

Use of safety-engineered medical devices (SEMDs) To improve prevention of needlestick and sharps injuries in the healthcare setting

Background

Needlestick and sharps injuries (NSIs) are one of the most common causes of physical, pathological and psychological hazards for many healthcare workers.

NSIs can be experienced by any healthcare professional who uses needles and/or any sharp objects including individuals from a range of occupations working in hospitals, aged and mental healthcare facilities and other healthcare services such as social and community services.

Approximately 30 needlestick injuries per 100 beds per year.

At least 18,000 Australian healthcare professionals suffer from a NSI every year.

Causes of NSIs

- administration of injections
- opening of an ampoule or vial
- disassembling needle kits
- opening and recapping needles
- surgical procedures
- procedures involving intravenous and major vessel lines
- disposing of needles and sharps
- blood collection
- scalpel handling (including scalpel usage and scalpel blade removal)
- intravenous cannulation
- needles used for testing/screening for blood glucose and haemoglobin (including needles used on newborns).

The use of hollow-bore needles (includes hypodermic needles) remains to be one of the major causes of NSIs.

Risk associated with NSIs

Transmission of bloodborne pathogens such as:

- hepatitis B virus (HBV)
- hepatitis C virus (HCV)
- human immunodeficiency virus (HIV) - the virus that causes acquired immune deficiency syndrome (AIDS)
- 20 other pathogens including malaria, infectious mononucleosis, diphtheria, herpes, tuberculosis and syphilis.

Transmission of pathogens may occur not only with freshly contaminated needles and sharp objects, but may occur also with needles or sharp objects that carry dry blood.

One in nine nurses in Australia has had at least one NSI in the past 12 months.

NSIs generate substantial costs for the Australian healthcare system due to the costs associated with the management of exposures to blood and body fluids, and the prevention and treatment of bloodborne pathogens.

The majority of NSI-associated costs are generally borne by the healthcare organisation where the injury had occurred.

Direct and indirect costs attributed to NSIs include:

- Blood sampling
- Urgent testing (laboratory testing)
- Vaccinations
- Healthcare visits
- Post-exposure prophylaxis (PEP)
- Counselling for injured staff
- Follow-up tests
- Long-term treatment (including lifetime treatment for healthcare workers who have seroconverted)
- Costs associated with a NSI prevention program (e.g. surveillance, administration)
- Time loss due to anxiety and distress
- Lost productivity/lost time from work
- Administrative effort (including healthcare provider time to evaluate and treat an employee and to evaluate and test the source patient).

Introduction of SEMDs is very effective in reducing the number of NSIs – over 80% of all NSIs can be prevented by the use of SEMDs.

SAFETY-ENGINEERED MEDICAL DEVICES (SEMDs)

A SEMD is a "nonneedle sharp or a needle device used for withdrawing body fluids, accessing a vein or artery, or administering medications or other fluids, with a built-in safety feature or mechanism that effectively reduces the risk of an exposure incident".

A SEMD can be used for:

- The collection of bodily fluids or withdrawal of body fluids after initial venous or arterial access is established
- The administration of medication or fluids
- Any procedures involving the potential for occupational exposure to bloodborne pathogens due to percutaneous injuries from contaminated sharps.

In Australia, 80% of reported NSIs involve a contaminated needle.

SEMDs can be used in place of most conventional needles and sharp devices.

The different types of SEMDs include:

- Lancets
- Syringes, needles and injection devices
- IV access insertion devices
- Blood collection and venepuncture
- Pre-loaded syringes
- IV delivery systems
- Surgical scalpels
- Suture needles.

Benefits of SEMDs

The usefulness of SEMDs is well established and healthcare organisations are encouraged to consider their use - (according to the NSW Health Policy Directive: Sharps Injuries – Prevention in the NSW Public Health System 2007).

Cost-effectiveness of SEMDs

The introduction of SEMDs in the healthcare industry has been shown to be cost-effective. When accounting for the high risk NSIs prevented and reduced, SEMDs prove to be extremely cost-effective.

MTAA conducted an economic evaluation, which showed that the implementation of SEMDs in all Australian hospitals would result in an average cost savings of **\$18.6 million per year**. The cost savings would further increase to at least **\$36.8 million per year** if the costs of post-exposure prophylaxis (antiviral) treatment and HCV treatment were included. Further to cost savings, the use and provision of SEMDs is also an ethical issue.

Prevention of injury should be regarded as a fundamental principle of work health and safety (WHS) legislation.

Recommendations

Australia Government to mandate the use of SEMDs in healthcare settings either through prescriptive legislation or policy.

Further to the effectiveness of SEMDs in reducing NSIs and the cost savings that can be gained by the Australian healthcare system, the use and provision of SEMDs should be considered as an ethical issue of "who has the right to decide healthcare workers should risk injury".

For further information and references:

VOT report on Needlestick and Sharps Injuries and Safety-Engineered Medical Devices Available at: <http://www.mtaa.org.au/docs/vot/vot-needlestick-and-sharpscopytosend.pdf?sfvrsn=0>

VOT report on Needlestick and Sharps Injuries and Safety-Engineered Medical Devices. Appendix Section: Economic Evaluation to Estimate the Cost Savings for the Implementation of SEMDs in Australian Hospitals. Available at: <http://www.mtaa.org.au/docs/vot/vot-needlestick-and-sharps-appendix-cost-savings.pdf?sfvrsn=0>

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