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Danger in the streets: exposures to bloodborne pathogens after community sharp injuries in Rio de Janeiro, Brazil



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ABSTRACT

Objective: Exposures to sharps injuries occurring in the community are relatively frequent. We describe characteristics of community sharp exposures reported in the city of Rio de Janeiro from 1997 to 2010.

Methods: A cross-sectional analysis of exposure reports to sharps in the community reported to a surveillance system, designed for health care workers, of the Municipal Health Department of Rio de Janeiro. The characteristics of exposed individuals analyzed included types of exposure, the circumstances of the accident, and the prophylaxis offered.

Results: 582 exposures were studied. Median age was 30 years and 83 (14%) involved children with less than 10 years of age. Two hundred and seventeen (37%) occurred with sharps found in the streets. The exposure was percutaneous in 515 (89%) and needles were involved in 406 (70%) of them. The sharps were present in the trash in 227 (39%) or in the environment in 167 (29%) of the reports. Professionals who work with frequent contact with domestic or urban waste were 196 (38%). The source was known in 112 (19%) of the exposures and blood was involved in 269 (46%). Only 101 (19%) of the injured subjects reported a complete course of vaccination for hepatitis B. Antiretroviral prophylaxis was prescribed for 392 (68%) of the exposed subjects.

Conclusions: Sharps injuries occurring in the community are an important health problem. A great proportion would be avoided if practices on how to dispose needles and sharps used outside health units were implemented.

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Introduction

The major concern following needlestick injuries is the acquisition of bloodborne infectious diseases particularly human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV).^{1,2} Although the viability of infectious particles in sharps decreases with time, bloodborne viruses can survive up to several weeks in the environment.³ Consequently, there is a growing concern about bloodborne virus transmission after community needlestick injuries (CA-NSI).⁴⁻⁶ CA-NSI create a very complex management challenge. Information about the moment of previous use of the sharp and the CA-NSI is frequently not available.

Additionally, as opposed to sharps injuries occurring in health care settings, reported experience with management of community incidents is scanty, the source of needles is usually unknown and postexposure prophylaxis (PEP) is rarely offered.

Recently, the number of subjects with acute or chronic diseases receiving home care has increased steadily.^{7,8} In addition to regular teams of HCW providing home care, family members are frequently responsible for injections and other invasive procedures at home.

Consequently, an increased risk of exposure to blood among these non-health care workers, not aware of universal safety precautions, is expected. In addition, exposure to potentially contaminated needles happens in the streets, beaches or yards and often involve children.⁹ Several of these exposures have been reported in areas with high prevalence of illicit drug use.^{9,10} Occasionally, community-acquired needlestick injuries may occur during deliberate use of needles and syringes with fresh blood as a weapon.¹¹

The risk of acquiring an infection following a CA-NSI is unknown and only a small number of case reports of infections have been described.¹² Strategies to reduce CA-NSI associated infections include the use of devices with minimal residual fluid in discarded needles (e.g. low dead-space syringes), syringe exchange programs, and access to safe needle disposal systems.¹³

A surveillance system of occupational exposure to bloodborne pathogens among healthcare workers (HCW) has been implemented in Rio de Janeiro, Brazil, since 1997.¹⁴ Nevertheless, no specific monitoring system for CA-NSI is in use. Frequently, CA-NSI is reported to the municipality health system through the cited surveillance system. This study was planned to describe circumstances related to exposures to bloodborne pathogens after community-acquired needlestick injuries in Rio de Janeiro (Brazil) reported to this surveillance system from 1997 to 2010.

Methods

This was a cross-sectional analysis of reports of potential exposures to bloodborne pathogens among children, family members, and non-healthcare workers. Data were collected in a validated form from all reports of exposures to bloodborne pathogens in these subjects sent to the STD/AIDS Program of Rio de Janeiro City Health Department (RJCHD) in a period of 14 years (1997-2010).¹⁵ Variables collected included: sex,

age, place of occurrence, type of exposure, serologic status of source, circumstances of the exposure, blood or other body fluids involved, hepatitis B vaccination status of the exposed subject, and use of postexposures prophylaxis (immunoglobulin, hepatitis B vaccine and antiretroviral drugs). Univariate analyses were performed using chi-square or Fisher exact test for categorical variables, and Student t test or Wilcoxon test for continuous variables. Odds ratios (OR) and 95% CIs were determined. All reported p-values are 2-sided.

The institutional review boards of the Hospital Universitário Clementino Fraga Filho/School of Medicine of the Universidade Federal do Rio de Janeiro and of the Rio de Janeiro City Health Department (RJCHD) approved the study protocol.

Results

Study sample

Five-hundred and eighty two exposures to blood and body fluids in the community were reported to RJCHD from January 1997 to December 2010. Table 1 shows demographic information of the study sample.

Three-hundred sixty-seven (63%) subjects were male. Median age was 30 years and ranged from 3 to 75 years. Eighty-three (14%) subjects were younger than 10 years of age and 68 (12%) were between 10 and 20 years old. Three-hundred twenty nine subjects (57%) were between 21 and 39 years and 102 (17%) were 40 or more years. Occupational information was available for 512 (88%) of the subjects. One-hundred and ninety six (38%) of these subjects worked in settings where frequent contact with domestic or urban waste was present (garbage collectors, cleaners, house keepers, and doorkeepers).

Previous hepatitis B vaccination information was available for 532 (91%) of the exposed individuals. A hundred and one (19%) subjects reported a complete course of vaccination for

Table 1 – Main characteristics of 582 subjects involved in community sharp injuries in Rio de Janeiro city (Brazil) from 1997 to 2010.

Main characteristics	n (%)
Male gender	367 (63%)
Female gender	215 (37%)
Median age in years (range)	30 (30-75)
Subjects by age categories	
<10 years	83 (14%)
10-20 years	68 (12%)
21-39 years	329 (57%)
>39 years	102 (17%)
Occupation	
Garbage collector	93 (16%)
Student	92 (16%)
Janitor	70 (12%)
Housekeeping	19 (3%)
Police officer	18 (3%)
Doorkeeper	14 (2%)
Others	206 (36%)
Not informed	70 (12%)

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