An analysis of needlestick and sharps injuries among hospital employees

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Introduction

- Needlestick and sharps injuries are a major concern in Canadian health care, numbering around 70,000 per year, with an estimate of 33,000 injuries occurring in Ontario each year.
- These injuries are the most common preventable cause of occupational exposures to blood and body fluids among health care workers.
- These exposures have the potential to transmit blood borne pathogens, thus posing as both an occupational and public health issue.
- These injuries are primarily associated with the transmission of hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV).
- Risks of transmission due to a needlestick/sharps injury from a known positive source:
  - Hepatitis B Virus: 6-30% (Risk for HBV applies if not HB vaccinated)
  - Hepatitis C Virus: 2%
  - HIV: 0.3%

Objective

- The objective of this study is to analyze reported needlestick and sharps injuries that will identify areas of highest risk to support injury prevention, raise awareness about the issue, and enhance education on safety measures.
- This study also intends to gain perspective from health care employees at risk of needlestick and sharps injuries in order to provide insight on the nature of problems and give recommendations for solutions.

Methods

- A needlestick and sharps injury was defined as an occupational exposure to blood and/or body fluids by the puncture of a needle or cut with a sharp object.
- The data analyzed in the study was obtained from an electronic record of needlestick and sharps injuries kept by the Occupational Health and Safety department of a local community hospital
- The record of injuries consisted of an excel master list and charted incident reports that included any health care employee of the hospital who has reported a needlestick and sharps injury from January 2014 to December 2017.
- Key informant interviews were conducted with six health care employees who responded to recruitment emails sent to locations identified with the highest numbers of injuries.

Results

Table 1: Reported needlestick and sharps injuries by type of injury and year (January 2014 to December 2017).

	Year				
Type of Injury	**2014**	**2015**	**2016**	**2017**	**Total**
Needle	31	41	39	30	141
Surgical/Suture	17	19	13	28	77
Other	7	0	2	1	10
Unknown	3	1	0	1	5
Glass	0	0	0	0	0
Total	58	61	54	60	233

- Types of devices causing injury in the “Needle” category include intravenous stylets, hypodermic needles, lancets, and insulin pens.
- Types of devices in the “Surgical/Suture” category include scalpels, suture needles, and other surgical equipment.
- Types of devices in the “Other” category include laboratory equipment.
- Types of devices in the “Unknown” category were not specified.

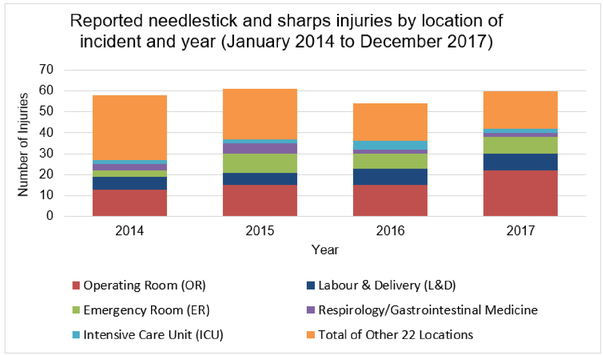

Figure 1: This graph illustrates the top 5 locations (OR, L&D, ER, Resp/GI Med, ICU) with the highest number of injuries compared to the other 22 locations of the hospital.

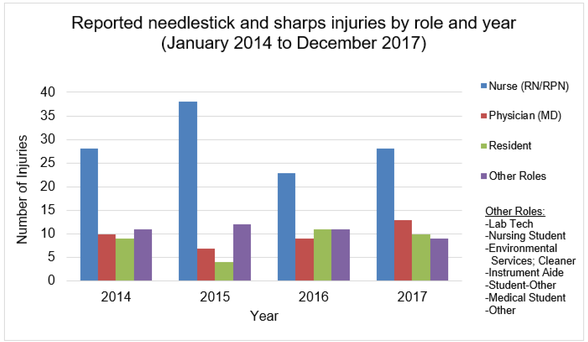

Figure 2: This graph illustrates the top 3 roles (Nurses, Physicians, and Residents) with the highest number of injuries compared to the 7 other role categories.

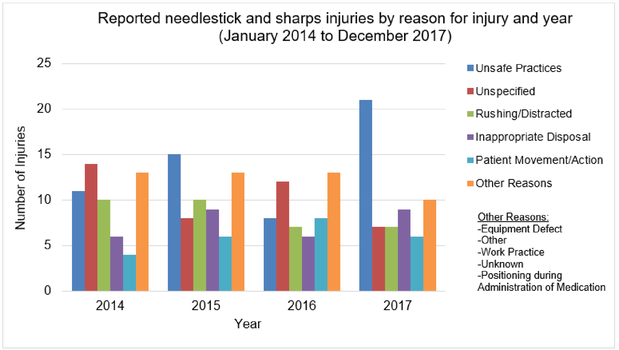

Figure 3: This graph illustrates the top 5 reasons for injury with the highest number of injuries compared to the 5 other reasons for injury.

Table 2: Key concerns and recommendations regarding needlestick and sharps injuries proposed by health care employees of the hospital from locations with the highest numbers of injuries

Key Informant Interviews	
Concerns	**Recommendations**

• Accountability to adhere to safe practices among health care workers
  ○ Overfilling sharps containers
  ○ Recapping needles
  ○ Rushing/cutting corners
  ○ Not using the “no hands technique” (pass sharps using trays, not hand to hand)
• Not using the proper techniques to engage the safety mechanism on devices
• Work practice during certain procedures are more susceptible to injuries
  ○ Cord blood banking techniques
  ○ Patients who are agitated or delirious
• The process to report injuries after hours to the Emergency department is time consuming
• Filling out incident reports during high stress, busy schedules
	• In-person demonstrations of safety engineered devices are more effective, as step-by step posters tend to be overlooked
	• Include information about needlestick and sharps safety in orientation sessions
	• Have more time dedicated to “quality huddles” where staff can engage and discuss on the topic of needlestick and sharps injuries
	• Have access to the expertise of an “IV team” that can educate staff about techniques for intravenous (IV) insertion
	• Have an alternative way of reporting injuries when computers are down or busy

Discussion

- The study analyzed a total of 233 needlestick and sharps injuries among hospital employees that occurred over a four year period, where the majority of injuries involved needle devices.
- The locations with the highest number of injuries were the Operating Room, Labour & Delivery, Emergency Room, Respirology/Gastrointestinal Medicine, and the Intensive Care Unit, with a combined total of 142 injuries which accounted for more than half of the total number of injuries.
- The roles most affected by injuries were Nurses, followed by Physicians and Residents.
- The most common reason for injuries were “Unsafe Practices,” “Unspecified,” “Rushing/Distracted,” “Inappropriate Disposal,” and “Patient Movement/Action” which demonstrates the need to increase awareness on safety measures and the issue of underreporting injuries.
- In 2007, Ontario Regulation 474/07 Needle Safety was established under the Occupational Health and Safety Act, which required the adoption of safety-engineered devices for all hollow-bore needles as a measure to reduce the incidence of needlestick injuries.
- However, this regulation does not include requirements to replace other sharp medical devices, such as suture needles, scalpels, and lancets.
- According to the Institute for Work and Health in Toronto, even with legislation, needlestick and sharps injuries have not substantially decreased.

Conclusion

- Following the introduction of the regulation, the decline in needlestick injury rates in Ontario has been less than expected, and ongoing efforts need to be made to monitor and examine needlestick and sharps injuries.
- An in-depth analysis of injury rates and continuous communication with health care workers at risk is needed to enhance safety and awareness to support prevention of needlestick and sharps injuries.

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