Military Medicine: From Experience to Knowledge

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The Israel Defense Forces Medical Corps (IDF-MC) is often associated with battlefield trauma and emergency care. While these domains remain central to the IDF mission, they represent only a fraction of a much broader professional landscape. The IDF-MC serves as a unique and multifaceted platform for clinical research, which is characterized by diverse occupational environments, specialized populations, and acute operational challenges.

What distinguishes military medicine is not merely the variety of conditions it addresses, but the environment in which it functions. Military healthcare systems are required to care simultaneously for healthy populations, preserve operational readiness, respond to acute threats, and manage the long-term consequences of service. They must do so under conditions that are often characterized by uncertainty, time pressure, environmental extremes, and rapidly evolving field realities. At the same time, military medicine continually benefits from advances made in civilian healthcare, creating a dynamic, bidirectional exchange of knowledge that strengthens both systems.

These challenges create a unique responsibility. The mission of the IDF-MC does not end with providing care. Every clinical encounter, environmental exposure, injury pattern, and treatment outcome represents an opportunity to learn. Observation alone, however, is insufficient. Experiences must be systematically documented, data must be collected and analyzed, and findings must be critically evaluated and shared. Only through this process can individual experiences be transformed into collective knowledge. Therefore, transforming experience into knowledge is one of the defining responsibilities of modern military medicine. The obligation to publish is therefore not merely academic; it is an extension of the IDF-MC's professional duty to improve care for future patients, both within and beyond military settings [1].

Recent years have further underscored this responsibility. Large-scale military operations, mass casualty incidents, and prolonged conflicts have generated unprecedented clinical and organizational challenges, reinforcing the need to systematically study operational experience and translate it into evidence-based medical practice.

This special issue of the *Israel Medical Association Journal* (*IMAJ*) reflects that commitment. The studies presented here span a wide spectrum of military medical practice, ranging from environmental and occupational medicine to trauma care, mental health, aerospace medicine, and healthcare systems research. Together, they demonstrate how the IDF-MC can transform clinical and operational challenges into opportunities for scientific discovery.

The responsibility to observe, learn, and share has never been greater. As military and civilian healthcare systems increasingly confront common challenges, the value of exchanging knowledge across disciplines and institutions becomes increasingly evident. By documenting and publishing these experiences, the military medical system contributes not only to the care of service members but also to the advancement of medicine.

The articles in this issue give practical expression to this idea. Each addresses a different point along the military medical continuum, yet all share the same underlying premise: that careful observation of military populations and field environments can generate knowledge with clinical, organizational, and public health significance.

The studies presented in this issue may be viewed across several complementary domains, including prevention and screening, operational and environmental medicine, trauma

and combat care, and healthcare systems research. Together, they illustrate the broad scope of contemporary military medicine. The issue opens with the question of prevention and early detection among young, healthy candidates for service. Rittblat and colleagues [2] examined the prevalence of hearing impairment among candidates for the Israeli Air Force flight academy and found that measurable hearing abnormalities may already be detectable among otherwise healthy young adults before military service. Their study invites readers to reconsider the potential value of hearing screening before enlistment, particularly in an era of changing adolescent listening habits.

The aeromedical environment is further explored by examining decompression sickness beyond its traditional association with diving. Ben-Ari and co-authors [3] examined altitude decompression sickness during altitude chamber training and combat flights, highlighting the unique physiological risks faced by aircrew and trainees. Their work connects aviation physiology, flight safety, and hyperbaric medicine, reminding clinicians that rare events may carry significant implications in highly specialized military settings.

Environmental physiology and field medicine are addressed in the case series by Epstein et al. [4], which follows biochemical markers after exertional heat stroke. The article emphasizes that clinical improvement after prehospital cooling may obscure ongoing internal injury, and that serial laboratory monitoring can reveal evolving renal, hepatic, muscular, coagulation, and inflammatory changes. This study encourages a more structured approach to the assessment and follow-up of suspected exertional heat stroke.

Closely related to this environmental domain, Erez and colleagues [5] examined sleep restriction and heat exposure as compounded operational risks. Their review highlights how these co-exposures may impair vigilance, executive control, and decision-making before overt heat illness develops. The researchers translate this evidence into practical measures such as protected sleep, cooling, hydration, work-rest cycles, task rotation, and supervisory cross-checks.

In the field of aviation medicine, the question of medical fitness is not limited to acute events. Angel et al. [6] examined long-term outcomes among active military aircrew diagnosed with new-onset asthma. By analyzing pulmonary function, exacerbations, and flight safety over prolonged follow-up, the authors provide evidence supporting individualized aeromedical assessment and careful monitoring rather than automatic disqualification.

The therapeutic potential of hyperbaric oxygen therapy (HBOT) is investigated in this issue from both physiological and psychological perspectives. Gur and co-authors [7] first addressed acoustic trauma, a highly relevant concern in military service, by comparing hearing loss caused by blast injury to hearing loss due to other mechanisms of acute acoustic trauma. They focused on the response to HBOT when combined with systemic glucocorticoids. Their findings suggest that blast-related hearing loss should be understood as a distinct injury pattern, with different auditory characteristics and a different therapeutic response.

Extending the discussion of HBOT beyond physical injury, another study by Gur and colleagues [8] examined its potential role in the treatment of post-traumatic stress disorder. By identifying current knowledge gaps and presenting preliminary findings from an ongoing randomized trial comparing two hyperbaric oxygen protocols, the article highlights both the potential therapeutic value and the need for further high-quality clinical evidence regarding emerging treatments.

Combat casualty care remains one of the defining domains of military medicine. Lessons learned in military trauma systems have repeatedly shaped civilian trauma care worldwide, highlighting the importance of continued research in this field.

Military trauma care is examined from another perspective in the study by Akler et al. [9]. They evaluated the association between age and outcomes following combat injury. In a large cohort of military casualties, the authors found no significant age-related differences in mortality, intensive care admission, or prolonged hospitalization. These findings suggest that chronological age alone may be insufficient to predict outcomes following military trauma and raise important questions regarding reserve service, medical screening, and physiological resilience.

Military medicine also requires thoughtful approaches to chronic disease and inclusion. Gavron and colleagues [10] studied military service outcomes among IDF volunteers with inflammatory bowel disease, examining service completion and occupational stability. Their findings support a more individualized view of medical eligibility, suggesting that carefully selected and appropriately monitored individuals with chronic diseases may successfully complete meaningful military service.

Another practical dimension of combat casualty care was addressed

by Hassidov and colleagues [11], who compared intraoperative metal detector assistance with a computed tomography-guided approach for combat-related shrapnel localization in a cadaveric model of penetrating neck injury. Their findings suggest that metal detection may serve as a useful adjunct to imaging, enabling more precise localization and smaller incisions, while requiring further clinical validation.

CONCLUSIONS

The articles in this special issue of *IMAJ* illustrate the breadth, relevance, and responsibility of military medicine. Yet, beyond their thematic diversity, they share a deeper common message: this field of research advances when lived experience is examined with scientific discipline. For the IDF-MC, research and publication are not separate from the mission of care; they are part of it. By systematically converting operational experience into evidence, evidence into policy, and policy into improved clinical practice, military medicine fulfills one of its most important obligations: ensuring that lessons learned by one generation of caregivers become knowledge available to the next.

References

1. Benov A, Gelikas S, Fink N, Glassberg E. Military medical research in the IDF: an array of fields and interests. *IMAJ* 2022; 24 (9): 557-8.
2. Rittblat M, Tsur N, Etedgi H, Ekshtein A, Avni M, Ben-Ari O. Prevalence of hearing impairment among young adults. *IMAJ* 2026; 28 (6): 348-51.
3. Ben-Ari O, Gabbai D, Nakdimon I. Decompression sickness; not only in divers: altitude as a risk factor. *IMAJ* 2026; 28 (6): 352-6.
4. Epstein Y, Akavian I, Assor A, Moran DS, Yaakov ZT, Ketko I. Studying the biochemical profile of patients after exertional heat stroke: a case series. *IMAJ* 2026; 28 (6): 357-62.
5. Erez D, Moran DS, Ketko I. Sleep restriction and heat stress as compounded risks to military cognitive readiness. *IMAJ* 2026; 28 (6): 399-406.
6. Angel O, Rittblat M, Freund O, et al. Asthma in active military aircrew: long-term health and flight performance. *IMAJ* 2026; 28 (6): 363-8.
7. Gur I. Gur I, Jerdev T, Nov Y. Hyperbaric oxygen therapy for acute acoustic trauma: blast versus noise-induced hearing loss. *IMAJ* 2026; 28 (6): 369-75.
8. Gur I, Ofir D, Moravia A, Ornshtein S, Kalla C. Knowledge gaps in our understanding of hyperbaric oxygen therapy in post-traumatic stress disorder: current evidence, proposed solutions, and preliminary results. *IMAJ* 2026; 28 (6): 376-82.
9. Akler D, Gelman D, Radomislensky I, Benov A, Nadler N; Israel Trauma Group. The impact of age on outcomes following military trauma: a retrospective analysis. *IMAJ* 2026; 28 (6): 383-8.
10. Gavron Y, Abuhasira S, Chechik Y. Military service among volunteers with inflammatory bowel disease in the Israeli Defense Forces. *IMAJ* 2026; 28 (6): 389-93.
11. Hassidov E, Paz D, Kassis F, Ronen O. Intraoperative metal detection vs. preoperative computed tomography for combat-related shrapnel localization: a cadaveric comparison. *IMAJ* 2026; 28 (6): 394-8.

When you have eliminated the impossible, whatever remains, however improbable, must be the truth.

Sir Arthur Ignatius Conan Doyle (1859–1930), physician and writer, best known for his detective fiction featuring the character Sherlock Holmes

Capsule

Melatonin, angiotensin 1-7, and cannabidiol in refractory autoimmune

Dysregulation of the TH17/T regulatory (Treg) axis represents a frequently implicated pathway that may contribute to immune imbalance in selected autoimmune diseases, and experimental and clinical evidence suggests that several neuroendocrine systems, including melatonin, the endocannabinoid system, and the ACE2/angiotensin 1-7 axis, inhibit interleukin 17 (IL-17) signaling and physiologically modulate immune homeostasis. In this retrospective, observational case series, **Lissoni** and colleagues evaluated 70 consecutive patients with refractory autoimmune diseases who were nonresponsive to or declined conventional immunosuppressive therapies. Patients received an integrative neuroendocrine regimen consisting of oral melatonin (10–50 mg nightly), gastro-protected angiotensin 1–7 (0.5 mg twice daily), and cannabidiol (20 mg twice daily). After 3 months, patients with Hashimoto's thyroiditis showed a significant reduction in anti-thyroglobulin antibody levels (-49%), while patients with other systemic autoimmune diseases exhibited a significant decline in antinuclear antibody titers (-60%). In the multiple sclerosis subgroup, 62% of patients achieved radiological disease stabilization, with a median follow-up of 46 months. Abnormally low baseline LMR values were normalized in 67% of patients experiencing disease flares at enrollment. The regimen was well tolerated, and no clinically significant adverse events requiring treatment discontinuation were observed.

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