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.


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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