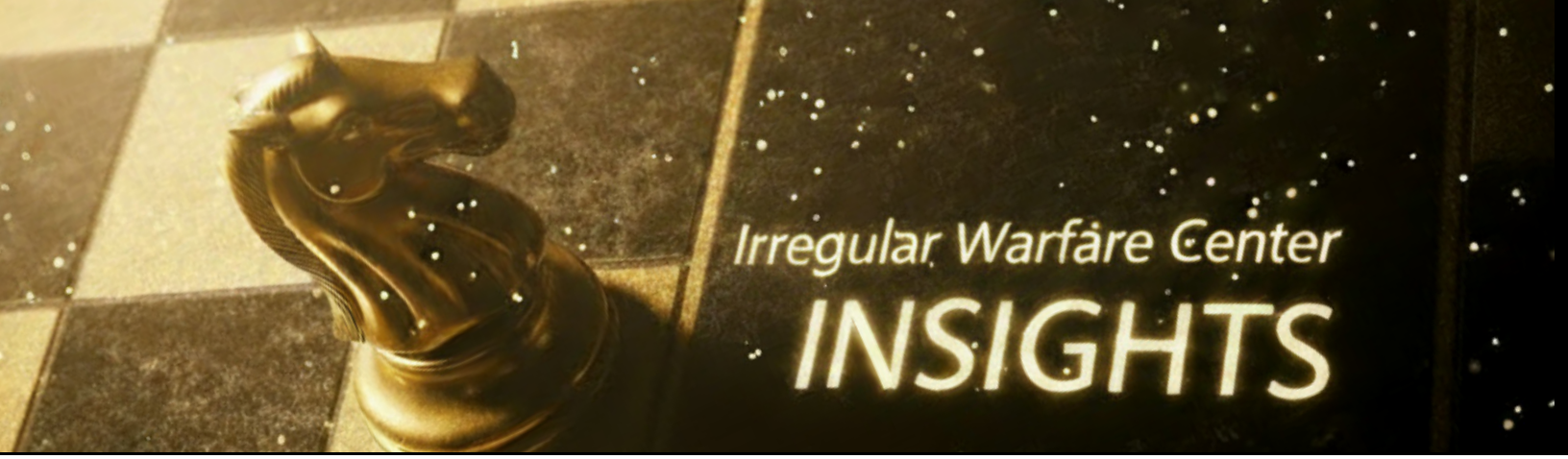


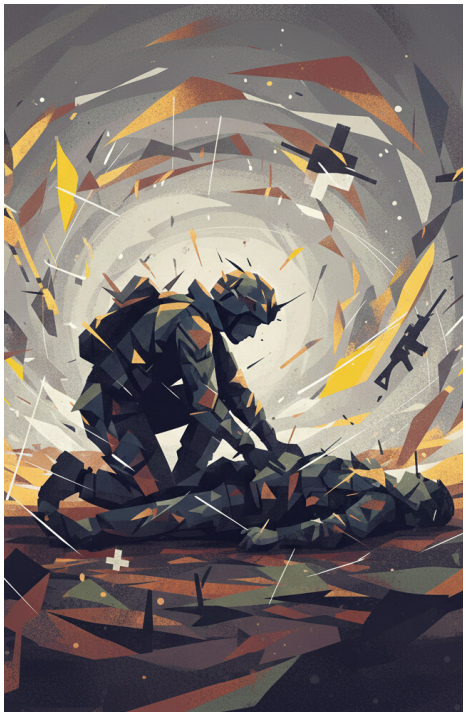
Build from the Shadows, Not the System - Disruptive Medicine for Denied Battlespaces: A Grounded Framework for Irregular and Clandestine Warfare

Abstract

In recent discussions on the future of military medicine, layered, mobile, and networked models of trauma care have gained prominence. These concepts aim to adapt conventional trauma systems to irregular warfare environments. However, they often overlook the on-the-ground realities of resistance movements and clandestine operations. Drawing from case studies in Syria, Ukraine, Gaza, Myanmar, and other theaters, this paper presents an alternative. It challenges prevailing assumptions about mobility, technological reliance, and medical integration, offering an "organic survivability" model—emphasizing decentralized, self-sufficient, and culturally integrated medical capabilities tailored to denied or clandestine contexts.

Introduction

In the modern era of near-peer adversaries and large-scale combat operations, opposition forces, whether nation-states or insurgent groups, can now field inexpensive drone-based Intelligence, Surveillance, and Reconnaissance (ISR) as well as kinetic capabilities. In response, the irregular and clandestine operations of the U.S. and its allies must adapt medical support to an arena defined by volatility, constant surveillance, and isolation from allied forces. There is a flawed assumption that trauma systems, normally deployed by large conventional force units or small Special Operations Surgical Teams (SOSTs) can be scaled, synchronized, or surgically inserted across irregular, austere, or clandestine environments. This assumption fails to account for how resistance forces actually fight and survive when facing formidable adversaries equipped with advanced military ISR and kinetic capabilities. This paper advocates for a bottom-up, operationally realistic approach to medical planning that centers on the resilience of individuals and small units operating without assurance of evacuation, resupply, or reinforcement.



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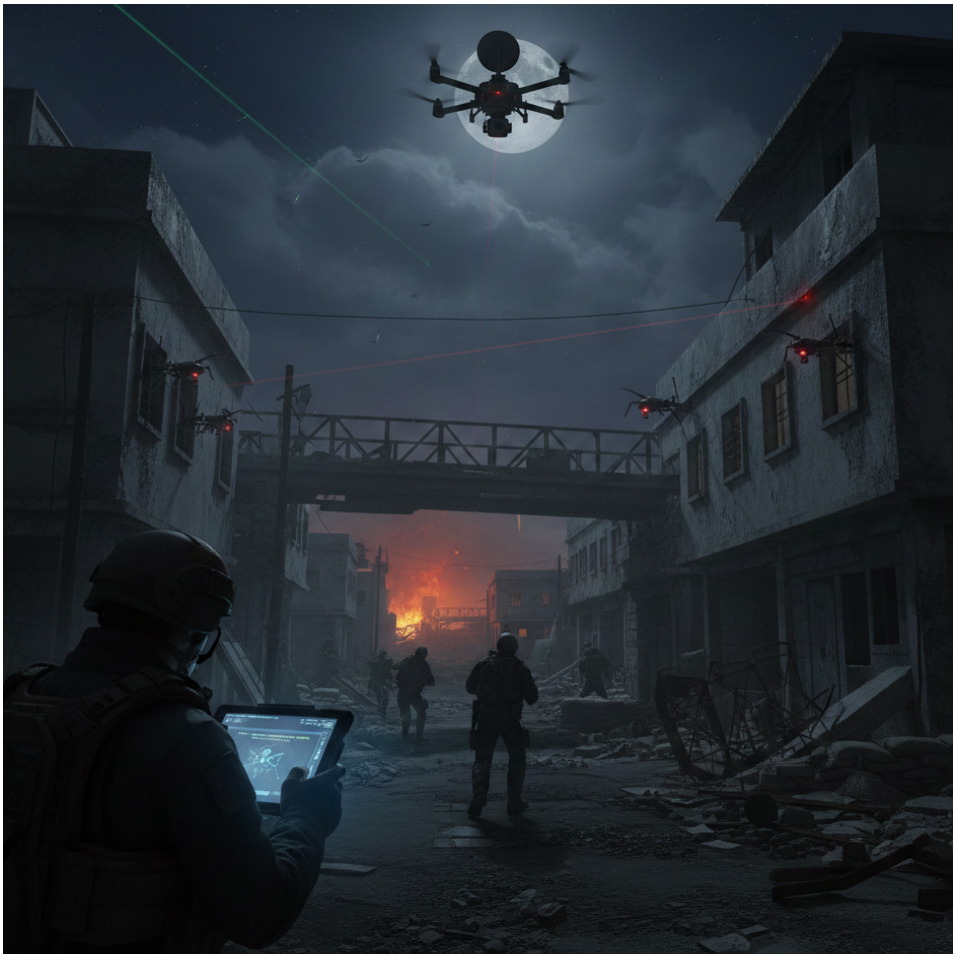
The Illusion of Mobility in Denied Battlespace

In high-surveillance environments, such as Gaza or Ukraine, movement often equals exposure. When the opposition is a near-peer adversary, it should be assumed that their ISR capabilities to monitor the battlefield are constant. As we have seen in Ukraine, it is almost impossible to create openings of surprise at the operational or strategic levels. Almost all amassing armor or logistics required for major movements on the battlefield will likely be detected by the adversary almost immediately and shortly followed by long-range precision fires. That being said, tactical - and rarely - operational surprise can be achieved with sufficient counter-intelligence efforts such as those preceding the Ukrainian offensive into the Russian Kursk territory. Medical personnel operating in irregular warfare or clandestine settings in resistance or proxy roles typically rely on static, hidden infrastructure and cached supplies such as in homes, tunnels, basements and not mobile trauma bays unless as a last resort. The concept of maneuvering modular medical nodes as a routine action under constant drone and satellite observation underestimates the lethality of modern ISR. Large logistics movements and amassed formations are ripe targets for long-range Russian strikes.



Additionally, medical targets are extremely high-value and if detected, would likely be on the receiving end of a high-priority prompt strike capability such as an Iskander ballistic missile rather than slow-flying Geran drones. The bottom line is that it is illogical to assume that surgical teams could move their entire apparatus in the battlespace on a scale needed for resistance operations or irregular warfare against near-peer adversaries. Moving skilled personnel to prepositioned medical safehouses with cached supplies is a more realistic approach. Whereas conventional units may have the luxury of repositioning for medical effect, irregular forces must prioritize concealment and redundancy. Medical planning for irregular warfare, resistance and clandestine operations should focus on minimal moving parts and survivability, not deployments and relocation of entire Role 2 and higher capabilities and scalability.

Technology as a Liability in the Electromagnetic Battlespace

Modern irregular warfare against near-peer adversaries, and even technologically savvy non-nation state adversaries, takes place in contested electromagnetic environments. Peer and near-peer adversaries routinely deploy GPS spoofing, jamming, cyber intrusion, and loitering munitions cued by radiofrequency emissions. Telemedicine platforms and health data networks, while promising on paper, become major liabilities when they expose locations or

require persistent connectivity. In the current conflict in Ukraine, Russian surveillance meant that Ukrainian medics learned to not assume secure communications and power continuity. In many cases, paper and written records, memorized protocols, and low-tech workarounds have proven more sustainable than digital solutions. In a hypothetical conflict against a near-peer adversary like China, any irregular or clandestine force would need to assume that they are operating in the most oppressive electronic warfare environments and that attempting to use telemedicine capabilities would be suicidal.

Indigenous Autonomy and Asymmetric Partnerships

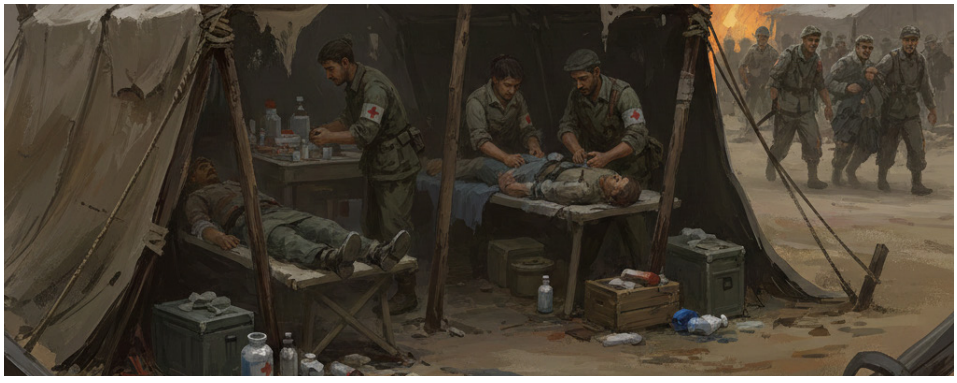
As seen firsthand working with partner forces' medical teams and host nation medical personnel, it is ill-advised to attempt to dictate how a partner force should run their medical teams. Efforts to integrate indigenous or resistance medics into standardized trauma networks often meet cultural, operational, and linguistic barriers. Success in Afghanistan and the Sahel has come not from assimilation into external doctrine but from enabling local autonomy with targeted support. Collaborative medical efforts can introduce U.S. Clinical Practice Guidelines as a good way to practice medicine rather than as the only way to practice medicine to partner forces. By working collaboratively, U.S. irregular and clandestine support will be much more effective in ensuring buy-in by the partner force medical personnel. Medical doctrine must be tailored, not transplanted. Indigenous care systems often reflect different triage norms, conceptions of pain and death, and prioritization of symbolic or spiritual healing. Advisors should embrace these systems rather than impose clinical conformity.

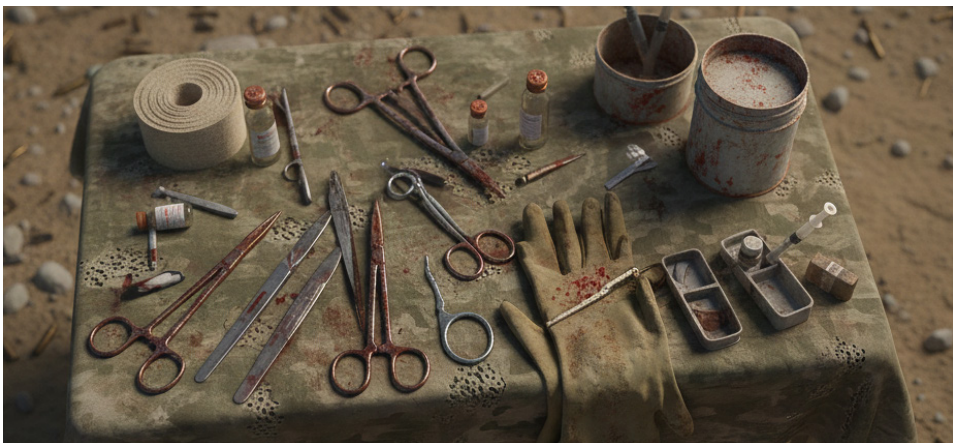
A Framework of Organic Survivability

In denied battlespaces, survivability must be prioritized over scalability or technological integration. The foundation of this approach lies in empowering local medical resilience through decentralized, low-signature methods that can function without external support. Central to this framework are train-the-trainer models, which build indigenous capacity by enabling local personnel to lead both immediate trauma response and prolonged field care in austere environments. These operators become force multipliers, spreading capability through their communities and units.

Equally critical is the establishment of prepositioned medical caches—strategically hidden and disguised stockpiles of trauma supplies designed to sustain operations when resupply or exfiltration is not possible. These caches serve as the backbone of continued care under siege or isolation. Supporting these systems are independent medical cells: small, autonomous units that are trained, equipped, and prepared to operate without centralized oversight or dependency on a broader network. Their low-profile nature makes them survivable and effective in environments where visibility equates to vulnerability.

Additionally, the long-term functionality of irregular medical systems depends on fostering a preventive medical culture. Emphasis on fundamentals like hygiene, water sanitation, sleep discipline, and psychological resilience reduces both trauma burden and non-battle-related injuries. This proactive posture ensures that limited resources are conserved for critical interventions. Ultimately, this framework does not treat area denial, oppressive opposition ISR, and kinetic capabilities as a temporary obstacle; it embraces them as a defining characteristic of modern conflict and builds systems accordingly.





Operational Realities That Undermine Centralized Trauma Models

The idealized trauma chains seen in conventional doctrine collapse quickly under the operational realities of irregular and clandestine warfare. One of the most fundamental challenges is the lack of centralized command and control. Many resistance networks operate through decentralized cells with limited communication between elements. Attempting to coordinate medical actions across these units not only strains operational security but creates vulnerabilities that adversary ISR and cyber capabilities can exploit. Equally important is the strategic imperative for plausible deniability. In many cases, the overt involvement of U.S. or allied medical personnel would compromise the mission or escalate the conflict. As a result, support must be delivered through proxy forces, prepositioned assistance, or advisory roles that are non-attributable.

Furthermore, the role of medical personnel in irregular warfare extends far beyond clinical treatment. Often, they serve as symbols of hope, community leadership, and morale. Their presence carries a cultural and psychological weight that doctrine must account for. Finally, the notion of safe evacuation must be discarded. Movement through contested terrain, across checkpoints, or under persistent ISR surveillance is frequently impossible. With adversaries capable of striking hundreds of kilometers with precision, evacuation becomes a fantasy. In most denied environments, care will be rendered in place or not at all.

Conclusion: Build from the Shadows, Not the System

Victory in irregular and clandestine warfare will not be won by mimicking the comforts of conventional systems. It will be won by embracing the realities of chaos, denial, and isolation. Medical support in these environments must be treated as a combat function, not a rear-area luxury. Attempts to graft traditional trauma care models onto resistance networks or proxy forces not only waste resources; they put lives at risk. The enemy's ISR capabilities, precision fires, and control of the electromagnetic spectrum make large-footprint, tech-reliant systems obsolete the moment they enter the battlespace.

What survives in denied environments is not modular; it is minimal, invisible, and embedded. We must stop planning as if exfiltration, resupply, or safe evacuation are options—they are not. Our doctrine must shift from aspiration to adaptation. That means building resilient indigenous systems, embedding capability in the lowest echelons, and accepting that our medical footprint must disappear into the terrain like the rest of our clandestine operations.

This is not a call for retreat from excellence, but a demand for a new form of it. In denied battlespaces, the enemy owns the sky, the spectrum, and the initiative. If we want to win, we build from the shadows.