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# ACCIDENTS WITH POTENTIALLY HAZARDOUS BIOLOGICAL MATERIAL AMONG WORKERS IN HOSPITAL SUPPORTING SERVICES

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*Descriptive study was carried out to characterize the occupational accidents involving potentially contaminated material among workers of hospital supporting services. The study reviewed records of workers involved in these accidents and attended at a specialized outpatient clinic of a large tertiary care hospital between January 1997 and October 2001. A total of 2814 workers from different professional categories were attended during this period. Of these, 147 (5.2%) belonged to the hospital supporting services and were the victims of 156 accidents, auxiliary cleaning personnel (80.2%), and over a third of the workers had not received any dose of hepatitis B vaccine (35.4%). Most accidents were due to sharp injuries (96.8%) caused by inadequately discarded hollow needles. Chemoprophylaxis for HIV was not indicated in only 23.1% of cases. We conclude that these workers are also exposed to the possibility of acquiring blood-borne pathogens and that periodical education programs are needed.*

*DESCRIPTORS: accidents, occupational; blood-borne pathogens; support services; hospital*

## ACCIDENTES CON MATERIAL BIOLÓGICO ENTRE TRABAJADORES DE SERVICIOS DE APOYO HOSPITALARIO

*Estudio descriptivo fue caracterizar los accidentes ocupacionales con material potencialmente contaminado y los trabajadores de los Servicios de Apoyo Hospitalario. El estudio revisó los datos de los trabajadores involucrados en estos accidentes y atendidos en un ambulatorio especializado de un grande hospital terciario, en el periodo de enero de 1997 a octubre de 2001. Fueron atendidos en este periodo 2.814 trabajadores de diversas categorías profesionales. De estos, 147 (5,2%) pertenecían al Servicio de Apoyo y registraron 156 accidentes. La categoría más atingida fue auxiliar de limpieza (80,2%). La mayoría de los trabajadores no había recibido ninguna dosis de la vacuna contra hepatitis B (35,4%). La mayoría de los accidentes fue corto-punzante (96,8%) ocasionados por agujas ocas descartadas en local impropio. La quimioprofilaxis no fue indicada apenas en el 23,1% de los casos. Se concluye que estos profesionales también están sujetos a la contaminación por patógenos vehiculados por el sangre. Son necesarios programas educativos específicos para estos trabajadores, con énfasis el los aspectos preventivos.*

*DESCRIPTORES: accidentes de trabajo; patógenos de residuos de sangre; servicios hospitalarios de apoyo*

## ACIDENTES COM MATERIAL BIOLÓGICO ENTRE TRABALHADORES DOS SERVIÇOS DE APOIO HOSPITALAR

*Estudo descritivo objetivou caracterizar os acidentes ocupacionais envolvendo material potencialmente contaminado e os trabalhadores dos serviços de Apoio Hospitalar. O estudo revisou dados de trabalhadores envolvidos nestes acidentes e atendidos num ambulatório especializado de um hospital terciário de grande porte, no período de janeiro de 1997 a outubro de 2001. Neste período foram atendidos 2814 trabalhadores de diversas categorias profissionais, sendo que destes 147 (5,2%) pertenciam aos Serviços de Apoio e registraram 156 acidentes. A categoria mais atingida foi auxiliar de limpeza (80,2%), e um terço dos trabalhadores não havia recebido nenhuma dose da vacina contra hepatite B (35,4%). A maioria dos acidentes foi perfurocortante (96,8%), ocasionados por agulhas ocas descartadas em local impróprio. A quimioprofilaxia não foi indicada em apenas 23,1% dos casos. Conclui-se que estes profissionais também estão sujeitos a adquirirem patógenos veiculados pelo sangue e programas educacionais periódicos são necessários.*

*DESCRITORES: acidentes de trabalho; patógenos de resíduos de sangue; serviços hospitalares de apoio*

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## BACKGROUND

Different investigations have been conducted on occupational accidents with biological material among health care workers, showing that the workers most exposed to this type of accident are those who directly care for patients[1-4].

In our professional practice, we have observed that other worker categories not involved in direct contact with patients or body fluids have been the victims of accidents, among them the cleaning, laundry, maintenance, and trash collection teams.

It was after the description of the first case of acquisition of human immunodeficiency virus (HIV)[5] that more emphasis started to be placed on preventive measures against infection with blood-borne pathogens, today denoted standard precautions. Standard Precautions[6] synthesize the major features of body substance isolation and universal precautions[7] to prevent transmission of a variety of organisms, apply to blood, all body fluids, secretions, excretions except sweat, regardless of whether or not they contain visible blood.

General preventive measures recommend the use of individual protective equipment such as gloves, masks, eye protectors, and gowns when contact with blood or body fluids is foreseen, as well as the careful manipulation of needles and sharp objects and handwashing. The gloves are recommended when touching blood, body fluids, secretions, excretions and contaminated items. The use of mask, eye protection, face shield to protect mucous membranes of the eyes, nose, and mouth during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, secretions and excretions. Gowns are indicated to protect skin and to prevent soiling of clothing during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, or excretions[6-7].

Among specific measures for the prevention of acquisition of blood-borne pathogens, only a vaccine against hepatitis B is available for the prevention of acquisition of blood-borne pathogens, with 90 a 95% efficacy. Hepatitis B immune globulin (HBIG) is recommended when a healthcare worker (HCW), who didn't received the vaccine or has not responded to it, has been exposed to a source patient. Hepatitis B vaccine also should be initiated when the HCW has not received the vaccine or has not responded to it[8].

Regarding exposure to HIV, chemoprophilaxis is recommended when the exposure to HIV is estimated to be high risk and involves a source patient with positive or unknown serology[9].

As far as hepatitis C (HCV) is concerned, the only preventive measures are limited to the use standard precautions, prevention of cutaneous and mucosal exposure and/or protection against needlestick injuries. To date, there is no vaccine for the prevention of this infection[10].

The number of accidents with potentially contaminated material is lower among workers of hospital support services than among professionals providing direct care to the patients. The accidents involving support personnel, however, are a source of concern because in many situations it is not possible to identify the source patient.

Although the current recommendation of the Center for Disease Control (CDC)[11] is not to institute prophylaxis against HIV in cases of accidents with biological material from unknown source, we cannot neglect the risk of infection with hepatitis C virus.

Studies showing the benefits of educational programs in terms of reduction of accidents with biological material are directed almost exclusively at health care workers who have direct patient care[12-13]. In addition, the scarcity of data about this type of accident among workers of hospital support services motivated us to conduct the present study.

## OBJECTIVE

The objective of this study was to characterize the occupational accidents involving potentially contaminated material among workers of hospital support services attended at a large university - affiliated tertiary care hospital in Sao Paulo, Brazil, during the period between January 1997 and October 2001.

## METHODS

This descriptive, retrospective study was conducted in a specialized outpatient clinic for health care workers who suffer occupational accidents with potentially contaminated biological material. The clinic which started its activities in a systematic manner in January 1997, provides 24 hour medical and nursing

care seven days a week. The clinic offers chemoprophilaxis against HIV and HBV, evaluation of risk for hepatitis C, as well as serologic exams for the victims of accidents and the source patients.

All workers of hospital support services who received care at the clinic from January 1997 to October 2001 were included in the study.

Data were obtained from medical charts of all workers in hospital support services who received care at the clinic following exposure to potentially infections material between January 1997 and October 2001.The data were analyzed with EPI-Info 6.0 software. The project was approved by the Committee of Ethical in Research of Ribeirão Preto Medicine College Clinical Hospital.

## RESULTS AND DISCUSSION

A total of 2,814 exposures to potentially hazardous material involving categories of hospital personnel were recorded with 156 (5.5%) occurring in hospital support services. Some of these exposures occurred in the same workers, providing a total of 147 workers who had exposure to potentially hazardous materials during the study period.

The characteristics of these 147 workers (Table 1) were: 116 (78.9%) were females and 31 (21.1%) were males, 82 (55.8%) were 20 to 40 years old, and 61 (41.5%) had been on the job for 1 to 10 years. The functional category that suffered the highest number of accidents was cleaning aide, with 118 workers (80.2%), followed by laundry aide, 17 (11.6%), garbage collectors, 5 (3.4%) and maintenance aides, 7 (4.8%).

General studies of accidents with sharp objects among health care workers have demonstrated an incidence of 3.3 and 5.2% among cleaning sector workers[13-15], whereas others specifically conducted on hospital support workers have reported that most accidents involving sharp objects occurred among cleaning workers (65.7%)[15].

An outstanding result was that only 52 (35.4%) workers had a complete scheme of vaccination against hepatitis B, 32 (21.7%) had in incomplete scheme, 52 (35.4%) had not received any dose of the vaccine, and 11 (7.5%) could not provide information. The workers who had not received any vaccine dose or had in incomplete scheme were vaccinated on the occasion of the occurrence of the accident.

These data indicate the need to extend both educational programs and campaigns stimulating the adhesion to vaccination against hepatitis B to workers of the hospital support services.

Table 1 - Characterization of workers of the hospital support services who were victims of accidents with biological material, January 1997 - October 2001, Brazil

| Characteristics | Nº | % |
|---|---|---|
| **Gender** | | |
| Male | 31 | 21.1 |
| Female | 116 | 78.9 |
| **Age (years)** | | |
| < 20 | 04 | 2.7 |
| 20 to 40 | 82 | 55.8 |
| 41 to 60 | 59 | 40.1 |
| > 60 | 02 | 1.4 |
| **Time on the job (years)** | | |
| < 1 | 36 | 24.5 |
| 1 to 10 | 61 | 41.5 |
| 11 to 30 | 26 | 17.7 |
| Not reported | 24 | 16.3 |
| **Functional category** | | |
| Cleaning aide | 118 | 80.2 |
| Laundry aide | 17 | 11.6 |
| Garbage collector | 05 | 3.4 |
| Maintenance aide | 07 | 4.8 |
| **Vaccination status against hepatitis B** | | |
| Complete | 52 | 35.4 |
| Incomplete | 32 | 21.7 |
| No dose | 52 | 35.4 |
| Does not know | 11 | 7.5 |

Characterization of the 156 accidents (Table 2) showed that 151 (96.8%) involved sharp objects and 5 (3.2%) involved cutaneous-mucosal exposure. The body part most frequently involved was the hand 120 (76.9%).

Table 2 - Type of exposure to potentially contaminated material by hospital support service workers, January 1997 - October 2001, Brazil

| Characteristics | Nº | % |
|---|---|---|
| **Type of exposure** | | |
| Sharp objects | 151 | 96.8 |
| Cutaneous-mucosal | 05 | 3.2 |
| **Affected area** | | |
| Hand | 120 | 76.9 |
| Leg | 17 | 10.9 |
| Foot | 07 | 4.5 |
| Not reported | 12 | 7.7 |
| **Object** | | |
| Hollow needle | 125 | 80.1 |
| Surgical knife | 07 | 4.5 |
| Glass | 06 | 3.9 |
| Others | 18 | 11.5 |
| **Location of the object** | | |
| Common garbage | 80 | 51.3 |
| Floor | 25 | 16.0 |
| Laundry bag | 18 | 11.5 |
| Others | 30 | 19.2 |
| **Source patient** | | |
| Know | 08 | 5.1 |
| Unknow | 148 | 94.9 |

The objects most frequently involved in the accidents were hollow needles (125, 80.1%). With respect to the location of the object that caused the accident, 80 (51.3%) where in common garbage, 25 (16.0%) on the floor, 18 (11.5%) in dirty laundry bags, and 30 (19.2%) at other sites. In most cases it was not possible to identify the source patient (148, 94.9%). Analysis of the sites were sharp objects were found showed that 78.8% were discarted or left in inappropriate places, probably by professional involved in direct patient care.

A similar study reported that most accidents with sharp objects involving cleaning sector workers was due to improper disposal of the objects in 54.7% of all accidents[15].

Table 3 lists the data concerning the chemoprophylaxis conduct adopted for HIV. In 36 cases (23.1%) no measure was adopted, in 105 (67.3%) chemoprophylaxis with two drugs was recommended, and in 15 (9.6%) chemoprophylaxis with three drugs was recommended.

Table 3 - Distribution of workers of hospital support services who suffered accidents with potentially contaminated material according to chemoprophylaxis conduct, January 1997 - October 2001, Brazil

| Chemoprophylaxis against HIV | Nº | % |
|---|---|---|
| None | 36 | 23.1 |
| 2 drugs | 105 | 67.3 |
| 3 drugs | 15 | 9.6 |
| Total | 156 | 100.0 |

We observed that most accidents were considered to involve a high risk, requiring chemoprophylaxis. In addition, in 94.9% of cases the source patient was not identified, further aggravating the situations of the workers involved in the accidents. These workers were followed up for one year, a period during which no seroconversion for HIV or hepatitis B or C was observed.

During follow-up the victims of accidents, 21 workers presented side effects due to the use of antiretroviral drugs. The most frequent side effects were nausea and vomiting, reported by 13 workers, followed by headache, fatigue, somnolence, and loss of appetite. Because of the side effects, 9 workers interrupted chemoprophylaxis on their own and abandoned follow-up.

## CONCLUSION

Although no case of seroconversion was observed in the present study, employees of hospital support services are at risk to acquire bloodborne pathogens since most accidents involved hollow needles from unknown source patients. This implies the use of chemoprophylaxis against HIV, which in turn increases the cost of attending the victims and possibly causes leaves from work due to the possible side effects.

Most accidents were caused by hollow needles discarded in inappropriate places, demonstrating the carelessness of health care professionals regarding their own safety and the safety of professionals from other areas, who should theoretically be less exposed to these accidents.

Thus, we believe that, in addition to reinforcing the questions of adequate disposal among health care workers, we must develop specific educational programs involving prevent measures, including the necessity of vaccination against hepatitis B, directed at workers of hospital support services.

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