

## 1. Introduction

Various studies in numerous centres using different methods all confirm a high incidence of ANI. Given the high cost of this common injury, it is an absolute necessity that time tested preventive measures, as well as effective management of these accidents be instituted in all health facilities. This often requires the use of both technology and implementation of appropriate administrative and managerial strategies.

## Part Two

### 2. Mechanisms of needlestick injuries

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## Personnel Health Preventive Measures Against Blood-Borne Infection within Health Facilities

Some of the more important factors associated with accidents are:

- Age
- Experience
- Time of day
- Work rate
- Type of work
- Health of worker
- Industrial relations

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## 2. Mechanism of needlestick injuries

The causes of accidents are difficult to summarise. There have been suggestions that it is all due to "accident proneness" or at the other extreme that accidents are entirely due to "chance". Many accidents are clearly multi-factorial.

Some of the more important factors associated with accident are<sup>20</sup>:

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Four important activities leading to needlestick injury in nurses can be identified:

- Recapping of used needles
- Disposal of used needles
- Venepuncturing
- Administration of intravenous therapy or injections

Together the above account for between 76% and 90% of activities known to be associated with needlestick injuries.<sup>21</sup> In a separate study, a fifth activity, suturing or assisting in suturing was included. This activity accounted for 8,4% of the last known episodes of needlestick injuries among nurses in a general hospital in Malaysia. The other preceding activities in this study were recapping of used needles (60,1%), disposal of used needles (19,2%), venepuncturing (6,7%) and others (5,6%).<sup>22</sup>

### 3. "Universal Precaution"

The concept of "Universal precautions" proposed by the United States Centres for Disease Control and Prevention is a first step in preventing ANI and the health implications of this accident.<sup>23</sup> This concept suggests that patients should be assumed infectious for HIV and other blood-borne pathogens, and that good work practice and appropriate personal protective equipment should be applied at all times.

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This concept is summarised as a list of "Ten Commandments" regarding protocol and device applications, as follows:

Wash hands

Handle blood as potentially infectious

Wear gloves

Do not recap or manipulate needle

Wear gowns

Dispose waste in the appropriate containers

Handle all linen as potentially infectious

Wear masks

Disposable resuscitation equipment, gloves, masks, linens, washing hand soap and waste disposal containers, should be provided at reasonable distance to the site of clinical procedures to enable health care workers practice universal precautions effectively.

#### **4. Preventive measures against needlestick injuries**

Different intervention strategies have been evaluated and while increased staff education and enlightenment is advocated, the assertion that it is usually more effective to rely on an inherently safe device than to depend on human effort to change work habit.<sup>22</sup> remains valid, albeit with caution. These intervention strategies have been broadly grouped into engineering controls (e.g. safety

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devices) and work practice controls (e.g. techniques to reduce handling of sharp instruments).<sup>24</sup>

#### 4.1 Engineering controls

Various studies have applied different intervention strategies with rather inconclusive results regarding the efficacy of various devices.<sup>25, 26</sup>

The use of standard precautions, which incorporates universal precautions, will reduce contact with blood and body fluids. The use of engineering controls such as safety devices, and changes in work practices like techniques to reduce handling of sharp instruments can reduce the frequency of percutaneous injuries. In settings such as the operating room, changes in instrument design and techniques for performing surgical procedures and modified personnel barriers have been shown to reduce blood contact.<sup>27</sup> However, despite adherence to standard precautions and implementation of some new techniques and devices, percutaneous injuries such as ANI continue to occur. This is of grave concern because these represent the greatest risk of transmission of blood-borne pathogens to health workers. Few studies evaluated show that a limited number of safety devices have demonstrated a reduction in percutaneous injuries among personnel.<sup>26, 27</sup>

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## 4.2 Policies and practices

The reality of working in a hospital environment and in health care in general is that ANI is going to occur. Coherent infection control policies and practices is crucial in managing the ANI cases that will occur.

### 4.2.1 Components of personnel health infection control

Sound personnel health service infection control measures revolve mainly around the following<sup>28</sup>:

- A. Immunisation for vaccine preventable diseases
- B. Isolation precautions to prevent exposures to infectious agents
- C. Management of health care personnel exposure to infected persons, including post-exposure prophylaxis, and work restrictions for exposed or infected health care personnel
- D. Prevention of sensitisation to latex among health care workers

### 4.2.2 Objectives of personnel health infection control

Personnel health service infection control should be an integral part of health care organisation's general program for infection control.

The objectives are primarily to<sup>27</sup>:

- a. Educate personnel about the principles of infection control and stress individual responsibility for infection control

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- b. Collaborate with the infection control department in monitoring and investigating potentially harmful infectious exposures and outbreaks among personnel
  - c. Provide care to personnel for work-related infectious illnesses and exposures
  - d. Identify work-related infectious risks and institute appropriate preventive measures
  - e. Contain costs by preventing infectious diseases that result in absenteeism and disability

To attain these infection control objectives of a personnel health service, the following are essential<sup>29</sup>:

1. Co-ordination with other departments
2. Medical evaluation
3. Health and safety education
4. Immunization programs
5. Management of job-related illnesses and exposures to infectious diseases, including policies for work restrictions for infected or exposed personnel and counselling services for personnel on infection risks related to employment or special conditions
6. Maintenance and confidentiality of personnel health records
7. Management of Latex hypersensitivity<sup>30</sup>

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## 5. Policy and practice recommendations

Several recommendations exist for the control of blood-borne infections in health facilities. These recommendations comprise to varying degrees of emphasis, the basic elements and core objectives of infection control.<sup>30</sup> The United States Centres for Disease Control and Prevention (CDC) has categorised a set of infection control guidelines. The categories are based on existing scientific data, theoretical rationale, applicability, and potential economic impact. These are as follows<sup>28</sup>:

### Category IA

Strongly recommended for all hospitals and strongly supported by well-designed experimental or epidemiological studies.

### Category IB

Strongly recommended for all hospitals and reviewed as effective by experts in the field and a consensus of Hospital Infection Control Practices Advisory Committee members on the basis of strong rationale and suggestive evidence, even though definitive scientific studies have not been done.

### Category II

Suggested for implementation in many hospitals. Recommendations may be supported by suggestive clinical or epidemiological studies, a strong rationale, or definitive studies applicable to some but not all hospitals.



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No recommendation, Unresolved

Practices for which insufficient evidence or consensus regarding efficacy exists.

The Centres for Disease Control and Prevention guideline will be used as the standard to measure infection control policies and practices in the hospitals, because of its comprehensiveness and the extensive range of epidemiological evidence cited to support the rationale for the recommendations. These guidelines are designed for hospitals and other health care facility infection control in general. However, only aspects related to management of ANI are of concern to this work and are therefore included in the interview. Asterisks indicate the different recommendations and the appropriate categories into which they are classified. (Annexure 1). The guidelines are not designed as question sets. The researchers have used the guidelines to synthesis questions for the interviews in this study.

## 6. Conclusion

The White Paper for the Transformation of the Health System in South Africa has spelt out government's commitment to decentralization, and district based primary health care.<sup>31</sup> This shift from tertiary to primary care entails that there be improved emphasis on this level of care in terms of occupational health services.

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This study is aimed at evaluating the personnel health service infection control measures on blood-borne infections against an international standard, using the CDC set of guidelines.

The specific objectives are to:

1. Describe the infection control policies and practices on blood-borne infections
2. Provide a simple audit tool for evaluating the personnel health service infection control measures for blood borne diseases in hospitals and health care settings
3. Stimulate action on the part of hospital managers in re-evaluating and improving infection control and personnel health service efforts
4. Provide hospital managers with a tool to evaluate compliance with some of the provisions of the Occupational Health and Safety Act regarding steps to ensure safe working environment.<sup>32</sup>
5. Describe the incidence of accidental needlestick injuries in district and regional hospitals
7. Ascertain the extent to which staff occupational health information is kept confidential
8. Ascertain the extent to which policies are made to control latex hypersensitivity, thereby, ensuring compliance to the use of protection with gloves