

NEEDLESTICK INJURIES AND POST-EXPOSURE PROPHYLAXIS AMONG NURSES AT DR. IVAN SELIMINSKI HOSPITAL - SLIVEN

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ABSTRACT

INTRODUCTION: The risk of needlestick or other medical sharp instrument-induced injuries is one the most common risks among nurses. These injuries are dangerous when it comes to transmitting life-threatening blood-borne infections, including HBV, HCV and HIV. Most commonly, the risk factors are related to the occupational work technique and practices, as well as the use of personal protective equipment, health and safety protocols at the work place, introducing safe medical equipment and timely post-exposure prophylaxis.

AIM: The aim of this study is to examine the frequency of sharp injuries, to analyse the most common reasons for those injuries and to analyse how well nurses at Dr. Ivan Seliminski Hospital are informed about post-exposure measures in order to increase occupational safety.

MATERIALS AND METHODS: We used an individual anonymous survey with 55 nurses working in different wards of the Hospital.

RESULTS AND CONCLUSION: Needlestick injuries are most commonly inflicted after injections, in emergency situations, and due to deficient health and safety protocols at the work place. Occupational exposure incidents are rarely reported so it is difficult to register them.

Keywords: *needlestick injuries, post-exposure prophylaxis, blood-borne infections, nurse*

INTRODUCTION

Social Significance of the Problem

In the global population, the spread of HCV varies between 0.5% in northern countries, and 2% in Mediterranean countries, and there are 5 million chronic carriers of HCV in Europe. In comparison, the spread of HBV varies between 0.3% and 3%. The World Health Organisation (WHO) estimates that every year in Europe there are 304 000 healthcare workers exposed to at least one percutaneous injury

with a sharp object infected with HBV, 149 000 with HCV and 22 000 with HIV. The probability of being infected with a blood-borne virus after an occupational exposure was estimated to be an average of <0.3% for HIV, 0.5% for HCV and 18%-30% for HBV, depending on the type of exposure (10).

The risk for healthcare workers is 6-30% for HBV and 1.8% for HCV following a percutaneous exposure (5).

In order to tackle this issue there is a Council Directive 2010/32/EU implementing the Framework Agreement on prevention from sharp injuries in the hospital and healthcare sector concluded by HOSPEEM (the European Hospital and Healthcare Employers' Association, a sectoral organisation representing employers) and EPSU (the European Federation of Public Services Unions, a European trade union organisation). The main aims of the directive are to achieve the safest possible working environ-

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ment by preventing injuries to workers caused by all medical sharps (including needlesticks) and protecting workers at risk in the hospital and healthcare sector (2, 4).

Risk of Blood-Borne Virus Infections

The risk of HBV, HCV or HIV during work depends on the frequency of percutaneous and mucosal exposures to blood and other body fluids.

Risk exposure, or occupational exposure, occurs in the work place via percutaneous inoculation (for example, needlestick injury or a cut with a sharp object), or via contact of mucosa, intact or non-intact skin with blood and other potentially infected body fluids, or with concentrated viral product (15).

Percutaneous inoculation (needlestick injuries, or cuts with sharp objects) is the most common way of spreading blood-borne virus infections. As an exception, such risk also exists as a result of exposure to other infectious biological fluids - synovial, pleural, peritoneal, pericardial and amniotic fluid (8).

Risk factors can be **organisational** – linked to institutional health and safety culture (policy and procedures), education and training, and **individual** – knowledge, attitudes towards the risk, individual behaviour, work environment and professional experience. Each of these factors can be monitored so that the occupation risk is reduced.

In medical practice, the transmission of blood-borne virus infections can occur during injections, infusion, transplantation, via non-sterile instruments, or through any other accidental injury. Healthcare workers can be infected by contact with the blood and body fluids of an infected patient, following an injury or contact with non-intact skin. Occupational exposure can also occur during surgery or other invasive medical procedures (7).

Representatives of nine European countries are taking part in a project to develop a complete pack of recommendations for managing occupational risk of blood-borne virus infections, in order to apply standardised and rational management of occupational exposure to HBV, HCV and HIV among healthcare workers in Europe (11).

AIM

The aim of this study is to examine the frequency of sharps injuries, to analyse the most common

reasons for those injuries and analyse how well nurses at Dr. Ivan Seliminski Hospital are informed about post-exposure measures in order to increase occupational safety.

MATERIALS AND METHODS

An individual anonymous survey with 55 nurses working in different wards of the Hospital was conducted in the period May-June 2016. Methods we have used were: descriptive, statistical, graphic, and survey.

RESULTS AND CONCLUSION

Data from the survey shows that more than half of the respondents – 64%, have more than 20 years of professional experience, whereas only 5% have been in the occupation for less than 5 years. The largest part of the respondents (29.09%) perform 30 needle procedures per shift (Fig. 1).

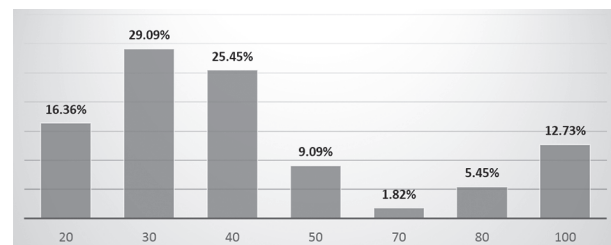


Fig. 1. Number of needle procedures

The first case of a healthcare worker infection caused by a needlestick injury was documented in 1984, and today there are 344 such documented cases (13).

According to data from the system of registering risk exposures in the United Kingdom (UK) these are most common among nurses (47%) (9).

In Italy, most cases of needlestick and sharps injuries are among nurses with less than 5 years of professional experience (6).

Apart from nurses, another large risk group are young professionals, including medical students. A study in the UK shows that students without clinical experience are more often exposed to injuries, and with age and length of service the number of incidents decreases (12).

According to a study, conducted in Bulgaria, 30% of the respondents have had needlestick injuries during the last 12 months (1).

Data from our survey confirm that a large proportion of the respondents (87%) have had such an injury, whilst only 13% report they have not had an occupational risk exposure (Fig. 2).

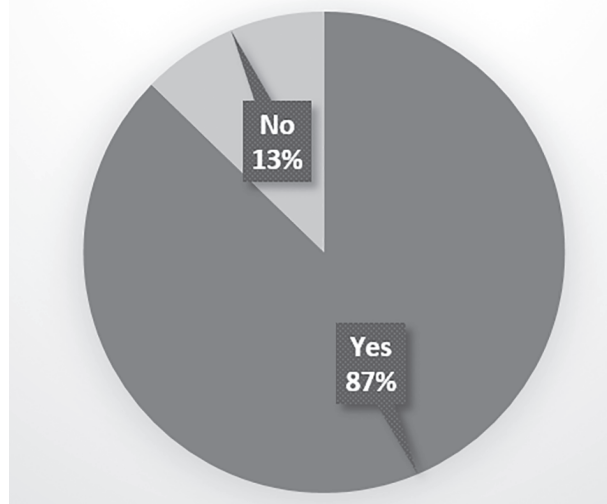


Fig. 2. Occurrence of incidents

Most nurses (37%) have had an injury after injection. A significant part of the respondents (26%) indicate an emergency to be the cause, for 19% it was an effect of a sudden movement of the patient, 14% - during needle disposal and only 4% - during disinfection of instruments (Fig. 3).

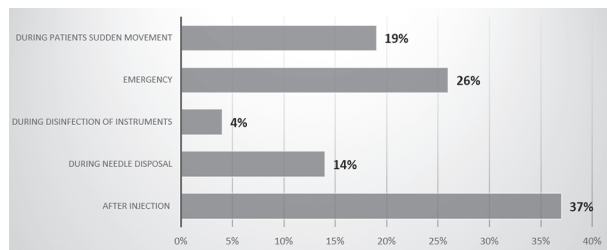


Fig. 3. Causes of needlestick injuries

Courses of action, taken by nurses responding in our survey, following an occupational exposure to blood and other body fluids which may contain HBV, HCV or HIV, show that they are aware of and adhere to the measures outlined in the Methodological Guide of the Ministry of Health (3) (Fig. 4). Thirty-eight percent of the responders have cleansed the contact zone with an antiseptic; 22% have washed it with cold water and have checked if the patient/source is a carrier of HBV, HCV or HIV. However, it

is worth noting that only 11% have reported their injury. In order to guarantee post-exposure risk management, a strict protocol of reporting occupational exposure must be adhered to. It should include data which allows the control and monitoring of post-exposure prophylaxis (PEP) (17).

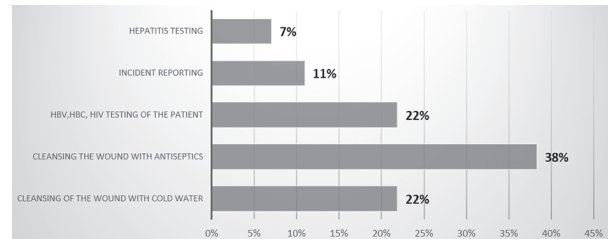


Fig. 4. Courses of action after exposure to blood and blood products

Employers must have an active system, including written protocols for fast reporting, assessment, consultation, treatment and monitoring of occupational risk exposures to blood-borne pathogens (14).

Whilst in Dr. Ivan Seliminski Hospital – Sliven, there is a developed programme including a “Report to Register Occupational Risk Exposure to Biological Agents during Work”, not all incidents have been reported.

Regular training sessions are carried out for nurses in the medical establishment in Sliven. They include various components of universal precautionary measures of health and safety and prevention of in-hospital infections: hand hygiene, use of per-

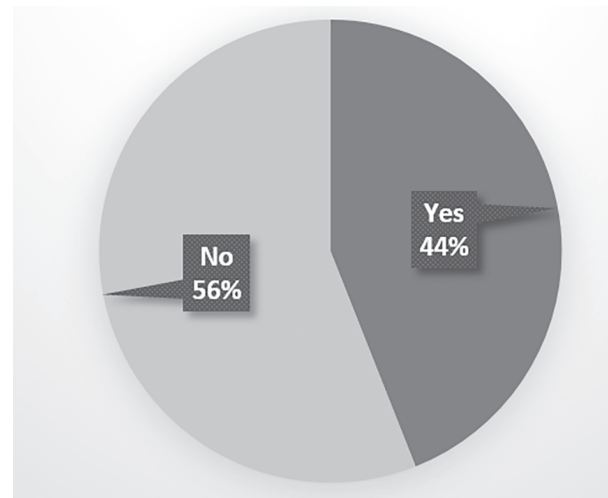


Fig. 5. Participation in workshops on prevention of blood-borne infections

sonal protective measures (gloves, clothing, masks, etc.), correct disinfection, sterilisation and disposal of waste, etc.

Despite this, more than half of the respondents have not taken part in any of these sessions – 56% (Fig. 5).

With the rapid development of technology and technical measures for control, it is much easier to prevent blood-borne infections by using safer instruments.

WHO recommends national strategies of safe and adequate injection practices to focus on changing the behaviours of healthcare workers and patients, providing equipment and supplies, as well as on managing sharps waste (16).

The preventive strategy recommendations suggested by the respondents to our survey include mainly educational and vocational training (39%), but also that introducing various types of auto-disable syringes could reduce the occupational risk of blood-borne infections. Only 4% believe that when it comes to risk of blood-borne infections, optimal safety can be achieved via reporting mechanisms and government protocols (Fig. 6).

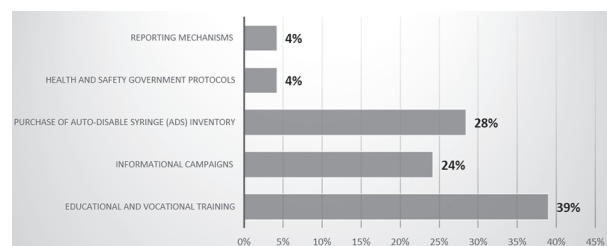


Fig. 6. Recommendations on preventive strategies for reducing needlestick injuries

CONCLUSION

The outcome of the conducted study shows that:

- ◇ Despite training programmes, needlestick injuries still occur.
- ◇ Needlestick injuries are most common after injections, due to an emergency, and because of poor workplace environment.
- ◇ Cases of occupational risk exposure are not always reported, and therefore are not registered.
- ◇ Most percutaneous injuries could be prevented with the use of safe instruments and practices.

- ◇ Educational and vocational training programmes about prevention should be constantly initiated, in order to change the nurses' attitudes and behaviour, and achieve optimal safety when it comes to blood-borne infections.

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