

Conflict Zones: How War Fuels Infectious Disease Outbreaks and Hides Them

Written by The Life Science Feed Editorial Team · Published 17 August 2026 · Edited by Mara Voss

Infectious diseases do not respect borders, but they thrive in their absence, particularly when those borders are fractured by conflict. The breakdown of public health systems in war zones creates a fertile ground for pathogens, turning localised skirmishes into regional health crises.

Understanding the intricate relationship between conflict and disease spread is critical for clinicians, not just those on the front lines, but also those managing the downstream effects in stable regions receiving displaced populations.

KEY TAKEAWAYS

- **The Pivot:** Armed conflict systematically dismantles the public health infrastructure necessary for disease surveillance and control.
- **The Data:** No specific numerical data is available without real research papers, but the principle remains that conflict exacerbates disease transmission.
- **The Action:** Clinicians should maintain a high index of suspicion for atypical presentations of infectious diseases in patients with a history of displacement from conflict zones.

The relationship between armed conflict and infectious disease outbreaks is not merely correlational; it is causal. War systematically dismantles the very foundations of public health, creating an environment where pathogens can spread unchecked and where the mechanisms to detect and contain them are severely compromised. This dynamic affects both endemic diseases and the emergence of novel threats, posing a significant challenge to global health security.

Displacement of populations is a hallmark of conflict. Millions flee their homes, often congregating in overcrowded, unsanitary camps with limited access to clean water, food, and medical care. These conditions are a textbook recipe for the rapid transmission of respiratory infections, diarrhoeal diseases, and vector-borne illnesses. Measles, cholera, and malaria frequently surge in such settings, overwhelming already fragile health services.

The Erosion of Public Health Infrastructure

Conflict directly targets and degrades health infrastructure. Hospitals are damaged or destroyed, medical supply chains are disrupted, and healthcare workers are displaced, injured, or killed. This loss of capacity means routine vaccination programs cease, surveillance systems collapse, and diagnostic capabilities vanish. Without functioning laboratories and reporting networks, outbreaks go undetected for longer, allowing diseases to gain a foothold before any response can be mounted.

The destruction extends beyond physical buildings. Essential services like water purification and sanitation systems

are often collateral damage or deliberate targets. Contaminated water sources become primary vectors for diseases like cholera and typhoid. Waste management falters, leading to increased rodent and insect populations, which in turn propagate vector-borne diseases such as dengue and leishmaniasis. These environmental changes create persistent reservoirs for pathogens, making long-term control exceedingly difficult even after active conflict subsides.

Challenges in Disease Surveillance and Reporting

Accurate disease surveillance relies on a stable, accessible population and a functional reporting system. In conflict zones, both are absent. Populations are highly mobile, making it nearly impossible to track cases or contacts. Fear of violence, distrust of authorities, and the sheer chaos of war deter individuals from seeking care or reporting symptoms. This creates significant blind spots for public health officials, who are often operating with incomplete or outdated information.

The deliberate targeting of communication infrastructure further isolates affected areas, preventing the timely sharing of critical epidemiological data. Without real-time information on disease incidence, prevalence, and geographic spread, public health interventions are delayed, misdirected, or entirely absent. This lack of data integrity means that outbreaks can escalate into epidemics before the international community is even aware of their existence. The Ebola response in conflict-affected regions has repeatedly highlighted these challenges, where tracing contacts and ensuring safe burials become monumental tasks under duress.

Impact on Vaccination Programs and Immunisation Gaps

Routine immunisation programs are among the first casualties of conflict. Supply lines for vaccines are cut, cold chain infrastructure is destroyed, and health personnel are unable to reach communities. This leads to a rapid accumulation of unvaccinated individuals, creating large pockets of susceptibility within populations. Diseases like measles, which are highly contagious and preventable by vaccine, can then spread explosively, particularly among children who are already vulnerable due to malnutrition and stress.

Even when vaccines are available, delivering them in conflict zones is fraught with danger. Healthcare workers face threats to their safety, and communities may be inaccessible due to active fighting or damaged roads. The resulting immunisation gaps can persist for years, leaving entire cohorts of children unprotected and susceptible to preventable diseases long after the immediate conflict has ended. This creates a lasting public health debt that requires significant investment to overcome.

The Role of Malnutrition and Stress

Conflict invariably leads to food insecurity and malnutrition. Disrupted agricultural production, blockaded supply routes, and economic collapse mean that populations, especially children, often face severe nutritional deficiencies. Malnutrition weakens the immune system, making individuals far more susceptible to infections and increasing the severity and fatality rate of common diseases. A child suffering from severe acute malnutrition, for example, is at a significantly higher risk of dying from diarrhoeal diseases or pneumonia.

Chronic stress, a pervasive feature of life in conflict zones, also compromises immune function. The constant threat of violence, displacement, and loss takes a heavy toll on physical and mental health, further reducing the body's ability to fight off pathogens. This complex relationship of malnutrition, stress, and lack of medical care creates a vicious cycle where disease thrives, and recovery is hampered.

Challenges for Humanitarian Response

Humanitarian organisations face immense obstacles in delivering aid and health services in conflict zones. Access to affected populations is often restricted by warring parties, and aid convoys can be targeted. The security risks for aid workers are substantial, limiting their ability to operate effectively and consistently. This means that even when resources are mobilised, they may not reach those most in need, or they may arrive too late to prevent widespread outbreaks. Coordination among multiple humanitarian actors is also complex in chaotic environments. Without a clear chain of command or reliable communication channels, efforts can be duplicated or, worse, leave critical gaps in coverage. The sheer scale of needs in a conflict zone often overwhelms the capacity of even the most experienced humanitarian agencies, highlighting the need for robust international cooperation and political will to ensure safe access.

The Silent Spread: Antimicrobial Resistance

Another insidious consequence of conflict is the acceleration of antimicrobial resistance (AMR). In environments where diagnostic capabilities are limited, antibiotics are often prescribed empirically and broadly, without proper identification of the pathogen or its susceptibility. This overuse and misuse of antimicrobials drives the selection and spread of resistant strains. The breakdown of sanitation and hygiene practices facilitates the transmission of resistant bacteria within communities and healthcare settings.

The movement of displaced populations can then carry these resistant strains across borders, posing a threat to global public health. A lack of surveillance for AMR in conflict zones means that the true burden of drug-resistant infections is often unknown, making it difficult to implement targeted control measures. This silent spread of resistance represents a long-term threat that extends far beyond the immediate conflict, potentially undermining the effectiveness of essential medicines worldwide. Clinicians should consult resources like the Oxford Handbook of Infectious Diseases and Microbiology for guidance on managing complex infections, especially when resistance patterns are uncertain.

Long-Term Health Consequences and Regional Stability

The health consequences of conflict are not confined to the duration of hostilities. The destruction of health systems, the emergence of drug-resistant pathogens, and the psychological trauma inflicted on populations can have ripple effects for decades. Rebuilding health infrastructure and restoring public trust in health services is a monumental task that requires sustained investment and political stability. Without these, regions can remain vulnerable to recurrent outbreaks and chronic health crises.

The movement of refugees and internally displaced persons also presents challenges for neighbouring countries, which must absorb and provide care for large populations, often with limited resources. This can strain their own health systems and potentially introduce new disease burdens. The interconnectedness of global health means that a health crisis in one region, particularly one exacerbated by conflict, can quickly become a concern for all.

Addressing the Gaps: A Call for Integrated Approaches

Mitigating the impact of conflict on infectious disease requires an integrated approach that combines humanitarian aid with long-term development strategies. This includes protecting healthcare facilities and personnel, ensuring safe access for humanitarian assistance, and investing in resilient health systems that can withstand shocks. Early warning systems for outbreaks must be prioritised, even in unstable environments, using innovative methods where traditional surveillance is impossible.

Addressing the root causes of conflict itself is paramount. Political instability, economic inequality, and social injustice all contribute to the conditions that make populations vulnerable to both violence and disease. Until these underlying issues are resolved, the cycle of conflict and disease will continue to undermine global health security. The complex drivers of vaccine hesitancy, for example, are often amplified in environments where trust in institutions has eroded due to conflict.

CLINICAL IMPLICATIONS

The clinical implications of conflict-driven infectious disease spread are profound, extending far beyond the immediate war zones. European GPs and specialists will inevitably encounter patients who have been displaced from these regions, presenting with complex health profiles shaped by their experiences. A high index of suspicion for unusual or drug-resistant infections is not merely prudent, it is essential.

The breakdown of vaccination programs in conflict areas means that many displaced individuals may lack routine immunisations. This necessitates a proactive approach to catch-up vaccination, particularly for diseases like measles, polio, and diphtheria, which can pose a public health risk in host communities. Understanding the specific disease epidemiology of the patient's region of origin can guide targeted screening and preventative measures.

But the challenge is not just about individual patient management. The global health community, including European regulatory bodies and public health agencies, must recognise that investing in robust disease surveillance and response mechanisms in conflict-affected regions is a matter of self-interest. Uncontrolled outbreaks anywhere can quickly become threats everywhere, demanding a more integrated and politically supported approach to humanitarian health aid.

The long-term consequences of conflict on health systems and disease patterns will persist long after the fighting stops. Clinicians must be prepared to manage the chronic health conditions, mental health sequelae, and altered infectious disease landscapes of the market that emerge from these crises, advocating for sustained support for rebuilding efforts and resilient health infrastructure.

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