SHORT REPORT

Blood and body fluid exposures in the French military

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Background Occupational exposure to blood and body fluids (BBFs) is a hazard of many occupations, particularly hospital-based health care providers. However, non-hospital-based health care workers (HCWs) and other personnel not providing health care are also at risk.

Aims To present the results of surveillance of accidental exposure to BBFs among non-hospital-based French military personnel between 2007 and 2009, comparing different occupational categories.

Methods The study population included all French military personnel subjected to occupational BBF exposure in a non-hospital setting. BBF exposure was defined as any percutaneous (needlestick injury, scalpel cut, etc.) or mucocutaneous (splash to mucosa, eyes or non-intact skin) exposure to blood, a biological fluid contaminated with blood or a fluid known to transmit blood-borne pathogens.

Results Between 1 January 2007 and 31 December 2009, 704 occupational BBF exposures were reported in non-hospital-based French military personnel. Annualized BBF exposure incidence rates were statistically different among health care workers in non-hospital settings, firefighters, ‘gendarmes’ and other military personnel, with respectively 38.7, 5.4, 0.8 and 0.1 exposures per 1000 persons per year. Among the 97 cases of HIV post-exposure prophylaxis (PEP) initiated, the source patient’s HIV status was unknown in 78 cases (84%).

Conclusions These results suggest that the appropriateness of HIV PEP initiation in the French military should be reviewed. Adapting French guidelines for managing BBF exposure, for non-hospital-based environments should be considered.

Key words Blood; body fluid; military personnel; non-hospital-based; occupational exposure.

Introduction

Occupational exposure to blood and body fluids (BBFs) is a hazard of many occupations. Exposures in hospital-based health care workers (HCWs) are well described. In France, surveillance of BBF exposure in hospitals is performed by the Coordinating Centre for Nosocomial Infection Control (CCLIN), which reported 16 282 occupational BBF exposures in French health care settings in 2008 [1]. There are published studies for non-hospital-based occupations [2–5], but few concerning the military population. This paper presents the results of 3 years’ surveillance of BBF exposures in non-hospital-based French military personnel from 2007 to 2009, comparing exposures of HCWs in non-hospital settings, firefighters, ‘gendarmes’ and other military personnel.

Methods

Surveillance of occupational BBF exposures in the French military is performed by the French Army Health Service’s Department of Epidemiology and Public Health. The study population included all military personnel subjected to BBF exposure in a non-hospital setting in France, the French overseas departments and territories and foreign territories. The gendarmes, a branch of the French armed forces responsible for general law enforcement, as well as firefighters in Paris and Marseille, who have military status and also provide emergency medical care (first-aid, advanced life support, etc.), were included in the study population. In accordance with accepted definitions [6], BBF exposure was defined as any percutaneous (needlestick injury, scalpel cut, etc.) or mucocutaneous (splash to...
mucosa, eyes or non-intact skin) exposure to blood, biological fluid contaminated by blood or a fluid known to transmit blood-borne pathogens.

Data were recorded using Teleform® and analysed with Stata 9.0® statistical software using the chi-squared test for observed frequencies. Annualized incidence rates (IRs) were calculated using the cumulative number of persons in each occupational group employed in the French armed forces between 2007 and 2009. The comparison of specific IRs according to occupational category was performed using a Poisson regression model, and chi-squared tests were conducted to compare socio-demographic and epidemiological data.

**Results**

Between 1 January 2007 and 31 December 2009, 704 occupational BBF exposures were reported among non-hospital-based military personnel. Table 1 presents incidence,
Annualized BBF exposure IRs were significantly different among HCWs working in non-hospital settings, firefighters, gendarmes and other military personnel with respectively 38.7, 5.4, 0.8 and 0.1 exposures per 1000 persons per year. The RR of being exposed to BBFs on duty was 400 times higher for HCWs than other military personnel. Firefighters and gendarmes were at next highest risk, respectively.

All HCWs were reported as having been immunized against HBV, contrary to the rest of the study population (P < 0.001). Firefighters and gendarmes reported mainly splashes, whereas HCWs reported mainly needlestick injuries (62%, P < 0.001). More than 90% of firefighters and HCWs sought medical care within 48 h after exposure, whereas only 70% of gendarmes sought medical care within the same interval (P < 0.001). Nearly 70% of gendarmes were exposed to a source with unknown HIV status, compared to 41% of firefighters and 43% of HCWs. A majority of data on source patient’s HBV and HCV status were missing or unknown. HIV post-exposure prophylaxis (PEP) was initiated in compliance with a decision algorithm in use in France [7]. It was more frequently initiated among gendarmes (17%) and HCWs (15%) than among firefighters (4%) (P < 0.001). The source patient’s HIV status was unknown in 78 of 97 (84%) cases of HIV PEP initiation. No HIV, HBV or HCV transmissions related to occupational BBF exposure were reported to our surveillance system.

Discussion

Over the 3 years period studied, 704 occupational exposures to BBFs among non-hospital-based military personnel were reported to the military epidemiological surveillance system. Annualized BBF exposure IRs and the RR of being exposed were significantly higher among HCWs in non-hospital settings than in firefighters, gendarmes and other military personnel. This is expected from their health care activities.

With regard to law enforcement officers, the BBF exposure IR among gendarmes was not comparable to other studies. Merchant et al. [2] and Sonder et al. [3] both found IRs among police officers that were much higher than those of French gendarmes in this study (respectively 4 and 6.8 per 1000 versus 0.8 per 1000). Occupational BBF exposures in non-hospital-based military personnel are reported by military practitioners and thus are subject to potentially significant under-reporting, either because military practitioners under-report these events or because the exposed personnel tend to consult civilian physicians. Gendarmes are probably more likely to consult in civilian establishments since their workplace is often distant from a military medical centre. Such consultations are not reported to the military surveillance system. Distance may also explain the longer exposure/consultation interval for gendarmes in our results.

Paradoxically, gendarmes had a relatively high percentage of HIV PEP initiation (17%), comparable to HCWs, even though their reported exposures (mostly splashes) are considered lower risk in the literature [4]. This raises questions about the appropriateness of PEP prescription among this population.

Moreover, the source patient’s HIV status was unknown in a large majority of cases where HIV PEP was initiated. According to French guidelines [7], when the source’s HIV status is unknown, PEP is initiated in the event of a deep injury when the source belongs to a high-risk group. Kuruzum et al. [8] suggest that for an unknown source, the risk of transmission seems negligible. We were not able to evaluate the appropriateness of PEP utilization in our cohort, but it is likely that as described by Merchant et al. [9], treatment may have been prescribed inappropriately in some instances.

As in previous studies [2,5,9], our results suggest a need to review the appropriateness of HIV PEP initiation in the French military. Adapting French guidelines to non-hospital-based environments should be considered, especially among non-health care providers.

Key points

- Annualized blood and body fluid exposure incidence rates and relative risk of being exposed were significantly higher among health care workers in non-hospital settings than among firefighters, gendarmes and other military personnel.
- The source patient’s HIV status was unknown in a large majority of cases where HIV post-exposure prophylaxis was initiated.
- The appropriateness of HIV post-exposure prophylaxis initiation after occupational exposure to blood and body fluids in the French military should be reviewed. Adapting French guidelines to non-hospital-based environments should be considered, especially among non-health care providers.

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Conflicts of interest

None declared.

References