

# Assessment of the level of knowledge in the field of emergency medical blood-borne infections. Preliminary report

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## Summary:

**Background.** Paramedics, as a professional group exposed to direct contact with the patient and potentially infectious material is particularly exposed to blood infection. It follows a particular need to improve their professional qualifications to ensure the protection of the paramedics and patients as well. An attempt to assess the knowledge of paramedics in the field of blood-borne infections.

**Methods.** The study included 189 paramedics in Poland. The study was based on a questionnaire in 2011.

**Results.** Paramedics assess their knowledge of prevention very good. Only 48% of respondents participated in training on infection prevention haematogenous. Also, 48% of people know that, with a single exposure greater risk of infection occurs in the case of HBV than HIV.

**Conclusions.** Paramedical practitioners to send the variable level of knowledge in the prevention of blood-borne infections. Among the paramedics less than half of the persons (46%) Participated in the training from the scope of the prevention of blood-borne infections. Studies show the urgent need to Develop a mandatory training Relating Preventing methods of blood-borne infection Intended for paramedics.

**Key words:** paramedic, blood infections, prevention, public health.

## Introduction

Blood infections can somehow include the occupational risks of medical personnel. Paramedics as the person having the most frequent direct contact with the patient at the level of prehospital care, as well as the hospital within the Hospital Emergency Department, must demonstrate a knowledge of prevention of blood-borne infections as well as the ability to use this knowledge in practice [1,2]. Please note that only conscious attitude towards the possible risks, methods of prevention and post-exposure procedures may

reduce the incidence of blood-borne infections in the emergency medical environment [2,3,4]. Knowledge paramedics on haematogenous infection prevention is the overriding factor affecting their behaviour during their daily work.

Unfortunately, the literature does not meet the reports dealing with the problem of prevention of blood-borne infections in the practice of medical rescue teams. Therefore, it seems appropriate to conduct work for measuring the level of knowledge in the field of emergency medical prophylaxis of blood.

Aim of the study was to attempt to assess the knowledge of paramedics in the field of prevention of blood-borne infections.

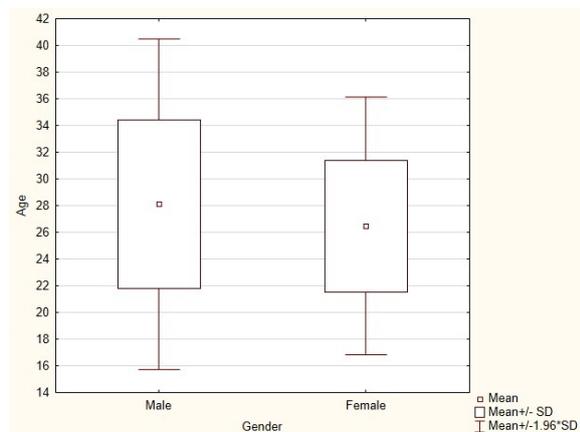
## Materials and methods

The study group included 189 persons, employed as a paramedic in the State System of Emergency Medical Services in the province of Mazovia and Łódź. The research tool was a questionnaire comprising 13 proprietary questions concerning the degree of knowledge of paramedics on blood-borne infections. The study was conducted in the fourth decade of 2011.

The research material was coded in Excel and developed using the statistical package STATISTICA 8.0. Normality distribution of the variables was tested by the significance level  $p$  for the Kolmogorov – Smirnov test. In the case of normal distribution of mean differences were tested by Student's  $t$  – test. Results were considered statistically significant at  $p < 0.05$ .

## Results

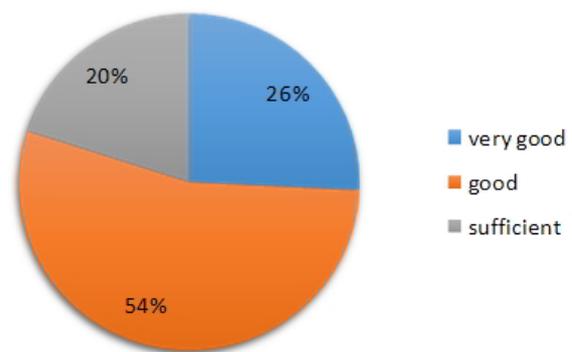
Respondents' age ranged 20-42 years, with the most people were aged 22-24 years (16%), and least in the age of 30-32 years (2%). The average age of the study group was 27.52  $\pm$  5.93 years and was higher for men (28 years) than for women (26.7 years; Fig. 1). Analysis using the Kruskal-Wallis test did not show that the age difference between men and women was statistically significant ( $H=0.8736049$ ,  $p=0.3500$ ).



**Figure 1:** Box-and-whisker diagram middle-aged men and women in the study group.

In a group of 189 people, men predominated and accounted for 62% ( $n = 117$ ). Women accounted for 38% of the study group ( $n = 72$ ). In the group of all persons engaged in the activities paramedic. The average length of service was 5.06 years ( $p < 0.001$ ).

Self – knowledge paramedics in the field of prevention of blood-borne infections are shown in Figure 2. Self-assessment of emergency medical knowledge was high; until 105 people found that their knowledge is satisfactory and attributed a good result, 50 people issued a very good grade, while only 39 rated their knowledge as sufficient.

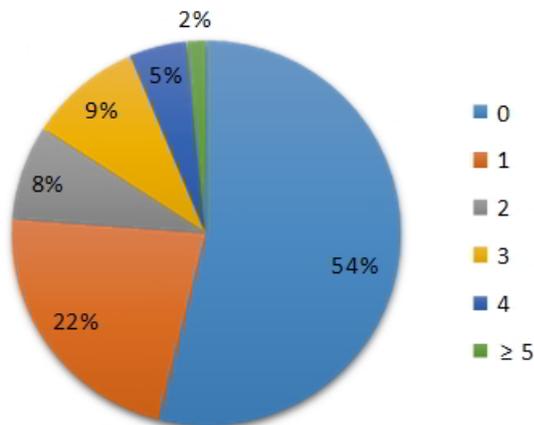


**Figure 2:** Self-assessment of knowledge paramedics in the field of prevention of blood-borne infections.

None of the subjects while performing official duties is not ill with hepatitis B or hepatitis C. The majority of respondents, as many as 54% had never attended a course on blood-borne infections, while 22% of respondents in the course of such a participated only once. In the entire group of 189 people, only 3 people have participated in the course of a blood-borne infections five or more times. These differences were statistically significant ( $p < 0.001$ ). Detailed distribution of answers given by respondents illustrates Figure 3. Only 57 cases any, training took place over the last calendar year.

When asked about the source from which derives the respondent knowledge about infection prevention haematogenous 114 people pointed to the media 111 people indicated medical literature, 87 of medical journals, training staff – 36 people, as many people pointed classes in college, as a source of knowledge, while 21 persons scientific conferences. However, most people, as a source of

knowledge about the prevention of blood-borne infections indicated discussions and individual interviews ( $p < 0.001$ ).



**Figure 3:** Answers to the question "How many times have you participated in training in the field of infection prevention hematogenous?"

Respondents were also asked whether they respect the need for further education on the prevention of blood-borne infections. The vast majority said yes ( $n=196$ , 98%). Only 2% of respondents did not see the need for training in this area ( $p < 0.001$ ).

In another question, respondents were asked if they knew the procedures to be followed after exposure to blood or other potentially infectious material. The answer in the affirmative marked 60% ( $n=114$ ). The remaining group of 75 people do not have knowledge of the after exposition procedures ( $p < 0.01$ ).

Asked respondents to rank the listed groups (non-medical personnel, medical personnel, visitors, patients) to the greatest exposure to infected blood. Respondents in most cases (91%) in the first place singled medical staff, then patients, non-medical staff and visitors at the end. In 9% of cases, the most vulnerable group of people surveyed found patients.

Survey respondents were also asked to identify two of the most dangerous examples of a biological material which is a potential source of blood-borne infections. All the respondents unanimously indicated materials following order: blood, body fluids.

Another question also on post-exposure procedure, was to point to the correct order of

proceedings after exposure to biological material of the patient, which is considered potentially infectious. 83% of respondents correctly knew the procedure to be followed after exposure to potentially infectious material.

Moreover, respondents were asked whether the decontamination area should be dry this surface. 19% of respondents said that drainage is needed, while 81% – that do not dry the surface, but wait until it dries itself.

To the question "Do you think that blood infections are a big problem medical staff?" 88% of respondents answered in the affirmative, only 12% did not see this problem.

The next question asked whether the respondent during all emergency treatment uses personal protective equipment. 90% of people answered in the affirmative. Less than 8% indicated that only when there is a risk of blood-borne infections. The remaining two percent indicated that generally does not use personal protective equipment – for the reason of this fact indicated lack of time to protect themselves.

43% of respondents paramedics found that in the case of a single stabbing a contaminated needle is relatively easier to become infected with HIV than with HBV, while 9% of the rescuers had no opinion on the matter. 48% of respondents found, however, that single stabbing is much more affected by infection with hepatitis B than HIV.

The last question referred to the situation or the interviewed person retains greater caution in dealing with the patient when he knows that the patient is infected with HIV, HBV or HCV. 89% of respondents answered in the affirmative, that knowledge, that are in contact with the infected patient is conducive to increase their caution in relation to the patient.

## Discussion

The level of knowledge in the field of blood-borne infections is an important element shaping the behaviour of medical staff in their daily work, thus affecting both the safety of the medical staff as well as patients [1,2,3]. Due to the fact that the literature does not meet the reports dealing with the problem of prevention of blood-borne infec-

tions in the practice of medical rescue teams, it is possible to refer to the results of other authors for the nursing staff.

The study shows that only 88% of respondents blood infections are a major medical problem. This opinion is confirmed by the studies of other authors [5].

The study showed that paramedics assess their knowledge of blood-borne infections, as very good. However, there is a difference between self-esteem and knowledge of the results obtained in the process of completing the survey. It should be noted that paramedics overestimate their knowledge. Other reports indicate that medical personnel as in the study by copyright in the subjective assessment has significantly better results than reported in objective research [6,7].

A positive aspect of the respondents is that paramedics recognize the need of education in the prevention of blood-borne infections (98%). However, only just 87 people (46%) participated in the course of this subject, and 57 people took any training in the past year. Respondents outside the training most often deepen their knowledge of prevention of blood-borne infections through discussions and personal interviews, the media and medical literature.

An important element considered in the context of haematogenous infection prevention among paramedics are safe behaviour at work and the use of barrier protective equipment (goggles, face mask, gloves). Unfortunately, both studies by other authors, and studies how copyright – where only 90% of respondents always use the protective measures in contact with the patient – suggest that health care workers do not follow the basic principles of protection [8,9].

Please note that in relation to the HIV and HBV infection are set forth in our country principle post-exposure prophylaxis. 83% of

respondents knew the order of proceedings after exposure to potentially infectious material. This result is certainly better than the result obtained by Dzikowska et al where the way to minimize the risk of infection after exposure knew only 10% of people [5]. Occupation paramedic is associated with continuous exposure to blood-borne infections.

When a single exposure (e.g., contaminated needle) the risk of blood infection for virus is as follows: HIV – 0.3%, HBV – 6-30% [10]. Thus, infection with hepatitis B and C are the most common occupational diseases health care workers. Unfortunately, only 48% of respondents knew that the greater the risk of infection exists for HBV.

All medical staff including paramedics should be aware that the patient is not required to formally inform that it is infected with HBV whether or HIV. It follows the golden rule applied to patients, saying that each patient should be treated as potentially infected. Worrying is the fact that 89% of paramedics admitted that with greater caution came to the patient about which they know they are infected with HIV. This proves the non-compliance with the above-mentioned principle that each patient should be treated as a potential source of infection [1].

## Conclusions

Paramedics presented different levels of knowledge in the field of prevention of blood-borne infections.

Research indicates to the urgent need to develop mandatory training on infection prevention methods haematogenous designed for paramedics.

Among paramedics less than half of people (46%) participated in training in prevention of blood-borne infections.

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