



SUPPORT OF THE POLISH NATIONAL SYSTEM BY MILITARY MEDICAL SERVICES DURING NATURAL DISASTERS – WIM-PIB EXPERIENCES FROM THE 2024 FLOOD IN LOWER SILESIA



Wsparcie systemu krajowego przez wojskową służbę
zdrowia w czasie klęsk żywiołowych – doświadczenia
WIM-PIB zebrane w trakcie powodzi na Dolnym Śląsku
w 2024 roku

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Abstract

Introduction and objective: In September 2024, Lower Silesia was affected by an unprecedented flood, resulting in the destruction of infrastructure, limited access to healthcare, and an increase in epidemiological risks. In response to this situation, the Military Health Service, as part of the Military Task Group “Lower Silesia,” took action to support the national healthcare system. The aim of this study was to analyse the activities of military medical teams carried out during the rescue operation in the aftermath of the flood, identify operational challenges encountered, and develop recommendations for future interventions in crisis situations. **Materials and methods:** The study was based on the analysis of operational reports, medical documentation, and field observations of the activities undertaken by military medical teams. The organizational structure, areas of operation, and scope of healthcare services provided were described. **Results:** Over the course of seven days of operations, the military medical teams provided assistance to 338 patients, mainly those with respiratory infections, injuries, and exacerbations of chronic diseases. A total of 126 post-exposure vaccinations were also administered. Organizational challenges included difficulties in the continuous supply of medical materials, limited communication, and the absence of clear logistical procedures. **Conclusions:** The actions of the Military Health Service played a crucial role in stabilizing the health situation in the flood-affected areas. Based on the experiences gained, the need for better organization of logistics, communication, and resource acquisition in similar operations was highlighted.

Streszczenie

Wprowadzenie i cel: We wrześniu 2024 roku Dolny Śląsk został dotknięty powodzią o niespotykanej dotąd skali, co doprowadziło do zniszczenia infrastruktury, ograniczenia dostępu do opieki zdrowotnej i wzrostu zagrożeń epidemiologicznych. W odpowiedzi na tę sytuację wojskowa służba zdrowia, w ramach Wojskowego Zgrupowania Zadaniowego Dolny Śląsk, podjęła działania mające na celu wsparcie krajowego systemu ochrony zdrowia. Celem pracy była analiza działań wojskowych zespołów medycznych, realizowanych w ramach akcji ratunkowej podczas powodzi, identyfikacja napotkanych problemów operacyjnych oraz opracowanie rekomendacji dla przyszłych interwencji w sytuacjach kryzysowych. **Materiał i metody:** Badanie opierało się na analizie raportów operacyjnych, dokumentacji medycznej oraz obserwacji terenowej działań wojskowych zespołów medycznych. Opisano strukturę organizacyjną, obszary działania oraz zakres udzielanych świadczeń zdrowotnych. **Wyniki:** W ciągu siedmiu dni działań wojskowe zespoły medyczne udzieliły pomocy 338 pacjentom, głównie z infekcjami dróg oddechowych, urazami oraz zaostrzeniami chorób przewlekłych. Przeprowadzono także 126 szczepień poekspozycyjnych. Problemy organizacyjne obejmowały trudności w bieżącym zaopatrzeniu w materiały medyczne, ograniczoną łączność oraz brak jednoznacznych procedur logistycznych. **Wnioski:** Działania wojskowej służby zdrowia odegrały kluczową rolę w stabilizacji sytuacji zdrowotnej na terenach dotkniętych powodzią. Na podstawie uzyskanych doświadczeń wskazano na potrzebę lepszej organizacji logistyki, komunikacji i pozyskiwania zasobów w przypadku podobnych akcji.

Keywords: flood; military health service; natural disaster; crisis management

Słowa kluczowe: powódź; wojskowa służba zdrowia; klęska żywiołowa; zarządzanie kryzysowe

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Introduction

In September 2024, Lower Silesia was hit by one of the most severe floods in the history of this region. Intense and prolonged rainfall led to a rapid increase in the water level of rivers, including the Odra, Nysa Kłodzka and Bystrzyca, as well as destruction of flood infrastructure. Many towns were completely isolated from the rest of the country. Bridges, roads and power lines were destroyed, making it significantly difficult to implement rescue interventions. Thousands of homes, schools, medical facilities and public utility buildings were under water. The situation required immediate mobilisation of rescue forces, including the military, fire brigades, police and medical services. Thousands of residents were evacuated from risk areas. The destruction of water and sewage infrastructure gave rise to epidemiological threat, which increased the risk of infectious diseases.

Furthermore, many medical facilities were partially or completely flooded, including the District Hospital in Nysa, the 23rd Military Health Resort and Rehabilitation Hospital in Łądek-Zdrój, the Rehabilitation and Care Centre in Wleń, the Care and Treatment Centre in Paczków, and the Provincial Centre for Long-Term Psychiatric Treatment in Stronie Śląskie. According to data from the Ministry of Health, about 390 different medical facilities were temporarily excluded from providing services at that time. Pharmacies were also closed in the affected areas.

In the face of these challenges, the Military Health Service supported the evacuation of patients from risk areas, and then actively organised and run temporary medical points (clinics). Military medics from all over Poland cooperated with local authorities and emergency services, coordinating interventions to minimise the consequences of the flood and ensuring continuity of health care for Lower Silesians. Mobile medical units made it possible to access hard-to-reach areas, increasing the effectiveness of rescue operations [1–3].

The paper describes the scope of support of the national system by the Military Health Service, provided within the Lower Silesian Military Task Group, from the perspective of the experience of a team deployed by the Military Institute of Medicine - National Research Institute.

Aim

The aim of this paper was to perform a thorough assessment of interventions undertaken by the medical forces

of the Military Institute of Medicine - National Research Institute in the flood-affected areas as part of the Military Task Group “Lower Silesia” in September 2024. An additional aim of the analysis was to identify operational difficulties encountered and to develop universal recommendations that could be used in similar future crisis situations.

Materials and methods

The task of arranging medical support in the flood-stricken area was assigned to the 4th Military Clinical Hospital with Polyclinic in Wrocław, which supervised medical teams sent by: Military Institute of Medicine – National Research Institute in Warsaw (WIM-PIB), Military Institute of Aviation Medicine in Warsaw (WIML), 10th Military Clinical Hospital with Polyclinic in Bydgoszcz (10th WSzKzP), 5th Military Clinical Hospital with Polyclinic in Kraków (5th WSzKzP), 7th Naval Hospital with Outpatient Clinic in Gdańsk, and 2nd Military Field Hospital in Wrocław (2nd WSzP).

The interventions were carried out between 20 and 28 September 2024. The actual provision of medical services took place between 21 and 27 September 2024, while coordination briefings, organisation of departure and transportation of teams from and to parent units took place on 20 September 2024 and 28 September 2024. The flooded regions were divided into three zones of operation: Kłodzko Valley, Nysa, and Lewin Brzeski.

Due to the size of the area, medical teams from three facilities were deployed to the Kłodzko Valley as part of the Łądek-Zdrój Task Group: 10th WSzKzP (doctor, nurse, rescue driver), WIML (doctor, rescue driver) and WIM-PIB (three doctors, three paramedics, operations officer, driver), as well as a driver with an ambulance from 2nd WSzP. Thus, four medical teams were deployed. The command of the Łądek-Zdrój Task Group was assumed by the deputy commander of the CSK MON WIM, Colonel Jarosław Kowal, MD, who took part in daily briefings of the Crisis Management Team in Łądek-Zdrój, and then assigned tasks in response to the reported needs of the local population. The WIM-PIB operations officer was responsible for coordinating interventions and communicating with 4th WSzKzP.

Accommodation and meals were arranged on the premises of 23rd WSUR in Łądek-Zdrój, where a vaccination point (Military Centre of Preventive Medicine and a civilian one), a warehouse for cleaning agents,

and a warehouse for medications and medical supplies were also installed (by entities independent of the medical teams).

The ongoing situation in the region and the health care needs were identified based on reconnaissance conducted personally by the commander of Łądek-Zdrój Task Group and his participation in the meetings of the Crisis Management Team in Łądek-Zdrój. The locations where services were provided were selected based on the needs reported by the heads of flooded villages or towns, as well as an independent identification of local needs and the possibility of reaching a given destination. The optimal working time of mobile medical teams (doctor, paramedic or nurse, rescue driver) was defined as 12-hour shifts, including the time spent travelling to and from the place of providing services.

The paper summarises medical reports submitted daily to the 4th WSzKzP by Łądek-Zdrój Task Group, describing the location and scope of services delivered along with encountered challenges.

Results

During 7 days of field operations, Łądek-Zdrój Task Group (4 mobile teams) provided medical services as part of rotating, mobile medical clinics in the following towns: Łądek-Zdrój, Stronie Śląskie, Trzebieszowice, Żelazno, Gorzanów, Krosnowice (Fig. 1).

In total, 338 medical interventions were performed. The reasons for these interventions mainly included respiratory and gastrointestinal infections, minor injuries sustained during flood damage removal, exacerbations of chronic diseases, and the need for continued chronic treatment. Two patients were handed over to the national emergency medical system due to life-threatening symptoms (gastrointestinal bleeding, ventricular arrhythmias in a hemodynamically unstable patient). Figure 2 and Figure 3 show the detailed distribution of healthcare services provided over time and their types, respectively.

Medical services were provided directly from ambulances stationed in locations indicated by the head of a given village or town, as well as at the place of call (so-called home visits in the case of bedridden patients, small children and women in advanced pregnancy), or in buildings

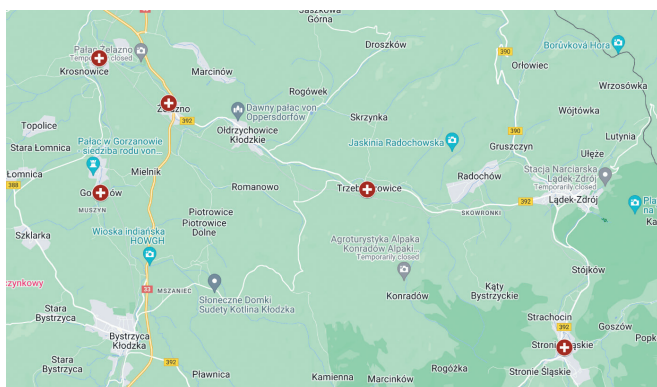


Figure 1. Map of the area of operations of the Łądek-Zdrój Task Group (our data)

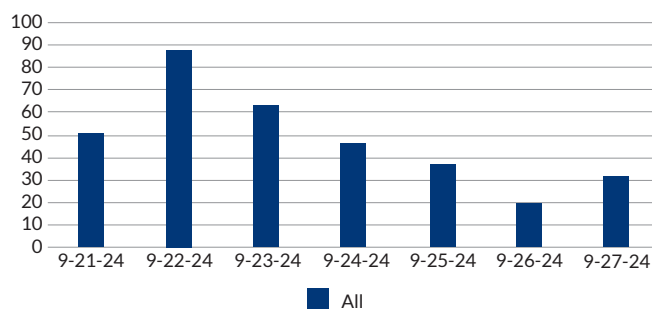


Figure 2. Number of medical services provided by the Łądek-Zdrój Task Group

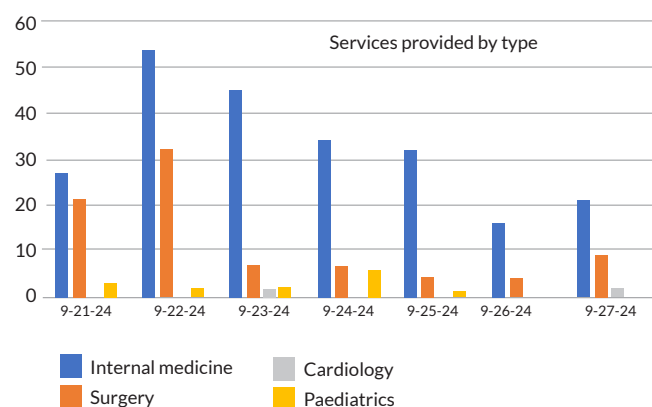


Figure 3. Type of medical services provided by the Łądek-Zdrój Task Group

made available by local authorities (including primary schools in Krosnowice and Żelazno, the village cultural centre in Gorzanów) (Fig. 4, Fig. 5, Fig. 6, Fig. 7).

The vaccines provided by 4th WSzKzP allowed for post-exposure immunisation against tetanus and hepatitis A at mobile medical clinics of Łądek-Zdrój Task Group. A total of 78 vaccinations against tetanus and 48 vaccinations against hepatitis A were administered.

Population vaccinations were administered by local sanitary/epidemiological stations and military preventive medical facilities.



Figure 4. Temporary medical care point in Gorzanów (own material)



Figure 5. Mobile medical care point in Stronie Śląskie (own material)

During the implementation of interventions, the following problems (typical of disasters of such scale) were encountered:

- variable and imprecise information on the needs, received at the stage of preparation for departure, regarding the type of services to be provided, the duration of the task, the period for which preparation should be made; as a result, detailed reconnaissance was done only when on-site implementation of tasks already began;
- difficulties in estimating the number of people in need resulted in varying consumption of available medical supplies and medications, and regional logistical problems made it difficult to develop a uniform system for obtaining these supplies;
- periodic absence of telephone and Internet coverage, which significantly hindered communication between teams, other uniformed services operating in the region and direct communication with 4th WSzKzP, especially in terms of keeping up-to-date electronic medical records.

Discussion

Natural disasters such as floods, hurricanes, large-scale fires, and earthquakes pose serious challenges to the healthcare system in any country. In such situations, when civilian infrastructure is overloaded or destroyed, the Military Health Service plays a key role by offering its resources and experience. Owing to its high mobility, training in crisis management and specialist



Figure 6. Temporary medical care point in Żelazno (own material)

equipment, this service can act in Poland as a strategic support, enabling a rapid and effective response to crisis situations [4].

In the face of one of the most serious floods in the history of Lower Silesia, the mobilization of military medical teams from all over Poland made it possible to support the local health care system. The Military Institute of Medicine - National Research Institute took up the task with intention to provide support to the population af-



Figure 7. Temporary medical care point in Gorzanów (own material)

affected by the disaster in the most feasible and comprehensive way possible. To this end, an internist/cardiologist, a paediatrician and an infectious disease specialist were delegated to provide services among flood victims. The medical teams were also joined by experienced paramedics and rescue drivers, who used their expertise and practical skills to effectively support rescue operations. The Łądek-Zdrój Task Group, established on site, was joined by a surgeon, a nurse and a rescue driver from the 10th WSzKzP, as well as an emergency medicine physician and a rescue driver from WIML. Both doctors and paramedics had extensive experience in crisis management, gained both in peacetime and during military combat missions. This unique combination of expertise and practical skills allowed for the highest level of comprehensive medical care provided, addressing diverse health needs of those affected by the disaster. In the context of organising medical teams during crisis operations, incorporation of two additional members responsible for command and logistics support, i.e. a team commander and an operations officer, was found to be an effective solution. It allowed for sustained contact with the Crisis Management Team, regular reporting, effective work organization and coordination of interventions with local authorities and emergency services on site. Additionally, it enabled efficient identification of operational needs and logistic planning of activities, without the need to engage medical personnel directly responsible for providing healthcare services.

The main organizational challenges faced by military medical services during natural disasters include the lack of access to medical infrastructure, shortages of medical equipment, logistic difficulties in transporting the wounded, and limited access to medications and dressings. Additionally, changing conditions necessitate rapid adaptation of management plans and there is a need to ensure effective communication between other emergency services [5, 6]. Similar challenges were faced by the Lower Silesian Military Task Group, Łądek-Zdrój Task Group in particular, during tasks performed in the flooded area. Given the lack of access to permanent medical infrastructure, it was assumed that healthcare would be provided in the first days of interventions via mobile medical care, directly from ambulances. However, the aim was for the local authorities to allocate rooms that could be adapted to serve as makeshift medical facilities. This solution was preferred by both medical personnel and residents of flooded towns due to unfavourable weather conditions during field operations, as well as the availability of electricity and running water, essential for powering devices and preventing infectious diseases. Additionally, the WIM-PIB team was equipped with a medical tent that could be used as an alternative to ambulances.

Each military hospital involved made an effort to equip its personnel as optimally as possible with medical equipment, medications, personal protective equipment, and dressings. The amount and type of equipment and medical supplies that could be transported was, however, limited by the space in the vehicles. Additionally, the time for which the medical teams were deployed was not initially specified. Considering the closed pharmacies in the flood zone and the victim's expectations to receive the medicines that were prescribed during medical ap-

pointment "instantly" or "offhand", the supplies brought by the teams exhausted after 3 days of interventions. The situation slightly improved as a result of donated funds received by the teams through local authorities. In this aspect, however, the problem of the lack of a uniform, central system for obtaining medicines and other medicinal products was evident.

Limited telephone and Internet coverage in most flood-affected towns made communication between teams, as well as between teams and 4th WSzKzP, and coordination of interventions with other uniformed services difficult or impossible. In the future, other, independent communication systems should be used for similar tasks.

Communication within the Łądek-Zdrój Task Group was conducted using a commercially available encrypted messenger. It primarily included reporting on the relocation of the Team's vehicles, changes of locations where tasks were carried out, emergency situations, hours of daily briefings, numerical data for daily reports, as well as required supplies and medicines.

Due to limited access to the Internet, keeping electronic documentation of the healthcare services provided was another major challenge. Most of the records were initially kept in paper form and then, in accordance with the regulations in force in Poland, electronically supplemented.

According to the World Health Organization (WHO), mechanical injuries, hypothermia, infections, infectious diseases and mental disorders are the most common health problems among populations affected by this type of disasters. The incidence of infectious diseases increases due to water pollution, limited access to hygiene products and overcrowding in temporary shelters [7]. Inhabitants of flood-stricken areas faced similar health problems. Acute respiratory and gastrointestinal infections and minor injuries sustained during removal of flood debris were the most common emergencies. Exacerbations of chronic diseases (e.g. high blood pressure, arrhythmias despite treatment), or the need to continue chronic treatment due to lack of access to prescriptions (closed primary health care facility) or medicines (closed pharmacies).

A high level of willingness and need to undergo post-exposure vaccinations (against tetanus and hepatitis A) in the event of injury or wound contamination with sewage were observed during flood among the local community. Additionally, many people reported their willingness to undergo preventive vaccinations. This suggests relatively high awareness of epidemiological threats among the population facing this crisis situation.

The actions of medical troops within the Lower Silesia Military Task Group were completed when local primary healthcare centres and pharmacies resumed their work, and as a result, the number of medical services provided by mobile teams decreased.

Conclusions

Professionalism, commitment and high level of organisation of military health service during the flood in Lower

Silesia in 2024 enabled effective support for the local health care system. Productive cooperation with civilian emergency services and local authorities allowed for the rapid control of the crisis situation and minimisation of health losses among the inhabitants.

Based on the experience gained, proposals were put forward for the organisation and equipping of military medical teams in the event of natural disasters, which are a valuable, practical extension of previous publications in this field [8].

Medical teams should incorporate qualified personnel with appropriate experience, and the operations require a unified command system. It is also essential to ensure the possibility of keeping medical records based on a reliable, interference-resistant communication system independent of the local mobile network infrastructure. Medical transport should enable efficient relocation in areas with varying degrees of destruction of road infrastructure. An easily accessible medical supplies system is also an important operational element: medicines, dressings, rescue equipment, with the possibility of their flexible replenishment to meet the dynamically changing needs.

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