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Patient safety and patients' fall risk in the pre-hospital phase of emergency medical services

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Abstract In Poland, falls constitute the major cause of hospitalisation and deaths among all types of accidents. Around 5,000 people die because of that per year (the standardised rate: 8.8. per 100,000 population). Nearly 70 % of the deaths caused by falls are related to slips and trips. A total of 11.3% deaths are connected with falling down stairs and other inclined surfaces. As many as 34 % of fatal falls remain further unexplained.

Key words: Patient safety; fall risk

Introduction

In Poland, falls constitute the major cause of hospitalisation and deaths among all types of accidents. Around 5,000 people die because of that per year (the standardised rate: 8.8. per 100,000 population). Nearly 70 % of the deaths caused by falls are related to slips and trips. A total of 11.3% deaths are connected with falling down stairs and other inclined surfaces. As many as 34 % of fatal falls remain further unexplained [1].

In the senior age group, falls most frequently happen in the home environment, in the street, nursing homes and long-term care homes as well as in hospitals.

A significant part of both falls and their life-threatening consequences, in particular in the case of people over the age of 65, is avoidable thanks to properly coordinated care and education as well as preventive actions undertaken by patients themselves, their carers and medical personnel [2]

Patients' falls in medical establishments constitute a vital organisational, medical and socio-economic problem. The issue of patients' falls also concerns the area of emergency medical services, and in particular their pre-hospital phase. Falls occur at different stages of the pre-hospital phase of medical rescue, especially while putting a patient on a stretcher at the site of the incident, during manual handling of a patient both to and from an ambulance, while putting a patient into an ambulance and taking them out of it, as well as during transport in an ambulance. This phenomenon, however, has not been sufficiently identified from a scientific perspective. In the authors' own research it was established that falls constitute around 5 % of all adverse events which occur in emergency medical services [3]

Irrespective of the stage of the pre-hospital proceedings, the role of a paramedic is to protect a patient from the danger of falling and from its likely consequences such as injury, disability or death.

Safe transport of patients

One of the basic aims of emergency medical services is to guarantee a patient in a health-threatening emergency situation safe transport to the nearest emergency department or a specialist centre which provides specialised treatment, such as a hemodynamic laboratory, a stroke treatment centre or a trauma centre.

As it has been emphasised in the literature, a correctly made decision concerning the choice of an appropriate way of transfer, means of transport and transfer destination improves prognosis of a patient in a health-threatening emergency situation [4]

A patient's health status will have a decisive influence on an emergency medical team leader's choice of type, way and form of transport of the patient. Scientific guidelines and recommendations of different sorts concerning the procedure rules in the case of specific diseases and life-threatening conditions will be helpful in this area [5,6]

Their common denominator is the aim to assure safety to a patient, understood as the protection of a patient against avoidable adverse events, including health deterioration not resulting from the natural course of a disease, but which might be caused by external factors.

Numerous recommendations concerning the safety of patient transport emphasise the following rules:

- minimising the number of cases of the manual lifting and transferring of a patient in favour of mechanical, automated equipment,
- transferring immobilised patients by at least 2 persons,

- making use of the optimal level of cooperation with a patient, taking into account their needs and movement possibilities [7]

It should be pointed out that obeying these rules is far more possible in the hospital environment than the pre-hospital one.

An example of a systemic solution which has had an influence on the improvement of patient safety at the pre-hospital stage in recent years can be the introduction of so-called bariatric ambulances for emergency medical services teams in Poland, equipped with, among other things, special stretchers for transporting persons with body weight even over 350 kg, electric height adjustment systems, and stretcher winches. These solutions should certainly be applied much more broadly in emergency medical services, not only with regard to the transport of patients with obesity.

Falls prevention and a paramedic's liability

A paramedic is a guarantor of the safety of the patient whom they take care of while performing medical rescue actions [8]

That obligation also concerns transport safety and falls prevention. It is demanded that a paramedic's conduct comply with law, current medical knowledge and the due professional diligence requirement. While exercising the paramedic profession, it will be therefore necessary to establish the factors of a patient's increased risk for falling as early as at the stage of the preliminary examination and conducting a medical interview, and to indicate the occurrence in a patient, among other things, disturbances of equilibrium, motor system dysfunction, dysfunctions of the sensory organs, glycemic disturbances or musculoskeletal diseases. The factors predisposing a patient to falls also include the patient's age (children, seniors), the patient's weight, as well as psychophysical disorders resulting from, for example, the influence of medicines, alcohol, 'legal highs', drugs, or from mental disorders. While establishing the fall risk, it will be important to obtain information not only from the patients themselves but also from the patients' carers.

A proper assessment of the risk of the occurrence of a patient's fall should determine the decisions about the way of transferring the patient from the site where a sudden health-threatening situation happened to the ambulance, as well as about the transport in the ambulance and the transfer from the ambulance to a hospital emergency department.

Lack of a paramedic's due professional diligence concerning a patient's fall may result in their civil liability for culpable injuries following the fall. In some situations, when a fall may expose the patient to direct danger of loss of life or of serious detriment to health, the paramedic can be made criminally liable. Exposing to danger by persons whose duty is to take care of the exposed person carries a penalty of 3 months' to 5 years' imprisonment. Such a situation is illustrated by Case no. 1.

Case no. 1

The Regional Prosecutor filed an indictment at the court, against an ambulance driver and a paramedic – members of a medical transport team, obliged to take care of the transferred patient. They exposed the patient to danger in such a way that, while carrying out the commissioned medical transport, they did not check the technical state of the equipment in the ambulance and they did not notice that, when they were taking out the stretcher from the vehicle, the supports of the stretcher with the patient on it did not unfold. As a result, it fell on the ground, together with the patient, in consequence of which the aggrieved party suffered bodily injuries in the form of a head soft tissue contusion and a subgaleal haematoma, which violated the proper functioning of the bodily organs. The injured person died. In

the opinion of expert witnesses, an inert person's fall from the stretcher's height directly on the facial skeleton, at the heavy body weight, could lead to the occurrence of fractures of facial skeleton bones or intracranial haemorrhage [9]

In the context of assuring safe transport of patients, the issues which need to be reminded are the obligation to use safety belts, and exemptions from this rule. In the ambulance one deals with two types of safety belts – belts connected with the seats in the car and safety belts connected with medical equipment, particularly with a stretcher, boards or a car chair. The Law on Road Traffic permits exemptions from the obligation to use safety belts in motor vehicles. The obligation to fasten safety belts does not concern, among others, members of a medical team while providing medical assistance, and a person with a disease or a disability, transported on a stretcher or in a wheelchair [10].

The law does not exempt a patient transported in a sitting position in a form other than a wheelchair from the obligation to use safety belts. Case no. 2 includes an illustration of this.

Case no. 2

A patient took a seat suggested to her – a chair for transporting people, serving also as a transport wheelchair. The possibility of securing a patient during transport was guaranteed both by the safety belt being the standard equipment of the transport wheelchair, as well as by the seat belts which remain the normal equipment of the vehicle. A paramedic told the woman to fasten the belt with which the chair was equipped, but it was not possible due to the patient's body weight. The belt was too short to encompass her body and ensure effective fastening. The paramedic recommended the patient to hold on to the seat during transport, which was what the woman did. On the way, the ambulance driver was forced to make a rapid breaking manoeuvre. The patient was thrown out of the chair and hit her entire body against the partition wall inside the ambulance, then she fell on the floor. As a result of the accident, the woman suffered a fracture in the lateral malleolus of the ankle joint, a thoracic contusion, and a right knee joint contusion. The injuries resulted in 5 %, permanent detriment to her health. The court assessed that there had been no health-related contraindications which would have excluded proper securing of the patient during transport. In the court's opinion, all circumstances indicated wilful negligence as regards the non-fulfilment of the duties which were to assure the safety of the patient during transport, on the part of the persons who carried out the medical transport service [11]

A paramedic's safety during transport

Due to the character of proceedings in emergency medical services, paramedic safety is equivalent to patient safety. Obeying the safety and hygiene at work rules protects not only paramedics themselves but also patients. As a rule, a paramedic's fall during manual patient transfer leads to a patient's fall. In an international data sheet on occupational hazards for an ambulance driver, among the occupational risk factors, the Central Institute for Labour Protection indicates, for example, uneven, slippery surfaces, stairs, floors (i.e. levels in buildings) – a possibility of injuries as a result of slipping, stumbling or falling during the transfer of patients or stretchers – as well as high-speed ambulance driving. As preventive measures, the following ones are indicated, among other things: using protective footwear with anti-slip soles, applying safe ways of lifting and transferring patients and

medical equipment, as well as the use of mechanical devices which facilitate lifting and transferring [12].

In the interests of both patient and paramedic safety, it is necessary to obey safety and hygiene rules during manual handling activities, including the norms concerning the maximum weight of loads for women and men, determined in the regulations [13].

In this context it should also be pointed out that reducing the staffing level in emergency medical teams to two persons, while being permitted by law, is a solution which increases the risk of the occurrence of falls in pre-hospital proceedings [14]

Conclusions

The pre-hospital phase of emergency medical services belongs to the areas with the highest risk of the occurrence of patients' falls compared to hospital proceedings. Obeying safety and hygiene at work rules for paramedics both by themselves and by their employers, is of significant importance for the prevention of falls of patients in pre-hospital proceedings. Breaching the safety rules during transport of a patient by a paramedic is associated with legal sanctions in criminal and civil proceedings. In-depth scientific research concerning the phenomenon of patients' falls at the pre-hospital proceedings stage is necessary.

References

- [1] Rafał Halik, Wojciech Seroka - Sytuacja zdrowotna ludności Polski i jej uwarunkowania (The health status of the Polish population and its determinants), ed. by Bogdan Wojtyniak and Paweł Goryński, National Institute of Public Health – National Institute of Hygiene, Warsaw 2018).
- [2] [Marta Godzik, Magdalena Żurowska-Wolak - Prewencja upadków u osób starszych (Prevention of falls for older people), *Praca Socjalna* 2017; 32 (5): 117-130).
- [3] Grzegorz Cira, Marcin Mikos - Zdarzenia niepożądane w ratownictwie medycznym (Adverse events in the Polish emergency system), *Państwo i Społeczeństwo*, 2017; vol. 17, no. 4, pp 55-68).
- [4] A.Stanisławek, R.Chadaj – Ratownictwo a transport poszkodowanego z obrażeniami pourazowymi (Medical rescue and transport of a person with post-traumatic injuries), *Logistyka – science (a scientific article)*
- [5] L. Brongel (ed.) – Złota godzina – czas życia, czas śmierci (Golden hour – time of life and death), Kraków, Wydawnictwo Medyczne 2007, pp 59-78).
- [6] J.E. Cambell – International Trauma Life Support, *Medycyna Praktyczna* 2009.
- [7] Strategia Europejskiej Agencji Bezpieczeństwa i Zdrowia w Pracy na lata 2006 -2012 (Strategy of European Agency for Safety and Health at Work for the years 2006-2012), Stanowisko Polskiego Towarzystwa Pielęgniarskiego w sprawie zasad podnoszenia i przemieszczania pacjentów (The stance of Polish Nursing Association as regards the rules of lifting and transferring patients).
- [8] Marcin Podgórski, Marcin Mikos - Bezpieczeństwo pacjenta w ratownictwie medycznym - faza przedszpitalna (Patient safety in emergency medical services – the pre-hospital phase), In: *Bezpieczeństwo pacjenta*, pp 99-109, Kraków ZIZ CE, ISBN 978-83-932788-8-6).

[9] Komunikat Prokuratury Okręgowej w Zielonej Górze z dnia 14 maja 2018 r. (the announcement of the Regional Prosecutor's Office in Zielona Góra as of 14 May 2018), <http://www.zielona-gora.po.gov.pl>).

[10] Ustawa z dnia 20 czerwca 1997 r. - Prawo o ruchu drogowym, Dz.U. 1997 nr 98 poz. 602 (The Act of 20 June 1997 - The Law on Road Traffic, Journal of Laws 1997 no. 98 item 602).

[11] Sąd Rejonowy dla Łodzi-Śródmieścia w Łodzi, I Wydział Cywilny z dnia 13 marca 2018 roku Sygn. akt I C 1116/16 (The Regional Court for Łódź-Śródmieście in Łódź, 1st Civil Division, the decision as of 13 March 2018, File ref. no. I C 1116/16)

[12] Centralny Instytut Ochrony Pracy – międzynarodowa karta charakterystyki zagrożeń zawodowych dla kierowcy karetki (Central Institute for Labour Protection – an international data sheet on occupational hazards for an ambulance driver), www.ciop.pl, retrieved on 17 April 2019)

[13] Rozporządzenie Ministra Pracy i Polityki Społecznej z dnia 14 marca 2000 r. w sprawie bezpieczeństwa i higieny pracy przy ręcznych pracach transportowych Dz.U. 2000 nr 26 poz. 313 z późn zm. (Regulation of the Minister of Labour and Social Policy of 14 March 2000 on the Safety and Health at Work For Manual Transport Works, Journal of Laws 2000 no. 26 item 313 as amended)

[14] Stanowisko Społecznego Komitetu Ratowników Medycznych w sprawie liczebności podstawowych zespołów ratownictwa medycznego (The stance of the Social Committee of Paramedics on the staffing level of basic emergency medical teams).