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## **„PATIENTS OVER 60 IN HELICOPTER EMERGENCY MEDICAL SERVICE IN POLAND”**

### **Introduction**

The number of medical dangers is rising due to the constant developing civilisation, such as: technological progress, motorisation development and other factors affecting the environment, therefore changing the life styles of a modern human being and creating a challenge for healthcare institutions all over the world. Changes in demographic statistics such as : life expectancy, decrease in mortality, result in the need for extra care for the elderly. As a human gets older their likeliness to have a chronic illness significantly increases, their independency levels drop, making elderly care much more difficult than before. People over the age of 60 are twice as likely to be hospitalised for body injuries and elderly mortalities caused by serious injuries are 6 times higher than in younger people with the same injuries. Providing the right medical care which aims for decreasing mortality rate and morbidity rate along with improving life quality for elderly people would require systematic improvements, demanding urgent financial investment in this case.

One of the key elements in healthcare is emergency medical system, which aims to provide appropriate medical care to victims of accidents and emergency medical situations before reaching a hospital. In Poland, one of these medical rescuers is Helicopter Emergency Medical Service – HEMS. HEMS aims to provide emergency medical attention at the location of the emergency, also promising a sanitary prompt aviation transport.

### **The purpose**

All of the above issues and problems of the elderly and their impact on the health have caused the author to carry out an investigation. The author investigated a number of cases between 2011 to 2017 where HEMS intervened with patients over the age of 60, for example:

why was HEMS needed in this case, how many times did they intervene, what was the medical emergency.

### **Methods used, results and conclusions**

The research has been made on the analysis of documentation presented by HEMS, related to flight and medical aspects. It concerned patients over 60 years old for whom HEMS has intervened between 1st of January 2011 until 31st of December 2017. The research material consisted of medical and operational documentation from 22 HEMS bases.

The subject of studies presented in the dissertation involved interventions accomplished by HEMS for the elderly patients in the indicated period of time.

During the analysis the following information was taken into account: the place where HEMS crew have been based, the period of time of all stages of interventions, distances measured for specific stages taken in the whole procedure, the location of the patient, the current season, month and day of the week, as this would influence the search carried out, also the time of intervention, including time of the day and the hour. All this was based on the knowledge and statistics in reference to International Statistical Classification of Diseases and Related Health Problems (ICD-10).

In addition: condition of the patient, gender and the age, as also medical emergency procedures and pharmacological treatment were also taken into account with the further treatment used for the patient. All together, 20 060 cases were taken into account for the research. The collected information were kept in Microsoft Excel (MS Office 2010 for Windows 10). During statistical analysis, the program called STATISTICA (version 13; StatSoft, Krakow, Poland) was used.

In the doctoral dissertation the following specific problems were raised:

1. What are the most common reasons for calling HEMS in the studied cases?
2. Is there any correlation between factors like: gender, the age of the patient, location of the patient, the type of mission and reasons of interventions in the group of patients over 60 years old?
3. What kind of medical emergency procedures are mainly given by HEMS crew during mission carried out for studied group?
4. What factors affect the accomplishment of medical emergency procedures in the studies cases?
5. What factors influence the time of HEMS arrival to the place of calling?

The report of the examinations and test results show that the most frequent conditions that required the HEMS team to be sent, for the patients over 60 years old were as followed: cardiovascular diseases, cardiac arrest and also bodily injuries. The research demonstrated correlation between gender, the age of the patient together with the location of the accident and the motives beyond undertaken interventions. The conclusions taken from the research are: for the oldest group of women (90+), the most common diseases during interventions in the urban area were cardiovascular diseases, however for the male population of the older generation, in rural area were injuries and poisoning.

The most common medical activities carried by the HEMS team at the place of intervention or on the way to the hospital were as follow: pharmacotherapy, measuring blood sugar levels, oxygen therapy, immobilization of patients, obtain intravascular access, sedation of patients, mechanical ventilation using a respirator as also endotracheal intubation. The pharmacotherapy mostly included given patient: crystalloid, opioid analgetics, epinephrine and benzodiazepines also giving other anticoagulants.

Further analysis of carrying after patients over 60 years of age shows that following first aid treatments used for the patients were as follows: 2/3 of patients were transported to the hospitals where further treatment was required, however 1/5 of patients had to be referred to Ground Emergency Medical Service (GEMS) for further transportation to the hospital.

The research also shows that location of the patient, the distance to the location, call HEMS crew when help is needed from GEMS, reaction time of the HEMS crew and the age of the patient has a huge impact that can influence the HEMS team work. It takes much longer to reach the location of the patient if the HEMS team has to fly for longer distance, as also if the location of intervention in the rural area as the longer reaction time of the crew.

This type of retrospective analysis of HEMS team interventions, done by the author was the first to be conducted in Poland for the spectrum of patients over 60 years of age. GEMS and HEMS work being carried pre-hospital treatment plays a vital role for the patients and it provides effective emergency medical services for the patients in critical circumstances. Although there is no unequivocal proof that HEMS services are effective and safe, investigative results, also other authors' research, provide wider research and knowledge of this aspect, emergency rescue for the elderly. Due to this research more known issues can be addressed and new systematic improvements can be explored. Limited resources can now be properly and efficiently allocated to the areas where is most needed, providing crucial care for the older generations. To significantly improve healthcare emergency rescue in Poland, it is crucial to carry out further research. This is to provide elderly patients with the care they need

and deserve, which should be given extra attention. The best way to accomplish this task is to carry out longer and more precise analysis and carrying out further research. This would allow to properly provide best care to individuals in medical danger or life threatening conditions thereby improving the quality of pre-hospital care [22, 59, 86, 105, 106, 107, 108, 109, 110, 111,115, 116, 117].

**Key words:** senility, Helicopter Emergency Medical Service, medical emergency procedures.