

## Abstract:

## ***Effect of Implementing Safety-Engineered Devices on Percutaneous Injury Epidemiology***

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**OBJECTIVE:** To assess the effect of implementing safety-engineered devices on percutaneous injury epidemiology, specifically on percutaneous injuries associated with a higher risk of blood-borne pathogen exposure.

**DESIGN:** Before-and-after intervention trial comparing 3-year preintervention (1998–2000) and 1-year postintervention (2001–2002) periods. Percutaneous injury data have been entered prospectively into CDC NaSH software since 1998.

**SETTING:** A 427-bed, tertiary-care hospital in Manhattan.

**PARTICIPANTS:** All employees who reported percutaneous injuries during the study period.

**INTERVENTION:** A “safer-needle system,” composed of a variety of safety-engineered devices to allow for needle-safe IV delivery, blood collection, IV insertion, and intramuscular and subcutaneous injection, was implemented in February 2001.

**RESULTS:** The mean annual incidence of percutaneous injuries decreased from 34.08 per 1,000 full-time–equivalent employees preintervention to 14.25 postintervention ( $P < .001$ ). Reductions in the average monthly number of percutaneous injuries resulting from both low-risk ( $P < .01$ ) and high-risk ( $P$  was not significant) activities were observed. Nurses experienced the greatest decrease (74.5%,  $P < .001$ ), followed by ancillary staff (61.5%,  $P = .03$ ). Significant rate reductions were observed for the following activities:

manipulating patients or sharps (83.5%,  $P < .001$ ), collisions or contact with sharps (73.0%,  $P = .01$ ), disposal-related injuries (21.41%,  $P = .001$ ), and catheter insertions (88.2%,  $P < .001$ ). Injury rates involving hollow-bore needles also decreased (70.6%,  $P < .001$ ).

**CONCLUSIONS:** The implementation of safety-engineered devices reduced percutaneous injury rates across occupations, activities, times of injury, and devices. Moreover, intervention impact was observed when stratified by risk for blood-borne pathogen transmission. □

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