

# THE INVESTIGATION OF THE ACCIDENT CIRCUMSTANCES OF APPARITION AND MECHANISM IN THE ACCIDENTS THROUGH BLOOD EXPOSURE IN A CLINICAL EMERGENCY HOSPITAL

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**Keywords:** accidents through blood exposure, medico-sanitary personnel, routine gesture, emergency situations

**Abstract:** The professional risk is a problem of a large interest and unanimous recognized as existing reality. Referring to the circumstances of sudden accidents apparition the most important manual labor followed by an accident through blood exposure is the fit of a braunule (rutine gesture) respectively the pricking with an needle. The majority of the of the blood exposure accidents occur during the routine medical gestures because those are more frequent. In other circumstances such as: emergency situations the accidents are more frequent in the health department with surgical profile

**Cuvinte cheie:** accident prin expunere la sânge, personal medico-sanitar, gest de rutină, situații de urgență

**Rezumat:** Riscul profesional este o problemă de larg interes și unanim recunoscută ca realitate. Referitor la circumstanțele apariției accidentelor, cea mai importantă manoperă urmată de un accident prin expunere la sânge este montarea unei braunule (gest de rutină), respectiv înțeparea cu un ac. Majoritatea AES au survenit în timpul gesturilor medicale de rutină pentru că acestea sunt mai frecvente. În cazul circumstanței situație de urgență, accidentele sunt mai frecvente în secțiile cu profil chirurgical.

## INTRODUCTION

The professional risk is a problem of a large interest and unanimously recognised as reality. During time the risks the medico-sanitary personnel was exposed were underestimated and neglected and considered as the "profession's risks" but the health professionals refused to preoccupy with this aspects.

The improvement of the epidemiological supervision and the occurrence of new risks enabled the measurement of the frequency and gravity of the exposures. A growing attention in what regards the hospital's hygiene determined the evaluation and the putting-up-to date of the strategies of prevention.

In this domain HIV/SIDA was the dominant element of this politic's evolution. Regarding this aspect epidemiological studies have been effectuated to emphasize not only the frequency of this transmission, but also the risk factors of the accidents through blood and body biologic liquids (possibly with blood) exposure.

Any accidental exposure to blood, to a biologic liquid contaminated with blood or to a fluid that may contain pathogenic agents transmitted through human blood, that supposes the harming of the teguments (pricking, cutting) or the projection on harmed mucosa or teguments represents an accident through blood exposure. Any accidental exposure to blood or any other biologic liquid contaminated with blood or a fluid that may contain the pathogenic agents transmitted through human blood, that supposes the lesion of the teguments (pricking, cutting) or the projection on harmed mucosa and teguments represents an accident through blood exposure.

The professional exposure to various pathogenic agents transmitted through blood may be realised through: percutaneous inoculations: pricking, cutting, the tegument's contamination with solutions of continuity, contamination of the mucosa during: the efectuation of invasive medical manevres with needle or sharp instruments, manipulating contaminated biologic products, manipulating the instrumentary and the

contaminated sanitary materials with contaminated biologic products (soft medical matherial, lingerie, equipments), through : cutting or pricking medico-surgical instrumentary, sanitary materials, surfaces and other endowments used in the medical activity, manipulating the contaminated residue resulted from the medical activity.

## THE PURPOSE OF THE STUDY

The purpose of the study was to investigate the circumstances in which the accidents through blood exposure of the medico-sanitary personnel occur and which is the mechanism of the accident in those cases. In this study we had the following work hypothesis some of the hospital departments present a high level of risk for accidents through blood exposure Anesthesia and intensive care, surgery, obstetrics-gynecology, hemodialysis, due to the density of invasive gestures and others have a lower risk such as the medical departments.

## MATERIAL AND METHOD

The study material consisting of 968 subjects was part of the medico-sanitary personnel in the Clinical Emergency Hospital of Sibiu selected in two lots: a research lot for the subjects in the departments with high risk of accidents through blood exposure in comparison with the lot in low risk departments of accidents through blood exposure, research lot and witness lot

**Research lot** 510 persons in departments with high risk for accidents through blood exposure (surgical departments, AIT, hemodialysis)

**Witness lot** 458 persons in departments with low risk for accidents

The professional accidents through blood exposure during 2006-2009 have been studied.

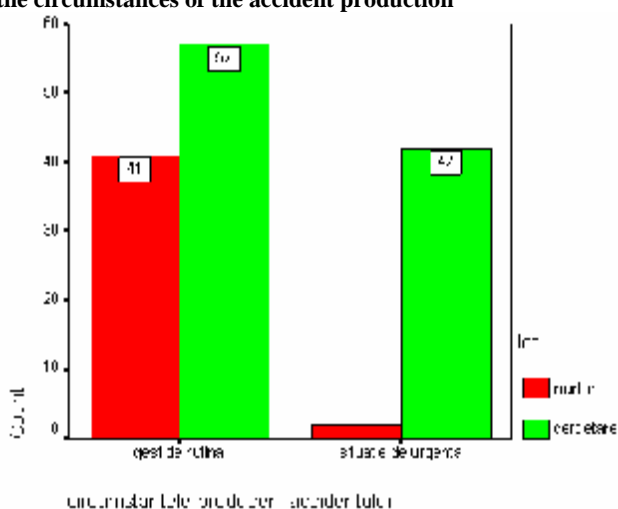
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RESULTS

Table no. 2. The association between the circumstances of apparition of the accidents through blood exposure in the 2 lots

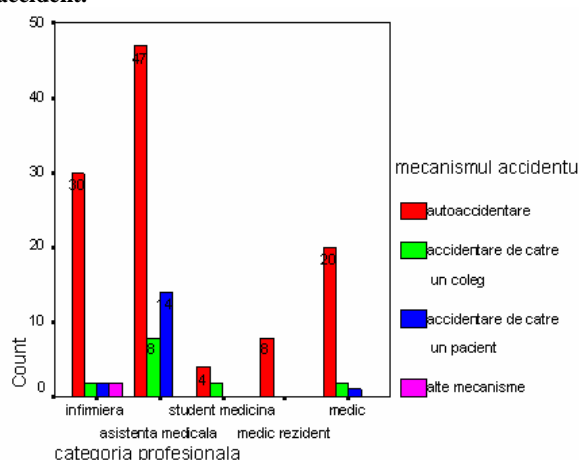
circumstanțele producerii accidentului	gest de rutina	Count	lot		Total
			marțor	cercetare	
gest de rutina		41	57	98	
	% within circumstanțele producerii accidentului	41.8%	58.2%	100.0%	
	% within lot	95.3%	57.6%	69.0%	
	% of Total	28.9%	40.1%	69.0%	
situație de urgență		2	42	44	
	% within circumstanțele producerii accidentului	4.5%	95.5%	100.0%	
	% within lot	4.7%	42.4%	31.0%	
	% of Total	1.4%	29.6%	31.0%	
Total		43	99	142	
	% within circumstanțele producerii accidentului	30.3%	69.7%	100.0%	
	% within lot	100.0%	100.0%	100.0%	
	% of Total	30.3%	69.7%	100.0%	

Figure no. 1. The case distribution in the two lots regarding the circumstances of the accident production



It is observed that in what regards the routine gestures is almost equivalent in the witness lot (41,8%) and in the research lot (58,2%). Regarding the emergency situations as a circumstance of accident producing those are more frequent in the research lot (95,5%) than in the witness lot (4,5%).

Figure no. 2. The distribution of the accidents in accordance with the professional category and the mechanism of the accident.



Among 142 cases of accidents through blood exposure 109 have been produced through auto accident, 14 through accident provoked by a colleague, 17 through accident provoked by a patient and 2 through other two mechanisms.

that in a total number 109 of auto accident, 47 are medical assistants, 30 are graduate nurses, 20 doctors, 8 resident doctors and 4 medicine students. In the case of accident provoked by a colleague in the total number of cases of 14, medical assistants are 8, 2 are graduate nurses, 2 doctors and 2 medicine students. In the case of accident provoked by a patient in the total of 17 cases, 14 cases are medical assistants, 2 are graduate nurses and 1 doctor. In other cases only the graduate nurses are aimed at.

The chi -square test distinguishes the fact that there is a significant difference among the number of the persons from the 5 categories in the case of auto accident. The auto accident is more frequent (47 cases) in medical assistants.

Table no. 3. The Chi Square test for the accident mechanism in various professional categories

categoria profesionala<sup>a</sup>

	Observed N	Expected N	Residual
infirmiera	30	21.8	8.2
asistenta medicala	47	21.8	25.2
student medicina	4	21.8	-17.8
medic rezident	8	21.8	-13.8
medic	20	21.8	-1.8
Total	109		

a. mecanismul accidentului = autoaccidentare

Test Statistics<sup>b</sup>

	categoria profesionala
Chi-Square <sup>a</sup>	55.633
df	4
Asymp. Sig.	.000

CONCLUSIONS

Regarding the circumstances of the accidents apparition – the most important manoeuvre followed by an accident through blood exposure is the exposure to blood when setting a branule(routine gesture),respectively the pricking with a needle.The majority of the accidents through blood exposure have ocured during the routine medicale gestures because those are more frequent. It is observed that in what regards the routine gestures the case distribution are approximative equal in the witness lot and in the research lot. There is a significant difference between the frequency of the accidents in the witness lot and the frequency of the accidents in the research lot, in the case of an emergency situation, the frequency of the accidents in the research lot being significantly bigger than the frequency in the witness lot.

The production of accidents through blood exposure during complex medical activity may be due to their complexity and duration.

Most of the accidents through blood exposure appeared in the usual situations such as treatments because we meet daily those medical gestures. A smaller number of the accidents appear during emergency medical gestures.

Among them we shouldnt neglect the high pressure during emergency medical activity influenced by the status of some patients (some are very restless- the accidents can't be prevented). From the point of view of the accident's mechanism, in an downward order the accidents were produced through auto accident, accident by a patient and accident by a colleague.

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