded in the A&E unit is more comprehensive and includes additional information such as time when procedures were performed, settings used during mechanical ventilation and arterial blood gas results.

5.3.2 Phase 2: Evaluation phase

During Phase two the A&E nurse practitioners were asked to evaluate the preliminary nursing record tool in the A&E unit. Feedback priorities expressed by the A&E nurse practitioners about the nursing record tool included:

- Colour coding of the nursing record tool, or use of thicker more clear lines to differentiate between the different sections, which in turn may decrease the complexity thereof.
- Space should be provided where the emergency care practitioner can sign once he/she has agreed with the pre-hospital information documented to ensure that accountability and responsibility of patient care is maintained.
- Space should be provided to document drugs administered during the pre-hospital phase.
- Clarity of terms was considered as suggested, such as changing the word "pathology" to "laboratory assessments".

These suggestions were incorporated into the final nursing record tool (see Addendum B4).

5.4 Limitations of the study

The limitations of this study include the following:

- The study was conducted in one public Level III hospital in Gauteng therefore the results may not be applicable to other similar settings.

- The final nursing record tool is currently too comprehensive due to the fact that it contains pre-hospital information and management components that should not have to be included.
- The nursing record tool was evaluated only by the A&E nurse practitioners and should ideally be evaluated by all the A&E health care workers involved in patient assessment and management in the A&E unit.
- The critically ill or injured paediatric patient was not included in the development of the nursing record tool.
- The nursing record tool was not developed to document information and management of priority three (P3) patients.

5.5 Recommendations

Recommendations based on the findings of this research include:

- **Recommendation 1:** The importance of patient identification should be emphasised and continuous professional development should focus on this issue. Clinical audits should be implemented and rigorous control of the correct procedures pertaining to patient identification should be executed.
- **Recommendation 2:** Collaboration between the emergency care practitioners and the A&E health care workers needs to be established in order to obtain pre-hospital information. It is recommended that once collaboration has been established and pre-hospital records are provided, the section included in the nursing record tool can be removed. This will shorten the nursing record tool as well as decrease the time spent by the A&E nurse practitioners to complete the section, thus eliminating duplication.
- **Recommendation 3:** Documenting the practice numbers of members of the multi-disciplinary team on the nursing record tool is recommended. However, this should be further investigated due to potential exposure of professional information and possible misuse thereof.

- **Recommendation 4:** The nursing record tool should be distributed to all public hospitals in the country to be re-evaluated and refined. Refinement should take place on a continuous basis to ensure that the nursing record tool is based on evidence-based principles.
- **Recommendation 5:** Continuous in-service training regarding the use of the nursing record tool should be provided to all relevant A&E health care workers to ensure correct and complete documentation.
- **Recommendation 6:** The nursing record tool should be submitted to legal experts to determine and approve the legality thereof.
- **Recommendation 7:** The components of the nursing record tool can be utilised once a paperless system is implemented as planned in the hospital.

5.6 Recommendations for future research

Future research that could be conducted based on the study findings is suggested. This includes possibilities of studies based on clinical audits. These audits can be conducted by various researchers concerning patient management and outcomes utilising the information documented on the nursing record tool. A similar tool could be developed for priority two and priority three patients as well as for paediatric patients, utilising similar research methodological principles.

5.7 Personal reflection on the study

During the research conducted on what a nursing record tool for critically ill or injured patients nursed in an A&E unit should entail, the researcher realised that the A&E environment and management approaches entail more than initially perceived. Although the principles used to assess and manage the critically ill or injured patient during the primary and secondary surveys was familiar to the researcher and experts who participated in the study, the difference lies with how the nursing record

tool is interpreted and utilised within different settings. These differences were observed during the FGI. Experts working in the private health sector and those working in the public health sector had different views concerning the content of the nursing record tool. Differences were also noted by reviewing the literature based on international studies.

The researcher became aware that unscientific use of medical terminology as well as the use of medical jargon that takes place daily in the A&E unit and is recorded as such.

5.7.1 Unscientific use of medical terminology

The researcher became aware that the A&E health care professionals have fallen into the trap of using their medical terminology in an unscientific manner.

One example is that when recording that the patient presented with distended neck veins, A&E health care professionals would record this symptom using the term increased *jugular vein pressure* (JVP), instead of using the correct term namely *jugular vein distension* (JVD). JVP is a measurement that can be used to estimate the central venous pressure (CVP) of a patient. JVD occurs when the patient has an increased CVP due to fluid overload or right ventricular dysfunction, and is an observation that the patient presents with without measuring a pressure. It became clear that the unscientific use of these terms can be due to the close relationship in meaning between these two terms.

Another common mistake with regard to unscientific terminology used during record keeping is based on the example of recording the procedure of inserting a *central venous catheter* as a *central venous pressure* (CVP). When referring to the CVP, one is actually referring to the measurement that is done with the central venous catheter, and not to the procedure of inserting this catheter.

As clinical facilitator the researcher realised that the A&E health care providers need to be made aware of the manner in which they use

terminology unscientifically in order to correct these common mistakes. To ensure the use of correct scientific terminology in practice an effort would have to be made by all the role players involved in training. This implies that the clinical facilitator should concentrate intensively on the correct use of terminology during in-service training sessions.

5.7.2 Use of jargon

Reflecting on the A&E unit in which the study was conducted, the researcher noticed an excessive use of jargon by the A&E health care providers. During the FGI the experts, who were from different private and public hospitals in Pretoria, used various phrases in which jargon occurred. The easy manner in which the experts used these phrases could be regarded as proof that these phrases are used on a daily basis in the clinical practice.

Jargon phrases that were mentioned by the experts included:

- "Lines and tubes phase": This was a phrase that referred to the resuscitation phase in the management approach used in the A&E units. Although this is a familiar phase used in the emergency care environment of Gauteng, the researcher could not find any literature to prove that this jargon phrase is used in other A&E units nationally or internationally.
- "DEATH": Another jargon phrase was the use of the mnemonic DEATH during the process of taking a patient's history. In the literature there are numerous references to the SAMPLE part of the mnemonic used to obtain the patient's history, but the only reference that the researcher could find on the DEATH part was in a local research study done by an expert working in the same hospital. This is proof that mnemonics can be context-bound.

5.8 Conclusion

In this chapter the final conclusions of this study were summarised based on the research objectives. The limitations pertaining to this study were

indicated and recommendations were made based on the research findings. In addition recommendations regarding future research were made and as a final conclusion to the study a personal reflection on the research was included.

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Annexure A

Ethical Approval

A.1 Faculty of Health Sciences Research Committee

A.2 The Hospital

A.1 Faculty of Health Sciences Research Committee

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

University of Pretoria

Faculty of Health Sciences Research Ethics Committee
University of Pretoria

Soutpansberg Road
MRC Building
Room 2 - 20

Private Bag x 385
Pretoria
0001

Tel: (012) 339 8619 **Fax to E-Mail:** 086 6516047
E-Mail: deepeka.behari@up.ac.za
Date: 31/01/07

Number : **S2/2007**

Title : Developing a nursing record tool for a Priority One (PI) patient nursed in an Accident and Emergency (A & E) unit in a public hospital in Gauteng

Investigator : I E van Eeden, Department of Nursing Science, University of Pretoria
(SUPERVISOR: TANYA HEYNS)

Sponsor : **None**

Study Degree: **M Cur (Clinical)**

This Student Protocol has been considered by the Faculty of Health Sciences Research Ethics Committee, University of Pretoria on 30/01/2007 and found to be acceptable.

Mr K P Behari	B.Proc. KZN; LLM – Unisa; (Lay Member)
Advocate AG Nienaber	(female)BA(Hons) (Wits); LLB; LLM (UP); Dipl.Datametrics (UNISA)
Prof V.O.L. Karusseit	MBChB; MFGP (SA); M.Med (Chir); FCS (SA): Surgeon
Prof M Kruger	(female) MB.ChB.(Pret); Mmed.Paed.(Pret); PhDd. (Leuven)
Dr N K Likibi	MB.BCh.; Med.Adviser (Gauteng Dept.of Health)
Dr F M Mulaudzi	(female) Department of Nursing
Mrs E.L. Nombe	(female) B.A. CUR Honours; MSC Nursing – UNISA (Lay Member)
Snr Sr J. Phatoli	(female) BCur (Et.Al) Senior Nursing-Sister
Dr L Schoeman	(female) Bpharm, BA Hons (Psy), PhD
Prof J.R. Snyman	MBChB, M.Pharm.Med: MD: Pharmacologist
Dr R Sommers	(female) MBChB; M.Med (Int); MPhar.Med;
Prof TJP Swart	BChD, MSc (Odont), MChD (Oral Path) Senior Specialist; Oral Pathology
Prof C W van Staden	MBChB; Mmed (Psych); MD; FTCL; UPLM; Dept of Psychiatry
Dr AP van der Walt	BChD, DGA (Pret) Director: Clinical Services, Pretoria Academic Hospital

Student Ethics Sub-Committee

Prof R S K Apatu	MBChB(Legon); PhD(Cambridge)
Dr A.M Bergh	(female) BA (*cum laude*), Rand Afrikaans University BA (Hons) (Linguistics), University of Stellenbosch Secondary Education Diploma (*cum laude*), University of Stellenbosch BA (Hons) (German) (*cum laude*), University of South Africa (Unisa) BEd (Curriculum Research and Non-formal Education) (*cum laude*), University of Pretoria PhD (Curriculum Studies), University of Pretoria
Dr S I Cronje	DD (UP) – Old Testament Theology
Dr M M Geyser	(female) BSc; MBChB; BSc HONS (Pharm); Dip PEC; MpraxMed
Mrs N Lizamore	(female) BSc(Stell), BSc (Hons) (Pret),MSc (Pret) DHETP (Pret)
Dr S A S Olorunju	B.Sc Hons; M.Sc; Ph.D
Dr L Schoeman	(female) Bpharm, BA Hons (Psy), PhD
Dr R Sommers	SECRETARIAT (female) MBChB; M.Med (Int); MPharMed

p/ PROF J R SNYMAN
MBChB; M.Pharm.Med: MD: Pharmacologist
CHAIRPERSON of the Faculty of Health Sciences Research
Main Ethics Committee - University of Pretoria

DR L SCHOEMAN
Bpharm, BA Hons (Psy), PhD
CHAIRPERSON of the Faculty of Health Sciences Research
Students Ethics Committee – University of Pretoria

A.2 The Hospital

APPLICATION TO CONDUCT A RESEARCH STUDY

Faculty of Health Sciences Research Ethics Committee
University of Pretoria
[redacted] Hospital
Tel: (012) 339 8612
Fax: (012) 339 8587
E Mail: manda@med.up.ac.za - Main Committee
E Mail: dbehari@med.up.ac.za - Student Committee

Soutpansberg Road - MRC-Building - Level 2 - Room
Private Bag x 385 – Pretoria – 0001

GAUTENG HEAD OFFICE USE	
DATE RECEIVED	
PROTOCOL NUMBER	
REPORT DUE DATE	
FILE REFERENCE	

GENERAL INFORMATION AND AGREEMENT BY APPLICANT

APPLICANTS

Primary investigator

Ms Ilze van Eeden
Clinical Fascilitator
[redacted] Hospital
Student M Cur Clinical
Universaty of Pretoria
Department of Nursing Science
Tel: (012) 354 [redacted]
Sel: 083 292 0694

Supervisor

Ms Tanya Heyns
Department of Nursing Science
Faculty of Health Sciences
PO Box 667
Pretoria 0001
Tel: (012) 354 2132

FULL TITLE OF STUDY:

Developing a nursing record tool for a priority one (P1) patient nursed in an accident and emergency (A&E) unit in a public hospital in Gauteng

ARE ANY SPECIAL PRECAUTIONARY MEASURES TO BE TAKEN AND BY WHOM?

In this study the views of the experts in the field of A&E nursing as well as the field of nursing records, will be described through the use of the critical problem-solving method of brainstorming during a group discussion. Voluntary participants will be not be known to each other, but will be introduced before the group discussion. Therefore it will be difficult to maintain anonymity, but anonymity will be ensured during data analysis as all inputs will be regarded as confidential. Publications will not contain any information that will link the hospital or the participants to the study.

INDICATE EXPECTED DATE OF REPORT :

DAY	MONTH	YEAR
30	November	2007

INDICATE NUMBER OF STAFF INVOLVED

Permanent nurses (A&E nursing practitioners and Recording experts)	5 - 7

THE NAME OF THE HEAD OF THE DEPARTMENT: **Dr Engelbrecht**

AGREEMENT BY APPLICANTS

The applicants agree as follows

- To conduct the study recorded in and under the conditions set out in this application form.
- To conduct this study at no additional expense to the Gauteng Department of Health whatsoever.
- To inform the Superintendent General: Gauteng Department of Health and other relevant authorities should it be deemed necessary to deviate from protocol or stop this study.
- To make available without delay all the results of this study to the Superintendent General: Gauteng Department of Health.
- We understand that the Superintendent-General: Gauteng Department of Health having allowed this study to be conducted places himself or herself or the Gauteng Department of Health under no obligation whatsoever and to leave the final choice of the institution where the trial/ evaluation will be conducted to the Superintendent- General: Gauteng Department of Health.

THE APPLICANTS MUST SIGN HERE

APPLICANTS		
NAMES	**SIGNATURES**	**DATE**
Mrs I E van Eeden		8 Febr. 2007
Mrs T Heyns		8 Febr 2007

INITIAL CONSENT BY DEPARTMENTAL HEAD

I Dr. A. Engelbrecht head of Emergency Medicine.
department of [redacted] hospital in consultation with the Chief Executive Officer / Superintendent of this Hospital grant permission to submit an application to conduct a study to the Chairperson of the Ethics, Research and Therapeutic Committees of this Hospital.

The researcers conducting the trial/evaluation will be Mrs I E van Eeden (Student of the University of Pretoria) and Ms Tanya Heyns (Department of Nursing Science, Universaty of Pretoria).

THE HEAD OF THE DEPARTMENT MUST SIGN HERE!

CLINICAL HEAD OF DEPARTMENT (EMERGENCY UNIT)		
NAME	**SIGNATURE**	**DATE**
A. Engelbrecht		19/2/07

APPROVAL BY HOSPITAL CHIEF EXECUTIVE OFFICER:

I Dr. AP van der Walt Chief Executive Officer / ~~superintendent~~ of the [redacted] Hospital, hereby agree that this study be conducted in the Emergency Unit of this hospital.

pp CEO OF THE [redacted] HOSPITAL		
NAME	**SIGNATURE**	**DATE**
Dr AP van der Walt	GAUTENG PROVINSIALE REGERING DEPT. VAN GESONDHEID [redacted] HOSPITAAL PRIVAATSAK/PRIVATE BAG [redacted] 22 FEB 2007 PRETORIA 0001 [redacted] HOSPITAL GAUTENG PROVINCIAL GOVERNMENT DEPT. OF HEALTH	22/2/2007

GAUTENG DEPARTMENT OF HEALTH N/a

SUPERINTENDENT GENERAL		
NAME	**SIGNATURE**	**DATE**

LETTER OF INTENT

Date:

Prof J R Snyman
Chair: University of Pretoria
Faculty of Health Sciences Research Ethics Committee
University of Pretoria
[redacted] Hospital
Tel: (012) 339 8612 Fax: (012) 339 8587
E Mail: dbrhari@med.up.ac.za -Student Committee
E Mail: manda@med.up.ac.za -Main Committee
Soutpansberg Road
MRC-Building
Level 2 - Room 19
Private Bag X 385
Pretoria
0001

Dear Prof Snyman

SUBMISSION OF PROTOCOL FOR EXPEDITED REVIEW

NAME OF PROTOCOL:

Developing a nursing record tool for a priority one (P1) patient nursed in an accident and emergency (A&E) unit in a public hospital in Gauteng

NATURE OF STUDY:

In this study the views of the experts in the field of A&E nursing as well as the field of nursing records, will be described through the use of the critical problem-solving method of brainstorming during a group discussion. Voluntary participants will be not be known to each other, but will be introduced before the group discussion. Therefore it will be difficult to maintain anonymity, but anonymity will be ensured during data analysis as all inputs will be regarded as confidential. Publications will not contain any information that will link the hospital or the participants to the study.

CONTRACT RESEARCH:

No

ARE SUFFICIENT FUNDS AVAILABLE TO COMPLETE STUDY? Yes

PATIENTS / VOLUNTEERS / FILES / SAMPLES:

A convenience sample will be used in this study because of the availability of A&E experts and record keeping experts in Gauteng. Snowball sampling, in which an early participant is asked to identify and refer other people who meet the criteria will be used in this study in phase 2. In phase 3 of the study the researcher plans on subjecting the content, the layout and the usefulness of the compiled nursing record tool to evaluation by asking clinical A&E nursing practitioners currently working in the A&E environment to use and then evaluate the instrument in the real-life situation in the A&E unit of the [redacted] Hospital. These clinical experts will then be asked by means of an open-ended questionnaire to give written feedback.

IS THE PROTOCOL SUPPORTED BY THE DEPARTMENT? Yes

IN WHICH DEPARTMENT WILL THE RESEARCH BE CONDUCTED?

Accident and Emergency unit

SIGNATURE OF THE HEAD OF THE DEPARTMENT WHERE THE RESEARCH WILL BE CONDUCTED		
SIGNATURE	**DEPARTMENT**	**DATE**
	Emergency Medicine	19/2/07

IS THE STUDY FOR DEGREE PURPOSES No

Signed:

Mrs I E van Eeden _____ Date: 8/2/07
Contact address: Accident and Emergency unit, Level E4, [redacted] Hospital
Telephone number: 083 292 0694
Work telephone number: (012) 354 [redacted]
e-mail: ilzeve@webmail.co.za

Ms T Heyns _____ Date: 8/02/07
Contact address: Department of Nursing Science, University of Pretoria
Phone: (012) 354 [redacted]
e-mail: tanya.heyns@up.ac.za

Clinical Head of Emergency Unit: _____ Date: 19/2/07
Contact address: Accident and Emergency unit, [redacted] Hospital
Work Phone: (012) 354 [redacted] / 354 [redacted]

AUTHORISATION TO PARTICIPATE IN A RESEARCH PROJECT

TITLE OF STUDY

Developing a nursing record tool for a priority one (P1) patient nursed in an accident and emergency (A&E) unit in a public hospital in Gauteng

Dear Mrs / Mr_____ Date_____/_____/____

1) THE NATURE AND PURPOSE OF THE STUDY

I understand that I am being asked to take part in a research study. The aim of this study is to develop an optimal nursing record tool for P1 patients nursed in an A&E unit in a public hospital in Gauteng.
The researcher believes that by equipping the A&E practitioners with an effective nursing record tool, they can become safer practitioners. Such a tool can be beneficiary to the patient as well as the nursing practitioner.

2) EXPLANATION OF PROCEDURES TO BE FOLLOWED

I am asked (as expert) to participate in a group discussion where the aim is to obtain the components pertaining to the nursing record tool as perceived by experts in the field of A&E nursing and recording. With all the inputs of the experts and the validating literature as background, the researcher will aspire to fulfil the aim of the study with a new user-friendly, less time-consuming, legal tool that can be used in the busy A&E environment for P1 patients.

3) RISK AND DISCOMFORT INVOLVED

There are no risks or discomfort involved in this study pertaining to the participants.

4) BENEFITS OF THE STUDY

This nursing record tool should guide nursing practitioners, and moreover protect them from the medico-legal aspect of caring for the P1 patient. The researcher believes that by improving record keeping, the standard of care given to the P1 patient will also improve. This will benefit the patient as well as the A&E nursing practitioner.

5) VOLUNTARILY PARTICIPATION AND WITHDRAWING FROM STUDY

I understand that participation in this study is completely voluntarily and that I as participant could withdraw from this study at any given time.

Annexure B

Nursing record tools

B.1 Current nursing record tool

B.2 Preliminary nursing record tool

B.3 Preliminary nursing record tool: Example of feedback of A&E nurse practitioner

B.4 Final nursing record tool

B.1 Current nursing record tool

[redacted]

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UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

PATIENT OBSERVATION EMERGENCY DEPARTMENT

Patient sticker	Allergy:	
	Diagnosis:	
	Time of arrival:	
	Ambulance nr.:	

GENERAL ASSESSMENT/ACTION																		
GENERAL	**A**	**H**	**PROCEDURES**	**A**	**H**	Suctioned			Peripheral 2			Limbs Arms						
Dressings			G Lavage			Bloodgas			Intraosseous			Limbs Legs						
Splints			IC Drain			Oximeter			Femoral			Others						
Traction			Others			**CIRCULATION**	**A**	**H**	Others									
Collar						Cardiac monitor						**BLOODS**						
Kenrich			**AIRWAY**	**A**	**H**	Rhythm			**X-RAYS**	**A**	**H**	Glucose		HIV				
Spine board			Satisfactory			CPR			C-Spine			U+E		CRP				
Scoop			Intubated			Defib/Cardio			Chest Sup.			Drugs		FBC				
Head blocks			…… …mm			ECG 12 lead			Chest erect			Compact						
NG Tube			O2..... L/min			**IV LINES**	**A**	**H**	Pelvis			Trop I						
Foleys			……. .%mask			CVP			Abdomen			Cardiac E						
Supra pubic			Ventilated			Peripheral 1			Skull			PI/PTT						

MEDICATION													
NAME	**DOSE**	**ROUTE + Frequency**	**Sign DR**	Time									
1				Dose									
				Sign									
2				Dose									
				Sign									
3				Dose									
				Sign									
4				Dose									
				Sign									
5				Dose									
				Sign									
6				Dose									
				Sign									
7				Dose									
				Sign									
8				Dose									
				Sign									

INTAKE					BLOOD PRODUCTS ADMINISTRATION						
IV Fluids	**Site**	**Vol.**	**Start**	**Stopped**	**Unit number.**	**Vol.**	**Start**	**Stop**	**Expire**	**Group**	**Signatures**
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
Total fluid intake:……L					**Total Blood intake:……Units**						

HEMODINAMIC OBSERVATIONS

TIME ⇐														
120mmg • BP • 80 mmg	190													
	180													
	170													
	160													
	150													
	140													
	130													
	120													
	110													
	100													
	90													
	80													
	70													
	60													
	50													
	40													
	30													
Pulse														
Temperature														
Chest pain / Meds														
Capillary refill sec.														
Glucose mmol														
CVP														
SaO_2 %														
Mode														
Pt / Ventilator rate														
FiO_2 / O_2 L/min														
Tidal volume (Insp)														
Minute volume														
Airway pressure														
Peep														
Pupil size L														
R														
Pupil Reaction L														
R														
G Eye Opening														
C: Motor Response														
S: Verbal Response														
Limb Arm L / R														
Leg L / R														
Hct														
Hb														
PH														
PCO2														
PO2														
HCO3														
SBE														
SaO2 %														
Shunt														
Urine output ml														
Ketones														
PH														
Blood														
Protein														
Leukocytes														
Glucose														
Others (NG)														

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TEAM	SURNAME	SPECIALTY	TIME CALLED	TIME ARRIVED	
Cas Dr.					
Sister 1					
Sister 2					
Sister 3					
Specialist 1					
Specialist 2					
Specialist 3					
Specialist 4					
Specialist 5					
Ward staff					

CARDEX

DATE/TIME		SIGNATURE

GAUTENG PROVINSIALE GESONDHEID
GAUTENG PROVINCIAL HEALTH
[redacted]

EMERGENCY DEPARTMENT

CONTROL OF CLOTHING AND VALUABLES

The [redacted] will not take responsibility for any valuables, cell phones or clothing of patients who are awake and orientated and in the casualty department.

.....
Signature of patient

DISORIENTATED OR UNCONCIOUS PATIENTS

Valuables and money handed in at admission:

Amount: R.....

Jewellery: .....

.....

Teeth: False: .....

.....
Signature: Admissions clerk

.....
Date

.....
Witness

.....
Witness

Receipt number.....

Unclaimed clothing will only be kept for 24 hours. Thereafter it will be discarded.

Clothing: 1. .....

2. .....

3. .....

4. .....

5. .....

6. .....

Handed over to the family: .....
Signature

.....
Date

.....
Witness

.....
Witness

If kept in the unit: .....
Signature

.....
Signature

Clothes and valuables handed over to the ward/unit:

.....
Signature: Emergency unit

.....
Date

.....
Signature: Ward

B.2 Preliminary nursing record tool

Patient information

Admission date		Medical Alert	Y	N	Preliminary diagnosis
Admission time		Allergies			
Triage score					
Triage colour					

	Name	Telephone number	Admission Priority			
Contact telephone numbers	1.	1.	P1		P2	
	2.	2.	Walk in		Ambulance call	

Pre-hospital information

Call type	Helicopter call	Y	N	Person in charge		HPCSA/SANC nr..	
	Primary call	Y	N	Qualification	ALS	Ambulance call sign	
	Trauma	Y	N		ILS	Time call received	
	Medical	Y	N		BLS	Time at scene	
	Transfer	Y	N		Other	Time at hospital	

Transfer information	Hospital name		Main complaint	Critically ill Patient	Chest pain		Quality	/ 10	
	Referring doctor				AMI		Type		
	Contact number				Respiratory distress		Type	Overdose	
	Notes on interventions performed				Hyperglycaemia		mmol/L	DKA	
					Hypoglycaemia		mmol/L	CVI	
					Hypertension			TIA	
					Other				

Mechanism of injury	Critically injured patient	Assault		Blunt object	Y	N	Mechanism of injury	Critically injured patient	Burns		Estimated %	
				Burns	Y	N			Diving accident		Estimated height	
				Stab wound	Y	N			Fell from height		Extraction time	
		Cyclist		Helmet worn	Y	N			MVA		Additional scene information	
		GSW		Self inflicted	Y	N			Near drowning			
		Hanging		Self inflicted	Y	N			PVA			
		MBA		Helmet worn	Y	N			Other		Specify	

Pre-hospital management

Airway and C-spine	Airway: open, maintained and protected by patient	Y	N				Laryngeal mask	Y	N	Size			
	Oropharyngeal tube	Y	N	Size			Cricothyroidotomy	Y	N	Size			
	Endotracheal intubation	Y	N	Size			Cuffed	Y	N	Oral		Nasal	
	Neck collar			Head blocks (HID)			Scoop			Notes			
	Spine board			Kenrich device (KED)			Spider harness						

Breathing	Oxygen mask	Y	N	% L/min	Bag-valve-mask ventilation	Y	N	breaths/min L/min	
	SaO_2 monitor	Y	N	%	Blood pressure monitor	Y	N	/ mmHg	
	Mechanical ventilation	Y	N	Ventilator type:	Mode:	Set respiratory rate:		FiO_2:	
	Air entry left	Y	N	Notes	Trachea central	Y	Notes		
	Air entry right	Y	N			N			

Compiled by: Ilze van Eeden (January 2009)

Pre-hospital management (cont.)

Circulation and haemorrhage

Pulses palpable	Y	Peripheral		Radial		Carotid				
	N	CPR	Y N	Time started		Drugs administered	Y	N	*(Complete on drug chart)*	
Peripheral access	Y	N	Site		Site	Fluid management *(Complete fluid chart)*				
Intraosseous access	Y	N	Site		Site					
Jugular access	Y	N	Site		Site					
Traction splint	Y	Site		Time		Upper limb splint	Y	N	Site	
	N	Site		Time		Lower limb splint	Y	N	Site	
Pressure bandages	Y	Site				Pelvic grip	Y	N	Time	
	N	Site				Other				

Disability/ Drugs/Defib

Glasgow Coma Scale	Eyes 1 2 3 4	Verbal 1 2 3 4 5	Motor 1 2 3 4 5 6	/15								
Pupils	L	mm	Reactive to light	Y N	Sluggish	Y N	Swollen closed	Y N	Level of consciousness			
	R	mm	Reactive to light	Y N	Sluggish	Y N	Swollen closed	Y N	A V P U			
Drugs administrated	Y N	*(Complete drug chart)*	Defibrillate	Y N	Blood glucose	Y N	mmol/L					

Patient history

S	**S**eatbelt worn	Y N	**Additional history notes**	**D**	**D**iabetes mellitus	Y	N
A	**A**irbags deployed	Y N		**E**	**E**pilepsy	Y	N
M	**M**edication	Y N		**A**	**A**sthma	Y	N
P	**P**ast illness	Y N		**T**	**T**uberculosis	Y	N
L	**L**ast meal	Y N			**T**hrombosis (MI / DVT / CVI)	Y	N
E	**E**vents prior to incident	Y N		**H**	**H**ypertension	Y	N

Notes on pre-hospital management

In-hospital multi-disciplinary team members involved in patient management

	Name in print	Signature	Speciality	Time called	Time arrived	HPCSA / SANC nr
Nursing staff						
A&E doctors						
Specialists						
Other						

A&E unit: Primary survey

Performed by **Time**

Child	**Estimated weight: 8+(age x 2) =** **kg**	Braslow tape used	Y / N	Braslow tape colour	

Airway and C-spine

Assess

Airway: open, maintained and protected by patient	Y / N	Level of consciousness	A V P U				
Gag reflex	Y / N	Noisy breathing		Stridor		Partial obstruction		Total obstruction	

Actions

Head tilt chin lift		Jaw thrust		Laryngeal mask		Size	Performed by		
Oropharyngeal airway		Cricothyroidotomy surgical		Time		Size	Performed by		
Nasopharyngeal airway		Cricothyroidotomy needle		Time		Size	Performed by		
Endotracheal tube		Depth at teeth	cm	Cuff pressure	cm/H_2O	Size	Performed by		
		Time		Oral		Nasal		Cuffed		Secured	
Manual inline immobilisation		Rigid neck collar		Head immobilising device (HID)					
Manual strapping		Distended neck veins	Y / N	Log roll		Notes			
Trachea position	L / C / R	Needle decompression	R / L	Site	Time				

Breathing

Assess

Air entry **R**	Normal		Decreased		Wheeze		Crepitus		Ronchi		Crackles		Silent chest	
Air entry **L**	Normal		Decreased		Wheeze		Crepitus		Ronchi		Crackles		Silent chest	
Spontaneous breathing		Tracheal tug		Symmetry		Peripheral cyanosis		Accessory muscle use			
Nasal flaring		Rib retraction		Asymmetry		Central cyanosis		Abdominal breathing			
Open wounds		Notes		Crepitus		Notes		Surgical emphysema		Notes	

Actions

Oxygen mask		% L/min	Bag-valve-mask ventilation		b/min L/min	Time		
Non-invasive ventilation		CPAP	FiO_2 PEEP	NIPPV		Time	FiO_2 PEEP	
Mechanical ventilation		Time	Mode of ventilation		***(Complete settings on observation chart)***			

Circulation

Assess

Palpable pulses	Y / N	Radial pulse		Brachial pulse		Femoral pulse		Carotid pulse			
		CPR started		Time started		Time stopped		***(Complete CPR form)***			
Capillary refill ≤ 3 sec		Capillary refill ≥ 3 sec		Skin cold / clammy		Skin warm / flushed					
Internal haemorrhage suspected in	Abdomen		Pelvis		Chest		Distended JVP	Y	N		
External haemorrhage		Site		Doppler used to detect pulse	Y / N	Site		+	–		
				Vital data done		***(Complete observation chart: baseline)***					

Actions

Pressure applied		Site		Sutures inserted		Site	Time	
						Performed by		
Vascular access		Site		Intra-osseous lines		Site	Time	
						Performed by		
Femoral access		Site		Venous cut down		Site	Time	
						Performed by		
Pelvic grip		Site		Fluid management ***(Complete fluid chart)***				

Compiled by: Ilze van Eeden (January 2009)

A&E unit: Primary survey (cont.)

Disability/Drugs/Defib

Assess

Glasgow Coma Scale	Eyes 1 2 3 4	Verbal 1 2 3 4 5	Motor 1 2 3 4 5 6	/15

Pupils												Notes
L	mm	Reactive to light	Y N	Sluggish	Y N	Swollen closed	Y N					
R	mm	Reactive to light	Y N	Sluggish	Y N	Swollen closed	Y N					

Actions

Drugs administrated	Y N	*(Complete drug chart)*	Blood glucose		mmol/L
Defibrillate		Synchronised cardioversion		Cardiac pacing		*(Complete CPR form)*

Environment

Assess

Undressed	Y N	Clothes cut	Y N	*(Complete clothing/valuable form)*				
Temperature		Per axilla		Rectal		Esophageal		Notes

Actions

Internally warmed		Warm intravenous fluid		Bladder		Stomach		
Externally warmed		Blanket		Air blanket		Space blanket		
Externally cooled		Tepid sponge		Ice packs		Other		

Additional notes pertaining to primary survey

Resuscitation phase

Procedures done

Arterial line		Site	Time	Collateral flow (Allen test)	Y	N	Performed by
Chest drain L		Size	Time	Oscillating	Y	N	Performed by
Chest drain R		Size	Time	Oscillating	Y	N	Performed by
Central line (CVP)		Site	Time	Controlled with x-ray	Y	N	Performed by
Lumber puncture		Size	Time	CSF obtained	Y	N	Performed by
Nasogastric tube		Size	Time	Position confirmed	Y	N	Performed by
Orogastric tube		Size	Time	Position confirmed	Y	N	Performed by
Urinary catheter		Size	Time	Draining	Y	N	Performed by
Other		Size	Time	Specify			Performed by

Diagnostic tests

12 Lead ECG	Time	Rationale	Time	Rationale	Time	Rationale
	Performed by		Performed by		Performed by	

Urine test	SG	pH	Blood	Ketones	Glucose	Proteins	Other

Sonar		Time	CT scan		Time	Cystogram		Time	MRI		Time

X-rays	C-spine		Chest		Pelvis		Scull		Abdominal	
	Other		Specify							

Pathology

Time	U & E		CK-MB		Cardiac enzymes		PI / PTT		βHCG		Myoglobine	
	FBC		Trop T		D-dimer		Alcohol		Diff		Compact	
	Glucose		Trop I		INR		CRP		Toxicology / Other		Specify	
	HIV		Consent	Patient		Next of kin		Superintendent				

Additional notes pertaining to resuscitation phase

Compiled by: Ilze van Eeden (January 2009)

Secondary survey

Head to toe examination

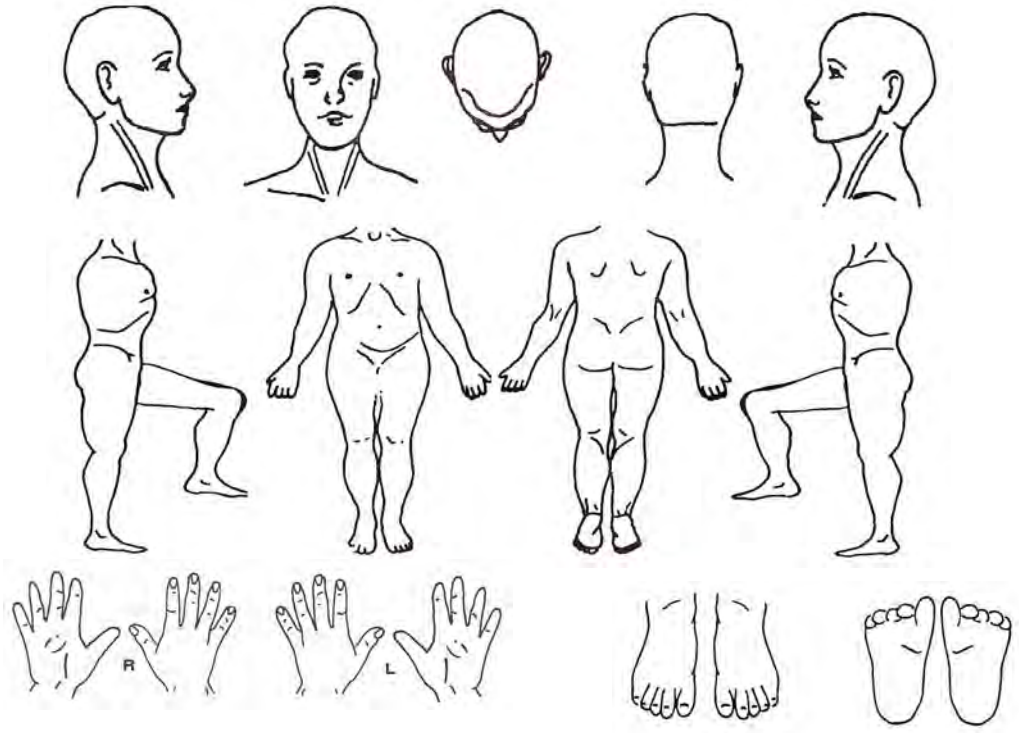
Neurological system	Repeat **GCS** and **pupil** response ***(Complete on observation chart)***										
Respiratory system	Repeat **ABG** (***Complete observation chart)***										
Cardiovascular system											
Gastro-intestinal system	Bowel sounds present	Y	N	Pregnant	Y	N	Fetal heart present	Y	N		
Genito-urinary system	Rectal tonus present	Y	N	Pelvis stable	Y	N	Vaginal examination	Y	N		

Musculo-skeletal system

Signs &Symptoms	Left arm		Left leg		Right arm		Right Leg	
Pulse present (**Y**es / **N**o)	Y	N	Y	N	Y	N	Y	N
Pain present (**Y**es / **N**o)	Y	N	Y	N	Y	N	Y	N
Paralysis present (**Y**es / **N**o)	Y	N	Y	N	Y	N	Y	N
Parestesis present (**Y**es / **N**o)	Y	N	Y	N	Y	N	Y	N
Poikilothermia (**N**ormal / **W**arm / **C**old)	N	W C	N	W C	N	W C	N	W C
Pallour (**N**ormal / **P**ale / **B**lue / **R**eddish	N	P B R	N	P B R	N	P B R	N	P B R
Notes								

Patient picture summary

1. Fracture
2. Dislocation
3. Laceration
4. Abrasion
5. Burns
6. Blisters
7. GSW
8. Stab wound
9. Degloving
10. Necrosis
11. Surgical emphysema
12. Oedema
13. Discolouration
14. Dressing



Co… chart

PH = Pre-hospital
BL = Base line

			PH	BL																						
Vital signs	Blood pressure **160** **70** MAP **(X)**	**210**																								
		200																								
		190																								
		180																								
		170																								
		160																								
		150																								
		140																								
		130																								
		120																								
		110																								
		100																								
		90																								
		80																								
		70																								
		60																								
		50																								
		40																								
		30																								
	Pulse rate (beats/ min)																									
	Respiratory rate (min)																									
	Temperature (°C)																									
	SpO_2 (%)																									
	Capillary refill (<3 / >3 sec)																									
	CVP (cmH_2O / mmHg)																									
	Blood glucose (mmol/L)																									
Continueu infusion																										
Pupils	Size **L** (mm)																									
	Size **R** (mm)																									
	Reaction to light **L**																									
	Reaction to light **R**																									
GCS	Eyes 1 2 3 4																									
	Verbal 1 2 3 4 5																									
	Motor 1 2 3 4 5 6																									
	Total /15 or /10 (ET)		/		/		/		/		/		/		/		/		/		/		/		/	
Mechanical ventilation	Mode																									
	Inspiratory TV (ml)																									
	Expiratory TV (ml)																									
	Minute volume (L)																									
	Set respiratory rate																									
	FiO_2																									
	PEEP																									
	Positive inspiratory pressure (PIP)																									
	PS / PC																									
Arterial blood gas	pH																									
	pCO_2																									
	pO_2																									
	Shunt																									
	$AaDpO_2$																									
	pO_2 / FiO_2 ratio																									
	SaO_2																									
	HCO_3																									
	SBE																									
	Hb																									
	Hct																									
	Na^+																									
	K^+																									
	Lactate																									
Output	Urine output																									
	Naso- / orogastric losses																									
	Intercostal drain losses																									

Compiled by: Ilze van Eeden (January 2009)

Intravascular (IV) fluid chart

Type	Vol	Site	Start	Stop	Blood / unit nr	Vol	Expire	Group	Start	Stop	Signatures
Total intake			**L**			**Total intake**			**units**		
Additional blood ordered	Y	N	units		Consent signed for blood products			Y	N	***(Complete consent form)***	

Pre-hospital drugs administered

Drug	Dose	Drug	Dose	Drug	Dose	Drug	Dose

Drug chart

Prescription chart					**Administration chart**								
Drug	Dose	Route	Frequency	Dr signature and name in print	Time								
					Dose								
					Sign								
					Dose								
					Sign								
					Dose								
					Sign								
					Dose								
					Sign								
					Dose								
					Sign								
					Dose								
					Sign								
					Dose								
					Sign								
					Dose								
					Sign								
					Dose								
					Sign								

Date	Final diagnosis	Treating / admitting doctor	Emergency unit staff sign	Handed over to ward sign

Summary report on patient current health status

Clothing and valuable form

Orientated patients

The hospital will not take responsibility for any clothing, valuables or cell phones of patients who are awake and orientated in the A&E unit. These patients will take responsibility for their own personnel belongings.

Signature of orientated patient_____ Date_____

Disorientated patients

Unclaimed clothing will be kept for 24 hours. Thereafter it will be discarded

Please do not use numbers when completing this form. All amounts must be written in words in order to prevent confusion.

Hand clothes and valuables to family members or friends accompanying the patient as soon as possible.

List of clothing		Witness one	Witness two	**Valuables handed in at admissions**	**Emergency unit staff**
					Name in print
		Handed to			Signature
		Name in print			**Handed to admission clerk**
		Signature			Name in print
List of valuables		Witness one	Witness two		Signature
					Date
		Handed to			Receipt number
		Name in print			
		Signature			

Teeth	Own teeth		False teeth		Upper set		Lower set		Notes

Clothes and valuables kept in unit		**Clothes and valuables handed over to ward staff**	
Emergency unit staff	**Emergency unit staff**	**Emergency unit staff**	**Ward staff**
Name in print	Name in print	Name in print	Name in print
Signature	Signature	Signature	Signature
Date		Date	

B.3 Preliminary nursing record tool: Example of feedback of A&E nurse practitioner

Continuous observation chart

PH = Pre-hospital
BL = Base line

		PH	BL																						
Vital signs	Blood pressure 160 70 MAP (X) 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30																								
	Pulse rate (beats/ min)																								
	Respiratory rate (min)																								
	Temperature (°C) PA/PO ?																								
	SpO_2 (%)																								
	Capillary refill (<3 / >3 sec)																								
	CVP (cmH_2O / mmHg)																								
	Blood glucose (mmol/L)																								
Continuous infusion																									
Pupils	Size **L** (mm)																								
	Size **R** (mm)																								
	Reaction to light **L**																								
	Reaction to light **R**																								
GCS	Eyes 1 2 3 4																								
	Verbal 1 2 3 4 5																								
	Motor 1 2 3 4 5 6																								
	Total /15 or /10 (ET)	/		/		/		/		/		/		/		/		/		/		/		/	
Mechanical ventilation	Mode → ? PT / ? Ventilator																								
	Inspiratory TV (ml) (O) → Vt																								
	Expiratory TV (ml)																								
	Minute volume (L)																								
	Set respiratory rate																								
	FiO_2																								
	PEEP cmH_2O																								
	Positive inspiratory pressure (PIP)																								
	PS / PC (O)	Pressure support / Pressure control (PS/PC)																							
Arterial blood gas	pH																								
	pCO_2 ? (N)																								
	pO_2 values																								
	Shunt																								
	$AaDpO_2$																								
	pO_2 / FiO_2 ratio ? P/F ratio																								
	SaO_2																								
	HCO_3																								
	SBE → One of these																								
	Hb →																								
	Hct → 135 – 145 mmol/L																								
	Na^+ → 3.5 – 5.5 mmol/L																								
	K^+ →																								
	Lactate																								
Output	Urine output (ml)																								
	Naso- / orogastric losses (ml)																								
	Intercostal drain losses (ml)																								

B.4 Final nursing record tool

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[redacted] *HOSPITAL*

Accident and emergency unit (A&E)

Nursing record tool for critically ill or injured patients

(P1 / P2)

The hospital emblem

- This tool was intended only for the first six hours of management of the critically ill or injured patient. Use ICU chart after six hours if patient is still in the unit.
- Complete only applicable sections with a √ or an **X** in the supplied white areas.
- Complete Section C on Pre-hospital management only if pre-hospital records from emergency care practitioner is not available.
- Use only recognised abbreviations from list below.
- Additional notes section is only for information that is not mentioned in the other sections of the nursing record tool.
- Normal values also appear on the continues observation form, please report if abnormal.

Abbreviations used in tool			
%	Percentage	**kg**	kilogram
A&E	Accident and Emergency	**L**	Litre
ABG	Arterial bloodgass	**L/min**	Litre per minute
ALS	Advanced Life Support	**MBA**	Motor bike accident
AMI	Acute Myocardial Infarction	**ml**	millilitres
AVPU	Alert Verbal Pain Unresponsive	**ml/kg/h**	Millilitre per kilogram per hour
b/min	Breaths per minute	**mm**	millimetres
BLS	Basic Life Support	**mmHg**	Millimetres of mercury
C	Centre	**mmol/L**	Millimol per litre
cm	centimetres	**MRI**	Magnetic Resonance Imaging
cmH_2O	Centimetres of water	**MVA**	Motor vehicle accident
CPR	Cardio Pulmonary Resuscitation	**nr.**	number
CSF	Cerebro spinal fluids	**°C**	Degree Celsius
C-spine	Cervical spine	**P1**	Priority one
CT	Computer Tomography	**P2**	Priority two
CVI	Cerebro vascular incident	**PC**	Pressure Control
CVP	Central Venous Line	**PEEP**	Positive end expiry pressure
DKA	Diabetic Keto Acidosis	**PIP**	Peak inspired pressure
Dr	Doctor	**PS**	Pressure support
DVT	Deep Venous Thrombosis	**PVA**	Pedestrian vehicle accident
ECG	Electro cardio gram	**sec**	second
ET	Endotracheal Tube	**SG**	Specific gravity
FiO_2	Fracture of inspired Oxygen	**TIA**	Trans ischemic accident
GCS	Glascow coma scale	**TV**	Tidal volume
GSW	Gunshot wound	**VF**	Ventricular fibrillation
HHNK	Hyperglycaemic Hyperosmolar Nonketotic coma	**vol**	volume
ILS	Intermediate life support	**VT**	Ventricular tachycardia

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S…ation					
Admission date		Medical Alert	Y	N	Preliminary diagnosis / Chief complaint
Admission time		Allergies			
Triage score					
Triage colour					

Contact telephone numbers	Name	Telephone number	Admission Priority			
	1.	1.	P1		P2	
	2.	2.	Walk in		Ambulance call	

SECTION B: Pre-hospital information

Call type

Helicopter call	Y N	Emergency care practitioner	Name		HPCSA/SANC nr.		
Primary call	Y N	Qualification	ALS		Ambulance incident code		
Trauma	Y N		ILS		Time call received		
Medical	Y N		BLS		Time at scene		
Transfer	Y N		Other		Time at hospital		

Transfer information

Hospital name	
Referring doctor	
Contact number	
Notes on interventions performed	

Patient classification – Critically ill patient

AMI		Type					
Chest pain		Quality					
Gynaecological		Type					
Hypoglycaemia		mmol/L					
Hyperglycaemia		mmol/L	DKA		HHNK		
Hypertension		mmHg	CVI		TIA		
Other		Specify					

Patient classification – Critically injured Patient

Assault		Blunt object	Y	N	
		Burns	Y	N	
		Stab wound	Y	N	
Burns		Estimated %			
Cyclist		Helmet worn	Y	N	
Diving accident		Estimated height			
Fell from height		Estimated height			
GSW		Self inflicted	Y	N	
Hanging		Self inflicted	Y	N	
MBA		Helmet worn	Y	N	
MVA		Extrication time			
Near drowning					
PVA					
Other		Specify			

SECTION C: Pre-hospital management

Airway and C-spine

Airway: open, maintained and protected by patient	Y N			Laryngeal mask	Y N	Size			
Oropharyngeal tube	Y N	Size		Cricothyroidotomy	Y N	Size			
Endotracheal intubation	Y N	Size		Cuffed	Y N	Oral		Nasal	
Neck collar		Head blocks (HID)		Scoop		Notes			
Spine board		Kendrick device (KED)		Spider harness					

Breathing

Spontaneous / Self	Y N	b/min		Bag-valve-mask ventilation	Y N	b/min	L/min			
Oxygen mask	Y N	%		SaO_2 monitor used	Y N	%				
Mechanical ventilation	Y N	Ventilator type:		Mode:		Set respiratory rate:		FiO_2:		
Air entry left	Y N	Trachea position	Left	Central	Right	Needle decompression	Y N	Site		
Air entry right	Y N									

Compiled by: Ilze van Eeden (January 2009)

SECTION ... ent (continued)

Circulation and haemorrhage

Pulses palpable	Y	Peripheral		Radial		Carotid			
	N	CPR	Y N	Time started	Drugs administered	Y N	*(Complete on drug chart)*		
Peripheral access	Y N	Site		Site	Fluid management *(Complete fluid chart)*				
Intraosseous access	Y N	Site		Site					
Jugular access	Y N	Site		Site					
Traction splint	Y	Site	Time	Upper limb splint	Y N	Site			
	N	Site	Time	Lower limb splint	Y N	Site			
Pressure bandages applied	Y	Site		Pelvic grip	Y N	Time			
	N	Site		Other					

Disability/ Drugs/Defib

Glasgow Coma Scale	Eyes 1 2 3 4	Verbal 1 2 3 4 5	Motor 1 2 3 4 5 6	/15					
Pupils	L mm	Reactive to light Y N	Sluggish Y N	Swollen closed Y N	Level of consciousness				
	R mm	Reactive to light Y N	Sluggish Y N	Swollen closed Y N	A V P U				
Drugs administrated	Y N	*(Complete drug chart)*	Defibrillate Y N	Blood glucose Y N	mmol/L				

Patient history

S	**S**eatbelt worn	Y N	**Additional history notes**	**D**	**D**iabetes mellitus	Y N	
A	**A**irbags deployed	Y N		**E**	**E**pilepsy	Y N	
M	**M**edication	Y N		**A**	**A**sthma	Y N	
P	**P**ast illness	Y N		**T**	**T**uberculosis	Y N	
L	**L**ast meal	Time			**T**hrombosis (AMI / DVT / CVI)	Y N	
E	**E**vents prior to incident	Y N		**H**	**H**ypertension	Y N	

Emergency care practitioner signature		**A&E unit staff signature**	

Notes on pre-hospital management

SECTION D: In-hospital multi-disciplinary team members involved in patient management

	Name in print	Signature	Speciality	Time called	Time arrived	HPCSA / SANC nr
Nursing staff						
A&E doctors						
Specialists doctors						
Other						

SECT ry survey

Performed by **Time**

Child	**Estimated weight: 8+(age x 2) = kg**	Braslow tape used	Y N	Braslow tape colour	

Airway and C-spine

Assess

Airway: open, maintained and protected by patient		Y N	Level of consciousness		A V P U								
Gag reflex	Y N	Noisy breathing		Stridor		Partial obstruction		Total obstruction					

Actions

Head tilt chin lift		Jaw thrust		Laryngeal mask		Size	Performed by						
Oropharyngeal airway		Cricothyroidotomy surgical		Time	Size	Performed by							
Nasopharyngeal airway		Cricothyroidotomy needle		Time	Size	Performed by							
Endotracheal tube		Depth at teeth	cm	Cuff pressure	cm/H_2O	Size	Performed by						
		Time	Oral		Nasal		Cuffed		Secured				
Manual inline immobilisation		Rigid neck collar		Head immobilising device (HID)									
Manual strapping		Distended neck veins	Y N	Log roll		Notes							
Trachea position	L C R	Needle decompression	R L	Site	Time								

Breathing

Assess

Air entry **R**	Normal		Decreased		Wheeze		Crepitus		Rhonchi		Crackles		Silent chest
Air entry **L**	Normal		Decreased		Wheeze		Crepitus		Rhonchi		Crackles		Silent chest
Spontaneous breathing		Tracheal tug		Symmetry		Peripheral cyanosis		Accessory muscle use					
Nasal flaring		Rib retraction		Asymmetry		Central cyanosis		Abdominal breathing					
Open wounds		Notes	Crepitus		Notes	Surgical emphysema		Notes					

Actions

Oxygen mask		% L/min	Bag-valve-mask ventilation		b/min L/min	Time							
Non-invasive ventilation		CPAP	FiO_2 PEEP	NIPPV		Time	FiO_2 PEEP						
Mechanical ventilation		Time	Mode of ventilation		***(Complete settings on observation chart)***								

Circulation

Assess

Palpable pulses	Y	Radial pulse		Brachial pulse		Femoral pulse		Carotid pulse					
	N	CPR started		Time started		Time stopped		***(Complete CPR form)***					
Capillary refill ≤ 3 sec		Capillary refill ≥ 3 sec		Skin cold / clammy		Skin warm / flushed							
Internal haemorrhage suspected in		Abdomen		Pelvis		Chest		Distended JVP	Y	N			
External haemorrhage		Site		Doppler used to detect pulse	Y N	Site		+	−				
				Vital data done		***(Complete observation chart: baseline)***							

Actions

Pressure bandage applied		Site		Sutures inserted		Site	Time						
						Performed by							
Intra venous access		Site	Gauge	Intra-osseous lines		Site	Gauge	Time					
		Site	Gauge			Performed by							
Femoral access		Site	Gauge	Venous cut down		Site	Gauge	Time					
		Site	Gauge			Performed by							
Pelvic grip		Site		Fluid management ***(Complete fluid chart)***									

Section ... rvey (cont.)

Disability/Drugs/Defib

Assess	Glasgow Coma Scale		Eyes 1 2 3 4		Verbal 1 2 3 4 5		Motor 1 2 3 4 5 6		/15				
	Pupils	L mm	Reactive to light	Y N	Sluggish	Y N	Swollen closed	Y N	Notes				
		R mm	Reactive to light	Y N	Sluggish	Y N	Swollen closed	Y N					
Actions	Drugs administrated		Y N	*(Complete drug chart)*	Blood glucose		mmol/L						
	Defibrillate	Y N	VF		VT		*(Complete CPR form)*	Synchronised cardioversion		Cardiac pacing			

Expose/Environmen

Assess	Undressed Y N	Clothes cut Y N	*(Complete clothing/valuable form)*					
	Temperature	Per axilla		Rectal		Per os		Notes
Actions	Internally warmed	Warm intravenous fluid		Bladder		Stomach		
	Externally warmed	Blanket		Air blanket		Space blanket		
	Externally cooled	Tepid sponge		Ice packs		Other		

Additional notes pertaining to primary survey

Section F: Resuscitation phase

Procedures preformed

Arterial line		Site	Time	Collateral flow (Allen test)	Y N	Performed by
Chest drain L		Size	Time	Oscillating	Y N	Performed by
Chest drain R		Size	Time	Oscillating	Y N	Performed by
Central line (CVP)		Site	Time	Controlled with x-ray	Y N	Performed by
Lumber puncture		Size	Time	CSF obtained	Y N	Performed by
Nasogastric tube		Size	Time	Position confirmed	Y N	Performed by
Orogastric tube		Size	Time	Position confirmed	Y N	Performed by
Urinary catheter		Size	Time	Draining	Y N	Performed by
Other		Size	Time	Specify		Performed by

Diagnostic procedures

12 Lead ECG	Time	Rationale	Time	Rationale	Time	Rationale						
	Performed by		Performed by		Performed by							
Urine test	SG	pH	Blood	Ketones	Glucose	Proteins	Other					
Sonar		Time	CT scan		Time	Cystogram		Time	MRI		Time	
X-rays	C-spine		Chest		Pelvis		Scull		Abdominal			
	Other		Specify									

Laboratory assessments

Time	U & E		CK-MB		Cardiac enzymes		PI / PTT		βHCG		Myoglobine	
	FBC		Trop T		D-dimer		Alcohol		Diff		Compact	
	Glucose		Trop I		INR		CRP		Toxicology / Other		Specify	
	HIV		Consent	Patient		Next of kin		Superintendent				

Additional notes pertaining to resuscitation phase

Head to toe examination

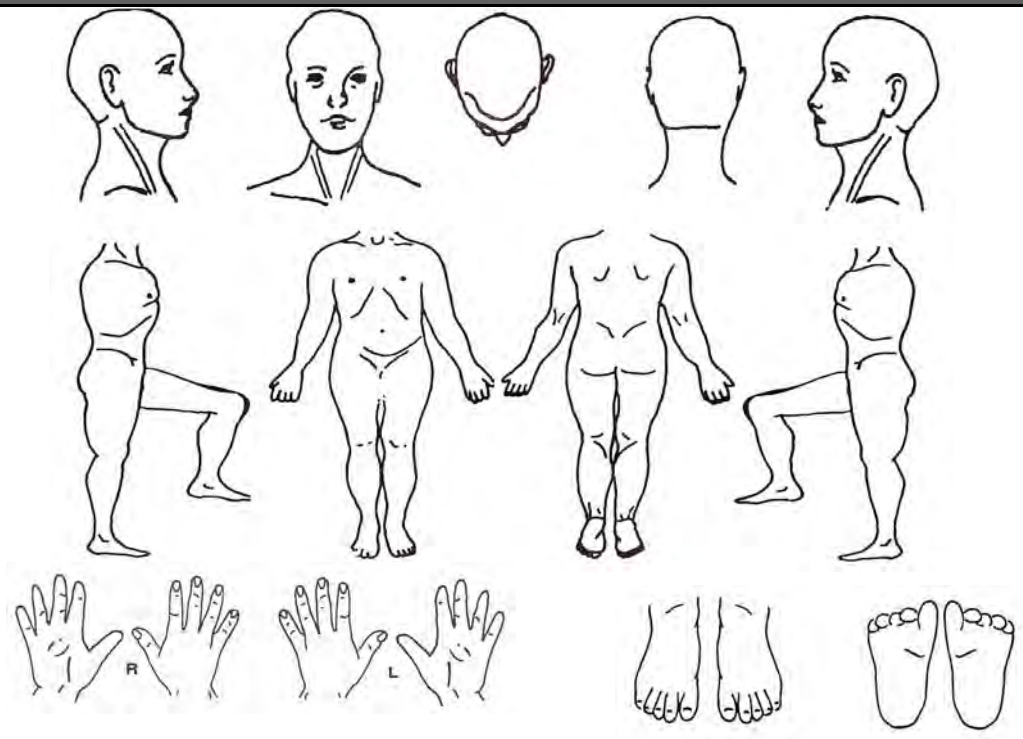
Neurological system	Repeat **GCS** and **pupil** response ***(Complete on observation chart)***							
Respiratory system	Repeat **ABG** (***Complete observation chart)***							
Cardiovascular system								
Gastro-intestinal system	Bowel sounds present	Y	N	Pregnant	Y	N	Fetal heart present	Y N
Genito-urinary system	Rectal tonus present	Y	N	Pelvis stable	Y	N	Vaginal examination	Y N

Muscular-skeletal system

Signs &Symptoms	**Left arm**	**Left leg**	**Right arm**	**Right Leg**
Pulse present (**Y**es / **N**o)	Y N	Y N	Y N	Y N
Pain present (**Y**es / **N**o)	Y N	Y N	Y N	Y N
Paralysis present (**Y**es / **N**o)	Y N	Y N	Y N	Y N
Parestesis present (**Y**es / **N**o)	Y N	Y N	Y N	Y N
Poikilothermia (**N**ormal / **W**arm / **C**old)	N W C	N W C	N W C	N W C
Pallor (**N**ormal / **P**ale / **B**lue / **R**eddish	N P B R	N P B R	N P B R	N P B R
Notes				

Visualised summary of injuries sustained

1. Fracture
2. Dislocation
3. Laceration
4. Abrasion
5. Burns
6. Blisters
7. GSW
8. Stab wound
9. Degloving
10. Necrosis
11. Surgical emphysema
12. Oedema
13. Discolouration
14. Dressing



PH = Pre-hospital
BL = Base line

			PH	BL																				
Vital signs	Blood pressure **160** **70** MAP **(X)**	**210**																						
		200																						
		190																						
		180																						
		170																						
		160																						
		150																						
		140																						
		130																						
		120																						
		110																						
		100																						
		90																						
		80																						
		70																						
		60																						
		50																						
		40																						
		30																						
	Pulse rate (beats/ min)																							
	Spontaneous breath rate (min)																							
	Temperature (°C)																							
	Peripheral saturation SpO_2 (%)																							
	Capillary refill (<3 / >3 sec)																							
	CVP (cmH_2O / mmHg)																							
	Blood glucose (mmol/L)																							
Continueu infusion																								
Pupils	Size **L** (mm)																							
	Size **R** (mm)																							
	Reaction to light **L**																							
	Reaction to light **R**																							
GCS	Eyes 1 2 3 4																							
	Verbal 1 2 3 4 5																							
	Motor 1 2 3 4 5 6																							
	Total /15 or /10 **(ET)**		/		/		/		/		/		/		/		/		/		/		/	
Mechanical ventilation	Mode																							
	Inspiratory TV (ml) TVi																							
	Expiratory TV (ml) TVe																							
	Minute volume (L) (MV)																							
	Set respiratory rate																							
	FiO_2																							
	PEEP																							
	Peak inspiratory pressure (PIP)																							
	PS / PC																							
	Inspiratory/expiratory (I:E) ratio																							
Arterial blood gas	pH (7.35 – 7.45)																							
	pCO_2 (35 – 45 mmHg)																							
	pO_2 (80 – 100 mmHg)																							
	Shunt (2 – 5%)																							
	$AaDpO_2$ (5 – 15 mmHg)																							
	pO_2 / FiO_2 ratio (> 200)																							
	SaO_2 (97%)																							
	HCO_3 (22 – 26 mEq/L)																							
	SBE (-3 - +3)																							
	Hb (12-18 g/100ml)																							
	Na^+ (135 - 145 mmol/L)																							
	K^+ (3.5 – 5.5 mmol/L)																							
	Lactate (0.4 – 2.2 mmol/L)																							
Output	Urine output (0,5-1ml/kg/h)																							
	Naso- / Orogastric losses (ml)																							
	Intercostal drain losses (ml)																							

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Type	Vol	Site	Start	Stop	Blood / unit nr	Vol	Expire	Group	Start	Stop	Signatures
Total intake			**L**		**Total intake**				**units**		
Additional blood ordered	Y	N	units		Consent signed for blood products				Y	N	***(Complete consent form)***

Pre-hospital drug record (Given pre-hospital by emergency care practitioners)

Drug name	Dose	Drug name	Dose	Drug name	Dose	Drug name	Dose
1)		3)		5)		7)	
2)		4)		6)		8)	

A&E unit Drug chart

Prescription chart					**Administration chart**								
Drug	Dose	Route	Frequency	Dr signature and name in print	Time								
					Dose								
					Sign								
					Dose								
					Sign								
					Dose								
					Sign								
					Dose								
					Sign								
					Dose								
					Sign								
					Dose								
					Sign								
					Dose								
					Sign								
					Dose								
					Sign								
					Dose								
					Sign								

D[illegible]y

Date	Final diagnosis	Treating / admitting doctor	A&E unit staff sign	Handed over to ward sign

Summary report on patient current health status

Clothing and valuable form

Orientated patients

The hospital will not take responsibility for any clothing, valuables or cell phones of patients who are awake and orientated in the A&E unit. These patients will take responsibility for their own personnel belongings.

Signature of orientated patient_____ Date_____

Disorientated or unconscious patients

Unclaimed clothing will be kept for 24 hours. Thereafter it will be discarded

Please do not use numbers when completing this form. All amounts must be written in words in order to prevent confusion.

Hand clothes and valuables to family members or friends accompanying the patient as soon as possible.

List of clothing		Witness one	Witness two	**Valuables handed in at admissions**	**A&E unit staff**
					Name in print
		Handed to			Signature
		Name in print			**Handed to admission clerk**
		Signature			Name in print
List of valuables		Witness one	Witness two		Signature
					Date
		Handed to			Receipt number
		Name in print			
		Signature			

Dentures	Own teeth		False teeth		Upper set		Lower set		Notes

Clothes and valuables kept in unit		**Clothes and valuables handed over to ward staff**	
A&E unit staff	**A&E unit staff**	**A&E unit staff**	**Ward staff**
Name in print	Name in print	Name in print	Name in print
Signature	Signature	Signature	Signature
Date		Date	

Date & time		Signature

Annexure C

Department of Health (2006)

C.1 Specialities classified as Level 3 services

Table 1. Specialties classified as Level 3 services

Group 1 Specialties	Group 2 Specialties	Group 3 Specialties
Burns		
	Cardiology: Echocardiography, Ultrasound, Electrocardiography, Stress testing, ECH Holter pacemaker follow up, Cath lab, Electrophysiology ablation	Cardiology: Cardioverter defribulator & LV assist devices unit
	Cardiothoracic Surgery	Cardiothoracic Surgery: Heart and lung transplant unit
	Clinical Immunology	
		Clinical Pharmacology
	Craniofacial Surgery	
Critical Care & ICU		
Dermatology		
Diagnostic Radiology: Multi-slice CT scan, Flouroscopy, Mammography, Colour Doppler US, Interventional radiology, Angiography.	Diagnostic Radiology: MRI, Interventional Neuroradiology,	Diagnostic Radiology: PET scan, Cardiac imaging
Ear Nose & Throat: General surgery	Ear Nose & Throat: Specialised services	Ear Nose & Throat: Skull base surgery, Cochlear implant
	Endocrinology	
Gastroenterology		
General Medicine: Angiography, AT scan, coronary care, Echocardiography, Stress ECG, Endoscopy, Proctoscopy, Sigmoidoscopy, Colonoscopy, Genetic nurse & counselling, Oncology palliation and basic care		
General Surgery: Complex and high acuity care		General Surgery: Liver and pancreatic resections, TME
	Geriatrics: Specialised geriatrics	
	Haematology	Haematology: Bone marrow transplant
		Hepatology: Specialist liver unit, Liver transplant
	Human Genetics	
Infectious Diseases: Tertiary Infectious Diseases Service, Pathology Services, Infection Control, Dietician, Counselling Services, Social Worker	Infectious Diseases: Clinical research	Infectious Diseases: National Institute for Communicable diseases
	Medical & Radiation Oncology	Medical & Radiation Oncology: National Oncology Referral Centre:Bone Marrow Transplant, IMRT, Intraoperative Radiation, Stereotactic Radiation, PET Scan planning; laminar flow, cryopreservation, stem cell harvesting, T-cell depletion facilities

Group 1 Specialties (cont)	Group 2 Specialties (cont)	Group 3 Specialties (cont)
Mental Health : Old-age psychiatry; Forensic psychiatry; Substance abuse; Liaison psychiatry; Eating disorders; Inpatient psychotherapy; Social psychiatry; Acute psychotic (complicated); Acute non-psychotic (complicated)		
Neonatology: Neonatal intensive care unit		
Nephrology		Nephrology: Pancreas-kidney / Liver-kidney transplant
	Neurology	
	Neurosurgery	
	Nuclear Medicine	Nuclear Medicine: PET or gamma-PET
Obstetrics & Gynaecology: Foetal / maternal medicine	Obstetrics & Gynaecology: Oncology, Urogynaecology, Reproductive medicine	
Ophthalmology	Ophthalmology: Specialised	Ophthalmology: Super-specialised
Orthopaedics: Sub-specialty orthopaedics	Orthopaedics: Orthopaedic oncology	
Paediatrics: Specialist paediatric medicine and surgery services Paediatric ICU	Paediatrics: Paediatric cardiology, endocrinology, gastroenterology, haematology & oncology, nephrology, neurology, respiratory medicine & allergology,	Paediatrics: Organ transplant, epilepsy surgery, craniofacial surgery, high cost / complexity medical interventions, metabolic laboratory, bone marrow transplant, complex neuromuscular neurodegenerative & metabolic patients, video telemetry, intercranial mapping, DEXA scans, paediatric rheumatology, interleukin levels, joint replacements.
Plastic & Reconstructive Surgery: General	Plastic & Reconstructive Surgery: Specialised	
Rehabilitation Centre	Rehabilitation Centre: Audiology, spinal injuries and stroke units.	
	Renal Transplant	
Respiratory Medicine		Respiratory Medicine: Lung volume reduction, lung transplant
	Rheumatology	
Trauma		
Urology: General	Urology: Specialised	
Vascular Surgery: General	Vascular Surgery: Specialised	

Annexure D

Participation leaflet and informed consent

D.1 Naïve sketch and focus group interview

D.2 Informal group discussion

D.3 A&E nurse practitioners

D.1 Naïve sketch and focus group interview

Participation leaflet and informed consent

Naïve sketch and focus group interview

Dear Colleague,

You are invited to participate in a research project. The information leaflet that follows contains information that will help you understand your role in the study. If there is any information that needs to be clarified, please feel free to contact the researcher at any time.

1) Title of the study

Development of a nursing record tool for critically ill or injured patients in an accident and emergency unit

2) The aim and objectives of the study

I understand that I am being asked to take part in a research study. My participation will be as expert. This entails an expert either as registered trauma and emergency nursing working in a accident and emergency (A&E) unit or as a nursing record keeping specialist.

The aim of this study is to develop a nursing record tool to record the management of critically ill or injured patients nursed in an accident and emergency (A&E) unit.

Given the aim of this research, the objectives were to -
To attain the aim of this research, the following objectives are set in the study:

- **Objective 1:** Explore the compilation of a nursing record tool
  - Describe the components of the nursing record tool
  - Reach consensus on the content and layout of the nursing record tool

- Compile a preliminary nursing record tool

- **Objective 2:** Evaluate the nursing record tool
  - Evaluate the preliminary nursing record tool
  - Construct the final nursing record tool

3) Explanation of procedures to be followed

I understand that I am being asked to take part in a research study. My participation will not be as a representative of the health organization I work for, but as an individual expert. I am asked (as expert) to participate in a focus group interview where the aim is to obtain the components pertaining to the nursing record tool as perceived by experts in the field of A&E nursing and recording. With all the inputs of the experts and the validating literature as background, the researcher will aspire to fulfil the aim of the study with a new nursing record tool that can be used in the busy A&E environment for the critically ill or injured patients.

4) Risk and discomfort involved

There are no risks or discomfort involved in this study pertaining to me as the participant. I do however understand that this project will take up approximately three hour of my time.

4) Benefits of the study

The benefits of the study involves that a nursing record tool will be developed for the A&E unit of the [redacted] Hospital. The nursing record tool may improve record keeping in the A&E unit in general and one would be able to use it as part of a continuous development programme to train and teach new nursing personnel working in the A&E unit. This in turn may impact on the nursing care provided.

5) Voluntarily participation and withdrawing from study

I understand that participation is completely voluntarily and that I as participant could withdraw at any given time without stating a reason.

6) Ethical approval

The Faculty of Health Sciences Research Ethics Committee at the University of Pretoria has granted written approval for this study.

7) Additional information

If I have any questions concerning this questionnaire, I should contact Ms Ilze van Eeden at –

Work telephone: (012) 354-[redacted]

Cell phone: (083) 292 0694

E-mail address: ilzeve@webmail.co.za

8) Confidentiality

All my inputs will be regarded as confidential. Results will be published or presented in such a fashion that I as a participant remain unidentifiable.

9) Consent to participate in this study

I have read or had read to me in a language that I understand the above information before signing this consent form. The content and meaning of this information have been explained to me. I have been given the opportunity to ask questions and am satisfied with the answers. I hereby volunteer to take part in this study.

_____ _____

Participants signature Date

_____ _____

Person obtaining informed consent Date

_____ _____

Witness Date

Participant's academic information

Academic qualifications			
Years of experience as A&E registered nurse / recording expert			
Context in which you are currently employed	**Options**	**Yes**	**No**
	Qualified A&E registered nurse		
	Lecturer within the field of A&E nursing, clinical or theoretical		
	Expert within the field of nursing record keeping		
	Other		

If other, please specify

_____

_____

You can hand this form as well as the naïve sketch in to the facilitator during the focus group interview session.

Thank you

Ilze van Eeden

D.2 Informal group discussion

Participation leaflet and informed consent

Informal group discussion

Dear Colleague,

You are invited to participate in a research project. The information leaflet that follows contains information that will help you understand your role in the study. If there is any information that needs to be clarified, please feel free to contact the researcher at any time.

1) Title of the study

Development of a nursing record tool for critically ill or injured patients in an accident and emergency unit

2) The aim and objectives of the study

I understand that I am being asked to take part in a research study. My participation will be as expert. This entails an expert either as registered trauma and emergency nursing working in an accident and emergency (A&E) unit or as a nursing record keeping specialist.

The aim of this study is to develop a nursing record tool to record the management of critically ill or injured patients nursed in an accident and emergency (A&E) unit.

Given the aim of this research, the objectives were to -
To attain the aim of this research, the following objectives are set in the study:

- **Objective 1:** Explore the compilation of a nursing record tool
  - Describe the components of the nursing record tool
  - Reach consensus on the content and layout of the nursing record tool

- Compile a preliminary nursing record tool

- **Objective 2:** Evaluate the nursing record tool
  - Evaluate the preliminary nursing record tool
  - Construct the final nursing record tool

3) Explanation of procedures to be followed

I understand that I am being asked to take part in a research study. My participation will not be as a representative of the health organization I work for, but as an individual expert. I am asked (as expert) to participate in a informal group discussion where the aim is to reach consensus regarding the content and layout of a nursing record tool developed for recording the management of a critically ill or injured patient in an A&E unit. With all the inputs of the experts and the validating literature as background, the researcher will aspire to fulfil the aim of the study with a new nursing record tool that can be used in the busy A&E environment for the critically ill or injured patients.

4) Risk and discomfort involved

There are no risks or discomfort involved in this study pertaining to me as the participant. I do however understand that this project will take up approximately three hour of my time.

4) Benefits of the study

The benefits of the study involves that a nursing record tool will be developed for the A&E unit of the [redacted] Hospital. The nursing record tool may improve record keeping in the A&E unit in general and one would be able to use it as part of a continuous development programme to train and teach new nursing personnel working in the A&E unit. This in turn may impact on the nursing care provided.

5) Voluntarily participation and withdrawing from study

I understand that participation is completely voluntarily and that I as participant could withdraw at any given time without stating a reason.

6) Ethical approval

The Faculty of Health Sciences Research Ethics Committee at the University of Pretoria has granted written approval for this study.

7) Additional information

If I have any questions concerning this questionnaire, I should contact Ms Ilze van Eeden at –

Work telephone: (012) 354-[redacted]
Cell phone: (083) 292 0694
E-mail address: ilzeve@webmail.co.za

8) Confidentiality

All my inputs will be regarded as confidential. Results will be published or presented in such a fashion that I as a participant remain unidentifiable.

9) Consent to participate in this study

I have read or had read to me in a language that I understand the above information before taking part in the informal group discussion. The content and meaning of this information have been explained to me. I have been given the opportunity to ask questions and am satisfied with the answers. I hereby volunteer to take part in this study.

_____ _____

Participants signature Date

_____ _____

Person obtaining informed consent Date

_____ _____

Witness Date

Participant's academic information

Academic qualifications			
Years of experience as A&E registered nurse / recording expert			
Context in which you are currently employed	**Options**	**Yes**	**No**
	Qualified A&E registered nurse		
	Lecturer within the field of A&E nursing, clinical or theoretical		
	Expert within the field of nursing record keeping		
	Other		

If other, please specify

_____

_____

You can hand this form as well as the naïve sketch in to the facilitator during the focus group interview session.

Thank you

Ilze van Eeden

D.3 A&E nurse practitioners

Participation leaflet and informed consent

A&E nurse practitioners

Dear Colleague,

You are invited to participate in a research project. The information leaflet that follows contains information that will help you understand your role in the study. If there is any information that needs to be clarified, please feel free to contact the researcher at any time.

1) Title of the study

Development of a nursing record tool for critically ill or injured patients in an accident and emergency unit

2) The aim and objectives of the study

I understand that I am being asked to take part in a research study. My participation will be as expert. This entails an expert either as registered trauma and emergency nursing working in the accident and emergency (A&E) unit of the [redacted].

The aim of this study is to develop a nursing record tool to record the management of critically ill or injured patients nursed in an accident and emergency (A&E) unit.

Given the aim of this research, the objectives were to -
To attain the aim of this research, the following objectives are set in the study:

- **Objective 1:** Explore the compilation of a nursing record tool
  - Describe the components of the nursing record tool
  - Reach consensus on the content and layout of the nursing record tool

- Compile a preliminary nursing record tool

- **Objective 2:** Evaluate the nursing record tool
  - Evaluate the preliminary nursing record tool
  - Construct the final nursing record tool

3) Explanation of procedures to be followed

I am asked (as expert) to participate in a collaborative effort to evaluate a nursing record tool that has been developed for an A&E unit. I will have to critically read through the document. Then, I have to utilise the nursing tool when admitting and managing a minimum of three critical ill or injured patients for a period six hours in the A&E unit. I then must make comments, recommendations and suggest changes, if appropriate, pertaining to the nursing record tool. This can be done by indicating the recommendations on a copy of the nursing record tool.

4) Risk and discomfort involved

There are no risks or discomfort involved in this study pertaining to me as the participant. I do however understand that this project will take up approximately three hour of my time.

5) Benefits of the study

The benefits of the study involves that a nursing record tool will be developed for the A&E unit of the [redacted] Hospital. The nursing record tool may improve record keeping in the A&E unit in general and one would be able to use it as part of a continuous development programme to train and teach new nursing personnel working in the A&E unit. This in turn may impact on the nursing care provided.

6) Voluntarily participation and withdrawing from study

I understand that participation is completely voluntarily and that I as participant could withdraw at any given time without stating a reason.

7) Ethical approval

The Faculty of Health Sciences Research Ethics Committee at the University of Pretoria has granted written approval for this study.

8) Additional information

If I have any questions concerning this questionnaire, I should contact Ms Ilze van Eeden at –

Work telephone: (012) 354-[redacted]

Cell phone: (083) 292 0694

E-mail address: ilzeve@webmail.co.za

9) Confidentiality

All my inputs will be regarded as confidential. Results will be published or presented in such a fashion that I as a participant remain unidentifiable.

10) Consent to participate in this study

I understand the information provided. Taking part in this informal group discussion implies that informed consent has been obtained from me. I have been given the opportunity to ask questions and am satisfied with the answers. I hereby volunteer to take part in this study.

_____	_____
Participants signature	Date
_____	_____
Person obtaining informed consent	Date
_____	_____
Witness	Date

Annexure E

The Hospital

E.1 A&E unit statistics

E.2 Triage form: Adult

E.3 Cardiopulmonary resuscitation form

E.1 A&E unit statistics

A&E unit: Adapted statistics 'new A&E unit' (January to June 2007)

Priorities	Total (Jan – June)		January		February		March		April		May		June	
Priority 1	1 284		357		366		428		542		488		441	
Priority 2	8 476		1 655		1 522		1 654		1 498		1 195		1 352	
Triage	2 488		719		290		449		348		359		323	
	Admit	***Refer***	***Admit***	***Refer***	***Admit***	***Refer***	***Admit***	***Refer***	***Admit***	***Refer***	***Admit***	***Refer***	***Admit***	***Refer***
	821	*1 667*	*432*	*287*	*53*	*237*	*143*	*306*	*63*	*285*	*71*	*288*	*59*	*264*
Total admitted to A&E unit	11 498		2 012		1 888		2 082		2 040		1 683		1 793	
Patients admitted to A&E unit > 4 h	6 663		1 026		1 032		1 235		1 152		1 023		1 195	

Adapted from: THE HOSPITAL: A&E unit. 2007. Statistics. Unpublished.

Priority 1 (P1): Patients admitted with life-threatening injuries or medical emergencies, such as airway, breathing and/or circulation problems. These patients are so severely injured or critically ill that they will die should they not receive immediate medical interventions.

Priority 2 (P2): Patients admitted with potentially life-threatening injuries or medical emergencies. Although their conditions are less serious than those of P1s and they are stable for the moment, they require watching by trained personnel and frequent re-triage, as the possibility exists for rapid deterioration.

Priority 3 (P3): These patients are often referred to as the 'walking wounded' and do not require immediate management. These patients have minor injuries or medical conditions and following their management will usually be discharged from hospital.

Triage: Patients triaged in the A&E unit. If the patient is classified as P1 or P2, he/she is admitted to the A&E unit. If the patient is classified as P3, he/she is transferred to a relevant clinic. The South African Triage Score is used.

***Note**: Because of a shortage of hospital beds, patients remain in the A&E unit from anything between two hours to 14 days. Every day between two and eight critical care patients are nursed in the A&E unit because of the shortage of beds.*

E.2 Triage form: Adult

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

[redacted] HOSPITAL
ADULT TRIAGE

DATE: _____
TIME: _____

Patient details:

Name: _____ **Age:**_____ **Gender:** M / F
Living Area: _____ **Brought by:** Own transport / Ambulance
Chronic illness / Medications: _____
_____
_____
Allergies: _____
History / Current complaint: _____
_____
_____

Vital data:

Time	1		2	
HR				
BP				
RR				
SATS				
TEMP				
AVPU				

Other tests:

Urine	
BHCG (preg.)	
Bloodglucose	

(please encircle the score)

Score	3	2	1	0	1	2	3
Mobility				Walking	With Help	Stretcher/ Immobile	
RR		less than 9		9-14	15-20	21-29	more than 29
HR		less than 41	41-50	51-100	101-110	111-129	more than 129
SBP	less than 71	71–80	81-100	101-199		more than 199	
Temp		less than 35		35-38.4		38.5 or more	
AVPU				Alert	Reacts to Voice	Reacts to Pain	Unresponsive
Trauma				No	Yes		
over 12 years / taller than 150cm							

Triage scoring:

Final Score:

Colour:

Discriminator: _____
(other factors)

(sticker)

Signature: Nurse: _____

Doctor's notes:

PLAN:

A: _____
B: _____
C: _____
_____
O/E: _____
_____
_____

Doctor's Name: _____

Signature: _____

E.3 Cardiopulmonary resuscitation form

STEVE BIKO ACADEMIC HOSPITAL RESSUSCITATION RECORD

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Patient Sticker

Ward:_____

Date: _____

Time of arrest:_____

Time CPR started:_____ **Time ended:**_____

Family contacted by:_____ **Time:**_____

Family member name or comment:

CPR Team

	Name	Signature		Name	Signature
Doctors	1.		**Nursing Staff**	1.	
	2.			2.	
	3.			3.	
	4.			4.	

Clinical Assessment

	Type	Size Tube		Time Inserted	Procedure one by
AIRWAY	Endotracheal				
	Crich				
	Laryngeal Mask				
	Oropharyngeal Airway	Yes	No		

	Type	Time started	Time ended	Procedure done by
BREATHING	BVM (Synchronised)			
	Manually Ventilated (Unsynchronised)			

Arterial Blood gass	Time	Time	Time	Time
pH				
PCO_2				
PO_2				
HCO_3				
SBE				
SO_2				
HB				
pO_2 / FiO_2 Ratio				
Na				
K				
Lactate				
Glucose				

Compiled by: I.E van Eeden & M Visser February 2007 (Revised October 2008)

CIRCULATION						
	Peripheral lines	**Area**	**Time Inserted**	**External Jugular**	**Area**	**Time Inserted**
		1.			1.	
		2.			2.	
	Intra-osseous	1.		**CVP**	1.	
	Femoral Lines	1.		**Other**	1.	
		2.			2.	
Compressions	**Manual Compressions**	Yes	No	**Auto Pulse**	Yes	No

Fluids	Crystalloids	Colloids	Plasma	Blood	Others
	1.	1.	1.	1.	1.
	2.	2.	2.	2.	2.
	3.	3.	3.	3.	3.
	4.	4.	4.	4.	4.
	5.	5.	5.	5.	5.
Total amount					

DEFIBRILLATION	**1**. Time	Joules	Rhythm	**2**. Time	Joules	Rhythm	**3**. Time	Joules	Rhythm	**4**. Time	Joules	Rhythm
Done by:												

DRUGS											Doctor Signature and qualifications	Nursing staff Signature and qualification
	Adrenaline	Time										
		Dose										
		Route										
	Atropine	Time										
		Dose										
		Route										
	Sodium Bicarbonate	Time										
		Dose										
		Route										
	Dextrose 50 %	Time										
		Dose										
		Route										
		Time										
		Dose										
		Route										
		Time										
		Dose										
		Route										
		Time										
		Dose										
		Route										

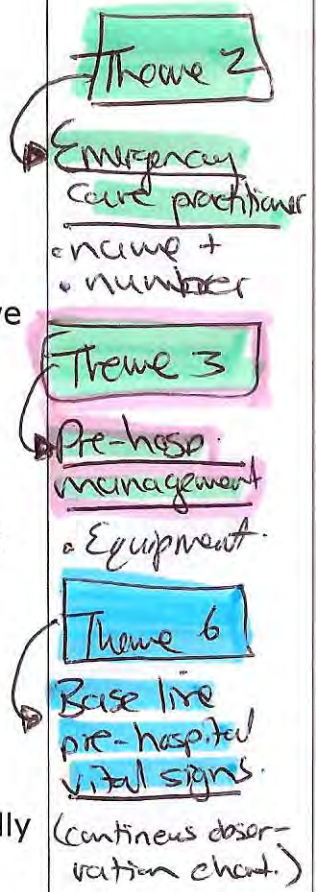
Compiled by: I.E van Eeden & M Visser February 2007 (Revised October 2008)

Annexure F

Data analysis

F.1 Sample of data analysis

FACILITATOR	I just want to clarify with with my partner here. Are you happy? Do you understand prompts? What's meand with that?
Ilze	Ja
FACILITATOR	So I don't need to clarify that for you?
Tanya	I just want to clarify something? Do you it's important to put the ambulance, the person who actually brings in the patient plus the ambulance number?
Group	Ja, ja,
Tanya	Because if there's legal queries then you can refer back to your call and say that's were we got that from, because the others Tswane or ER.
Liezel	The other stuff we do have, the pre-hospital equipment used? The neck collar that we do have we just tick it off. You know with what the patient came in, but the other stuff we must remember to ask, then then afterwards (cough) uhh, oh, I didn't asked this or what ever. But with ~~NETCARE~~ it's difficult because you don't get anything,
Nelouise	Well even if you get the paper there's not a lot written on it.
Liezel	Ja MVO what and then you can write the vital signs your first vital signs while they ja (laugh), ja, ja hupstoot laugh ja
FACILITATOR	I just want to clarify, because I don't know when you say a prompt, what do you exactually mean?
Donald	I mean there must be something in the form of maybe a heading that ehm, will prompt the



Annexure G

Editing

E.1 Letter from editor

JR TAALSORG
Posbus 25455
Oosrand
1462

073-642-0202
marthieb@its.co.za

To Whom It May Concern:

I hereby declare that all editing and proofreading of the dissertation "**Development of a nursing record tool for critically ill or injured patients in an accident and emergency unit**" researched and written by University of Pretoria student Ilze van Eeden ,student number **99242193**, was done by me.

Please feel free to contact me in case of any related queries.

MARTHIE BOTHA