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THE ROLE AND CONTRIBUTION OF MILITARY FIELD HOSPITALS IN ENSURING THE HEALTH SECURITY OF MILITARY PERSONNEL

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ABSTRACT

This article explores the importance of military field hospitals in safeguarding the health and well-being of Armed Forces personnel, the optimal organization of their provision, and a comparison of international practices with the current situation in our country. Effectively organizing the provision of military field hospitals is a multifaceted endeavor that is a global concern, encompassing various organizational, technical, and human elements. While countries approach this issue with their unique experiences, tactical strategies, and technological advancements, there are common trends, technological solutions, and organizational principles that have been adopted by many nations.

Research shows that effective field hospital operations have a significant impact on combat readiness, with studies indicating that providing primary medical care within one hour can increase survival rates to over 85 percent. The article examines the hierarchical structure of field medical care from Role I (tactical combat first aid) to Role IV (permanent hospital transfer), looking at successful implementations by NATO forces, the US Army, Israeli Defense Forces, and lessons learned from recent conflicts. The experiences of the Mongolian Armed Forces' field hospitals in international peacekeeping missions and domestic emergency responses are assessed against global standards. Key findings suggest that modern military field hospitals need modular design, rapid deployment capabilities, advanced technological integration including drone support, and comprehensive logistics coordination.

The study concludes that while Mongolia has shown operational competence in various international missions, significant improvements in equipment modernization, personnel training systems, and logistical infrastructure are necessary to meet contemporary military medical standards and ensure optimal health security for military personnel.

KEYWORDS

Military Field Hospitals, Health Security, Military Logistics, Combat Medical Care, Tactical Medicine, Peacekeeping Operations

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Introduction

The health and safety of military personnel today goes beyond just weapons, equipment, and strategic planning. Human resources, particularly the health and psychological readiness of personnel, are crucial factors for successful military operations. The military field hospital, a specialized institution in military medicine, plays a vital role in supporting the armed forces.^{1,2}

The primary role of the military field hospital is to deliver emergency medical care in combat and crisis scenarios, as well as to maintain and restore the combat readiness of personnel. The ability to provide rapid and efficient medical assistance in real-time situations like battlefields, peacekeeping missions, disasters, field exercises, armed conflicts, etc., is essential for ensuring the well-being of military personnel and enabling them to fulfill their duties effectively.^{3,4}

In military operations, medical support plays a crucial role in safeguarding the health and combat readiness of military personnel. Efficient time, organization, and resource management are essential in delivering healthcare services, particularly in field settings. Effective human resource organization and management are necessary to facilitate timely decision-making and ensure the seamless provision of medical support in field conditions.

The organization of military field medical care in field conditions is crucial for the combat readiness of any Armed Forces and the protection of the lives and health of military personnel.⁵ This system is comprehensive, relying not only on the expertise of medical personnel but also on the coordination of supply logistics, transportation, communications, and command.⁶

While the Mongolian Armed Forces have been gradually developing this system, there is a necessity for reform and enhancement in light of international standards, technological advancements, and recent regional geopolitical shifts.⁷

In recent years, the Mongolian Armed Forces have actively engaged in international peacekeeping missions, dispatched field medical teams to countries like Sudan, South Sudan, and Lebanon, and have collaborated with multinational armed forces. Amid the global COVID-19 pandemic, the swift establishment of military hospitals and the utilization of field hospital expansions to provide emergency support have showcased their adaptability and resilience.

However, Mongolia faces a growing need to enhance its military field medical system, incorporate international best practices, and progressively bolster its medical capabilities. Therefore, the aim of this article is to explore and assess the potential for enhancing the role and involvement of military field hospitals in safeguarding the health security of the Armed Forces.

Organizational characteristics and functions of Military field hospitals

Throughout history, military field hospitals have evolved to save the lives of soldiers during wars and armed conflicts. In World Wars I and II, medical teams were stationed near the front lines to offer quick care to injured soldiers, laying the foundation for modern military field hospitals.^{8,9} Various countries, including NATO and Eastern European militaries, have established a structured system for delivering medical care in the field, ranging from basic care to advanced surgical services. The U.S. Army's field hospital system, for instance, is categorized into Role I–IV levels, with the goal of providing medical assistance promptly and in close proximity to the battlefield.^{10,11}

The military field hospital is structured in the following hierarchy:

- ✓ Primary (Role 1): initial medical care provided by a team of doctors and paramedics in a branch unit;
- ✓ Second (Role 2): a mobile team equipped for field surgery, imaging, and laboratory support;
- ✓ Third (Role 3): a comprehensive field medical organization offering specialized care;

¹ Ritchie, E. C. (Ed.). (2015). *Combat and operational behavioral health*. Borden Institute

² NATO. (2017). *Military medical support manual*. NATO Standardization Office.

³ U.S. Department of Defense. (2019). *Military medical service: Training manual*. Defense University.

⁴ U.S. Department of the Army. (2010). *Field manual FM 4-02: Army health system*. Headquarters, Department of the Army.

⁵ NATO. (2017). *Military medical support manual*. NATO Standardization Office.

⁶ Winkenwerder, W. (2005). Force health protection: Strategic roles for military medicine. *Military Medicine*, 170(4), 10–17.

⁷ Ulambayar, C. (2022). *Military health*.

⁸ Pugh, C. M., & Johnson, T. R. (2011). *Military medicine: From ancient times to the 21st century*. ABC-CLIO.

⁹ Fisher, J. (2014). Evolution of combat casualty care: Lessons from the global war on terrorism. *Military Medicine*, 179(8), 745–752.

¹⁰ Department of the Army. (2009). *Field manual (FM) 4-02.10: Theater hospitalization*. Headquarters, Department of the Army.

¹¹ NATO Standardization Office. (2015). *AJP-4.10 allied joint medical support doctrine*. NATO.

✓ Fourth (Role 4): a stage for transporting patients to a permanent hospital and providing rehabilitation services.

Field hospitals are designed with a modular structure and organization that can be adjusted based on specific needs and situations.¹ This allows for partial expansion or reduction as required. For instance, the different phases include I phase: primary care, II phase: diagnostic services, minor surgery, III phase: integrated surgical teams, laboratory services, rehabilitation, and IV phase: temporary care until patients can be transferred to a permanent hospital.

In a tactical situation, the available levels of military field medical care are as follows:^{2,3,4}

- ✓ Level I - Tactical Combat First Aid (Tactical Combat Casualty Care);
- ✓ Level II - Company Medical Post;
- ✓ Level III - Battalion Medical Center;
- ✓ Level IV - Field Mobile Hospital (surgical facility);
- ✓ Level V - Main Rear Hospital (Inpatient).

The hospital command oversees the management of supplies, drug registration, human resource coordination, and communications. In military field conditions, the command center, medical tents, warehouses, disinfection, and catering areas are strategically located⁵ in accordance with logistics principles, requiring coordinated care services organization with command, logistics, and security support.

Key features of a military field hospital include mobility, rapid deployment capability, and the ability to provide medical care under high-demand conditions. As such, all technical equipment, medications, beds, ventilation, and power supply must be portable, easily assembled and disassembled. This directly and indirectly impacts the outcomes of military field operations.⁶ The supply organization of a military field hospital comprises the following main elements: These include:

- ✓ Sufficient stocks of general and emergency medications, including immunization kits, stored in specific conditions;
- ✓ Medical tools and materials, such as portable X-ray machines, UV scanners, wound dressings, and surgical kits;
- ✓ Personnel, including a group of doctors, nurses, and paramedics with relevant experience. If needed, a psychologist and an infectious disease specialist can be brought on board.
- ✓ A transportation and logistics system, including ambulances, specialized medical tents, power generators, and clean water facilities, will be established.

Effective implementation of military field medical support in the field relies on detailed planning, continuous training, and rational supply management. The skills of military medical personnel go beyond medical knowledge and include physical and psychological readiness for combat conditions, tactical and technical skills in field operations, and cooperation skills. Human resource planning considers the number of teams involved in field medical operations, their professional mix, movement coordination, and an optimal rotation system. These include:

- ✓ Prioritizing tasks based on operational workload;
- ✓ Providing temporary replacement personnel when needed;
- ✓ Maintaining a mobile structure that can adjust to changes in location.

In terms of training, the field team is regularly trained and exercises in the following key areas:

- ✓ Professional training to develop expertise in emergency care, basic wound care, and infection control;
- ✓ Tactical training to enhance skills in adapting to military movements, security, and communication;
- ✓ Psychological training to improve stress management and oversee the team's psychological well-being;

- ✓ Coordination exercises with field medical teams and other units are also part of the training.

The Mongolian Armed Forces' military field hospital actively participates in both domestic and international joint exercises to enhance its expertise. However, there is a pressing need to upgrade equipment, enhance human resource allocation, and refine the training system.⁷

¹ World Health Organization. (2013). *Emergency medical teams: Minimum standards and recommendations*.

² NATO Standardization Office. (2019). *Allied joint medical support doctrine (AJP-4.10)*. NATO Standardization Agency.

³ U.S. Department of the Army. (2020). *Field manual 4-02: Army health system*. Headquarters, Department of the Army.

⁴ U.S. Department of Defense. (2017). *Joint publication 4-02: Joint health services*.

⁵ International Committee of the Red Cross. (2018). *Health care in danger: A sixteen-country study*.

⁶ Joint Health Services Support. (2017). *Joint publication 4-02*. U.S. Department of Defense.

⁷ Byambasuren, C. (2023). Planning and organizing medical supply in the military field. *Military Journal*, 2, 45–52.

A study on the role and involvement of field hospitals in safeguarding the well-being of armed forces personnel reveals that the primary objective of a military field hospital is to safeguard the health of soldiers, bolster the efficiency of combat operations, and minimize casualties. Providing immediate medical assistance to injured soldiers on the battlefield is crucial in saving lives. According to a 2022 report from the US Department of Defense, administering primary medical care within 1 hour in the field increases the survival rate to over 85 percent, whereas a delay of 3 hours reduces it to less than 60 percent.^{1,2}

The role and involvement of military field hospitals have a significant impact on ensuring the health and safety of Armed Forces personnel, their operational effectiveness, and the stability of the national defense system. This impact is evident in several key areas, including:

1. **Sustaining combat capabilities:** The prompt treatment of wounded individuals in field conditions directly contributes to maintaining the combat readiness of military units. For instance, the 2023 NATO Health Analysis highlighted the importance of field hospitals being able to transfer 70% of wounded personnel to a permanent hospital within 48 hours, a criterion relevant to the Mongolian Armed Forces.^{3,4}

2. **Psychological readiness and support for combat morale:** Military personnel feel more secure and confident when they know they have access to medical care, which helps them maintain psychological stability and make sound decisions under pressure. Studies have indicated that units located near field hospitals exhibit 15–20% higher levels of psychological stability.^{5,6}

The role of security mechanisms during disasters: Military field hospitals serve as a crucial resource for safeguarding public health not only during times of war but also in emergency situations. For instance, amid the 2021 "Covid-19" pandemic, the Armed Forces field hospital team collaborated with the Ministry of Health to establish a temporary hospital and provide aid to over 500 citizens.⁷ This bolstered social trust and garnered increased public support for the military organization.⁸

Military strategic adaptability: The capacity to offer health assistance in the field enhances strategic flexibility in decision-making. This is evident from the experiences of NATO and UN Peacekeeping Operations.⁹ Mongolian Peacekeeping teams have effectively utilized the field hospital system during their missions in Chad, Afghanistan, Sudan, and South Sudan, earning recognition from international partners.¹⁰

Enhancing Civil-Military Relations: Military hospitals offer aid not just to military members but also to civilians in disaster-stricken areas. This contributes positively to civil-military relations and enhances soft security elements. Research indicates that individuals in areas with field hospitals exhibit 25-30% higher trust in the military.¹¹ These initiatives not only test the capacities of military hospitals but also underscore their importance in the nation's security and healthcare frameworks.

Experience in overseeing the health and safety of military personnel on a global scale

The challenge of efficiently coordinating military medical assistance in field settings is a multifaceted task that is a significant global priority, involving various organizational, technical, and human elements. Different countries are effectively implementing this based on their unique experiences, tactical strategies, and technological advancements, while also adhering to common global trends, technological solutions, and organizational principles.

¹ Burkle, F. M., & Greenough, P. G. (2008). The public health consequences of disasters. *Prehospital and Disaster Medicine*, 23(4), 392–396. <https://doi.org/10.1017/S1049023X00006132>

² Hodgetts, T. J., Mahoney, P. F., Russell, R. J., Byers, M., & Crush, D. (2014). *Battlefield advanced trauma life support (BATLS): Military trauma manual*. Oxford University Press.

³ NATO Standardization Office. (2023). *Allied joint medical support doctrine AJP-4.10 Edition C, Version 1*. NATO.

⁴ Hodgetts, T. J., & Mahoney, P. F. (2017). *Combat casualty care: Lessons learned from OEF and OIF*. Office of the Surgeon General, US Army.

⁵ Adler, A. B., Bliese, P. D., McGurk, D., Hoge, C. W., & Castro, C. A. (2009). Battlemind debriefing and battlemind training as early interventions with soldiers returning from Iraq: Randomization by platoon. *Journal of Consulting and Clinical Psychology*, 77(5), 928–940

⁶ Jones, E., & Wessely, S. (2005). *Shell shock to PTSD: Military psychiatry from 1900 to the gulf war*. Psychology Press.

⁷ Ministry of Defense. (2021). *Military field hospital operations report (COVID-19 temporary hospital)*. Ministry of Defense.

⁸ Government of Mongolia. (2021). Results of joint state and military measures against the COVID-19 pandemic. *Government of Mongolia Bulletin*, 12.

⁹ Ministry of Defense. (2019). *Mongolia's Armed Forces peacekeeping operations experience: Sudan, South Sudan, Chad, Afghanistan*. Ulaanbaatar.

¹⁰ United Nations. (2014). *Medical support manual for United Nations peacekeeping operations*. United Nations Department of Peace Operations.

¹¹ NATO. (2016). *Allied joint medical support doctrine (AJP-4.10)*. NATO Standardization Office.

Summary of international experience: *The US Armed Forces* utilize a modular field medical system (Role I-IV) that offers a range of services from emergency care to rehabilitation. They have an integrated communication and logistics system and utilize automated transportation for wounded personnel, enhancing the health and safety of their forces.^{1,2,3}

NATO member states employ deployable medical modules, multinational joint medical teams, and network platforms to enhance the safety of military personnel.

Israel follows the principle of providing medical care at the nearest point on the battlefield, operating forward surgical teams with advanced air and ground emergency care systems and portable high-tech equipment.

In the context of the Russian-Ukrainian military special operation, the features of military field hospital medical care are characterized by the deployment of medical units near the front line and the use of mobile medical points that can be swiftly relocated to the battle zone.

The Ukrainian forces emphasize collaboration between military and civilian medical organizations, whereas the Russian forces prioritize secrecy and mobility to safeguard medical facilities. Russian military field hospitals are structured to deliver surgical care, evacuation, and specialized treatment in tactical or operational depth, reflecting the evolving tactics of modern military field medical care in the ongoing operation.

Drones and digital technologies are playing a crucial role in medical care. For instance, tactical ISR drones are utilized to map terrain, identify enemy positions, and monitor movements to identify safe and strategic locations for setting up military field hospitals. Drones are also employed to swiftly transport essential supplies like blood, plasma, vaccines, and surgical equipment to frontline field hospitals, locate injured soldiers, provide medical assistance, and establish evacuation routes. Additionally, they are supporting remote consultations with physicians and enhancing healthcare decision-making in the field. The experience of countries such as NATO, the United States, and Russia highlights the following key operational principles:

- ✓ Swift echelon medical care;
- ✓ Coordinated logistics management;
- ✓ Utilization of electronic records and data integration;
- ✓ Emphasis on operational organization, including adaptable tactical structures.

Military hospitals in these countries are implementing advanced mobile medical systems with high-tech equipment in the field. In Mongolia, the medical teams of the Armed Forces have gained experience in various roles, including peacekeeping operations (such as ISAF, UNMISS, UNAMID, MINUSMA, UNIFIL), joint field exercises (like Khan Quest, Selenge, Center-2023), and disaster and emergency relief operations. The Mongolian Armed Forces medical team effectively carried out search and rescue operations following an earthquake in the Kyrgyz Republic. These experiences are crucial for the successful performance, safety, and efficiency of military teams, enhancing human resource preparation and organizational capabilities. As a result, there is a growing need in Mongolia to establish national standards, improve training, and enhance resource readiness for military field medical provision in peacekeeping operations.

Conclusions

The military field hospital is a crucial reserve force in combat and emergency situations, as well as in various military operations, playing a direct and indirect role in safeguarding the health and safety of Armed Forces personnel.

Its efficient functioning has a wide-reaching impact, such as saving lives, preserving military capabilities, enhancing state-citizen relations, and fostering international cooperation.

While the organization and function of the Mongolian Armed Forces' military field hospital have progressed to a certain extent, there is a necessity to enhance its logistical capabilities in field settings by incorporating international best practices, advanced technology, and training systems into its operations.

Field hospitals are a crucial element of modern military operations, playing a vital role in maintaining combat effectiveness and preserving human resources in challenging environments. Their importance goes beyond just medical care, impacting strategic, psychological, and diplomatic aspects that directly affect national security capabilities.

¹ Kotwal, R. S., Butler, F. K., & Holcomb, J. B. (2013). Military medical revolution: The U.S. experience with Tactical Combat Casualty Care. *Military Medicine*, 178(2), 38–46.

² U.S. Army Medical Department. (2017). *Combat health support doctrine: FM 4-02*. U.S. Army Medical Department.

³ U.S. Department of Defense. (2020). *Joint publication 4-02: Joint health services*. U.S. Department of Defense.

Efficient field hospital operations have a significant impact on military effectiveness, with the “*golden hour*” principle showing that timely medical intervention can greatly increase survival rates. This also boosts morale among personnel, leading to improved unit cohesion and operational performance.

Lessons from international experiences, such as NATO operations and US military deployments, emphasize key principles for successful field hospital implementation. These include modular organizational structures, integrated logistics, advanced communication systems, and the use of innovative technologies like medical drones and digital health records.

While the Mongolian Armed Forces have a strong foundation from participating in peacekeeping missions and responding to emergencies like the COVID-19 pandemic, there are areas for improvement. These include updating medical equipment, enhancing training programs based on recent conflicts, improving logistics and supply chain management, and integrating new technologies for better operational efficiency.

Mongolia's strategic focus should be on developing a field hospital system that not only meets current needs but also prepares for future challenges in a changing security landscape. This requires ongoing investment in human capital, technology, and international partnerships to ensure that Mongolian military medical capabilities align with allied forces and effectively protect personnel in all military operations.

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