

ORIGINAL ARTICLE

CHARACTERISTICS OF THE INTERVENTION OF EMERGENCY MEDICAL TEAMS IN THE SOUTHERN PART OF POLAND IN 12-MONTH OBSERVATION

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ABSTRACT

The aim: The aim of this study was to characterize the general characteristics of the completed interventions by the Voivodeship Rescue Service of Katowice in the time period from 1st January 2018 to 31 December 2018.

Material and methods: Analysis of the characteristics of the trips was done based on the information contained in the dispatch order cards and medical emergency services cards. In the statistical analysis the Chi-Square ($p < 0.05$) test was utilized.

Results: The total number of interventions was 211,548 cases. It is also worth observing, that the general number of interventions out of town amounted to 20,344 interventions, whereas, in town, there were 191,204 interventions. It can be observed that the most common decision made by the Emergency Medical Team was the decision to directly transported and received by the emergency department (126,553 cases; $p < 0.05$). The definite most common reason for symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (ICD-10 code : R; $p < 0.05$).

Conclusion: The largest number of interventions completed by the Voivodeship Rescue Service in Katowice in 2018 was due to injuries and poisonings, symptoms, diseases features and incorrect results of diagnostic tests, and in third place were cardiovascular diseases.

KEY WORDS: Silesian Voivodeship, emergency medicine, medical rescue, Emergency Medical Team

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INTRODUCTION

One of the state's tasks, defined in the act from the 8th September 2006 regarding National Emergency Medical Services, is guaranteeing help to every person who finds themselves in the state of sudden danger to their health. In order to do this, in the aforementioned act, the system of the National Emergency Medical Services (NEMS) [1] was created, parts of this system are the Emergency Medical Teams (EMT) and Emergency Department (ED), direct control of this system is placed upon the Minister of Health, whereas, on the Voivodeship level, the province governor is responsible for the correct planning, coordination and organization of the system as well as directing supervision over this system. The governor is subsequently approved by the Minister of Health, and next, based on the analysis made, the National Health Fund signs contracts to guarantee healthcare services in the field of emergency medical services [2, 3]. Due to this, as highlighted by Sucheka et al., the functioning of the entire medical emergency rescue system should be looked at from the business perspective, based on a business logic [4]. The ability to carry out analysis of trips completed by the Medical Emergency Teams, including the assessment of the legitimacy of the trip, its

cause, defined groups of patients most often utilize the structure of the National Emergency Medical Services, which is made possible by entrances made on "Emergency documentation cards". A significant role in this system is performed by the dispatcher medical, whose tasks include the acceptance of calls, collecting a report from the caller, as well as deciding if there is or isn't a need for a Medical Response Team - basic or specialist - being sent out. The team is composed of two people authorized to perform emergency medical services, including a system nurse or paramedic. In turn, in the composition of the specialist squad, there are three people authorized to perform emergency medical rescue, including a system doctor and nurse or a paramedic. It is worth noting that the decision made by the dispatcher medical is based purely on the subjective transfer of information from the reporter, additionally, the reporter has no ability to assess the medical state of the person based on the realistic picture of the caller's ailments, which can be done in a Emergency Department [1]. The primary task of the EMT is helping those in sudden danger for their life and health, defined as a sudden or predictable appearance of symptoms of a worsening health, which the direct succession of which could be serious damage

Table 1. Characteristics of actions that ended the intervention of the emergency medical team in 2018, broken down into intervention area and gender

Form of conclusion	Out of town	Win town
Other than aforementioned	493	5300
Medical emergency operations abandoned	447	3306
The person who was helped was directly transported and received by the trauma center	26	105
The person who was helped was directly transported and received by the hospital organizational unit	125	587
The person who was helped was directly transported and received by the hospital emergency department or emergency room	12607	113946
The person who was helped was not transported to the hospital emergency department or emergency room	6597	67863
Transfer of care for a person in an emergency health situation to an air medical rescue team	49	97

to the functioning of the organism or damage of the body or even the loss of life, requiring the immediate decision to provide emergency medical services and treatment. However, determining a full and precise list of the dangers is practically impossible just like drawing a clear line to decide from when sudden danger can be determined. In effect, the functioning of the NEMS imposes itself on the functions of other open treatment units [1, 4].

THE AIM

The aim of this study was to characterize the general characteristics of the completed interventions by the Voivodeship Rescue Service in Katowice in the period between 1st January 2018 to 31st December 2018. Particular attention was paid to the type of intervention taken by the EMT as well as the reasons for the calling it based on the international qualification of ICD-10 illnesses.

MATERIAL AND METHODS

Analysis of the characteristics of the interventions made by the Voivodeship Rescue Service in Katowice in 2018 was done based on the information contained on the dispatch order cards and medical emergency services cards. Only the reports where the trip of an Emergency Medical Team took place were analyzed and looked at. The shared data was implemented into an Excel calculatory spreadsheet, anonymized, and then statistically analyzed using the STATISTICA 13 (Stastoft, Cracow, Poland) program. In the statistical assessment, multi-purpose tables and the Chi-Square test were used using a statistical significance threshold of $p < 0.05$.

The study did not require the consent of the bioethics committee and the patient's consent.

RESULTS

The total number of interventions was 211,548 cases. It is also worth observing, that the general number of interventions out of town amounted to 20,344 interventions, whereas, in town, there were 191,204 interventions. (table 1; $p < 0.05$). Based on the figures presented in table 1, it can be observed

that the most common decision made by the Emergency Medical Team was the decision to directly transported and received by the hospital emergency department or emergency room (126,553 cases; $p < 0.05$). The second most common decision was associated with not transported to the ED (totalling 74460 cases; $p < 0.05$). The third most common decision was other than aforementioned (5793 cases; $p < 0.05$).

The second part of the analyzing the implemented data was connected with characterising the causes of the trips by the Medical Emergency Team in 2018 (Table 2). The definite most common reason for symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (ICD-10 code : R; $p < 0.05$).

The number of out of town interventions due to this cause totalled 94445 (women - 8672 cases; men - 85773 cases), whereas in town - the total number of trips was 97061 cases (women -9179; men - 87882). For 200,42 cases, gender information was not provided (Table 2).

DISCUSSION

As part of this work, it was decided to analyze the reasons for the interventions made by the Voivodeship Rescue Service in Katowice in 2018 based on the ICD-10 code classification, as well as to determine the most commonly made decisions by the travel teams about what to do next with the patient. According to the best of the author's knowledge, this is the first scientific description of this sort in the Silesian Voivodeship. These types of analyses are incredibly important. Firstly, through the screening method, it allows us to obtain information about the most common health issues, which are connected with the trips made by the EMT. Through this, it is possible to determine if the essence of the Emergency Medical Rescue System defined in the Act [1], in reality answers to the interventions characteristics. This perception of the Emergency Medical Rescue System, leads to perceiving it in business terms [4]. Due to this, the question is raised, if it would be recommended to redefine the assumptions of the Act, which would definitely lead to changes in the public perception of the system, leading to new thought and cultural patterns. On the other hand, this sort of analysis would

Table 2. Reasons for trips of the Voivodship Rescue Service in Katowice in 2018

Letter	ICD10 Name	Men			
		out of town	in town	out of town	in town
A	Some infectious and parasitic diseases	6	62	3	30
B		0	12	2	16
C	Cancer	98	758	107	811
D	Diseases of the blood and haematopoietic organs and some diseases involving autoimmune mechanisms	15	106	17	137
E	Disorders of endocrine, nutritional status and metabolic transformation	229	2074	196	1701
F	Mental and behavioral Disorders	335	3738	417	4146
G	Nervous system diseases	287	2433	430	4319
H	Diseases of the eye and appendages of the ye. ear and mastoid process	15	151	12	129
I	Cardiovascular diseases	1508	14442	1159	9492
J	Respiratory system diseases	217	2046	303	1947
K	Digestive System diseases	201	1275	163	1270
L	Skin and subcutaneous tissue diseases	13	196	16	230
M	Muscoskeletal system and connective tissue diseases	160	1674	130	1186
N	Urogenital diseases	129	1214	141	1113
O	Pregnancy, birth and puerperium	39	744	0	0
P	Certain conditions originating in the perinatal period	3	0	0	0
Q	Congenital malformations, deformations and chromosomal abnormalities	0	6	1	15
R	Symptoms, signs and abnormal clinical test results not elsewhere classified	3105	31424	2891	28009
S	Injuries, poisonings and other identified effects of external factors	1486	12751	1922	16575
T		180	1891	277	2848
V		103	784	139	852
W		44	584	59	888
X		57	460	66	606
Y		69	1438	264	5591
Z		Factors affecting health and contact with the health service	373	5510	464

rather lead to the consideration if in all the cases where the medical distributor found it necessary to send out the Medical Emergency Service there was an actual threat to the health and life of a person [5, 6].

This illustrates the complexity of the problem, implication with various indirect issues, including the economy, administrating the health system, as well as directing the focus on the pressure and psychological strain forced upon the medical distributor, which is the first, while also critical element in the patient-sickness-healthcare system (rescue) relationship. The constant stressful situations and constant pressure that paramedics, nurses and doctors deal with should also not be undermined.

The analysis carried out by us indicated that the most common cause of interventions made by the EMT were injuries, poisonings and other identified results of external factors (approx. 97% of all interventions). Aftyka

et al. analyzed the reasons for calls for the EMT within the jurisdiction area of the Voivodship Rescue Service in Lublin in the first week of each quarter of the year [8]. These authors determined that there was a significantly higher frequency of trips to areas in town instead of those out of town (village), which is also compatible with our findings. Convergent observations were made, when the breakdown criterium was gender. Nonetheless, Aftyka et al. did not observe any clear difference between the interventions due to injuries, poisonings or other identified effects of external factors in comparison to the others. This can be the result of a shorter observation period (totaling 4 weeks) compared to the period adopted by us, as well as the analysis of all calls, not just those resulting in a trip being made by a EMT [8]. In turn, Nogalski et al. indicates that in the years 2003-2005, the number of patients hospitalized was 92,463 people, of which 66% were

men [9]). Additionally, our observations indicate a higher frequency of injuries in men than in women. An interesting fact seems to be that injuries, and not cardiovascular diseases, were the dominating cause for trips being made by EMT. According to our developed statistical data for the amount of deaths due to cardiovascular causes is gradually increasing in Poland, placing currently at over 177,000 in 2016, from which the number of people above the age of 65, who died due to cardiovascular causes in the Silesian Voivodeship amounted to 2635 people for every 100,000 residents (data from 2013) [10]. A seemingly small amount of reported cardiovascular incidents, which we observed in our study could be a result of the high public awareness in the Silesian Voivodeship. A survey carried out by Trzeciak et al. aimed to compare risk factors of illnesses of a cardiovascular nature in north and south Poland. These authors determined that there was a lower risk of incidents in residents of southern Poland - OR 3.6 - in comparison to residents of the northern region of our country - OR 4.4. In this work, the higher public awareness in the field of prevention and a healthy lifestyle throughout residents of southern Poland, including the Silesian Voivodeship [11], were highlighted. In turn, Koziński et al. highlights, that people with a higher education are characterized by a higher awareness of health prevention [12], and in the area of the Silesian Voivodeship, several rapidly developing academic campuses can be picked out [13]. The relatively small number of reports due to cardio-vascular causes, could be possibly be due to the fact that in this work, the only cases which were analyzed, were those that ended in an intervention by a EMT. Therefore, it is also not out of the question, that a certain number of these reports were seen as not in need of an intervention by the medical distributor. Undoubtedly, in some of the cases, the people were looking for help by directly reporting to the ED or the Interventional Cardiology Ward. Throughout the reasons for the intervention structure determined by us, it must be remembered, that a relatively small number of cases of cardiovascular diseases is connected with a high societal awareness in the Silesian Voivodeship about the range covered by the EMT, which above all should carry help for those in sudden life-threatening or health-threatening situations, and not exacerbations of chronic diseases [14, 15]. Dobosz et al. in their carried out analysis indicates cardiovascular diseases as the third most common cause for trips made by EMT, immediately after a group of diseases classified using the R code by the ICD-10 classification method (symptoms, disease features as well as incorrect results for clinical tests not elsewhere classified) as well as injuries, poisonings and other identified effects of external factors - codes S and T [16]. It is also worth drawing attention to the fact that most of the completed interventions were ended in a recommendation to continue treatment in the jurisdiction area (201590 cases), whereas in only 5530 cases, the intervention ended in transporting the person to the emergency room or the Hospital Emergency Ward, in relation to 3009 people, this was not necessary [9]. Based on the collected data, the complexity of the

Medical Emergency Service system and its functioning can be observed, as well as the need to analyze the system from several viewpoints, mainly socially, economically, and psychologically. There is a need for further analysis.

CONCLUSIONS

The largest number of interventions completed by the Voivodeship Rescue Service in Katowice in 2018 was due to injuries and poisonings, symptoms, disease features and incorrect results of diagnostic tests, and thirdly, cardiovascular diseases. The majority of the trips made by the EMT ended in a recommendation to continue treatment within the jurisdiction.

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Conflicts of interest

Authors declare no conflict of interest.

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