

SHARPS SAFETY IN HOSPITALS



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A. Introduction

It is indeed a challenge, a continuous effort, a struggle towards decreasing the incident rate of sharps injuries and increasing awareness among healthcare professionals in healthcare settings!

How to ensure a safe working environment and how to maintain appropriate practices is a real concern for most of us. Having said that, we will of course discuss action plans to suggest and follow. Patience and hard work will yield desirable outcomes... The following questions may help healthcare professionals identify key components for a successful intervention plan:

- (1) Is there an entity responsible for planning, implementing and monitoring systems to ensure environmental, occupational health & safety, and risk management programs at your institution?
- (2) Is there a plan for eliminating or controlling occupational hazards and hazardous environmental factors at the workplace?
- (3) Is occupational health and safety training provided to all employees?
- (4) Is all staff aware of the use of adequate personal protective equipment?
- (5) Are work related incidents reported?
- (6) Are there policies and procedures governing safe work practices?
- (7) Etc.

Healthcare professionals are at considerable risk of contracting Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Human Immunodeficiency Virus (HIV), and other pathogens through sharps injuries. Studies in USA have shown that the risk of developing HBV varies from 6% to 30% for healthcare professionals who have not received HBV vaccinations, the risk of contracting HCV is 0.4% to 1.8% and the risk of developing HIV is 0.3%. Sharps injuries are also associated with direct and indirect costs related to post-exposure medical follow up, treatment and disability, in addition to time lost (absenteeism) by healthcare professionals. Emotional distress, anxiety and stress can still occur, even in the absence of disease transmission. This can affect the quality of life of the injured and can disturb the relationship with the environment extending to colleagues and family members. According to the Centers for Disease Control and Prevention (CDC), about 385,000 sharps injuries occur annually to hospital employees and up to 80% of all accident exposures to blood are caused by needlestick injuries (1).

B. Relevant Accreditation Standards

As stipulated by the Ministry of Public Health (MOPH), Occupational Safety and Health Administration (OSHA), and Joint Commission on International Accreditation (JCI) occupational incidents together with near miss incidents should be reported, monitored, investigated, and action plans should be developed to ensure that strategic decisions are implemented. A record of these incidents should be kept and statistical reports showing incident trends & areas of weaknesses should be generated. Not to forget an important factor which is accident or near misses arising from misplaced sharps. In such cases, the risk is very high because the source is unknown and may put all auxiliary staff at risk such as housekeeping, laundry staff, and sterilization teams. There should be more awareness to double check and account for used sharps and properly discard them at the point of use.

1. Ministry of Public Health Standards (2)

The Lebanese Ministry of Public Health (MOPH) accreditation standards on occupational Health & safety (OH&S) focus on the accidents and incidents that occur in the hospital for both employees and visitors. The following are the standards of MOPH that state the requirements in relation to sharps injuries prevention:

- OH 4.6 Manual handling
- OH 4.7 No recapping of needles
- OH 4.8 Documented process for completing accidents and incident forms
- IC 6.9 Policies and procedures should include but not be limited to: Universal/standard precautions
- IC 6.14 Needle stick injury

2. Centers for Disease Control and Prevention Standards (3)

The US Centers for Disease Control and Prevention (CDC) issued recommendations for Universal Precautions that included guidance on sharps injury prevention. Universal Precautions, intended to reduce exposures, rely on barriers (e.g., protective gloves) and work-practice controls to prevent sharps injuries. Despite these recommendations, there was only limited success in reducing the incidence of sharps injuries due to suboptimal adherence to recommendations, and because most protective clothing is impenetrable by needles. Thus, additional interventions were needed to make further gains in preventing sharps injuries.

In 2000 a law on “Needlestick Safety and Prevention Act” was introduced, which authorized OSHA to require the use of safety features or to investigate the feasibility of using such features. In the US, at least 17 states enacted such requirements, imposed by OSHA.

- 29CFR 1910.1030** The employer is required to provide a safe environment for employees. Engineering and work practice controls shall be used to eliminate or minimize employee exposure.
- Bloodborne Pathogen Standard** “sharp with engineered sharps injury protection” is a “non-needle sharp or needle device used for withdrawing body fluids, ac-

cessing 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.

3. Joint Commission of International Accreditation Standards (3)

The Joint Commission International (JCI) standards on hospitals focus on both patient and healthcare worker safety. The following are the standard requirements from JCI in relation to sharps injury prevention:

- PCI .5
 - There is a comprehensive program and plan to reduce the risk of healthcare associated infections in patients.
 - There is a comprehensive program and plan to reduce the risk of healthcare associated infections in health care workers.
 - Risk-reduction goals and measurable objectives are established and regularly reviewed.
- PCI.7.3 The organization has a policy and procedure on the disposal of sharps and needles.
 - The organization ensures that a policy is implemented that adequately addresses all steps in the process from the type and use of containers, the disposal of the containers and the surveillance of the process of disposal.
- SQE.8.4 The organization provides a staff health and safety program.
 - Staff safety is also a part of the organization’s quality and patient safety program. A staff health and safety program can be located within the organization or be integrated into external programs. Whatever the staffing and structure of the program, staff understand how to report and be treated for and receive counseling and follow-up for injuries such as needle sticks, exposure to infectious diseases, the identification of risks and hazardous conditions in the facility, and other health and safety matters.

Therefore and in an attempt to reduce the occurrence of these incidents, an action plan is highly needed. The plan may include: developing a multidisciplinary policy on decreasing sharp injuries, increasing awareness among staff, and introducing safer engineering devices.

C. The Use of Information Technology

1. The Exposure Prevention Information Network



Exposure Prevention Information Network

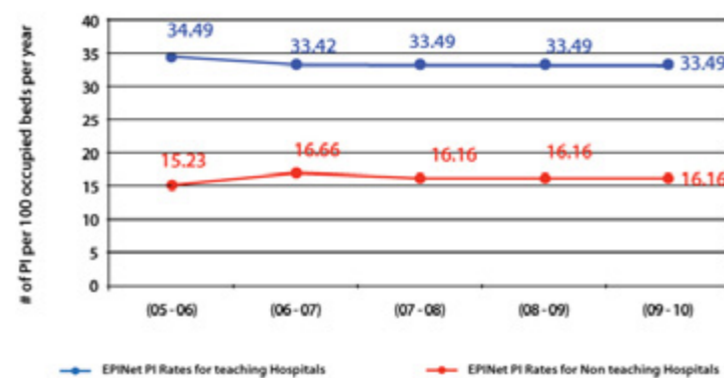
The Exposure Prevention Information Network (EPINet) Surveillance System which is a computer program, tracks sharp-object injuries, blood and body fluid exposures, and post-exposure follow-up. EPINet is the property of the University of Virginia, USA, a data sharing network coordinated by the International Healthcare Worker Safety Center. More than 1,500 hospitals in the United States use EPINet because it provides a standardized surveillance system to compare data to other healthcare facilities and generates summary reports. All are encouraged to adopt this system and it is for free; it helps identify correctives measures that will help decrease sharp injuries throughout the institution. Using EPINet will help you benchmark, an important tool to identify the highest standards of excellence for services or processes and to make necessary improvements to reach those standards. Benchmarking is used to compare measurements, policies or outcomes, within the same organization or across organizations, sectors, and services. Also you can use internal benchmarking to reveal incidents trends within the institution. Internal benchmarking may be more representative because it tracks injury trends within the institution over the years and any fluctuations of rates can be a sign of lack or increased awareness, reporting compliance or under-reporting, etc. On the other hand, incidence rates provided by OSHA present a standardized way to measure performance both historically and in comparison to other institutions within its industry. Using standardized rates makes comparisons easier and more accurate. However, comparing rates should be used as an indication to stress on important issues for enforcement efforts. These rates help measure trends in workplace safety and identify areas of potential concern. Keep in mind that rates are only indications of past performance and cannot be used purely as indications of what will happen in the future performance of the institution.

2. EPINet Rates

EPINet provides two rates; the Percutaneous Injury (PI) Rate which is based on the Number of Percutaneous Inju-

ries *100 / Number of Occupied Beds. The second rate is the Blood & Body Fluids (BBF) Exposure Rate which is the number of BBF Exposure*100 / Number of Occupied Beds (4).

Chart 1: Percutaneous Injury Rate



Always remember that variables are not the same, so a comparison between your institution's rates and US teaching hospitals can give you just an indication. Variables can be such as patient mix, average length of stay per patient days, type and frequency of procedures, ratio of healthcare to patient service, extent of training provided to healthcare professionals, under-reporting of incidents, extent of conversion to safety devices, etc.

3. Cost & Benefits Implications

The direct cost of sharps injuries is the cost of blood tests for HBs Antigen (Ag), HCVAg and HIVAg incurred in addition to post exposure treatment and psychological harms. According to studies in the USA an example of liver transplant in the case of hepatitis can cost more than \$314,000 and treatment for someone who has contracted HIV can cost more than \$500,000. Moreover, to treat a wound and perform post exposure evaluation costs several thousand dollars. Also, the cost of testing, counseling, prophylactic medication/post exposure treatment, long-term medical complications, disability payments, lost wages, expensive treatment, increased worker's compensation claims and insurance premiums, lost work time; overtime of replacement staff, unpleasant side effects, emotional distress, and potential legal liability can significantly increase expenses.

However, preventing sharps injuries have a dual benefit on the healthcare professional and on the patient. Satisfied staff means lower turnover; facilities can save signifi-

cant amounts of money when there is no longer a need to replace staff members who leave due to dissatisfaction, and the numbers add up fast—one academic medical center study showed that turnover costs represented 3.4% to 5.8% of the \$500 million operating budget. By eliminating sharps injuries, healthcare professionals will be relieved from post exposure treatment and will have a positive psychological impact avoiding harms such as anxiety, depression, and/or stress that considerably affect performance, satisfaction and quality of life. One-handed activation of safety devices will encourage higher compliance of safety features.

On the other hand, source patients will not be exposed to additional pricks needed for screening for infection with blood borne pathogens. In some cases, using the appropriate device for the care of patients will improve patient's satisfaction as it will decrease exposure to additional/unneeded procedures. This will help the healthcare professional to perform in fewer steps, less time, and less pressure during necessary procedures/medical treatments while ensuring best possible clinical outcomes (5).

D. Conclusion & Recommendations

One of the solutions that healthcare professionals can consider is to adopt sharp safety devices for those sharps which present high risk of injuries e.g. syringe needles, suture needles, Intravenous (IV) needles, and blades. The root causes of these incidents once identified should focus on adopting safety engineering devices if possible as well as recommending specific change in current risky practices through education. Introducing safety engineering devices in high risk areas will not completely eliminate the risk but will sure have a positive effect on the reduction of sharps injuries. This option will of course need to be properly evaluated and gradually introduced in pilot areas to document results and monitor response rate before final implementation. Once safety engineered devices are available, we should conduct practical training to staff, evaluate their effectiveness in reducing incidents, and provide proper support for healthcare professionals on using such devices. Focused groups can be assigned from all disciplines (Nursing Staff, Medical Staff, Infection Control, Supply Chain Management, etc.) to be the custodian of this implantation task force. Subsequently and at a pre-defined follow up date, we should have a plan to check on the implementation progress:

(1) A post implementation study can be performed to assess the effectiveness of using safety engineering devices

as compared to the use of conventional sharps devices. (2) Track historical comparisons as prevention measures are implemented. (3) Study the effectiveness of properly used safety engineering devices to ensure functionality and simplicity of use of each device introduced. (4) Follow up on the activation compliance of the active safety devices introduced, if any, and assess attitudes regarding safety engineering devices, if they are well accepted by healthcare professionals.

In 1998, California passed the first state law mandated by the Occupational Safety and Health Administration (OSHA) requiring employers to provide safety engineering devices in all relevant device categories. An estimate of the financial investment is required for implementing the use of safety devices in specific areas as a preliminary step taking into consideration only direct costs, the replacement of conventional devices with safety engineered devices. However, if the cost is evaluated in terms of each patient attended or by patient day, the investment would be worthwhile.

However, general safety precautions are a must and cannot be replaced by any other solution. We can ensure adher-





ence to standard precautions by means of changes in work practice and training e.g.:

- (1) Increased use of personal protective equipment (PPE) such as gloves, fluid resistant gowns, protective eyewear, surgical gloves, masks, waterproof shoe covers and other barrier garments to reduce contact with blood and contaminated body fluids.
- (2) Safer handling and disposal of sharp devices such as use of sharps containers placed as close as possible to the point of use preferably within arms' reach of the user, and annual training of all at-risk healthcare professionals.
- (3) Use a passing tray or neutral zone to reduce the incidence of accidental sharps injuries.
- (4) Review all policies related to sharps injuries prevention and management of accidental blood or body fluid exposure.
- (5) Include in incident reporting detailed information in case of sharps injuries such as the source patient number, brand, size and type of device, and the process of use in which the injury occurred. Or use the forms provided by Spinet, more information can be collected in the case of sharps injuries and a better analysis can be performed.
- (6) Regularly send reminders, play tapes on daily basis, and hang posters and announcements reiterating protection against sharps injuries.
- (7) Continually support healthcare professionals' need

for educational tools and training assistance such as in-servicing, videos/CDs, clinical documentation, wall charts, newsletter, and comprehensive device information.

(8) Increase awareness on associated risks to prevent the presence of sharps in transported contaminated sets, soiled linen, waste bags, etc.

(9) Encourage healthcare professionals to continue reporting unsafe practices/incidents. Monitor such incidents in order to identify non compliant disciplines and follow up on eliminating such occurrences. Implement an action plan to improve compliance and coordinate with the different parties involved.

(10) Ensure that all healthcare professionals and trainees are properly trained to minimize risks of injury and potential contamination/infection. Topics should cover infection

control and sharps injury prevention, safe use and disposal of sharps, need for reporting sharps injuries, need for providing complete information when reporting, no recapping of sharps, asking for help with uncooperative patients, not to leave items or sharps in sets, linen, gowns, waste bags, etc.

Finally, I would like to reiterate to report all sharp incidents, emphasize the importance of abiding by safety rules and regulations, and to keep up performance improvement.

E. References

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