Italian Journal of Medicine

https://www.italjmed.org/ijm

eISSN 1877-9352

Publisher's Disclaimer. E-publishing ahead of print is increasingly important for the rapid dissemination of science. The Early Access service lets users access peer-reviewed articles well before print/regular issue publication, significantly reducing the time it takes for critical findings to reach the research community.
These articles are searchable and citable by their DOI (Digital Object Identifier).

The Italian Journal of Medicine is, therefore, E-publishing PDF files of an early version of manuscripts that have undergone a regular peer review and have been accepted for publication, but have not been through the copyediting, typesetting, pagination, and proofreading processes, which may lead to differences between this version and the final one.

The final version of the manuscript will then appear in a regular issue of the journal.

The E-publishing of this PDF file has been approved by the authors.

Ital J Med 2025 [Online ahead of print]

Please cite this article as:

Carmine Siniscalchi C, Imbalzano E, Di Micco P. **The hidden toll of war: long-term health risks at Europe's doorstep**. *Ital J Med* doi: 10.4081/itjm.2025.2403

Submitted: 13-11-2025
Accepted: 01-12-2025

The hidden toll of war: long-term health risks at Europe's doorstep

Carmine Siniscalchi,[1] Egidio Imbalzano,[2] Pierpaolo Di Micco[3]

[1]Department of Internal Medicine, Parma University Hospital; [2]Internal Medicine Ward, Messina University Hospital; [3]Internal Medicine Ward, Santa Maria delle Grazie Hospital, Naples, Italy

Correspondence: Pierpaolo Di Micco, Internal Medicine Ward "P.O. Santa Maria delle Grazie", Naples, Italy.
E-mail: pdimicco@libero.it

Key words: war, long-term health, risk factor, trauma.

Contributions: all the authors made a substantial intellectual contribution, read and approved the final version of the manuscript and agreed to be accountable for all aspects of the work..

Conflict of interest: the authors declare that they have no competing interests and all authors confirm accuracy.

Ethics approval and consent to participate: not applicable.

Informed consent: not applicable.

Patient consent for publication: not applicable.

Availability of data and materials: data available from the corresponding author upon request.

Funding: none.

AI use statement: during the preparation of this manuscript, the author(s) used ChatGPT (OpenAI, GPT-5, 2025 version) to improve readability, correct grammar, and refine phrasing. The tool was used only for linguistic enhancement.

Dear Editor,

Armed conflicts unfolding along and near Europe's borders have generated an extraordinary humanitarian response and a justifiable focus on acute trauma care. Yet the legacy of these conflicts will be written just as much in chronic, indirect, and system-level health consequences as in battlefield injuries. We argue that European health systems should anticipate an impending wave of long-tail morbidity spanning malnutrition, infectious disease, respiratory illness from environmental exposures, destabilization of non-communicable diseases (NCDs), mental-health disorders, and antimicrobial resistance (AMR).[1-3] Our purpose here is to outline the principal risk pathways and propose concrete, near-term priorities for preparedness and early recovery, tailored to the European context.

Even when hostilities abate, the health effects of war persist for years. Disrupted food supply chains and purchasing power, damaged water and sanitation (WASH) infrastructure, population displacement, and health-workforce attrition predict increases in under-nutrition and micronutrient deficiencies, especially among children, pregnant people, and the elderly. Prolonged delays and interruptions in food delivery are likely to precipitate malnutrition.[1,4,5] The underlying causal chain is sound and widely observed across conflicts: protracted shortages and high prices diminish dietary quality; infection-malnutrition cycles develop; and the consequences for immune function, wound healing, and recovery from acute illnesses are profound.

The collapse of buildings and the use of munitions create persistent airborne hazards.[6,7] Dusts of varied composition, such as silicates, metals, combustion by-products, that drive a spectrum of respiratory outcomes, from upper-airway irritation to chronic bronchitis and pneumoconiosis-like syndromes, particularly in those forced to live or work amid rubble and reconstruction. This warrants specific planning for post-conflict respiratory clinics, spirometric surveillance, and exposure-mitigation guidelines for cleanup crews, volunteers, and returnees. The time window is measured in years, not months, and respiratory services should therefore be integrated into early recovery budgets rather than relegated to emergency phases alone.

Conflicts reshape pathogen transmission. Crowding, intermittent water supply, poor sanitation, and interrupted vaccination programs raise risks for enteric infections and vaccine-preventable diseases.[2,8-12] Simultaneously, constrained diagnostics, empiric broad-spectrum antibiotic use, and fragmented stewardship infrastructure can accelerate AMR selection and spread.[3] The theme is actual and urgent: without deliberate stewardship adapted to resource-limited settings, AMR will worsen and complicate any surge of post-conflict infections. That, in turn, increases length of stay, cost, and mortality once patients reach European hospitals, a pressure already familiar to acute care units managing older, frailer patients with resistant infections.

A major yet underappreciated consequence of war is the destabilization of chronic illnesses: heart failure, chronic obstructive pulmonary disease (COPD) and asthma, diabetes, chronic kidney disease, and severe mental illness. Medication interruptions, loss of records, missed follow-up, and dietary change push-controlled disease into decompensation. Continuity of chronic care is a life-saving, not merely quality-of-life, priority in post-conflict planning. For European systems likely to receive displaced patients or repatriated citizens, that means investing in rapid medication reconciliation, flexible prescribing to bridge formulary gaps, and protocols to fast-track high-risk NCD patients (*e.g.*, insulin-dependent diabetes, advanced heart failure) into stabilization pathways upon arrival or return.

The psychological toll of conflict, post-traumatic stress disorder (PTSD), depression, anxiety, and substance-use comorbidities falls on civilians, combatants, humanitarian staff, and journalists.[13-15] In our opinion, European health systems should anticipate prolonged demand for evidence-based mental-health and psychosocial support (MHPSS): stepped-care models, trauma-informed primary care, community-based supports for adolescents, and stigma-sensitive outreach to men (who often underutilize services). The crucial point is longitudinally: PTSD and depression often surface after initial resettlement once survival stressors recede. Building surge-capable, culturally competent MHPSS now will reduce downstream social and economic costs.

Certain groups will face disproportionate harm: infants and small children; pregnant and postpartum people; older adults with frailty, cognitive impairment, or multimorbidity; people with disabilities; and those with serious mental illness or substance-use disorders. Our clinical work with frail older inpatients, where functional vulnerability predicts infection risk and resource use, reinforces how conflict-exposed older adults may present to European hospitals: atypically, with non-specific symptoms and rapid functional decline rather than classic febrile syndromes. Preparedness plans should therefore include geriatric-aware triage, rapid functional screening, and pathways linking acute care with rehabilitative and social services to prevent avoidable institutionalization

We propose a pragmatic set of near-term priorities for European health systems and their partners. These measures can be embedded in humanitarian corridors, border reception, and municipal health services in regions likely to receive displaced people, as well as in cross-border support to rebuilding health sectors.

1. Targeted surveillance and early warning. Adopt syndromic surveillance (respiratory, diarrheal, febrile, and rash illnesses) in reception centers and community clinics; integrate point-of-care diagnostics where feasible; create feedback loops to rapidly adjust vaccination and prophylaxis strategies. Surveillance should explicitly include AMR patterns through low-burden sampling and simplified antibiogram reporting to inform empiric therapy.[10-12]
2. Catch-up immunization and infection-prevention basics. Prioritize measles–mumps–rubella, polio, diphtheria-tetanus-pertussis, influenza, and pneumococcal catch-up, adapted to age and risk. Pair with WASH and ventilation improvements in shelters and schools; provide hygiene kits and risk communication materials in relevant languages. These are cost-effective, high-impact steps that reduce outbreak risk while broader recovery unfolds.[2,8,9]
3. Continuity of chronic care. Implement accelerated medication reconciliation at entry points; establish emergency formularies aligned with likely pre-war regimens; support rapid referral for unstable heart failure, insulin-dependent diabetes, and advanced COPD/asthma; equip primary care with protocols for re-stabilization and for safe de-escalation of high-risk polypharmacy. Electronic “minimum datasets” for displaced patients, medications, allergies, key diagnoses, can reduce errors when records are fragmentary.[16-18]
4. Respiratory clinics and exposure mitigation. Create post-conflict respiratory assessment tracks for symptomatic returnees and workers engaged in debris removal; provide spirometry, imaging when indicated, and occupational guidance (mask use, wet methods to suppress dust). Include smoking cessation and vaccination as part of the package.[6,7]
5. Workforce and financing for early recovery. Protect and expand the local health workforce through supportive supervision, mental-health support for clinicians, and streamlined hiring of multilingual staff. Ring-fence budgets for recovery-phase priorities (surveillance, chronic-care continuity, MHPSS, stewardship, rehabilitative services) so they are not crowded out by short-term emergency line items.[13-15]

In conclusion, the end of active hostilities will not be the end of conflict-related disease. On current trajectories, European health systems will be asked to absorb prolonged indirect morbidity shaped by disruptions to basic determinants of health, chronic-care interruptions, environmental exposures, and the dynamics of AMR. If we plan now, by building targeted surveillance, securing chronic-care continuity, embedding stewardship, anticipating respiratory and mental-health needs, and protecting the workforce, we can blunt a predictable wave of avoidable mortality and disability. The priority actions we outline are feasible, scalable, and comparatively low-cost relative to late-stage rescue care. What they require is foresight: recognizing that the most consequential health work of war often begins *after* the shooting stops.

References

1. Bendavid E, Boerma T, Akseer N, et al. The effects of armed conflict on the health of women and children. Lancet 2021;397:522-32.
2. Deal A, Halliday R, Crawshaw AF, et al. Migration and outbreaks of vaccine-preventable disease in Europe: a systematic review. Lancet Infect Dis 2021;21:e387-98.
3. Granata G, Petersen E, Capone A, et al. The impact of armed conflict on the development and global spread of antibiotic resistance: a systematic review. Clin Microbiol Infect 2024;30:858-65.
4. Azanaw MM, Anley DT, Anteneh RM, et al. Effects of armed conflicts on childhood undernutrition in Africa: a systematic review and meta-analysis. Syst Rev 2023;12:46.
5. Corley AG. Linking armed conflict to malnutrition during pregnancy, breastfeeding, and childhood. Glob Food Sec 2021;29:100531.
6. Aldrich TK, Gustave J, Hall CB, et al. Lung function in rescue workers at the World Trade Center after 7 years. N Engl J Med 2010;362:1263-72.
7. Banauch GI, Hall C, Weiden M, et al. Pulmonary function after exposure to the World Trade Center collapse in the New York City Fire Department. Am J Respir Crit Care Med 2006;174:312-9.
8. Crawshaw AF, Farah Y, Deal A, et al. Defining the determinants of vaccine uptake and undervaccination in migrant populations in Europe to improve routine and COVID-19 vaccine uptake: a systematic review. Lancet Infect Dis 2022;22:e254-66.
9. Hui C, Dunn J, Morton R, et al. Interventions to improve vaccination uptake and cost effectiveness of vaccination strategies in newly arrived migrants in the EU/EEA: a systematic review. Int J Environ Res Public Health 2018;15:2065.
10. El-Khatib Z, Taus K, Richter L, et al. A syndrome-based surveillance system for infectious diseases among asylum seekers in Austrian reception centers, 2015-2018: analysis of reported data. JMIR Public Health Surveill 2019;5:e11465.
11. Saleh M, Farah Z, Howard N. Infectious disease surveillance for refugees at borders and in destination countries: a scoping review. BMC Public Health 2022;22:227.
12. Fabris S, d'Ettorre G, Spagnolello O, et al. SARS-CoV-2 among migrants recently arrived in Europe from low- and middle-income countries: containment strategies and special features of management in reception centers. Front Public Health 2021;9:735601.
13. Charlson F, van Ommeren M, Flaxman A, et al. New WHO prevalence estimates of mental disorders in conflict settings: a systematic review and meta-analysis. Lancet 2019;394:240-8.
14. Steel Z, Chey T, Silove D, et al. Association of torture and other potentially traumatic events with mental health outcomes among populations exposed to mass conflict and displacement: a systematic review and meta-analysis. JAMA 2009;302:537-49.
15. Tol WA, Le PD, Harrison SL, et al. Mental health and psychosocial support in humanitarian settings: research priorities for 2021-30. Lancet Glob Health 2023;11:e969-75.
16. Mendelson M, Morris AM, Thursky K, Pulcini C. How to start an antimicrobial stewardship programme in a hospital. Clin Microbiol Infect 2020;26:447-53.
17. Cox JA, Vlieghe E, Mendelson M, et al. Antibiotic stewardship in low- and middle-income countries: the same but different? Clin Microbiol Infect 2017;23:812-8.
18. Arieti F, Göpel S, Sibani M, et al. White Paper: bridging the gap between surveillance data and antimicrobial stewardship in the outpatient sector-practical guidance from the JPIAMR ARCH and COMBACTE-MAGNET EPI-Net networks. J Antimicrob Chemother 2020;75:ii42-51.