

Acceptance of HIV Post-Exposure Prophylaxis According to Occupation in the Hospital Setting

J Lane, C Moore, R Vogel, J Stephens

Citation

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Abstract

Exposure to HIV in the hospital setting is a major concern for health care workers (HCWs). As of June, 2001, 57 HCWs in the United States have acquired HIV through occupational exposure with greater than 100 suspected infections [1,2,3]. Post-exposure prophylaxis (PEP) is recommended after occupational exposure to HIV and routine protocols are established in most hospitals [4,5]. We retrospectively investigated both acceptance and compliance of PEP among all hospital employees exposed to blood and body fluids in a U.S. community teaching hospital (the Medical Center of Central Georgia, Macon, Georgia) over a two-year period.

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INTRODUCTION

Exposure to HIV in the hospital setting is a major concern for health care workers (HCWs). As of June, 2001, 57 HCWs in the United States have acquired HIV through occupational exposure with greater than 100 suspected infections [1,2,3]. Post-exposure prophylaxis (PEP) is recommended after occupational exposure to HIV and routine protocols are established in most hospitals [4,5]. Initiation of PEP is based on multiple factors including the type of exposure (needle, non-needle sharp, splash), HIV status of the exposure source, time between exposure and medical evaluation, medical history of both the source patient and the exposed employee, and side effects of medications. Not all hospital employees accept PEP when indicated and tolerability and side-effects limit compliance with this therapy [4].

METHODS

We retrospectively investigated both acceptance and compliance of PEP among all hospital employees exposed to blood and body fluids in a U.S. community teaching hospital (the Medical Center of Central Georgia, Macon, Georgia) over a two-year period. This facility is a 568 bed teaching hospital with level one trauma services that is affiliated with a local medical school. Occupational exposure management is regulated by employee health during regular business

hours and through the emergency department after hours. A definition of terms is as follows: compliance was defined as the use of medications as directed by the physician; noncompliance was defined as stopping medications prematurely; acceptance was defined as the patient agreeing to take the medications as instructed. A total of 364 occupational exposures were reviewed from our employee health database. Employees were grouped into one of seven occupational categories (Ancillary, Emergency department [physicians, nurses, technicians], Environmental services, Medical students, Nurses, Operating room, Physicians). Screening tests were performed via enzyme immunoassay and positive tests were confirmed by Western blot analysis. Data were analyzed by weighted least squares for categorical data via the SAS® CATMOD procedure [6]. Associations were detected between occupation and acceptance of PEP ($p < 0.0001$), occupation and acceptance of PEP based on the source status ($p < 0.0001$), and acceptance of PEP based on the source status ($p < 0.0001$). Associations were also analyzed as odds ratios based on Poisson Logit Model.

RESULTS

Among those starting PEP, 93% completed a three day course prior to confirmation that the source patient was HIV negative (due to side effects such as nausea and vomiting). The remaining 7% did not complete the three day course even when the source status was unknown. However, only 55% completed the full 28 day course of PEP needed for either HIV positive or source unknown exposures. Similar to

prior reports [7], our nursing staff had the highest absolute number of exposure to HIV as did environmental services staff. Overall, the majority of occupational categories exhibited similar acceptance rates for PEP; however, acceptance in the environmental services staff category was only 21% (Table 1). Furthermore, compliance with PEP in this group was only 5.3% overall and 0% with source unknown cases. All medical students exposed opted to initiate PEP and only one was noncompliant. Using physician staff as the reference group, medical students were more likely to be compliant than noncompliant or decline PEP than physicians regardless of HIV status (Table 2). However, environmental services staff were less likely to be compliant than physician staff regardless of HIV status (Table 2).

Figure 1

Table 1: Acceptance and compliance of PEP based on occupation.

Source	Occupation ^a	Compliant ^b	Noncompliance ^c	Declined ^d	Total
HIV negative	Ancillary	25	1	27	51
	Emergency	13	2	6	21
	Environmental	1	0	0	1
	Med students	6	0	0	6
	Nursing	72	4	65	141
	Operating	8	1	11	20
	Physicians	13	0	14	27
	Subtotal	116	8	123	267
HIV positive	Ancillary	1	0	1	2
	Emergency	0	0	0	0
	Environmental	0	0	0	0
	Med students	0	1	0	1
	Nursing	3	1	3	7
	Operating	1	0	0	1
	Physicians	3	5	0	8
	Subtotal	6	7	4	19
HIV unknown	Ancillary	3	4	12	19
	Emergency	0	0	5	5
	Environmental	0	3	15	18
	Med students	1	0	0	1
	Nursing	1	3	18	22
	Operating	0	1	7	8
	Physicians	0	0	5	5
	Subtotal	5	11	62	78
	Total	149	26	189	364

Figure 2

^aOccupation categories: Ancillary (laboratory staff, radiology staff, nursing students, other), Emergency department staff (nurses, technicians), Environmental staff (janitors, housekeeping staff, custodial personnel), Medical students, Nursing staff, Operating room staff, Physicians (attending, residents).
^bCompliance connotated by completion of either 3 day course pending source status or 28 day course.
^cNoncompliance connotated by incomplete course or late initiation of medications.

Figure 3

Table 2: Odds ratios for compliance to PEP protocol.

Occupation	Odds Ratio	Confidence Interval
Physician (reference)	1.00	-----
Medical Student	10.50	(1.18, 93.70)
Ancillary	0.90	(0.41, 1.99)
Emergency	1.50	(0.55, 4.06)
Environmental	0.10	(0.01, 0.83)
Nurse	1.21	(0.60, 2.45)
Operating Room	0.67	(0.25, 1.85)

DISCUSSION

Since the introduction of the United States Occupational Safety and Health Administration blood borne pathogens standard, occupational exposure to blood and body fluids has been a focus of hospitals and their employee health departments [8]. Exposure to HIV is of particular concern given the nature and severity of HIV infection. Transmission risk is low (approximately 0.3%) from parenteral occupational exposures but can be further decreased with PEP [2,5]. While the risk of occupational exposure is small, the consequences of transmission are severe. Thus, the implementation of efficient and effective reporting and management of occupational exposures is imperative.

The compliance of patients taking PEP in the present study was slightly higher than other published series; however, it still emphasizes that side effects lead to discontinuation in almost half of the cases [4]. Lack of compliance with PEP after HIV exposures is also related to low risk exposures such as splashes in addition to side effects of PEP.

The number of occupational exposures is likely underreported secondary to time constraints, lack of knowledge of the disease, confusing protocols, lack of understanding of infection risks and fear of potential discrimination. Post-exposure prophylaxis is routinely offered when clinically indicated according to the nature of the exposure. A correlation was found in our study between job category and acceptance and compliance with PEP. From this data, we suggest that more focused education be implemented for certain occupational categories, specifically environmental services. Additionally, future studies are needed to focus on other methods of improving PEP administration such as alternate regimens and implementation of safer medical devices in the medical setting [6].

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Author Information

Joshua E. Lane, M.D.

Division of Infectious Disease, Department of Internal Medicine, Mercer University School of Medicine, The Medical Center of Central Georgia

Christopher C. Moore, M.D.

Department of Internal Medicine, University of Virginia Health Sciences Center

Robert L. Vogel, Ph.D.

Department of Family Medicine, Mercer University School of Medicine, The Medical Center of Central Georgia

Jeffrey L. Stephens, M.D.

Division of Infectious Disease, Department of Internal Medicine, Mercer University School of Medicine, The Medical Center of Central Georgia