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EPINet™ Report:

PERCUTANEOUS INJURIES IN PEDIATRIC HEALTH CARE WORKERS

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WHILE THE RISK OF PERCUTANEOUS INJURIES in health care workers has been well documented,^{1,2} relatively little attention has been focused on needlestick injuries occurring in pediatric health care workers. Pediatricians have been considered to be at low risk of exposure to bloodborne pathogens when compared to surgeons or anesthesiologists.³ Yet, difficulties in using gloves which may discourage their use, and the challenge involved in controlling a child while administering care, may actually place pediatric health care workers at considerable risk of exposure to bloodborne pathogens.³ Furthermore, the spread of HIV among the heterosexual population also puts pediatric health care workers at increased risk. During a one-year period, 1,500-2,000 infants infected with HIV were born in the U.S.⁴

We studied sharp-object injuries recorded in the Exposure Prevention Information Network (EPINet) database for the University of Virginia (U.Va.) Medical Center from August 1992 through August 1995. EPINet is a standardized system for recording percutaneous injuries and blood and body fluid exposures.

Of the 3,813 health care workers at U.Va. at risk for needlestick injuries, 346 (9%) provide care to children. During the study there were 1,146 sharp-object inju-

ries, with 96 (8%) sustained by persons caring for children.

Injuries to pediatric health care workers occurred more often in patient rooms and critical care units, in contrast with injuries to non-pediatric workers which occurred more often during surgical procedures [see Table 1, page 3].

The palmar side of the left hand was injured more often in pediatric providers, while the back of the left hand was injured more often in non-pediatric health care workers. Injuries to pediatric health care workers occurred more often after use of a sharp device or while withdrawing a needle from resistant material, such as a vacuum tube stopper or an intravenous port,

as compared to other health care workers who sustained percutaneous injuries more often between steps of a procedure [Table 1]. When injuries occurring in the operating room were excluded from these analyses, the differences remained significant.

After disposable syringes, the device causing the most injuries to pediatric health care workers was a winged steel (or butterfly) needle IV set (11/96 or 11%). This device was responsible for only 48/1050 (5%) of injuries to all other health care workers ($p=.01$). The winged steel needles causing injury were used most often to draw venous blood from pediatric (6/11 or 55%) and non-



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pediatric patients (34/48 or 71%). They were also used frequently to draw arterial blood (4/11 or 36%) in pediatric patients.

The mechanism of injury for winged steel needles was different in pediatric vs. non-pediatric health care workers. In 4/11 (36%) of the pediatric health care worker cases, the injury occurred while disposing of the needle. This was the mechanism of injury in only 1/48 (2%) of the cases involving all other health

ten used in pediatric units to prevent children from having access to the needles.

Most other winged steel needle injuries occurred after use but before disposal, in both pediatric (4/11 or 36%) and non-pediatric (20/48 or 42%) health care workers.

In other respects, sharps injuries occurring in pediatric health care workers were similar to those occurring in all other health care workers [see below]. Most of the injuries were sustained by nurses (51/96 or 53%) in patient rooms (46/96 or 48%) and were moderate in severity (58/96 or 60%). In most instances the source patient was known (89/96 or 93%), and the injured worker was the original user of the sharp object (71/96 or 74%), which was contaminated in 89/96 (93%) of the cases.

The results of this study lead us to make the following recommendations: (1) The design of needle disposal systems used in pediatric units should be modified so that the risk of needlestick injuries to health care workers is minimized.

(2) Needleless devices and protective devices on needles should always be used unless clinically contraindicated. (3) Health care workers should refrain from recapping needles and otherwise observe Universal Precautions.⁵

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Disposal of a butterfly needle in a wall-mounted disposal unit—a common hazard on pediatric units

care workers ($p=.003$).

Upon further investigation, we discovered that in pediatric units, needle disposal systems were often mounted on the walls [see photo] and underneath beds or bassinets, while in non-pediatric units disposal containers were placed on the floor.

These results suggest that there is an increased risk of percutaneous injuries from winged steel needles when wall- or bed-mounted disposal systems are used. Such units are of-

Table 1. Sharp-Object Injury Comparisons Between Pediatric Healthcare Workers and Other Healthcare Workers
(Three most frequently occurring categories; University of Virginia, 1992 – 1995)

	Pediatric Workers Number of Injuries = 96			Non-Pediatric Workers Number of Injuries = 1,050		
	Category	#	%	Category	#	%
Job Description	Nurse	51	53%	Nurse	459	44%
	Resident	15	16%	Resident	246	23%
	Attending Physician	7	7%	Attending Physician	79	8%
Place of Occurrence	Patient Room*	46	48%	Patient Room*	347	33%
	ICU/CCU*	19	20%	Operating Room*	306	29%
	Outside Patient Room	6	6%	Procedure Room	77	7%
Was the device contaminated?	Yes	89	93%	Yes	947	90%
	Unknown	6	6%	Unknown	88	8%
	No	1	1%	No	14	1%
For what purpose was the device originally used?	IV Injection into I.V. Port	21	22%	Suturing*	191	18%
	Drawing Blood*	20	21%	IV Injection into I.V. Port	173	16%
	Other	10	10%	Other	150	14%
When did the injury occur?	Other After Use*	35	36%	During use	306	29%
	During use	25	26%	Other After Use*	224	21%
	Resistant Material* †	10	10%	Between Steps*	170	16%
How severe was the injury?	Moderate	58	60%	Moderate	590	56%
	Superficial	36	38%	Superficial	401	38%
	Severe	2	2%	Severe	52	5%
What body part was injured?	Left Hand, Palm*	52	54%	Left Hand, Palm*	422	40%
	Right Hand, Palm	26	27%	Right Hand, Palm	262	25%
	Right Hand, Dorsum	10	10%	Left Hand, Dorsum*	155	15%

If there were more than three possible answers to a question, the table shows only the three most frequent categories.

* Indicates significant difference at $p < .05$ either by Chi Square or Fisher Exact Test between pediatric and non-pediatric workers for that item.

Note that the same items were not always in the top three categories for each group; therefore some items, such as suturing, only appear for one group of workers.

† Withdrawing needle from resistant material such as vacuum tube stopper or I.V. port.