

# HIV and the nursing professional in face of needlestick accidents

O HIV E O TRABALHADOR DE ENFERMAGEM FRENTE AO ACIDENTE COM MATERIAL PERFUROCORTANTE

EL VIH Y EL TRABAJADOR DE ENFERMERÍA FRENTE A ACCIDENTES CON MATERIAL PUNZOCORTANTE

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## ABSTRACT

The goal of this study was to identify the scientific production about work-related needlestick accidents among nursing professionals involving HIV-contaminated biological material, as well as to characterize the pre-existing factors to such accidents, such as procedures occurring after the exposure to potentially HIV-contaminated needlestick material. This is a literature review, whose bibliographic search for keywords was carried out within the LILACS databases from the year 2000 onward. This study confirms that pre-existing factors for the occurrence of work-related needlestick accidents are related to *work conditions* as much as to *individual conditions*. In face of these accidents, the nursing workers need to know the conducts concerning post-exposure to potentially HIV-contaminated needlestick material. We conclude that the adoption of standardized precautions when working in healthcare is a fundamental condition for worker safety, independently of their area of expertise, given the increasing number of HIV cases.

## KEY WORDS

Nursing.  
Occupational risks.  
HIV.  
Accidents, occupational.  
Occupational health.

## RESUMO

O estudo tem como objetivo identificar a produção científica sobre o acidente de trabalho do profissional de enfermagem com material biológico contaminado por HIV e caracterizar os fatores predisponentes aos acidentes de trabalho, assim como os procedimentos realizados pós-exposição ao material perfurocortante potencialmente contaminado pelo HIV. É uma revisão de literatura, cuja busca bibliográfica por palavras-chave foi realizada por meio da base de dados LILACS a partir de 2000. Constatou-se que os fatores predisponentes à ocorrência dos acidentes de trabalho com perfurocortantes estão relacionados tanto às *condições de trabalho*, como as *condições individuais*. Frente a estes acidentes, os trabalhadores de enfermagem têm necessidade de conhecer as condutas pós-exposição ao material perfurocortante potencialmente contaminado pelo HIV. Concluímos que a adoção das precauções-padrão no trabalho em saúde é condição fundamental para a segurança dos trabalhadores, independente da área de atuação, pois o número de casos de HIV é crescente.

## DESCRIPTORES

Enfermagem.  
Riscos ocupacionais.  
HIV.  
Acidentes de trabalho.  
Saúde do trabalhador.

## RESUMEN

El estudio tiene como objetivo identificar la producción científica sobre accidentes de trabajo de profesionales de enfermería con material biológico contaminado por VIH y determinar las características de los factores que los favorecen, así como los procedimientos realizados posteriores al accidente con material punzocortante potencialmente contaminado por VIH. Revisión bibliográfica a través de palabras claves en la base de datos LILACS a partir del año 2000. Se constató que los factores que predisponen estos accidentes de trabajo se relacionan tanto con las *condiciones de trabajo* como con las *condiciones individuales*. Es necesario que los trabajadores de salud conozcan las conductas en casos de accidente punzocortante por VIH. Concluimos que la adopción de medidas patrón es una condición fundamental para la seguridad de los trabajadores, independientemente del área de trabajo, pues el número de casos con VIH esta en aumento.

## DESCRIPTORES

Enfermería.  
Riesgos laborales.  
VIH.  
Accidentes de trabajo.  
Salud laboral.

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## INTRODUCTION

Interest in this theme stems from the existence of several risks at the workplace, which can affect the workers' health and physical integrity. In this study, we focus especially on biological risks, since needlestick accidents with material that is potentially contaminated by HIV are the most common accidents among Nursing workers. Various prevention forms have been adopted, whose focus varies over time.

The adoption of adequate techniques and models, as well as the practice of effective hygiene and occupational safety measures eliminate or minimize occupational risks<sup>(1)</sup>. These biological risk prevention and control measures are based on several types of knowledge, involving hygiene, occupational biosafety, as well as education, management, engineering and even legislative resources.

For the evaluation of occupational hazards, we highlight that a preventive course of action should be created, considering that occupational health problems are absolutely preventable, provided that standard precautions are adopted. However, over time, the adoption of these precautions in professional activities has been a challenge for Nursing<sup>(1)</sup>. Although several workers accept the biosafety norms, these still do not permeate the daily practice with the same intensity, a fact that results from the workers' feeling of invulnerability.

Another factor contributing to the choice of this theme nowadays lies in the change of the HIV/AIDS epidemiologic profile, where all persons should consider themselves vulnerable, especially nursing professionals, since they deal with procedures involving blood and bodily fluids most of the time<sup>(2)</sup>. This care should always be performed through the adoption of safety measures, regardless of knowledge about a positive HIV diagnosis of the client under their responsibility.

## OBJECTIVES

This study is justified by the problem exposed above and by the importance of this theme. The goals are to:

- Identify the scientific production about work-related accidents with biological materials contaminated by HIV among nursing professionals;
- Characterize the factors that may cause work-related accidents, as well as the procedures nursing workers perform after exposure to potentially HIV-contaminated needlestick material, described in literature.

## METHOD

This is a literature review about work-related accidents with biological material contaminated by HIV among nursing workers. We chose the literature review since it allows for the examination of a theme under a new focus or approach, drawing innovative conclusions. This type of research covers secondary sources, as well as bibliographies published on the study topic, such as reports, newspapers, journals, books, research studies, articles, theses, dissertations, among others<sup>(3)</sup>.

The bibliographic research was carried out at the end of 2006, performed with a computerized search system in the archives of journals in the LILACS database. The criteria for selecting journals followed certain parameters, such as publication date after 2000, due to the need for update information about the theme, as well as the utilization of the following keywords: nursing worker; HIV; work-related accident; occupational risks; needlestick and chemoprophylaxis. Eighty-six (86) articles were found, and selection within this group was based on previously established characteristics. In view of these characteristics, publications were included which presented the whole article; addressed the triggering factors of work-related needlestick accidents with potentially HIV-contaminated material and focused on nursing professionals' actions after exposure to this type of accident. It is worth noting that 31 of these articles are qualitative studies, 38 are quantitative studies and 17 are literature reviews.

After the bibliographic investigation was concluded, and each abstract was read, the articles were registered on bibliographic cards. The process of data analysis started after the bibliographic selection was thoroughly read, aiming at meeting the goals of the present study. However, as nurses and researchers, we had an instrument available during this bibliographic research that allowed us to comprehensively cover the research universe in its many aspects, overcoming superficiality and apprehending the reality from areas that have already been researched on and discussed by other authors.

## RESULTS AND DISCUSSION

### *A Brief history of HIV and its repercussions for nursing workers*

At the start of the epidemic, there were several common characteristics among the victims: healthy young adults, homosexuals, users of intravenous drugs. However, it was soon verified that AIDS was not restricted to homosexual or bisexual groups, being reportedly detected in us-

ers of intravenous drugs, hemophiliacs, heterosexual partners of people infected with AIDS, healthcare workers through occupational exposure and receivers of blood and its derivatives through transfusion <sup>(4)</sup>.

This fact shows that the patterns of AIDS transmission in Brazil have been changing. Regardless of the country's epidemiological profile, it is especially necessary for healthcare workers in the nursing area to be cautious when providing care, particularly in cases where there is exposure to biological content, in order to reduce the chances of acquiring HIV.

The feeling of invulnerability was perceived by nursing workers who acquired HIV by performing technical procedures on HIV-seropositive patients, since the long time on the job and the experience with technical skills end up conveying a feeling of "protection", discarding the use of the standard precautions <sup>(5)</sup>.

When nursing workers fail to recognize their vulnerability to infection, they become likely to be exposed to pathogens, i.e. using IPE (Individual Protection Equipment) only to provide care to individuals whose positive HIV diagnosis is known <sup>(6)</sup>. There is no justification for the affirmation that professionals should only adopt biosafety measures when providing care to HIV-seropositive individuals, since there are many people infected by HIV whose seropositivity status is unknown.

Another relevant factor that contributes to the increasing cases of occupational HIV acquisition among healthcare workers is related to increasingly detailed studies about therapies with anti-retroviral medication, which lengthen the survival of HIV-seropositive individuals. As a consequence, they are more exposed to the healthcare workers <sup>(7)</sup>.

Regarding anti-retroviral technologies, the life expectancy of HIV-seropositive individuals is increased, and consequently, scholars are more interested in researching on occupational exposure to HIV <sup>(8)</sup>. Since nursing workers have to provide care to HIV-seropositive individuals for a longer period, there is a higher probability of occupational needlestick accidents with contaminated materials.

According to this context, we notice that the transmission of HIV/AIDS does not choose whom it will occur on, much less when, i.e., we are all subject to acquiring HIV/AIDS. The idea of considering ourselves "invulnerable", i.e., that HIV will only infect bisexuals, drug addicts and prostitutes must be abandoned. Nowadays, other professionals are also victims, with healthcare professionals among them, particularly nursing workers. With the lengthened survival of HIV-seropositive individuals, the exposure and possible acquisition of HIV are also likelier to happen among nursing workers through needlestick accidents, with many of them being a consequence of risky behaviors by not adopting standard precautions.

### ***The nursing worker and the needlestick accident with HIV-contaminated material***

The risks in the healthcare services exist because of activities in several hazardous areas with different levels of danger, the dependency on hierarchy, being influenced by the type of care provided, as well as the function of the nursing worker. This study focused on the biological risks due to HIV/AIDS exposure, because the number of work-related needlestick accidents with HIV-contaminated material is increasing among nursing workers <sup>(9-10)</sup>.

Work-related needlestick accidents are frequent among nursing workers, due to the constant manipulation of needles, and these risks pose threats for both the workers and the institution <sup>(11)</sup>. In this sense, we believe that this fact leads one to consider that workers and the institutions where they work need to pay more attention to the problem, directing measures focused on the notification of accidents, improving the referrals of victimized workers and especially the adoption of preventive measures to reduce occupational accident levels.

In the case of occupational exposure to HIV, as focused on in this study, culture and beliefs can be singled out as the factors that increase the amount of needlestick accidents with HIV-contaminated material among nursing workers <sup>(12)</sup>. As an example, we can mention certain behaviors established during the provision of care to HIV-seropositive individuals, such as recapping contaminated needles. Also, this happens because the workers consider themselves "experienced" to execute nursing techniques without using IPEs when in contact with blood or other bodily fluids.

It is observed that the health education proposals supported on the idea of the risk posed by certain unprotected occupational practices are insufficient to control needlestick accidents <sup>(13)</sup>. It is necessary that, besides providing IPEs and information about their use, individual attention be given to each nursing worker, emphasizing the importance of complying with security measures. One of the main factors to influence the occurrence of needlestick accidents is nursing workers' non-compliance with the precautions when providing care. Moreover, the conditioners for this non-compliance are related to both *institutional* (work-related) and *individual* (worker-related) factors <sup>(14)</sup>.

However, based on the conditioners, which contribute to non-compliance with the standard precautions, it should be noted that the causes of accidents should not merely be blamed on nursing workers, but on the work process itself. In other words, it is necessary to consider the hectic atmosphere of the job; lack of adequate containers to discard contaminated needlestick materials; lack of or inadequate IPEs; patient agitation; and work overload, among others <sup>(15)</sup>.

Therefore, it is highly relevant to develop an organizational system, a type of supervision that aims at and assures the professionals' education about precautions, as well as the workers' commitment to complying with said precautions. We also think that it is equally important to evaluate compliance constantly, its enhancements and adaptations to meet the circumstantial necessities. Each workplace has its own characteristics, especially regarding the current epidemiologic situation and the material resources available.

There is also the necessity for trained professionals who can deal with these accidents, since their occurrence causes feelings of frustration in the worker, the experience of having acquired a disease, as well as fear of being humiliated by peers, both in the social and the professional midst. Oriented by the studies about the theme, which involve nursing workers, HIV and work-related needlestick accidents, we believe in their relevance and the attention these topics deserve, both by nursing workers and by healthcare services responsible for controlling infectious-contagious diseases. Both should be present, from the implementation of educational actions that promote the prevention of needlestick accidents until the monitoring of the nursing workers after an accident and exposure to HIV, through a prophylactic scheme that strives to reduce the workers' chances of acquiring the HIV virus <sup>(16)</sup>.

#### **The nursing worker after exposure to HIV**

Interest in the issue of work-related accidents and monitoring the worker after needlestick accidents with objects that have been potentially contaminated by biologic material increased in the early 1980s, with the onset of HIV/AIDS. Due to many occurrences of work-related needlestick accidents and the possibility of acquiring an infectious-contagious disease, prophylactic schemes for the healthcare workers were implemented by the Center for Disease Control (CDC) after exposure to biologic material. CDC is an entity in the United States that is responsible for disease control and prevention. In Brazil, these activities are performed by epidemiological surveillance services.

Prior to beginning the chemoprophylactic scheme, in case of needlestick accidents with potentially HIV-contaminated material, it is necessary to take some actions, such as washing the injury with running water and, in case mucosa were exposed, washing them with a saline solution; reporting them immediately to management, which should report to the Commission for Hospital Infection Control – *Comissão de Controle de Infecção Hospitalar (CCIH)* – or a sector that will evaluate the accident as soon as possible; having the victim's blood collected for serology at the CCIH. The sample should be coded, protecting the anonymity of the work-related accident victim; reporting the accident to

the occupational physician, who will record the Notification of Occupational Accident – *Comunicação de Acidente de Trabalho (CAT)* – so that the accident can be recorded in a legal manner; and then, performing chemoprophylactic procedures if necessary, as well as clinical-laboratorial monitoring of the work-related accident victim <sup>(9)</sup>. Such monitoring should also emphasize the reestablishment of the worker's psychological harmony, since exposure, as well as the possible contamination by HIV, causes the same psychological damage.

It is extremely important to know the serologic status of the patient from medical record data and, when these are not available, it is necessary to request a quick HIV test, after receiving written consent from the patient or a guardian <sup>(17)</sup>. It is worth noting that such quick tests are indicated in situations needing quick therapeutic decisions, such as maternal-pediatric prevention in the case of parturients who did not take the pre-natal anti-HIV test, as well as in cases of occupational accidents.

For occupational accidents, quick tests in the source patient or biological material the healthcare worker was exposed to are justified, since the immediate start of chemoprophylactic therapy reduces the risk of acquiring HIV by at least 80% <sup>(17)</sup>.

Quick testing after accidents is recommended, since occupational exposure to HIV should be treated as a medical emergency and chemoprophylaxis should be initiated as soon as possible. The indication of chemoprophylaxis for occupational exposure should be carefully evaluated, and it is also necessary to consider the risk of the source patient being infected with HIV or not, the potential benefits of the anti-retroviral medication, as well as the gravity of exposure <sup>(18-19)</sup>.

After cutaneous-mucosal exposure, the risk is considered to be high when a large area is exposed, when there is a large amount of blood with a high HIV viral count. Also, this occurs, in cases of patients in seroconversion or in advanced stages of the disease, and when there is prolonged contact with contaminated blood <sup>(16)</sup>. It is fundamental to monitor the toxicity and compliance with the therapy during chemoprophylaxis, regardless of the gravity of exposure and the chosen scheme.

Such monitoring is relevant, because several factors can lead to low compliance with anti-retroviral drug treatment: the occurrence of side effects, incompatibility of the dose scheme with the patient's daily activities, a high number of pills, dieting restrictions, not understanding the prescription, and even the lack of information about the risks of non-compliance <sup>(20)</sup>.

When healthcare services use anti-retroviral chemoprophylaxis after an accident with exposure to HIV, they need

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organization, service protocols and, especially, follow-up care to the nursing worker submitted to post-exposure chemoprophylaxis<sup>(8)</sup>, since the worker who was a victim of this type of accident is faced with the difficulty of starting, as well as completing the recommended prophylactic scheme. We note that this fact occurs because the work-related needlestick accident causes feelings of anxiety, fear and frustration in view of the possibility of acquiring HIV. The prophylactic measures imply, overall, the preparation of the nursing worker to accept chemoprophylactic treatment for four weeks<sup>(16)</sup>. Often, nursing workers are perceived to have difficulties to comply with the treatment, mostly because of lack of emotional preparation, the side effects of the drugs and being unaware of the probability of an accident occurring with "him".

However, it is worth noting that, in spite of the technological innovations regarding prophylactic schemes with anti-retroviral drugs after accidents and exposure to HIV, such chemoprophylactic schemes are not totally successful. Hence, we believe that the implementation of educational and preventive actions is extremely important and necessary, focusing on compliance with the standard precautions. As the old saying goes, "preventing is better than remedying".

However, based on several literature reviews verified during the construction of this study, we found that the predisposing factors for the occurrence of work-related needlestick accidents described in literature were those *related to work conditions* (institutional) and those related to the *individual behavior of the workers*. Regarding factors related to *work conditions*, we highlight: patients' aggressive behavior; lack of professional qualification programs; work overload, related to the lack of employees; lack of adequate containers to discard needlestick materials, as well as inadequate arrangement of such materials at the unit (away from the needlestick manipulation area); insufficient or no offer of safety equipment and materials. The factors related to the *workers' behavior* include: disregarding standard precautions; lack of knowledge about the risks of infection; lack of attention and carelessness; tension and stress; tiredness/fatigue; doing the job for a long time and having technical skills make them consider themselves invulnerable, and the cultural aspects of each worker, such as recapping needles.

We also note that the professionals most commonly exposed to accidents are nursing technicians and auxiliaries, since they are constantly in direct contact with the patient, administering medication, applying or changing bandages and other procedures that keep them in close contact with needlestick material. However, it is worth noting that the occurrence of work-related accidents is not only related to the educational level, but also to training, qualification, available material resources and the local culture.

As for the results about the attitude of the workers after accidental exposure to material potentially contami-

nated by HIV, this study, based on the scientific production, shows that some of these professionals do not take the necessary actions after being exposed to needlestick accidents, as recommended by the CDC. This increases the worker's probability of acquiring HIV/AIDS, because, although the chance for HIV acquisition is minimal, it is different from zero, especially when the norms for accidental exposition to HIV are not followed.

In addition to immediate care, preferably in the first two hours, the nursing worker, after a needlestick accident, should be monitored until the end of the prophylactic scheme to avoid abandoning this scheme, a common fact due to the side effects of the medications. Also, this should be done so that the worker can be protected from the psychological damage caused by exposure<sup>(17)</sup>, because the occupational accident with materials potentially infected by HIV can have psychosocial repercussions and emotional impact, which lead to changes in social, family and working relations.

Still in this context, this study shows, based on data from the literature, that there are several causes related to nursing workers' non-compliance with the prophylactic scheme after needlestick accidents. Among these are the side effects of the medication, the lack of awareness, lack of knowledge about "what to do", i.e. the actions to be taken after the accident. This is the cause of sub-notifications, besides the lack of emotional preparation. The latter is a consequence of the nursing worker's feelings of fear and anxiety when faced with the possibility of acquiring HIV/AIDS.

## CONCLUSION

At the end of this literature review, based on the analysis of the scientific production about the theme of interest, some considerations are important, such as the relevance of adopting biosafety measures during care practices performed by healthcare workers, especially those in the nursing area, since they are the professionals who spend the most time with the patient. Besides, they are responsible for the execution of procedures, which includes contact with biologic material like blood, for example.

Although some nursing workers know the importance of utilizing standard precautions in patient care delivery, the adoption of these devices does not occur regularly. As a consequence, the number of occupational accidents has increased. Besides, when workers are victims of accidents, they often have no knowledge about the post-exposure actions to be taken. This fact causes sub-notification and often the acquisition of HIV.

We also note that nursing team members need to be oriented, having their own personal protection as their goal while delivering care to patients. This orientation means extrapolating information and performing interventions with different strategies, since nursing workers already

know some of the biosafety measures but employ them neither systematically nor constantly. In this context, the healthcare services should plan and implement specific orientations for the nursing workers, so that they can adopt safe professional practices. However, we believe that the nursing workers' practice of caring for HIV-seropositive people needs to exist with a humanistic focus, guided by norms that aim at the implementation of biosafety through preventive measures centered on the worker during the act of providing healthcare.

Finally, we would say that the adoption of measures – IPE, in healthcare activities – is a fundamental condition for worker safety, regardless of their area. The number of HIV cases is growing, as well as other infectious-contagious diseases. Moreover, the nursing worker, in the scope of care for HIV-seropositive individuals, should not increase biosafety measures just because he knows about that diagnosis. It is important to practice them systematically and adequately, with technical competence and universally, aiming to provide ethical and humane care, respecting all the citizens regardless of their diagnosis.

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