

Educational interventions to improve awareness and reporting of needlestick injuries among residents in an otolaryngology department

James Hamilton, MD, Patrick Tassone, MD, Candace Mitchell, MD, Akshay Sanan, MD, Kiley Trott, MD Edmund Pribitkin, MD Maurits Boon, MD, Ellen O'Connor, MD, David Cognetti, MD
Dept. of Otorhinolaryngology-Head and Neck Surgery, Thomas Jefferson University Hospital, Philadelphia, PA

ABSTRACT

Objective: To evaluate the effectiveness of an educational intervention on needlestick injuries (NSIs) among otolaryngology trainees

Study Design: Cross-sectional survey with baseline testing and follow up at 12 months

Methods: Compare the rates and the nature of NSIs before and after an educational intervention within a large otolaryngology department at an academic medical center. Questionnaires were delivered before and after a lecture-based intervention. Resultant information concerning NSIs was obtained and data was compared using Chi-square analysis.

Results: Prior to an educational intervention, 70% of residents were aware of departmental policies on self-reporting of NSIs. Post-intervention, 93% were aware of the policy. Six of 12 (50%) of most recent injuries were reported before the intervention, and eight of 12 (75%) were reported following the intervention. NSIs were unlikely to be reported if no else knew of the injury.

Conclusions. An educational intervention increased awareness of reporting policy regarding NSIs among otolaryngology trainees, but the unreported NSIs did not decrease by this intervention alone.

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CONTACT

James M. Hamilton, MD
Thomas Jefferson University Hospital
Email: james.hamilton@jefferson.edu
Phone: 215.519.1296

INTRODUCTION

Otolaryngologists, otolaryngology residents in training, and medical students assisting in otolaryngology surgery are at risk for needle stick injuries (NSIs). A study of general surgeons found that 99% of trainees will sustain at least one NSI during residency with the average number being eight.¹ Such injuries place these individuals at risk of contracting communicable blood-borne diseases from patients. While systems are in place to report needle stick injuries that take place in the operating room or in the hospital, many needle sticks go unreported by health care providers at all levels of training. Despite the risk, residents have sometimes been found to have the least knowledge of how to report such injuries (Lakbala 2014). In fact, as many as two thirds of all OR personnel may be unaware of reporting guidelines (Bindra 2014). Many needlestick injuries go unreported for other reasons. We sought to quantify frequency and reporting of needlestick injuries in our otolaryngology - head and neck surgery department, and to determine whether an educational intervention could change reporting and awareness of needlestick injuries.

METHODS

- As part of a quality improvement program, an intervention was designed among otolaryngology residents with an Infectious Diseases specialist leading our institution's occupational exposure committee
- A survey, designed to capture frequency of NSIs, frequency of reporting of such injuries, and reasons for not reporting injuries was distributed before this educational intervention.
- The intervention was a mandatory didactic session with an Infectious Disease specialist, including specific instruction on needlestick injury reporting policies at our institution
- Otolaryngology residents from all PGY years were included.
- The survey was re-distributed 12 months later, in the following academic year
- Pre- and post-intervention surveys were tallied and compared. Using an unreported needlestick as a binary event, Chi-square analysis was undertaken to identify associated factors. $P < 0.05$ was considered significant.

Needlestick Injuries		
	Pre-Intervention (n=17)	Post-Intervention (n=15)
Resident PGY	Frequency	Frequency
2	4 (24%)	4 (27%)
3	5 (29%)	5 (33%)
4	5 (29%)	3 (20%)
5	3 (18%)	3 (20%)
Needlesticks Last Year		
0	7 (44%)	9 (60%)
1	6 (35%)	5 (33%)
2	2 (12%)	1 (7%)
3	2 (12%)	0 (0%)
Needlesticks Last Two Years		
0	6 (35%)	5 (33%)
1	3 (18%)	6 (40%)
2	3 (18%)	7 (40%)
3	1 (6%)	8 (40%)
4	2 (12%)	9 (40%)
5	0 (0%)	10 (40%)
6	1 (6%)	11 (40%)

Table 1. Pre- and post-intervention NSIs reported

RESULTS

- Pre-intervention**
 - 17 residents, PGY2 to PGY5, completed the initial survey (Table 1)
 - 16 NSIs occurred in the last year, with 26 total in the last two years; 6 residents (35%) reported no NSI in the last two years
 - Most recent NSIs were self-inflicted (69%)
 - Most common reason cited for needlestick was being rushed, followed by fatigue
 - 50% (6/12) of NSIs were witnessed, of which all were reported; 50% were unwitnessed, of which none were reported ($P = .0005$)
- Post-intervention**
 - 15 residents, PGY2-PGY5, completed the second survey (Table 1)
 - 7 NSIs occurred in the last year, with 15 total in the last two years; 5 residents (33%) reported no NSI in the last two years
 - Most recent NSI were self-inflicted (64%)
 - 58% (7/12) of NSIs were witnessed, of which all were reported; 42% (5/12) were unwitnessed, of which only one was reported ($p = .004$)

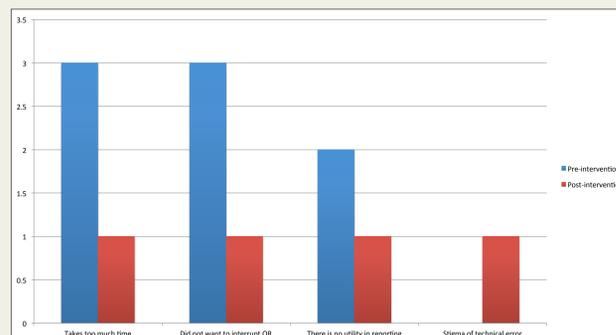


Table 2. Reasons for unreported needlestick injuries

Anonymous

1. PGY equivalent (circle one): 1 2 3 4 5 attending student

2. How many needle sticks have you sustained in the last year? _____ two years? _____

3. Was your most recent needle stick involving a "high-risk" patient? Y / N ("high-risk" defined as history of HIV, hepatitis B or C, or IV drug use)

4. Was your most recent needle stick? (circle one): self-induced / by someone else (circle one): hollow-bore needle / solid needle (circle one): in the OR / at the bedside / Other _____ (circle one): while passing a needle / loading a needle / saturating / recapping a needle / cleaning up / Other _____

A. In your opinion, what was the cause of your most recent needle stick? (circle all that apply)

- lack of assistance
- lack of skill set required
- fatigue
- rushed
- could not have been prevented

B. Was your most recent needle stick reported to employee health? Y / N If NOT, what was the reason? (circle all that apply)

- takes too much time
- I did not want to interrupt OR
- there is no utility in reporting it
- the associated stigma of having performed a technical error
- someone else discouraged me from reporting it
- I didn't want to know the result
- Other: _____

C. Did anyone else know about your needle stick? Y / N If YES, was it? (circle all that apply)

- a resident
- an attending
- a nurse
- a medical student
- a significant other
- Other: _____

5. In the last year, have you had a needle stick that was not reported to employee health? Y / N

A. If YES, what was the reason? (circle all that apply)

- takes too much time
- there is no utility in reporting it
- the associated stigma of having performed a technical error
- I didn't want to know the result
- Other: _____

6. Have you ever had a needle stick involving a "high-risk" patient? Y / N ("high-risk" defined as history of HIV, hepatitis B or C, or IV drug use)

7. Have you ever witnessed another person have a needle stick that went unreported to employee health? Y / N

8. Are you aware of the departmental policy on reporting needle stick injuries? Y / N

The responses to this survey are anonymous and will not be identified with you personally.

Figure 1. The survey used was modified from a similar survey done in General Surgery departments

DISCUSSION

NSIs are an important occupational hazard among surgical residents and can lead to infections with blood borne pathogens. Improving knowledge of the prevalence and reasons for such injuries is integral to find means of prevention. Residents have are at higher risk than experienced practicing surgeons.² Poor reporting reveals a failure to appreciate the potential consequences of such injuries and precludes medical evaluation, testing, and, if warranted, appropriate therapy. Studies have demonstrated that there is significant underreporting of sharps injuries among residents. The prevalence of NSIs has previously been reported from 52% to as high as 99% among surgical residents including a rate of 73% among otolaryngology residents.³ Associated non-reporting rates are between 45 and 75%, including a rate of 43% among otolaryngology residents.³

Our study revealed 56% of residents had an NSI in the year before the survey, of which 50% were reported. Following the intervention, 40% of residents had an NSI, of which 75% were reported. In agreement with prior findings by Makary et al., residents in this study were much more likely to report an NSI if it was witnessed. There was no association between high-risk status, type of needle, or PGY year and reporting of NSIs. Factors contributing to low reporting rates included time required to report, fear of interrupting the OR, belief that there is no utility in reporting and stigma of technical error. (Table 2) Ninety-three percent of residents knew the departmental policy after our intervention, compared to 70% before, however gaps remain between knowledge and practice as 25% of NSIs remained unreported.

Our study provides useful data regarding NSIs and patterns of reporting among otolaryngology residents, but clearly has limitations. The low participant rate raises concern for selection bias, as respondents may have been motivated to respond by previous NSI, thus falsely inflating the rate. Conversely, concern for privacy may have given a falsely decreased rate. Finally, a potential confounder is that the survey did not capture whether the resident was alone in the operating room, which may have prevented immediate reporting to avoid leaving the room.

CONCLUSION

NSIs among residents are common and often not reported. This highlights the importance of ongoing attempts to reduce such injuries and improve reporting to avoid delay in medical care. Despite a low risk of transmission of blood-borne viruses, consequences of transmission are high. It is up to the individual to practice appropriate precautions and report early. Updates on policy should be given regularly and a simplified method of NSI reporting should be implemented. As we have shown, departmental efforts can be as simple a lecture from an appropriate source to increase awareness of policies. The risk of NSIs will never be zero, but surgical trainees can at least protect themselves by rapid reporting when they do occur.