

**Presentation Type:**

Poster Presentation - Poster Presentation

**Subject Category:** Occupational Health

**Occupational percutaneous injuries and exposures at a dental teaching institution from 2017 to 2023**

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**Background:** All dental professionals face the risk of occupational percutaneous injuries and exposures. Previous studies have reported high incidents of percutaneous injuries among dentists. This study examined injury data over six years at a large teaching institution for trends to increase awareness and to design appropriate interventions to reduce injury rates. **Method:** Study injury data was collected for the department of employee and occupational health. The data was entered into an electronic incident reporting system from 2017-2023. Statistical analysis was performed with Openepi to determine injury trend by year and overall association by activity type. **Result:** There was a total of 168 injuries reported between 2017 and 2023. A majority of the injuries (54%) were caused by a needle or sutures followed by instruments at 41%. Most of the injuries (44%) occurred during treatment and while cleaning the surgical spaces at 15%. Only 13% of the injuries were attributed to handling or recapping needles. Chi-square test 0.2618 ( $p > .05$ ) indicated there was no significant difference between years and number of injuries. Overall chi-square  $p < 0.001$  by activity type was significant indicating risk was not equal across all activities. **Conclusion:** Injuries declined during COVID-19 but soared back up in 2023. Needles, sutures, and instruments were the predominant source of injuries. Injuries occurred during treatment (43%), while cleaning the surgical space (15%) and while recapping or handling needles (13%). This study is the first step in understanding the trend and factors attributing to injuries to implement appropriate corrective actions. Further analysis should be conducted to identify specific procedures or clinical activities exposing employees to Occupational percutaneous injuries.

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Table 1. Injuries per activity type

Activity	# of injuries	# of injuries per 100,000 procedures	Chi square pvalue
During Treatment	73 (43%)	4.9	
Cleaning Operatory	26 (15%)	1.7	
Recapping/ Handling Needle	22 (13%)	1.5	
After Treatment	19(11%)	1.3	
Handling Cassettes/ Instruments	17 (10%)	1.1	
Before Treatment	2 (1.1%)	0.1	
Unidentified	9 (5.3%)	0.6	
<b>Total # of injuries injuries</b>	<b>168</b>		<b>&lt;0.001</b>

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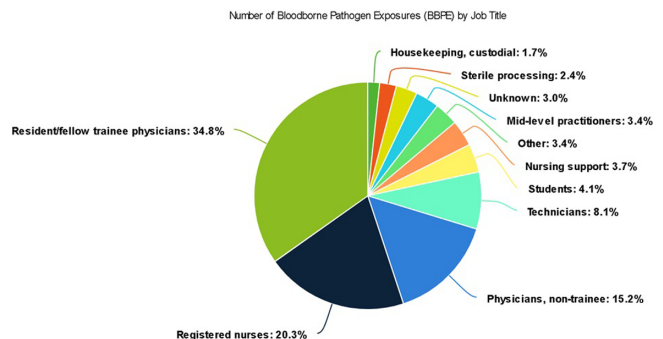
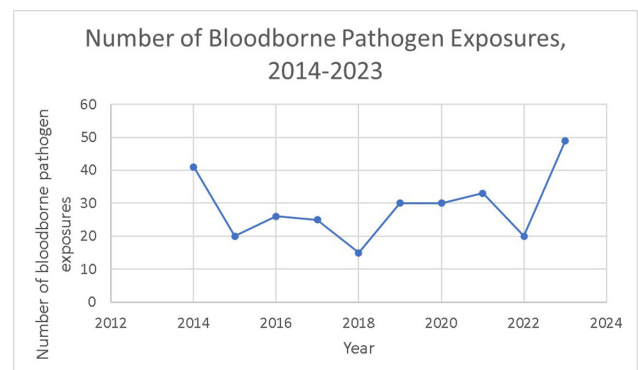
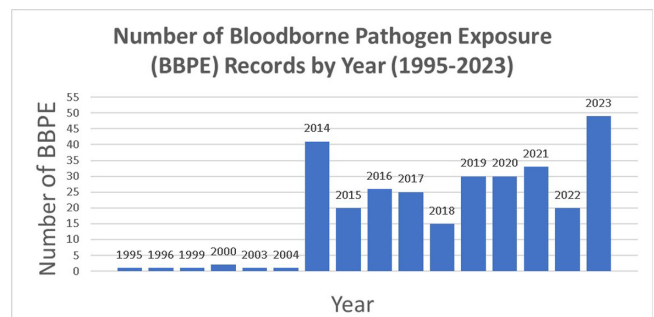
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**Characterization and Evaluation of a Government Health Center's Bloodborne Pathogen Exposures (BBPE) Monitoring Program**

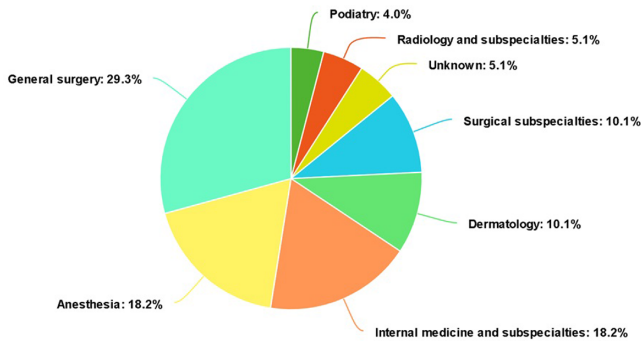
Abigail McDonald, Yale University Occupational and Environmental Medicine; Richard Smith, VA Connecticut and Efa James, VA Connecticut Healthcare

**Background:** A vital role of hospital employee health is the management, characterization, and targeted prevention of bloodborne pathogen

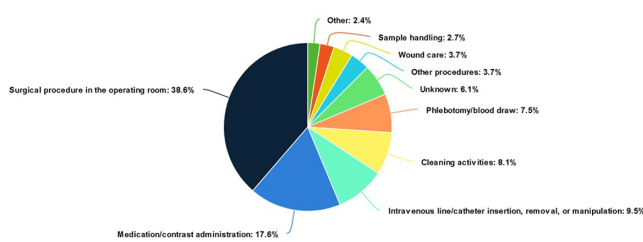
exposures (BPPE) among healthcare workers. A comprehensive review of a health center's BPPE over time was conducted to identify areas for improvement and target education and training, given changes in BPPE standard operating procedures (SOPs) over time. **Methods:** A retrospective descriptive analysis was conducted on deidentified BBPE cases reported to employee health at VA Connecticut Healthcare System from 1995-2023 (N=296) using R statistical software. **Results:** The highest number of BBPE occurred among trainee physicians (N=103, 34.8%, especially surgery and internal medicine), registered nurses (N=60, 20.3%), and non-trainee physicians (N=45, 15.2%). The most frequently implicated devices were hollow-bore (N=103, 34.8%) and suture needles (N=60, 20.3%). Most BBPE occurred during surgical procedures (N=114, 38.5%) or medication administration (N=52, 17.6%). Over half of BBPE occurred during afternoons/nights (N=172, 58.1%). Over half occurred with use of personal protective equipment (PPE) (N=181, 61.1%). The majority of BBPE implicated finger injuries (N=220, 74.3%). Blood was the most frequently reported exposure (N=127, 42.9%), a similar percentage of records did not specifically name a body fluid type (N=121) or whether PPE was used (N=110). In most cases, the source patient was identified (N=282, 95.3%) and tested



Number of Bloodborne Pathogens Among Trainee Physicians, N=103



Activities When Bloodborne Pathogen Exposures (BBPE) Occurred



(N=272, 91.9%). Forty-three sources (14.5%) had positive BBP testing, which included HIV (N=14, 4.7%), hepatitis C (N=23, 7.8%), and hepatitis B (N=6, 2.0%). Most employees presented to employee health for initial evaluation (N=231, 78%) and underwent post-exposure testing (N=266, 89.9%); most had evidence of immunity to hepatitis B (N=246, 83.1%). Eighty-three employees (28%) received HIV PEP (average=1.9 days). Most records did not indicate if this was a first-time BBPE (N=250, 84.5%). No employee records indicated seroconversion for a bloodborne pathogen. **Conclusions:** Physicians and RNs, those performing surgical procedures and administering medications, and those on second and third shifts are at highest risk and may benefit from additional interventions such as exposure assessment or education. Required recordkeeping has been variable over time. Updated national SOPs have been adapted to employee health, though additional details could be considered for quality improvement purposes, such as duration of employment, level of training, and prior BBPE prevention education. It is unclear if some information such as history of BBPE or PPE use was elicited but not documented – this information could be helpful in management of BBPEs.

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**Experience with Using Personal Protective Equipment among Korean Healthcare Personnel: For the Development of Better Products**

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**Background:** Although various difficulties and self-contamination concerns have been continuously reported regarding the use of personnel protective equipment (PPE) among healthcare personnel (HCP), better PPE

**Table 1. Demographic information of the participants (N=250)**

Category	n	%
<b>Gender</b>		
Male	49	19.6
Female	201	80.4
<b>Age</b>		
Twenties	75	30.0
Thirties	116	46.4
Forties	52	20.8
Fifties	5	2.0
Sixties	2	0.8
<b>Occupation</b>		
Physician	54	21.6
Resident	38	70.4
Hospitalist	11	20.4
Professor	5	9.3
Nurse	196	78.4
Clinical nurse	123	62.8
Charge nurse	12	6.1
Nursing manager	24	12.2
Nurse for dedicated work*	25	12.8
Nurse practitioner	12	6.1
<b>Current workplace</b>		
Tertiary hospital	87	34.8
General hospital	139	55.6
Hospital	7	2.8
Long-term care hospital	8	3.2
Primary hospital	2	0.8
District public health center	2	0.8
Other	5	2.0

Note, \* e.g., nurse educator.

options are unavailable in healthcare settings. This study aimed to thoroughly examine HCP's PPE experience to develop improved PPE. **Method:** By sending cooperation requests to eight academic societies (e.g., Korean Society of Infectious Disease, Korean Society of Critical Care Nursing), four hospitals (e.g., National Medical Center), and Korea Disease Control and Prevention Agency, 250 HCP who had direct patient contact with emerging infectious diseases were recruited. The questionnaire with 65 main questions (211 maximum including sub-questions and 19 open-ended questions) was developed in detail (e.g., use frequency, priority check among the options) based on literature reviews and verified by an expert panel. Through an online survey link, participants completed the questionnaire between December 6-11, 2023, and received a \$53 incentive. Descriptive statistics were performed for data analysis. **Results:** Among 250 participants, most were female (80%), in their thirties (46.4), nurses (78%), working at general hospitals (56%), and averaged 121.1 months of clinical experience (Table 1). Among 6 PPE sets (Figure 1), 29% of participants used Set #2 (i.e., disposable water-proof gown, gloves, goggles/face shield, hair cap, and N95 mask) and 26% used Set #3 (i.e., Level D, gloves, goggles/face shield, shoe cover, N95 mask, and hair cap). 64% of HCP preferred Set #2 due to practical aspects (e.g., simple, convenient, safer than Set #1, and easy donning/doffing). Most PPE sets were largely used for 30 minutes to 1 hour (except level D, to 2 hours). Most prioritized difficulties of PPE use were: disposable mask dampness; pressure pain on the wearing area for N95 masks; powered air purifying respirator (PAPR) wear takes a long time; sweating for gloves, waterproof gowns, and level D/C coveralls; skin exposed through torn gloves; blurry visibility for goggles/face shield; hearing difficulty for hoods; and a slippery