DEVELOPING A BBF EXPOSURE CONTROL PLAN

A COLLABORATIVE OHSAH, VIHA, AND UBC INITIATIVE

PROJECT FOCUS

Introduction

Workplace exposure to blood and body fluids (BBF) is a major threat to the health and safety of healthcare workers (HCWs) across Canada. In addition to potentially severe physical effects, an exposure can trigger considerable psychological stress in a healthcare worker. In BC, WorkSafeBC estimates there are 4000-7000 BBF-related exposures each year.

A BBF Exposure Control Plan (ECP) is a key part of a proactive and systematic approach to reducing risk of exposures to biological hazards. An ECP outlines the engineering and administrative controls and personal protective equipment important in reducing or eliminating exposures and protecting workers. An ECP also provides clear management responsibilities regarding plan administration, the process of risk identification and assessment, control procedures, and best work practices. Documenting and recording incidents and exposures is critical to track and further investigate and identify associated risk factors.

WorkSafeBC provided a research grant to OHSAH and University of British Columbia (UBC) to pilot EPINet, a standardized method for recording and tracking needlestick injuries and BBF contacts in Vancouver Island Health Authority (VIHA). EPINet was incorporated into the Workplace Health Indicator Tracking and Evaluation (WHITE™) Database, a web-based health and safety information collection system currently being used in four of BC's six health authorities. Data were collected at VIHA between January 1, 2000 and November 14, 2005. A worker survey was also conducted in 2003 to complement the information gathered in WHITE EPINet (results on page 3).

EPINet Incident Summary

1. **There were 1,577 reported BBF sharps and splash exposures.** Of these, 23% were BBF exposures or splash injuries. 77% were needlestick and sharp object injuries, of which 84.6% involved contaminated items and 9.4% reported that contamination was unknown.
2. **Nurses are most affected.** Nurses as a group reported the highest frequency of both needlestick and other sharps injuries – 761 (62.7%) – and splash injuries – 229 (65.4%).
3. **Almost 25% of injuries occur to other healthcare workers.** Workers in occupations in which sharps are not originally handled were also affected, including housekeeping staff and laundry workers: 24.5% of injuries occurred to those so-called "downstream" users. This suggests that unsafe disposal of sharps materials create risk to others who come into contact with discarded items (e.g. cleaners, laundry, housekeeping). This figure may also include HCWs who must handle sharp instruments already used or located by others. These injuries could be prevented through implementation of safety-engineered devices and greater compliance with safer disposal instructions and safe work procedures.

What is the WHITE™ Database?

The WHITE Database is a web-based health and safety system, developed by OHSAH, which tracks workplace injuries and illness in healthcare workers and related information. The system is currently in place in four of six BC health authorities (Fraser Health, Interior Health, Northern Health, and Vancouver Island Health Authority). In 2007, Provincial Health Services Authority will begin using the WHITE Database.

What is EPINet™?

The Exposure Prevention Information Network (EPINet™) system was developed in the United States to provide a standardized method for recording and tracking needlestick injuries and blood and body fluid contacts in healthcare settings. More than 1,500 hospitals in the US use the system. EPINet is now used in many countries around the world, including Canada. EPINet has also been incorporated into the WHITE Database, and is used to track BBF exposures and related data in the BC health authorities using the system.

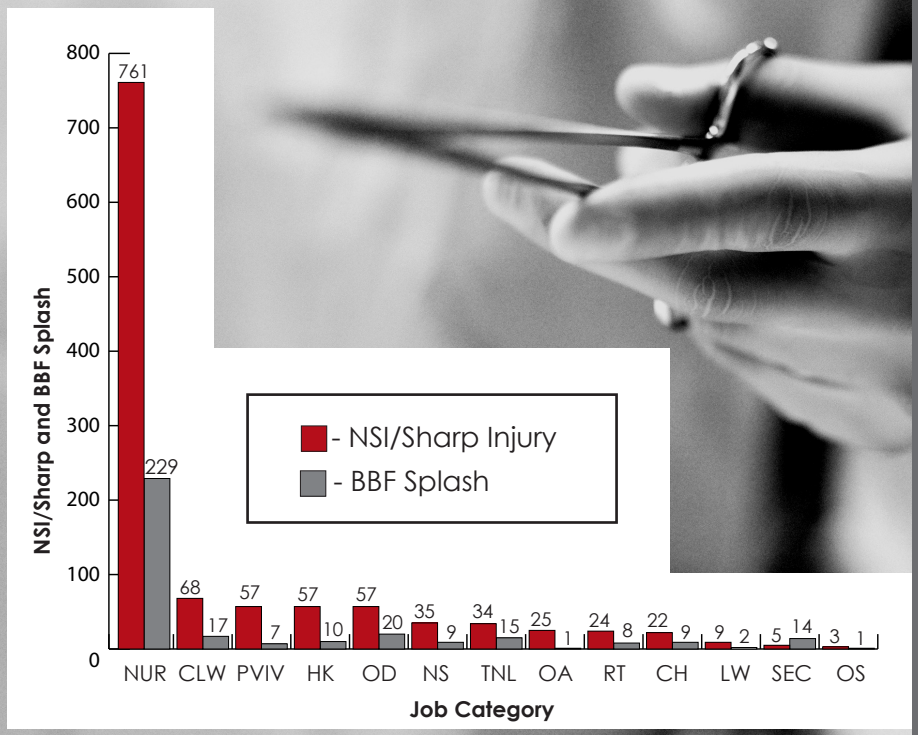


Figure 1. NSI/Sharp Injury and BBF Splash Injury vs. Job Category (VIHA Jan 2000 – Nov 2005)

NUR - Nurse
CLW - Clinical Laboratory Worker
PVIV - Phlebotomist/Venipuncture/IV
HK - Housekeeper
OD - Other, describe
NS - Nursing Student
TNL - Technologist (non lab)
OA - Other Attendant
RT - Respiratory Therapist
CH - CNA/HHA
LW - Laundry Worker
SEC - Security
OS - Other Student

Note: Although included in this graph, physician related exposures are incomplete. The literature reports that physicians and medical residents are at especially high risk of needlestick injuries. However, most of these are not reported and/or recorded in the WHITE Database at this time.

Next Steps

This study demonstrated the value of an efficient tracking system for BBF-related exposures, which enables health authorities to effectively assess further corrective actions, such as incident investigation and post-exposure management, before putting them into practice. Most of the health authorities are moving towards, or already completed, the implementation of BBF ECPs. WorkSafeBC has given healthcare employers until January 1, 2008 to complete implementation of safety-engineered products and update their ECPs.

Through our collaboration with the 'BC BBF Focus Group' (OH&S professionals from each health authority), OHSAH is able to support all Health Authorities in their efforts to control BBF exposures. OHSAH also recently received a research grant to further evaluate the effectiveness of the VIHA BBF ECP. As proposed, workers' survey and working environment observation will be conducted at VIHA sites based on the completion of the BBF ECP implementation. Data collected through the WHITE EPINet system will be used in conjunction with the study results to conduct a series of comparisons and analyses.

Worker Survey Key Findings:

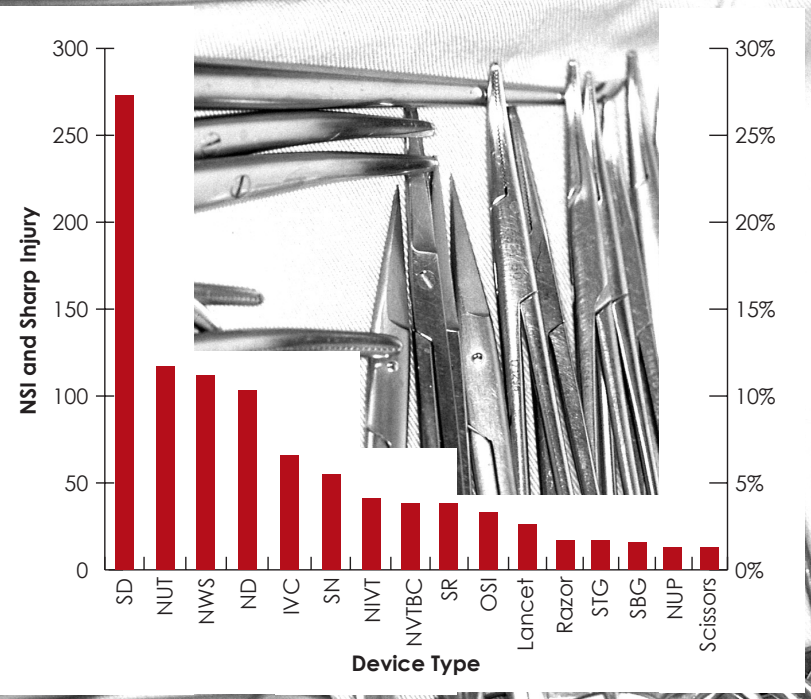
In parallel to the EPINet implementation project, a worker questionnaire survey was conducted at VIHA over the fall and early winter of 2003-2004 to identify significant BBF exposure risk factors, acquire information on worker risk perceptions and behaviour, and estimate rates of near-misses and the frequency of under-reporting to BBF exposures. Several key findings emerged from this survey.

1. **Under-reporting is a major problem.** The worker survey revealed that over 80% of needlestick injuries in nurses go unreported. The key cause for non-reporting is the belief that reporting will not result in corrective actions. Those who do not report an exposure may be influenced by a perceived lack of control over the risk itself. An additional reason for under-reporting is the exclusion of reported incidents suffered from contracted workers, including physicians, and that healthcare employees know that the reporting system is incomplete even if they do report.
2. **Nurses sustain the majority of both needlestick and splash injuries; however, other occupational groups also experienced exposures.** Therefore, prevention and control measures, including site-specific safe work procedures, must be in place in the entire healthcare environment and for all occupationl groups that are potentially at risk for exposure.
3. **The acute care setting is where BBF exposure risk is greatest; however, exposure risk also occurs in Long-Term Care and Community settings.** While Operating Room, Surgical, General Medical, and ICU Staff seem to have particularly elevated risks compared to most other groups in acute care, the highest risk group when considering rates of exposure is Laboratory staff.
4. **Use of personal protective equipment (PPE) is lacking.** The majority of BBF splash incidents involve exposures to the head, yet less than 10% of those reporting were wearing appropriate PPE, such as a face shield, at the time.
5. **More than one third of reported needlestick and sharps injuries could be prevented with adherence to standard precautions and procedures.** Along with safety engineered needles, the proper use of sharps disposal containers is needed along with policies and training to reinforce not recapping needles (if conventional needles are being used), and not leaving sharps in inappropriate places (e.g. better use of neutral zones).

Figure 2. NSI and Sharp Injuries vs. Type of Sharp Devices (VIHA Jan 2000 - Nov 2005)

SD - Syringe, disposable
NUT - Needle, unknown type
NWS - Needle, Winged steel
ND - Needle, describe
IVC - IV catheter
SN - Suture Needle
NIVT - Needle on IV tubing
NVTBC - Needle/holder vacuum tube blood collection
SR - Scalpel, reusable
Lancet - Lancet
Razor - Razor
STG - Specimen/test tube, glas
SBG - Syringe, blood gas
NUP - Needle, unattached hypodermic
OSI - Other sharp item

Note: Although included in this graph, physician related exposures are incomplete



Implications

1. The results of this study indicate the need to improve workplace safety culture by promoting prevention strategies and reducing under-reporting of incidents by promptly following up when reports occur. It also requires promoting the inclusion of contracted workers and physicians in the data collection system and prevention programs.
2. The analysis of the underlying causes of incidents is most effective when localized to the source of these incidents. Consequently, each Health Authority, with the help of their Joint Occupational Health and Safety Committees and OH&S staff, should study incidents at the worksites where they occur. This would lead to better understanding of unique workplace safety issues, and in turn, the creation of control measures matching the particular needs of each work setting.
3. Management must take an active role in monitoring ECPs, which includes evaluating and selecting the most effective control measures. Clear and consistent management commitment along with bipartite participation in the development of the ECP, is the cornerstone of a comprehensive and effective ECP.
4. Implementing proper hierarchy of exposure controls is fundamental to successful BBF exposure prevention efforts. The most effective approach to reducing BBF exposures in the workplace begins with eliminating unnecessary sharps and injections first, and then introducing engineering controls, such as safety engineered devices, followed by administrative and work practice controls. The latter include training workers in hazard identification, sharps/BBF exposure prevention, incident reporting, following universal precautions, eliminating needle recapping, and using sharps containers.
5. Increasing the scope of data used for BBF related injury analysis could aid investigations of underlying causes. Health authorities only track exposure incidents occurring to their employees, leaving out physicians, housekeepers, laundry and food service workers. Collecting information associated with BBF exposures occurring to all workers, must be included in order to provide a complete picture of the hazards faced by healthcare workers and to offer insight into potential corrective actions.

> "There is a need to improve workplace safety culture by promoting prevention strategies and reducing under-reporting of incidents."

Table 1. External Comparison of Needlestick and Sharp Injury by Job Category (VIHA and Adjusted U.S. EPINet (2003) Data)

Data Resource	VIHA	US EPINet Data *
Nurse	141 (63.5%)	642 (50.2%)
Clinical Laboratory Worker	26 (11.7%)	44 (3.4%)
Housekeeper & Laundry Worker	13 (5.9%)	43 (3.4%)
Technologist (non lab) & Phlebotomist/ Venipuncture/ IV Team	10 (4.5%)	171 (13.4%)
All Other Job Categories **	32	379
Total Number of NSI Injury in 2003	222	1279

* US EPINet data was adjusted based on the VIHA job category. Data of Doctors, Medical and Other Students, Dentist and Dental Hygienist were excluded as these groups were not captured at VIHA.

* * 'All Other' includes Other, Describe; Other Attendant; Nursing Student; Security; Respiratory Therapist; Surgery Attendant; CNA/ HHA; and Paramedic. Proportions for 'All Other' is not included because of the coding difference between the US and BC data.