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## RESEARCH NOTE

# An Injury Mitigation Program Highlights the Importance of Adhering to Current Infection Control Policies

Esther H. Chen, MD; Newton Addo, MAS; Gemma Cohen, RN, MSN

## TO THE EDITOR

Sharps injuries and body fluid exposures are common health care occupational hazards. Mitigation measures include training on and adhering to standard precautions for procedures, providing feedback mechanisms, and using safety devices.<sup>1</sup> During the SARS-CoV-2 pandemic, the health system instituted universal use of face mask and eye protection for patient care activities, in attempts to reduce person-to-person viral transmission, as previously shown.<sup>2,3</sup> With the waxing and waning of hospitalized patients, institutional relaxation of policies and adherence to wearing personal protection equipment (PPE) may change. We reviewed incidents reported to Occupational Health Services (OHS) and hypothesized that fewer incidents, particularly splash incidents, would be reported during the pandemic period.

## METHODS

This is a retrospective analysis of prospectively collected data from the OHS, which tracks injuries from a public hospital, chronic care rehabilitation facility, and health clinics network. The Institutional Review Board approved this study as exempt from review. Mitigation strategies were implemented from 2016 to 2020. We compared mean quarterly exposures for prepandemic (quarter [Q] 1, 2015–Q1, 2020) and pandemic periods (Q2, 2020–Q4, 2021) using an analysis of variance (ANOVA) model and adjusting for underlying downward trends and variable hospital census during the improvement period.

## RESULTS

A total of 1,015 incidents were reported (2015–2021). Figure 1 shows incidents (rate/1,000 visits) and time line of mitigation measures. Of these reported incidents, 755 (74.4%) were sharps injuries; 8 (0.8%) were burns or bites. Trainees (residents and fellows) and nurses represented 63.3% of all incidents, at 319 and 323, respectively. Fewer total incidents were reported during the pandemic vs. prepandemic period (24.3/Q [standard deviation (SD) 3.2]

vs. 40.2 incidents/Q [SD 6.5]), but this was not significant after adjusting for hospital census and downward trends (0.82 [SD 0.11] vs. 1.33 [SD 0.25], adjusted difference = -0.11 [95% CI -0.33 to 0.11],  $p=0.32$ ). Injuries reported by trainees also showed no significant difference (0.20 [SD 0.10] vs. 0.44 [SD 0.16], adjusted difference = 0.04 [95% CI -0.11 to 0.18],  $p=0.61$ ). However, injuries reported by nurses showed a significant, though small, reduction (0.26 [SD 0.05] vs. 0.42 [SD 0.10], adjusted difference = -0.12 [95% CI -0.25 to 0.002],  $p=0.05$ ) after instituting the strict PPE policies.

Splash incidents totaled 252 (24.8%), most of which were reported by nurses and trainees, at 118 (46.8%) and 60 (23.8%), respectively. Fewer splash incidents were reported during the pandemic vs. prepandemic period (4.3/Q [SD 2.3] vs. 10.5/Q [SD 3.5]), but this was not significant after adjusting for hospital census and downward trends (0.14 [SD 0.08] vs. 0.35 [SD 0.12], adjusted difference = -0.12 [95% CI -0.26 to 0.02],  $p=0.09$ ). Of the 225 incidents, 207 (82.1%) may have been prevented if current PPE recommendations were followed. During the pandemic, 30 splash incidents were reported; of these, 22 (73.3%) facial exposures may have been prevented if current pandemic PPE recommendations were followed.

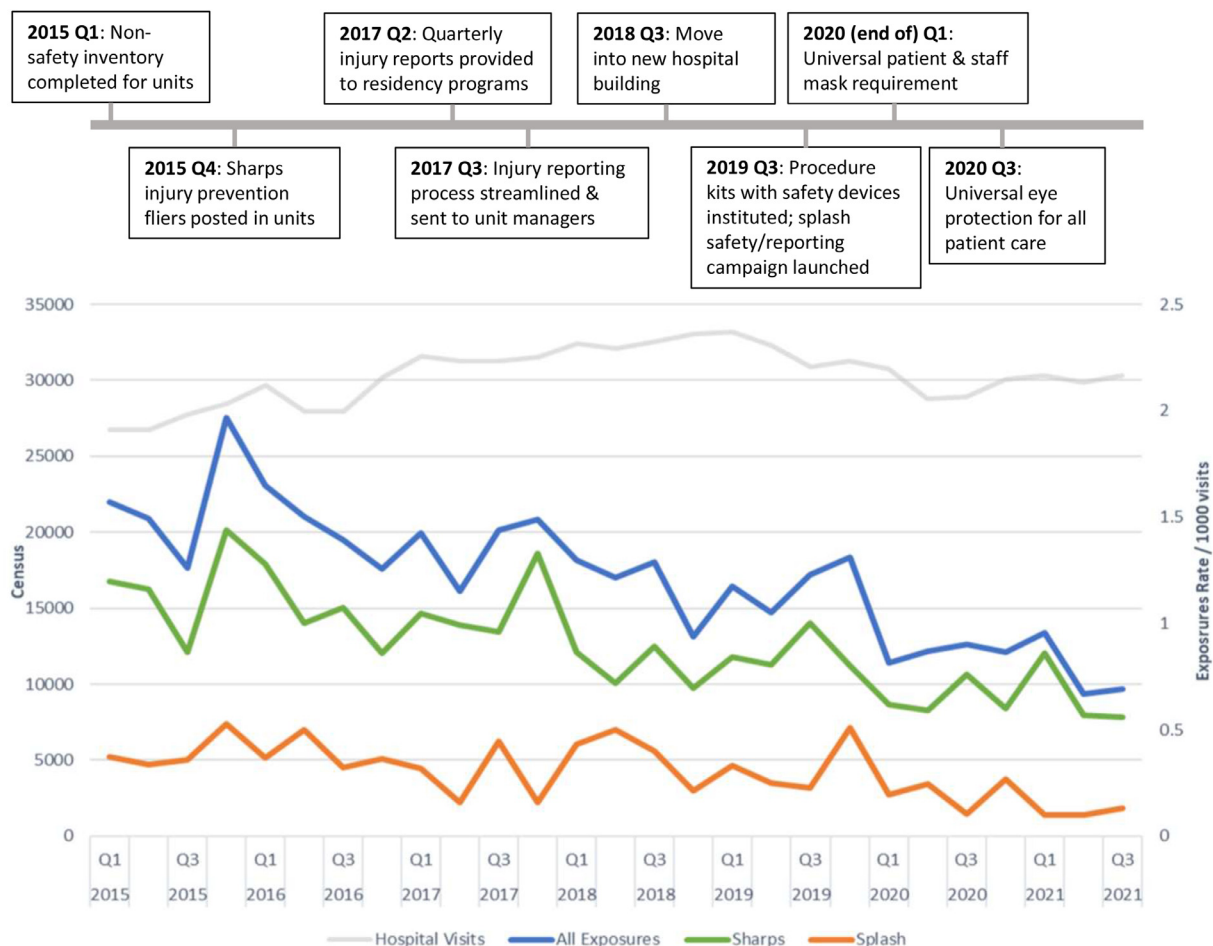
A total of 162 (64.3%) splashes occurred during a procedure. Adherence to current PPE recommendations when performing procedures may have prevented 149 (92.0%) of those incidents. Sixty-eight (27.0%) splashes occurred during nonprocedural patient care activities.

## DISCUSSION

We report the results of a health system's injury mitigation program and observed a downward trend in sharps injuries and splash exposures during the improvement period through our different mitigation measures. We had expected to see further injury reduction after instituting stricter PPE recommendations during the pandemic period, and although we continued to see a downward trend this was not statistically significant after adjusting for the variable hospital census. However, we did see a small but significant reduction in nursing injuries after implementing the stricter PPE policies, possibly because nurses were more likely to sustain splash injuries. Splash incidents may have been further reduced by adherence to the current PPE recommendations.

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**Figure 1:** Shown here is a time line of mitigation measures and the incidents (rate/1,000 visits) of sharps injuries and splash incidents. Q, quarter. Sharps Injuries and Splash Incidents and Time Line of Mitigation Measures

Many splash incidents occurred during procedural activities, but more than 25% occurred during nonprocedural patient care activities that routinely would not have required PPE use, such as handling patients, clearing belongings, or transporting body fluids. In high-risk areas such as the emergency department or institutions in which the patient population may have a significant prevalence of a transmissible blood-borne infectious disease, we would recommend continuing eye protection and face mask use for patient care activities.

Our study is limited by generalizability, as it was conducted in a single health care system. The pandemic resulted in a month of limited operating room capacity and constantly changing hospital policies. There may also be underreporting of injuries, which we were not able to capture.

## CONCLUSION

Universal masking and eye protection for all patient encounters during the pandemic did not significantly reduce overall splash injuries, primarily because of a preexisting trend toward lower injury rates over the improvement pe-

riod and suboptimal adherence to current PPE policies. We did see a significant reduction in injuries reported by nurses, who reported almost half of all splash incidents. Nonprocedural patient care activities are a potential source of injury in which PPE is traditionally not worn. Continuous improvement with feedback to clinical areas about high-risk activities can help to cultivate a safer working environment.

**Conflicts of Interest.** All authors report no conflicts of interest.

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