

## ORGANIZATION OF THE EMERGENCY MEDICAL SERVICE IN POLAND

Beata PATER

University of Agriculture in Krakow; beata.pater@urk.edu.pl, ORCID: 0000-0003-4209-241X

**Purpose:** The purpose of the article is to present the organization and financing of the emergency medical services system in Poland, against the background of model solutions in this matter.

**Design/methodology/approach:** The methodology of the study is based on the analysis of existing legal regulations on the organization of the emergency medical services system in Poland. A review of the available literature, in which the authors addressed issues related to models of functioning of the emergency medical services system, was also carried out. Statistical data provided by the Statistics Poland (GUS) and reports on the implementation of the financial plan provided by the National Health Fund (NFZ) were reviewed.

**Findings:** The State Emergency Medical Service system is evolving towards the Anglo-American model. The previous model of financing through a subsidy from the state budget has proved insufficient. In the years under review (2007-2022), the subsidy was insufficient to cover the costs of operating the State Emergency Medical Service. After a change in the method of financing, the burden of covering operating costs was transferred to the National Health Fund. In 2023, costs were planned to be higher than they were actually incurred. Year after year, however, the system requires higher expenses.

**Originality/value:** The publication addresses issues related to the organization of state emergency medical services in Poland. The subject matter is relevant in the context of the current socio-economic and political situation and is a contribution to further in-depth research in a situation of shortage of resources allocated to health care.

**Keywords:** emergency medical service, organization, financing, model of EMS delivery.

**Category of the paper:** research paper.

### 1. Introduction

In Poland, the State Emergency Medical Service system was created to provide necessary medical assistance to people who are in a state of sudden danger to life or health. This system is critical to the sense of security in both individual situations and mass events. The provision of medical assistance in situations and states of sudden danger to life and health is guaranteed by Article 68 of the Constitution of the Republic of Poland. The law governing the organization

of the EMS system, the principles of its financing and operation has been undergoing evolution. The first law on State Emergency Medical Services was passed on July 25, 2001. It was in force until December 31, 2006 (Journal of Laws No. 113, item 1207). It was replaced by the current Law on State Emergency Medical Services (Journal of Laws 2006 No. 191, item 1410). In connection with the need to achieve increasingly higher efficiency, the organization of the Emergency Medical Service system is changing. Significant changes in the organization of the system, aimed at improving the functioning of the entire Emergency Medical Service system, were introduced by the Act of May 10, 2018 amending the Law on State Medical Rescue and certain other acts (Journal of Laws 2018 item 1115). The purpose of the article is to present the organization of the Emergency Medical Service system in Poland, against the background of model solutions.

## 2. Organization of the State Emergency Medical Service system

The World Health Organization (WHO) defines Emergency Medical Service system (EMS) as a way of deploying personnel, equipment and technical facilities to ensure proper, effective and coordinated system activities including preventive actions, management of risks arising from emergencies, disasters, natural disasters, etc. Their task is to provide medical care services implemented at the scene of an incident and during transport (pre - hospital EMS) and hospital emergency medicine services (in-hospital EMS) implemented in emergency departments. (Kuehl, 2002; WHO, 2008; Bem, 2013). According to this definition, the emergency medical system should provide medical care to the patient at the scene, during transport to the nearest hospital and in the hospital.

The way of the delivery of service depends on the model in which emergency medical services operate. Since the 1970s, the organization of emergency medical services in the pre-hospital setting has been based on two main models: the Anglo-American and the Franco-German models (Al-Shaqsi, 2010; Chenaitia et al., 2011).

The Franco-German model, is the idea of bringing the hospital closer to patients, based on the principle of *stay and stabilize*. Medical activities are carried out by experienced doctors who are authorized to make complex clinical assessments and treat patients in their homes or at the scene. As a result, fewer people are transported to hospitals. The few patients transported to medical facilities are usually admitted directly to hospital wards by an emergency medicine field physician, bypassing the emergency department (Roessler, Zuzan, 2006; Adnet, Lapostolle, 2004; Spiteri, 2008).

The Anglo-American model, on the other hand, works in countries where emergency medicine is well developed and widely recognized as a separate medical specialty. It is based on the principle of *scoop and run* (Al-Shaqsi, 2010; Dijkink et al., 2017; Bélanger et al., 2019;

Makrides et al., 2022). This means getting patients to the hospital quickly with fewer pre-hospital interventions. In this model, paramedics are closer to public safety services, such as police or firefighters, rather than health care (Pozner et al., 2004). Trained paramedics and emergency medical technicians (EMTs) operate the system under clinical supervision. On-scene and transport services tend to be reduced to basic emergency services. Patients are transported mainly in ambulances, with less use of air-medical evacuation or coastal ambulance. Nearly all patients in the Anglo-American model are transported by Emergency Medical Services personnel to developed emergency departments rather than to hospital wards (Al-Shaqsi, 2010; Bélanger et al., 2019; Makrides et al., 2022).

Sharp distinctions between these models were evident from the 1970s until the end of the 20th century. Today, most EMS systems around the world have components of both models. In Poland, EMS is largely based on the Anglo-American model adapted to Polish conditions. It is also recognized that the Anglo-American model is the most effective and modern model for the organization and operation of emergency medical services (McConnell et al., 2007). In addition, EMS in Poland is based on the standards of the golden hour (the time within which a person in a life-threatening condition should be delivered to a facility where medical assistance can be provided) and the concept of the chain of survival (the chain of survival consists of early recognition of cardiac arrest and call for help - early initiation of cardiopulmonary resuscitation - early defibrillation - post-resuscitation care; the first three links can be taken care of by a pre-medical first aider, the last belongs to hospital care) (Andres, 2022; Miłowski et al., 2024).

According to the provisions of the Law on State Emergency Medical Services (Journal of Laws, No. 191, item 1410), the State Emergency Medical Services system consists of government administrative bodies responsible for carrying out the tasks of the system, namely the minister in charge of health and the provincial governors. Supervision of the system in the country is exercised by the minister responsible for health, while the task of the governor is to organize, plan, coordinate and supervise the execution of the system's tasks (Article 18 of the Law on State Emergency Medical Services, Journal of Laws 2006, No. 191, item 1410).

The second branch is the cooperating units of the system: medical dispensaries, hospital emergency departments, emergency medical service teams and air ambulance services.

Medical dispensaries are organizational units of the provincial office, which are listed in the provincial plan of operation of the EMS system, established to receive and handle emergency calls transmitted from emergency notification centers (Article 3(2) of the Law on Emergency Notification System, Journal of Laws 2023, item 748)), receive notifications of incidents and perform tasks by medical dispatchers (Article 3 of the Law on State Emergency Medical Services, Journal of Laws 2006, No. 191, item 1410).

Emergency medical teams are units of the EMS system, undertaking medical emergency activities in out-of-hospital settings. A distinction is made between specialized and basic teams. Specialized teams consist of at least three persons authorized to perform medical emergency

actions, including a system physician and a system nurse or paramedic. Basic teams, on the other hand, consist of at least two people authorized to perform medical emergency activities, including a system nurse or paramedic. Emergency medical service teams may also include a driver, in the event that none of the team members meet the conditions of the Law on Driving as specified in Article 106, paragraph 1 (Journal of Laws 2011, No. 30, item 151).

Air Ambulance, as a unit of the system, has three types of teams. These are EMS teams - an airplane or helicopter transport team with a crew consisting of two pilots, an EMT (paramedic or nurse). Airborne HEMS (Helicopter Emergency Medical Service) teams, on the other hand, consist of a pilot, a rescuer (paramedic or nurse) and a doctor (LPR).

Trauma centers and organizational units of specialized hospitals providing essential emergency medical services in the provincial plan of action of the system cooperate with the system. Also cooperating with the system are other units, such as the Police, Fire Department, Border Guard, mountain and water rescue (Article 2 of the Law on State Emergency Medical Services, Journal of Laws 2006, No. 191, item 1410).

In the State Emergency Medical Service system in 2023, there were 1617 teams in operation, including 1302 basic teams and 315 specialized teams. Since 2020, the number of working EMS teams has increased by 36 nationwide, while their structure has changed. The number of specialized teams was reduced by 28, while the number of basic teams was increased by 64. The most visible change took place in the Silesian province, where 13 specialized teams were dropped and 17 basic teams were established (Table 1). Thus, the tendency to move away from specialized teams (as in the Franco-German model) to basic teams (as in the Anglo-American model) is evident. Despite these changes, emergency teams most often provide out-of-hospital medical assistance to people in medical emergencies. In 2023, nearly 2.8 million trips or outings were made, of which 6.1% were to people under the age of 18, and 50.1% to people 65 and older. A significant percentage of the actions (77.1%) were those made to the patient's home. In addition to emergency medical service teams, medical assistance is also provided by air medical rescue teams from 21 Air Ambulance bases, and 246 hospital emergency departments.

In 2023, there were 155 emergency rooms, 17 trauma centers and 11 pediatric trauma centers working with the National Emergency Medical Service system. Nearly 4.0 million people received ambulatory (non-hospitalized) medical care in hospital emergency departments or emergency rooms, of whom children accounted for 19.5% and people aged 65 plus accounted for 26.8%.

**Table 1.***Units of the State Emergency Medical System in 2020 and in 2023*

Province	Specialized emergency medical service teams			Basic emergency medical service teams			Hospital emergency rooms			Air Ambulance Teams	
	Year		Number	Year		Number	Year		Number	Year	
Year	2020	2023	change	2020	2023	change	2020	2023	change	2020	2023
Dolnośląskie	27	27	0	90	90	0	16	15	-1	1	1
Kujawsko-pomorskie	12	12	0	81	82	+1	10	11	+1	1	1
Lubelskie	28	28	0	65	65	0	17	16	-1	1	1
Lubuskie	11	8	-3	43	47	+4	8	8	0	2	2
Łódzkie	23	21	-2	80	83	+3	20	21	+1	1	1
Małopolskie	21	21	0	113	115	+2	21	21	0	1	1
Mazowieckie	41	37	-4	159	177	+18	31	33	+2	3	3
Opolskie	12	12	0	32	32	0	7	7	0	1	1
Podkarpackie	17	14	-3	78	83	+5	14	14	0	1	1
Podlaskie	20	20	0	37	37	0	12	13	+1	2	2
Pomorskie	20	19	-1	74	80	+6	13	13	0	1	1
Śląskie	41	28	-13	122	139	+17	14	15	+1	1	1
Świętokrzyskie	9	9	0	40	41	+1	10	11	+1	1	1
Warmińsko-mazurskie	12	12	0	69	70	+1	11	12	+1	1	1
Wielkopolskie	34	32	-2	88	94	+6	25	26	+1	2	2
Zachodniopomorskie	15	15	0	67	67	0	10	10	0	1	1
Total:	343	315	-28	1238	1302	64	239	246	7	21	21

Source: own compilation based on GUS (2021) and GUS (2024).

Emergency medical service teams in 2023 included nearly 12.9 thousand employees, the largest group of which were paramedics (more than 11.2 thousand). The teams included more than 0.3 thousand emergency medical system doctors, 1 thousand emergency medical system nurses, and 0.3 thousand drivers and pilots. Compared to 2020, the number of medical personnel included in the emergency medical service teams decreased slightly, as at that time there were 13.0 thousand employees in the emergency medical service teams. The largest group (11.0 thousand) were paramedics, in addition, almost 0.5 thousand system doctors, more than 1.1 thousand system nurses and 0.4 thousand drivers and pilots worked in the teams. Thus, the number of paramedics increased, while the number of doctors, system nurses, pilots and drivers decreased (GUS, 2021, 2024).

### 3. Financing of the State Emergency Medical Services system

Until the end of 2022, prehospital emergency medical services pertaining to the EMS system were financed from the state budget, from the parts administered by the Minister of Health and provincial governors, while hospital emergency services in hospital emergency departments of EDs - from the funds of the National Health Fund.

As of January 1, 2023, emergency medical service teams are financed from the National Health Fund's resources, instead of - as before - from the state budget. The exception is the activity of air emergency medical service teams, which is financed in the form of a subjective subsidy from the state budget, from the part whose disposer is the minister in charge of health. (Article 48 of the Law on State Emergency Medical Services, Journal of Laws 2006, No. 191, item 1410).

**Table 2.**

*Subsidy from the state budget for the implementation of the tasks of medical rescue teams in 2007-2023*

<b>Year</b>	<b>Subsidy (in thousands of PLN)</b>	<b>Dynamics</b>
2007	1146480	100
2008	1468873	128,12
2009	1722492	117,27
2010	1726052	100,21
2011	1758496	101,88
2012	1823691	103,71
2013	1834497	100,59
2014	1837947	100,19
2015	1844347	100,35
2016	1868117	101,29
2017	1918441	102,69
2018	2035029	106,08
2019	2145931	105,45
2020	2386730	111,22
2021	2385734	99,96
2022	3130578	131,22
2023	0	0,00

Source: NFZ (2024).

Over the period 2007-2022, the subsidy from the state budget for the implementation of the tasks of medical rescue teams remained fairly stable (Table 2). In the financial plan of the National Health Fund for 2023, the value of revenues from the subsidy from the state budget for the implementation of the tasks of medical rescue teams was determined. Their amount was planned at 2,967,020 thousands of PLN. As a result of transferring the source of financing of tasks carried out by medical rescue teams from subsidies from the state budget to the National Health Fund and changes in the financial plan templates, the President of the Fund reduced the planned value of revenue from a subsidy from the state budget for the implementation of tasks of medical rescue teams by 2,967,020 thousands of PLN. Thus, the value of the received funds from the subsidy from the state budget for this purpose amounted to 0 of PLN. If the subsidy is compared with the costs, it can be seen that the subsidy in the analyzed years was insufficient to cover the costs of implementing the tasks of medical rescue teams.

**Table 3.***Costs of carrying out the tasks of medical rescue teams from 2007 to 2023*

<b>Year</b>	<b>Costs of performing tasks</b>	<b>Dynamics</b>
2007	1146595	100
2008	1468761	128,10
2009	1722516	117,28
2010	1726042	100,20
2011	1758472	101,88
2012	1823691	103,71
2013	1834497	100,59
2014	1837947	100,19
2015	1844350	100,35
2016	1868118	101,29
2017	1918470	102,70
2018	2034616	106,05
2019	2146278	105,49
2020	2417824	112,65
2021	2449379	101,31
2022	3151477	128,66
2023	3767606	119,55

Source: NFZ (2024).

In the years 2007-2023, except for the years 2008, 2009, the pandemic year 2020, and the years 2022 and 2023 were rather stable (Table 3). In 2023, costs were planned at the amount of the original subsidy. However, due to changes in legislation and changes in the financial plan of the National Health Fund for 2023, the cost of carrying out the tasks of emergency medical teams was planned at 3,790,868 thousands of PLN, and executed at 3,767,606.18 thousands of PLN. These costs were realized at a lower level than planned by 23,261.82 thousands of PLN. However, they turned out to be higher than the costs incurred in 2022 by 616,128.71 thousands of PLN, or 19.55% (NFZ, 2023).

#### **4. Conclusions**

The Polish Emergency Medical Service system is currently undergoing an evolution towards the Anglo-American model. This is evidenced by the decreasing number of specialized teams, while the number of basic teams is increasing.

The transfer of financing from the state budget, to the National Health Fund is difficult to assess after such a short period of operation of the new financing model. Year after year, however, the system requires higher expenses. The financing mechanism for services can be a cause for concern, as the National Health Fund is an institution in which decisions on the purchase of services are limited by the financial plan. No greater commitments can be made than the amount of money that is guaranteed in the plan.

## Acknowledgements

The publication was financed by a subsidy from the Ministry of Science and Higher Education for the University of Agriculture in Krakow, for 2004.

## References

1. Adnet, F., Lapostolle, F. (2004). International EMS systems: france. *Resuscitation*, 63(1), 7-9.
2. Al-Shaqsi, S. (2010). Models of international emergency medical service (EMS) systems. *Oman Medical Journal*, 25(4), 320.
3. Andres, J. (2022). *Wytyczne resuscytacji 2021*. Kraków: Polska Rada Resuscytacji.
4. Bélanger, V., Ruiz, A., Soriano, P. (2019). Recent optimization models and trends in location, relocation, and dispatching of emergency medical vehicles. *European Journal of Operational Research*, 272(1), 1-23.
5. Bem, A. (2013). Organizacja i finansowanie ratownictwa medycznego. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, 319, 158-167.
6. Chenaitia, H., Massa, H., Noel, C., Fournier, M., Verges, M., Emeric, S., ... Michelet, P. (2011). Paramedics in prehospital emergency medical systems across Europe. *International Paramedic Practice*, 1(1), 33-39.
7. Dick, W.F. (2003). Anglo-American vs. Franco-German emergency medical services system. *Prehospital and disaster medicine*, 18(1), 29-37.
8. Dijkink, S., Nederpelt, C.J., Krijnen, P., Velmahos, G.C., Schipper, I.B. (2017). Trauma systems around the world: a systematic overview. *Journal of trauma and acute care surgery*, 83(5), 917-925.
9. GUS (2021). *Pomoc doraźna i ratownictwo medyczne w 2020 r. Informacja sygnałna*.
10. GUS (2024). *Pomoc doraźna i ratownictwo medyczne w 2023 r. Informacja sygnałna*.
11. Konstytucja Rzeczypospolitej Polskiej, Dz.U. 1997, nr 78, poz. 483.
12. Kuehl, A. (Ed.) (2002). *Prehospital systems and medical oversight*. SAGE Publications.
13. LPR (Lotnicze Pogotowie Ratunkowe), <https://www.lpr.com.pl/pl/charakterystyka-zespolu-lotniczego-transportu-sanitarnego/>, 12.09.2024.
14. Makrides, T., Ross, L., Gosling, C., Acker, J., O'Meara, P. (2022). From stretcher bearer to practitioner: a brief narrative review of the history of the Anglo-American paramedic system. *Australasian Emergency Care*, 25(4), 347-353.
15. McConnell, K.J., Gray, D., Lindrooth, R.C. (2007). The financing of hospital-based emergency departments. *Journal of Health Care Finance*, 33(4), 31-52.



16. Miłowski, T., Mitura, K.M., Celiński, D., Perłowski, T., Jastrzębski, P., Zalewska-Szajda, B., Szajda, S.D. (2024). Emergency medical service through the centuries—the Polish perspective. *Medical Research Journal*, 9(1), 113-119.
17. NFZ (2024). *Roczne sprawozdanie z wykonania planu finansowego narodowego funduszu zdrowia na 2023 rok*.
18. Pozner, C.N., Zane, R., Nelson, S.J., Levine, M. (2004). International EMS systems: The United States: past, present, and future. *Resuscitation*, 60(3), 239-244.
19. Roessler, M., Zuzan, O. (2006). EMS systems in Germany. *Resuscitation*, 68(1), 45-49.
20. Spiteri, A. (2008). EMS systems in Malta. *Resuscitation*, 76(2), 165-167.
21. Ustawa z dnia 10 maja 2018 r. o zmianie ustawy o Państwowym Ratownictwie Medycznym oraz niektórych innych ustaw (Dz.U. 2018, poz. 1115).
22. Ustawa z dnia 22 listopada 2013 r. o systemie powiadamiania ratunkowego (Dz.U. z 2023 r., poz. 748).
23. Ustawa z dnia 25 lipca 2001 r. o Państwowym Ratownictwie Medycznym. Dz.U. 2001, nr 113, poz. 1207.
24. Ustawa z dnia 5 stycznia 2011 r. o kierujących pojazdami. Dz.U. 2011, nr 30, poz. 151.
25. Ustawa z dnia 8 września 2006 r. o Państwowym Ratownictwie Medycznym. Dz.U. 2006, nr 191, poz. 1410.
26. World Health Organization. Regional Office for Europe & European Union (2008). *Emergency medical services systems in the European Union: report of an assessment project co-ordinated by the World Health Organization*. Copenhagen: WHO Regional Office for Europe.
27. Zarządzenie nr 179/2022/DSM Prezesa Narodowego Funduszu Zdrowia z dnia 30 grudnia 2022 r. zmieniające zarządzenie w sprawie określenia warunków zawierania i realizacji umów w rodzaju ratownictwo medyczne.