

# SHARP SAFETY CURRICULUM FOR HEALTH WORKERS

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## ABSTRACT

### *Backgorund*

Sharp injury is a sharp stabbing event that is very risky to health workers. The incidence of sharp injury is still high in the world. This event can lead various implications such as the spread of infection, psychological and economic implications. This is influenced by the understanding of health workers about the importance of sharp safety. Therefore, a curriculum is needed that aims to improve the understanding of sharp safety for health workers.

### *Methods*

This research uses literature review method. The research material comes from journals, books, and proceedings both in the country and abroad

### *Results*

Sharp safety curriculum consists of 7 main topics, i.e. safety device, safety procedures, safety disposal, implications of sharp injury, prevention of infection by vaccination, regulation relating to sharp safety, reporting, monitoring, and evaluation of sharp injury.

### *Conclusion*

Sharp safety curriculum is needed to increase knowledge and understanding of health workers regarding sharp safety so it is expected to reduce the incidence of sharp injury.

Keywords: sharp safety, sharp injury, curriculum, health worker

## A. BACKGROUND

Work accidents due to sharp stabbing (sharp or needlestick injury / NSI) is one of the many problems that occur in health workers. On the safety evaluation conducted by the National Audit Office at NHS Hospital UK in 2003 found 17% of events related to needlesticks or sharp injury (National Audit Office, 2003).

In a follow-up survey conducted on 4,000 nurses at the Royal College of Nursing (RCN) in 2008 found that 48% of nurses had experienced NSI or sharp injury (RCN, 2008). In a study conducted in the United States found that more than 8 million health workers in hospitals exposed to blood or other bodily fluids, including through contact types such as wounds with contaminated sharp instruments (Askarian et al, 2011).

While in Indonesia, in the study of 114 health workers in 10 health centers in Jakarta found approximately 84% of officers had been stuck needles used (Hudoyo, 2004).

The incidence of sharp injury in health workers may increase the risk of spreading infection of blood-borne pathogens such as hepatitis B, hepatitis C, and human immunodeficiency virus (HIV) (CDC, 2008). In 2003, the World Health Organization (WHO) recorded cases of infection due to contaminated needle puncture was estimated to result in 21 million hepatitis B virus infections (32% of all new infections), hepatitis C virus infection of 2 million (40% of all new infections), and HIV infection of 260,000 (5% of all new infections) (WHO, 2003). In a study conducted in Indonesia on health workers at puskesmas in DKI Jakarta, the prevalence of HBsAg positive was 12.5% in the dentist group and 13.3% in laboratory workers, whereas prevalence among health workers was generally around 4% (Hudoyo, 2004)

In addition to the increased risk of spreading the infection, sharp injury may increase the costs incurred by healthcare providers. These costs include serological examination for follow-up investigations, consultation and diagnosis to health personnel, as well as affecting the work time of health workers. In addition, the costs incurred for initial treatment of health workers affected by Hepatitis B, Hepatitis C and HIV were also considerable (Adams & Elliott, 2006).

Sharp safety is a safe procedure in the use and utilization of sharps in health services (Foley & Leyden, 2002). Such procedures include prevention in the form of safe use of sharps, personal protective equipment, prudence, understanding of health personnel, removal of sharps waste according to procedure, and vaccination. In addition to prevention, also obtained follow-up procedures are performed if the incidence of incident sharp injury is recording and reporting, examination of exposed health workers, and monitoring and evaluation. A good regulation of sharp safety is also needed to reduce the incidence of sharp injury (Adams, 2012). Given the magnitude of the effects and risks of sharp injury to health personnel, a sharp safety curriculum is required to be implemented for health workers.

## **B. METHODS**

This research uses literature review method. The research material comes from journals, books, proceedings, and scientific articles about sharp safety.

## **C. RESULTS**

In the curriculum about sharp safety, there are two main things that are important to note that is learning objective and mapping concept.

### **a. Learning Objective**

Sharp safety is a safe procedure in the use and utilization of sharps in health services (Foley & Leyden, 2002). The sharp safety curriculum is needed with the goal of health workers being able to identify tools that can cause sharp injury and safe means of use, be able to identify actions that can cause sharp injury and how to perform safe actions, be able to define the spread of infections due to sharp injury, able to mention the implications of sharp injury events, knowing the role of vaccinations in sharp injury events, knowing the ways and benefits of post sharp

injury reporting, knowing the ways and benefits of monitoring and evaluation post sharp injury events, and knowing regulations related to sharp safety.

## b. Mapping Concept

In sharp safety, there are 7 things that must be considered so that health workers can avoid sharp injury events, namely safety devices, safety disposal, safety procedures, sharp injury implications, vaccination, regulation, reporting, monitoring, and evaluation.



Diagram 1. Component of sharp safety's curriculum

### Safety Devices

Jagger et al (1988) mentioned that there were 326 occurrences of NSI in one of the educational hospitals in Virginia, USA. Some of the tools that can cause sharp injury include disposable syringe and needle, intravenous tubing and needle assemblies, pre-filled syringe cartridges, winged steel IV sets, vacuum tube phlebotomy assemblies, iv styles, and other devices. In the study mentioned that the highest cause of NSI is the use of disposable syringes (35%). In the study has not mentioned other tools that cause sharp injury such as a knife or scapel at the time of operation.

In the use of safe tools, there are two types of tools that can be used are active safety devices and passive safety devices. Passive safety devices do not require the additional safety required in use, while active safety devices require additional safety (CDC 2008). There are four major factors in evaluating the security of a device: security, usability, suitability, and assurance that it does not cause other problems (Adams & Elliott, 2003).

## **Safety Procedures**

Cone (2000) identifies actions that often cause NSI to be injection, venipuncture, suturing, manipulating intravenous (IV) injection parts, inserting peripheral IV catheters, other medical procedures. In the study mentioned that the action of injection is a procedure that often causes NSI. In another study conducted by McGeer et al (1990) reported that 13-62% of NSI was due to venaseksi. In addition, NSI events in doctors, health workers, and laboratory personnel are often caused by flebotomy procedures. Gaffney et al (1992) mentioned that 72% of physicians had experienced NSI during flebotomy within 6 months and less than 5% of reported events. Cardo et al (1997) mentioned that the risk of infection transmission due to NSI caused by depth injury.

## **Safety disposal**

In addition to the use of safe objects, removal of sharps that have been used also has an important role. Foley and Leyden (2002) have identified processes to reduce the risk of exposure to blood-borne pathogens such as elimination of hazard, engineering control, administrative control, work practice control, and personal protective equipment.

## **Sharp injury infection and implication**

Blood-borne pathogene infections can occur in sharp injury. Department of Health (DH) in 2006 advocated the early treatment of wounds caused by sharp objects. DH does not recommend mentioning that sucking the wound with the mouth. If the splash of blood on the eyes or the mouth should be immediately irrigated or rinsed with water, If the contact lens in the eye then should be drained water before and after it is released. Health workers should follow established procedures established in the hospital.

Some infectious diseases such as human immunodeficiency virus (HIV) and hepatitis C virus (HCV) are potentially infectious to health workers. In Italy, an organization incorporated in the Italian Study Group for Occupational Risk of HIV Infection reported a study in 1982-1992 that mentioned almost half the incidence of HIV and HCV transmission. In France, the Institut de Veille Sanitaire, mentioned that 11 out of 13 HIV incidents and 22 of 63 HCV occurrences were related to blood retention. It was generally reported that 106 out of 106 HIV positive cases and 238 suspected HIV cases were identified as a result of transmission to health personnel. Research conducted in December 2002 stated that as many as 128 (37.2%) occurred in nurses, 42 (12.2%) in physicians, and 39 (11.3%) in laboratory personnel.

In addition to affecting the safety of health personnel, the incidence of sharp injury also affect the cost or cost incurred. Handling of sharp injury events often requires a greater cost than the cost when prevention. These costs include serological examination for follow-up investigations, consultation and diagnosis to health personnel, as well as affecting the work time of health workers. In addition, the costs incurred for initial treatment of health workers affected by Hepatitis B, Hepatitis C and HIV were also considerable (Adams & Elliott, 2006). The incidence of sharp injury can also affect psychological health workers even significant. Health workers who wait for post lab test results exposed to sharp injury often experience pressure or stress is high enough. Costigliola et al

(2012) conducted a study of 634 nurses from Europe and Russia who had experienced NSI due to injection of diabetic patients. They point out that the incidence of sharp injury affects their emotional state such as depression, sudden cry, tension in the family, problems with spouses and families, panic attacks, anxiety and inability to work.

### **Vaccination**

Vaccination is important in dealing with exposure to infection of blood born pathogene. The sharp safety guidelines published by the Centers for Disease Control and Prevention mention that full hepatitis B vaccine is necessary for health workers (CDC, 2008)

### **Regulation**

On 11 May 2013 EU Member States implemented the Council Directive 2010/32 / EU regulations. The implementation includes Framework Agreement on factors related to NSI and sharp injury covering safe type of device and procedure. In addition, the identification of the principle of safe use of equipment and disposal and discussion of regulations to improve security and reduce the NSI. EU member states agree to prevent sharp injury and infection in the public and private sphere. Some of the things that need to be done are risk assessment (are there any risk of exposure to blood-borne pathogens from NSI? Can these risks be minimized or eliminated?), Risk elimination and prevention, elimination of unnecessary sharps, identify whether exposure risks can be decreased by use of safe tools, improved education and caution, and ensuring proper and safe sharps disposal systems. Ensure that regulation or procedure is in place.

In Indonesia, Health and Safety (K3) is an effort to protect workers and others entering the workplace against the hazards of accidents. The purpose of Health and Safety (K3) is to prevent, reduce and even eliminate the risk of occupational diseases and accidents and improve the health of workers so that work productivity increases. Law No.36 of 2009 on Health article 165 states that workplace managers are obliged to undertake all forms of health efforts through prevention, improvement, treatment and recovery for workers. Based on the above article, the workplace managers at the Hospital have an obligation to nourish the workforce. One of them is through work health efforts in addition to safety work. Law no. 36 of 2014 on Health article 11 letter (d) also states that health workers in carrying out their practice obtain protection for occupational safety and health. One of them is through work health efforts in addition to safety work. Hospitals must ensure health and safety both to patients, service providers or workers and the surrounding community from various potential hazards, therefore the hospital is required to implement Health and Safety (K3) efforts that are implemented in an integrated and comprehensive so that the risk of disease and Work Accident Accident in hospital can be avoided (Ministry of Health RI, 2010).

### **Monitoring and Evaluation Sharp Injury**

When health workers are exposed to sharp injury, there are several important things to do namely reporting and recording. It is necessary to monitor the injury and identify the necessary next steps. This action is often underestimated by

health personnel and many health workers who do not report the incidence of NSI or sharp injury so it is not directly addressed. The process of reporting and recording should not only occur local but also done regionally to nationally. It is also useful as a means of evaluating the spread of infectious diseases of blood borne pathogens. Post-reporting and recording of NSI events should be performed immediately such as laboratory tests or antiretroviral administration. It is also related to the responsibility of health care providers to their health workers. Further monitoring is also required in this event and there should be a standard procedure to be implemented. Risk assessment should also be conducted primarily for HIV transmission, HBV and HCV transmission. Blood in the body is a fluid that often causes infections in health personnel, though other body fluids such as cerebrospinal fluid and pleural fluid may also be at risk. Percutaneous exposures are more at risk than contamination of the mucosa. In addition, contamination may also occur through conjunctiva. The average risk of HIV occurrence in NS incidence was <0.5%.

#### **D. CONCLUSION**

The curriculum concerning sharp safety needs to be developed and implemented to health personnel including learning objective, and mapping concept curriculum. The curriculum is needed to improve the understanding and awareness of health personnel so as to reduce the incidence of sharp injury.

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