Building Health System Resilience

Preparing Norway and NATO for an Article V Scenario

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CLIENTS

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ABOUT THE AUTHOR

Tammy Nguyen is a U.S. Department of State Rangel Fellow studying at Harvard University's Kennedy School of Government and will earn a Master's in Public Policy degree in May 2023. Through the fellowship, Tammy will serve as a U.S. diplomat in the Foreign Service following graduation. From June-August 2022, Tammy worked at the U.S. Mission to NATO in Brussels, Belgium, which informed her professional understanding of multilateral diplomacy for this report. Previous work experience includes the U.S. House Committee on Homeland Security, Peace and Security Funders Group, Truman National Security Project, D.C. City Council, and Austin City Council.

EXECUTIVE SUMMARY

Putin's full-scale invasion of Ukraine proves that war in Europe is not obsolete.

Beginning in Chechnya, Syria, and now in Ukraine, Russia's historical pattern of attacking hospitals and health sector assets should ring alarm bells for senior medical, military, and political leaders. The World Health Organization regarded the war in Ukraine as the "largest attack on health care in Europe since World War II," as Russia executed 859 healthcare attacks since the start of the invasion, according to the WHO's surveillance system for attacks on healthcare.[1] In response to Russia's invasion, NATO continues to strengthen Euro-Atlantic security through a variety of policies, such as reinforcing deterrence on the eastern flank, enhancing rapid response capabilities, strengthening regional partnerships, and more. However, many overlook the opportunity to build health system resilience. Typically, senior civilian and military medical leaders only collaborate during the midst of a crisis, despite the fact that health systems preparedness is critical to ensuring civilian health during conflict and quality medical care for combat effectiveness and readiness.

This report aims to provide a strategic approach to assessing health systems' preparedness, define more comprehensive health system objectives to support NATO's 5th baseline requirement for resilience, and build strategic-level civilian-military medical cooperation. The report's specific goals are two-fold. The first goal is to recommend how Norway, one NATO ally that borders Russia, can assess its national health system vulnerabilities and work across the civilian-military medical interface to improve health resilience in the face of national security threats. This applies to other NATO allies that are strengthening their national health preparedness. The second goal is to recommend how the NATO Committee of the Chiefs of Medical Services (COMEDS) can support allied nations in assessing their health systems and building strategic civil-military cooperation and resilience across the alliance. The following recommendations are useful not only for war-related threats but also for unpredictable and emergent health crises where civil and military counterparts will cooperate.

<u>Recommendations for Norway include</u>:

- Undertake a comprehensive 'health system in conflict' framework to assess vulnerabilities and identify mitigation strategies.
- Establish a permanent Article V preparedness task force.
- The Norwegian military should release a medical cooperation strategy report to civilian counterparts, outlining the threat and areas of opportunity in medical preparedness.
- Draft and exercise updated coordinated response plans focused on the health system response to an Article V scenario.

<u>Recommendations for NATO include</u>:

- COMEDS should develop a 'health system in conflict' framework with the Joint Health Group and the European Union to assess vulnerabilities and identify mitigation strategies.
- Release a health system assessment survey to NATO allies.
- Conduct annual strategy-level tabletop exercises (TTX) to stress test the roles, responsibilities, and capacities of national, allied, and multilateral interoperability.
- Incorporate more extensive medical exercises into NATO multi-national military exercises.

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1. Stefan Anderson, "Russian Airstrikes In Ukraine: The 'Largest Attack' On Health Care In Europe Since World War II, Says WHO - Health Policy Watch," Health Policy Watch, November 21, 2022, sec. Content type, https://healthpolicy-watch.news/russian-ukraine-airstrikes-largest-attack-health-care-europe-since-world-war-ii-who/.

PART I: SETTING THE CONTEXT

Introduction

The North Atlantic Treaty Organization (NATO) and its allies are reassessing the effectiveness of their current resilience programs in response to Russia's aggression in Ukraine. NATO allies are challenged by a foreign actor that repeatedly abuses the Geneva Conventions by attacking health institutions and medical assets. As such, resilience policy and planning should consider this pattern and challenge to increase focus and investment in health system preparedness across the alliance.

The war in Ukraine stresses that health system attacks result in more than the immediate loss of life and infrastructure; in addition, it poses a long-lasting impact on a country's stability. Moreover, health system attacks are a shared challenge for military readiness, as many countries' militaries depend on civilian health systems for force protection and readiness. Attacks on civilian health systems directly affect military medical services and delivery. NATO's 5th resilience baseline requirement, detailed below, covers medical-related concerns and helps guide allies focus their national preparedness efforts.

5th

"Ability to deal with mass casualties and disruptive health crises: ensuring that civilian health systems can cope and that sufficient medical supplies are stocked and secure." [2]

The 5th baseline requirement and the corresponding evaluation criteria (an internal document) are primarily tactical and operational. For example, the existing criteria for managing mass casualties include mapping infrastructure and resources, developing evacuation plans, increasing transport capacities, and updating civilian-military contingency plans. The criteria are useful for allies to consider the immediate medical-related consequences of an attack or threat. However, given the propensity of Russia to attack health systems, the strategic advantages it provides, as well as the significant and lasting effects that a collapsed health system can have on a country's economy and political stability, NATO allies should consider the question of how they can improve health system resilience in a more comprehensively.

Policymakers should focus on long-term and high-level strategic challenges caused by armed conflict. Strained health financing, a depleted health workforce, disrupted medical supply chains, and an increased burden of disease caused by displaced populations and large-scale migration will challenge policymakers and health service delivery. As such, policymakers should adopt long-term and more strategic preparedness strategies that align with these prolonged consequences. For most NATO allies, military medical services are a part of the national health system. Civilian and military medical assets align and reinforce one another for many countries rather than exist in two separate systems. Health system destruction will have military implications, ultimately benefiting the adversary. In a military conflict, will national health systems be prepared to contend with the surplus of medical needs? Are health systems prepared to respond to casualties from civilians, national troops, allied troops, and enemy troops? Most importantly, is there situational awareness and understanding on the strategic level? This report will discuss these questions and potential strategies to address them.

2. NATO, "Resilience, Civil Preparedness and Article 3," NATO, https://www.nato.int/cps/en/natohq/topics_132722.htm.

Attacks on health systems by Russia – the rule, not the exception

Image Source: EyePress News/REX/Shutterstock

The Mission of Ukraine to NATO facilitated briefings and forums from Ukraine's Surgeon General to inform NATO of the medical lessons from the conflict. Russia's violation of international humanitarian law and law of armed conflicts includes targeting medical emblems, attacking health facilities, and blocking efforts by international organizations and 35 countries from delivering aid and medicines to occupied territories.[3] NATO allies have recognized the importance of strengthening capabilities, such as the ability to manage civilian casualty redistribution across Europe while maintaining treatment, the importance of civil-military cooperation in contending with mass casualties, and upgrading medical stockpiles.[4] Similarly, military medical lessons from Ukraine also heavily focus on managing mass casualties nationally and transnationally, including logistics, ground medical evacuation, medical stockpiles, and related challenges.[5] To help advance the 5th baseline requirement, specifically "*ensuring that civilian health systems can cope*," then several reflections should be considered by NATO and brought to the forefront of future medical strategies, policies, and implementation.

Russia's aggression in Ukraine illustrates the disruptions to the national healthcare system during conflict and how these disruptions can affect military medical service delivery.[6] In Ukraine, nearly all health infrastructure in recaptured villages was damaged or destroyed, causing health providers to flee the area and severely affecting health service availability and delivery. At the onset of the invasion, Ukraine's health system reorientation caused hospitals and health facilities to stop non-emergency care; as such, many areas lacked sufficient pharmacies and primary healthcare centers.[7] The elderly population in newly liberated territories experiences difficulty managing non-communicable and chronic diseases such as diabetes, hypertension, and chronic respiratory infections. Other serious conditions regularly go undiagnosed.[8] Russia's impact on Ukraine's financial system has caused doctors and nurses to work without sufficient and timely payments and dozens of hospitals and clinics to close.[9]

These macro-level challenges are not exclusive to Ukraine. Russia has indiscriminately destroyed civilian health infrastructure over the past two decades and will likely repeat these violations. These broader concerns will also impact military medical services as they are equally vulnerable in the same way as civilian health systems to being targeted. NATO and allies bordering Russia are rightfully prioritizing this pattern of destruction and threat. War leads to massive displacement, the proliferation of infectious diseases, economic distress, an increase in the prevalence of sexual assault, and more. As such, NATO should scope and scale health resilience more comprehensively with civilian counterparts.

> Russia's strategy of war goes far beyond inflicting mass casualties, it aims to attack the very foundation of its adversary's health system.

3. NPR, "Ukrainian Health Minister Says Russia Is Blocking Access to Medicines," NPR, August 13, 2022, sec. Europe, https://www.npr.org/2022/08/13/1117346305/ukrainian-health-minister-russia-blocking-access-medicines.
4. Interview #9, Official at NATO.
5. NATO, "Outline of Medical Lessons from Ukraine-Russian War," October 22, 2022.
6. Beard, "Analysis | Russian Attacks Have Struck Ukrainian Health-Care Facilities and Providers 715 Times."
7. "One Hundred Days of War Has Put Ukraine's Health System under Severe Pressure," https://www.who.int/news/item/03-06-2022-one-hundred-days-of-war-has-put-ukraine-s-health-system-under-severe-pressure.
8. "Ukraine: The Toll of War on the Elderly and People with Disabilities," Doctors Without Borders, https://www.doctorswithoutborders.org/latest/ukraine-toll-war-elderly-and-people-disabilities.
9. "Ukrainian Nurses Haven't Been Paid in Months," openDemocracy, https://www.opendemocracy.net/en/odr/ukraine-hospital-staff-nurses-unpaid-reform-russia-war/.

Background

This section will briefly explain the history of health system strengthening literature and the use of frameworks to improve health outcomes. A 'health system' has evolved from a building blocks model that illustrates specific inputs (numbers of medicines, beds, clinics, and patients) and outputs (treatments provided and amount of medicine distributed) to an operational model that considers how governance and policy choices shape health care delivery and outcomes such as population health, financial risk protection, and patient satisfaction. The background section cover relevant health system frameworks, and highlight the importance of adopting an appropriate framework to support resilience work for Norway and NATO.

Why adopt a health system framework?

Health system frameworks allow interlocutors to reach a common operational picture (COP) by providing a reference point that uses a systems-thinking approach to identify shared vulnerabilities, consider the implications of attacks and disruptions to health systems, and help reach solutions. Moreover, frameworks help structure the relationship between policy decisions, health system components, and outcomes on population health and health delivery.

What is health systems strengthening, and how did it begin?

Global health organizations and leaders have developed various frameworks to strengthen health systems for the past forty years. The Alma-Ata Declaration of 1978, signed by member countries of the World Health Organization (WHO), established a rights-based approach to primary healthcare and an acceptable level of global health by 2000.

In 2003, the WHO Health System Framework was released to organize health problems and outcomes in response to the increasing disparity between medical interventions and the weak capacity of health systems to implement them. The WHO Framework includes six core components or "building blocks" that impact overall goals and outcomes. Many aid agencies, global health development organizations, and researchers have used this framework.

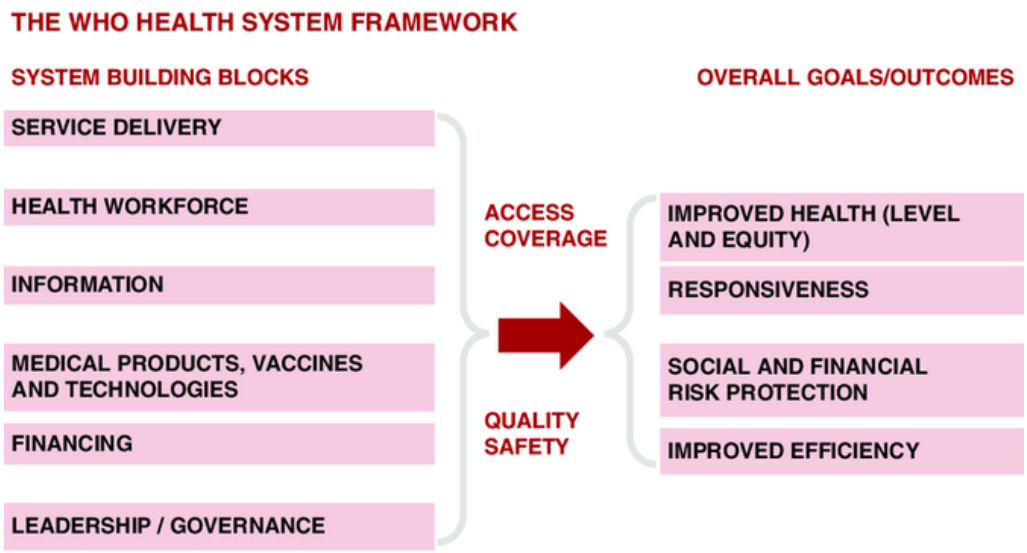

Figure 1: World Health Organization, 2007. Everybody's Business: Strengthening Health Systems to Improve Health Systems WHO's framework for action

In 2003, Harvard professors Marc Roberts, William Hsiao, Peter Berman, and Michael Reich published the book "Getting Health Reform Right" with a framework adopted by The World Bank and known widely as the Flagship "Control Knobs" framework. This framework provides an operational model to guide health system reform, where health leaders can adjust the control knobs to produce different health system outcomes. The Appendix section features an explanation of the control knobs.

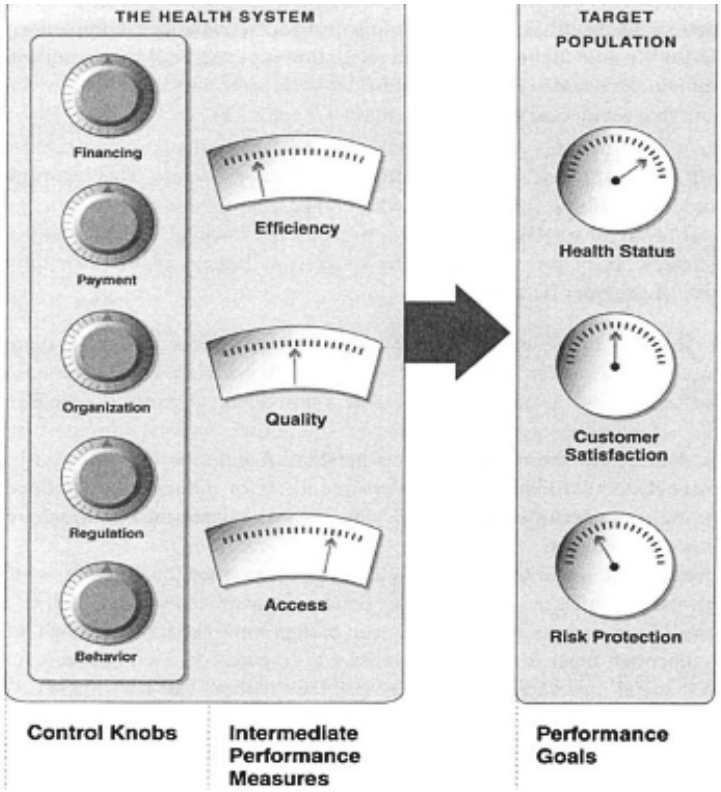

Figure 2: Getting Health Reform Right. A Guide to Improving Performance and Equity. Oxford University Press, Oxford, England. 2004 Roberts, Hsioa, Berman, Reich

What is missing from existing health system frameworks?

Existing literature does not include a framework specific to assessing health system vulnerabilities, implications in the event of an armed conflict, and potential mitigation strategies. The WHO and World Bank/Flagship health system frameworks are commonly used, but these frameworks are not tailored specifically to the needs and harms to health systems in the event of armed conflict. A more specific framework is helpful for policymakers to consider how to organize disruptions in the event of attacks on hospitals and how that will affect other components of the health system to mitigate different challenges that may arise as the health system tries to surge health care services to support its military personnel and civilians affected by armed conflict.

One health system framework for conflict-affected states, proposed by Dr. Margaret Bourdeaux and Dr. Christian Haggenmiller in *A Field Guide to Global Health & Medicine*, draws upon elements of the WHO Framework and the World Bank's Flagship Framework. It provides an operational model to guide countries experiencing civil conflict to think through components such as governance, specific health system elements, and policy decisions in the context of managing the health system despite destruction and disruption from armed conflict and political violence.

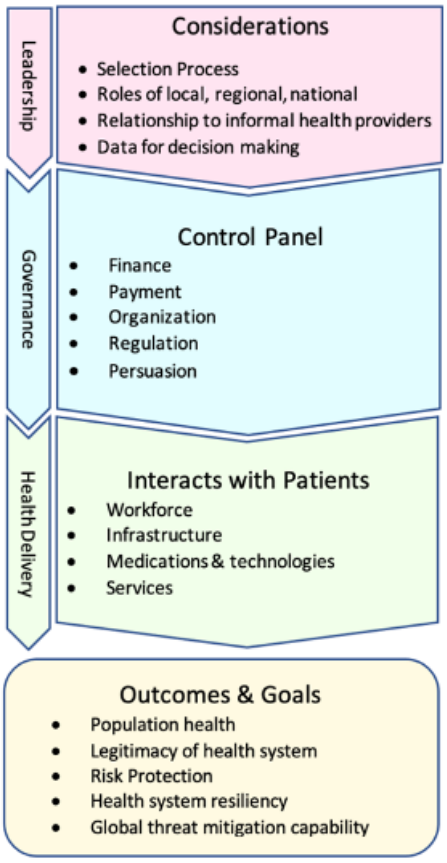

Figure 3: Bourdeaux M, Haggenmiller C. Strengthening and Supporting Health Systems. In Chambers JA, editors. Field Guide to Global Health and Disaster Medicine. Philadelphia, PA: Elsevier; 2021. p. 367-82

To the left of the page, Bourdeaux and Haggenmiller's framework guides policymakers through important components that will be affected by attacks and damages to a health system.

The proposed framework divides health systems into three levels. The top level of the framework, titled "Leadership," outlines the selection process for leaders responsible for governing the health system, the role of different governance authorities, their reporting structure, the decision-making authority and structure, and the duration of their stewardship of the health system. The framework helps support conflict-affected states; therefore, the top level is useful for countries experiencing civil conflict to think through their health system leadership selection process.

At the highest level of the health system ("Leadership"), a potential conflict with Russia will lead to several critical issues for policymakers to consider. For instance, policymakers will have to determine how to balance healthcare spending priorities when military and civilian health services are in high demand. Another potential issue could include negotiating payment arrangements for civilian healthcare services delivered outside the country when the host nation's healthcare system is overburdened by managing mass casualties and struggles to maintain chronic care treatments.

The second level of the health system framework is the "Governance Apparatus." This level describes the range of policy decisions made by health system leadership that impacts the functioning of the third level, the "Health Delivery Platform." The Governance Apparatus includes policy decisions related to health system financing, payment mechanisms for healthcare providers and organizations, the organization and distribution of healthcare services across institutions, categories of health system regulation, and the capability to influence population health behavior in the absence of regulation for conflict-affected states. Armed conflict affects many policy decisions at the Governance Apparatus level. For instance, armed conflict will inevitably alter healthcare system financing when the national budget becomes diverted to defense spending. Countries must determine how to share and allocate military and civilian healthcare funding. Policymakers need to consider other potential issues, such as adjusting payments to healthcare providers or organizations during wartime, and determine how they will receive payment on time if they are internally displaced or deployed to the frontlines.

Countries will have to develop incentives for medical expatriates to return to the country and address how the conflict will impact health system regulations. How, other than through regulation, does the health system communicate with and influence the population's health behaviors—how might this change in the event of an armed conflict? These are essential issues to address for healthcare systems impacted by war. The policy choices made at the Governance Apparatus level directly affect how healthcare is provided through the Health Delivery Platform. This includes all elements directly impacting patients, such as the healthcare workforce, infrastructure, medicines and services, and patient data collection and communication systems. For instance, attacks on health facilities will interrupt the provision of healthcare services, while the onslaught of conflict-related injuries and illnesses will lead to an increased demand for specific medical services and treatments. The availability of essential medicines and supplies will be at risk when armed conflict significantly impacts supply chains. There may be a need to rely more on foreign actors for these goods; however, their geopolitical interests may influence their willingness to provide goods. Additionally, population displacement resulting from regional violence can alter the distribution of people in need of health services. These considerations highlight several challenges for policymakers to consider the high-level impact of armed conflict on the Health Delivery Platform and prompt appropriate mitigation strategies.

Methodology

The project used semi-structured qualitative interviews to gain accurate and current context to the discussion topics. The author interviewed 18 individuals comprised of officials from NATO, the Norwegian civilian health authorities, and the Norwegian military medical services. Due to the sensitive nature of this topic, the research project cited interview participants by their position and respective organization. Interviews took place in NATO Headquarters (Brussels, Belgium) and Norway. When in-person interviews were not possible, interviews were virtual. The following two paragraphs outline the interview questions that were posed to participants to inform the research findings from Norway and NATO.

Interviews with Norwegian officials

Interviews with officials in various civilian health institutions and military medical organizations helped inform how the national health system addresses national security concerns and builds health system resilience. The general interview questions are as follows:

1. How does your organization prepare for disruptive health crises?

2. What are the lessons learned from COVID-19? What are the lessons learned from the war in Ukraine?

3. Is your organization concerned about an Article V attack? If so, can you describe what influences the concern?

4. In a major crisis, such as war, how are the following considered and mitigated: disruptions to health governance, health delivery effectiveness, health financing/payment, health organization and regulation (resource drainage, supply chain breakdowns, lack of workforce capacity)?

5. How can a national health system stay stable during a catastrophe such as war?

6. How can a national health system recover from a catastrophe such as war?

7. Can you describe how your organization interacts with its (where applicable) civilian or military counterpart on preparedness efforts?

Interviews with NATO officials

The researcher asked officials in various committees, divisions, and permanent delegations of NATO several questions to evaluate the alliance's progress on health system resilience and civil-military medical cooperation. The general interview questions are as follows:

1. How do healthcare systems adjust in times of conflict? How do NATO members mitigate disruptions to health systems?

2. How do NATO countries assess and prepare for the medical needs of Article V scenarios?

3. How does NATO describe a health system? To what extent does NATO assess civilian health system as part of civil-military cooperation?

4. Does NATO conduct national or multi-national health systems exercises, which test point of injury to Role 4 medical care? If so, how are exercises organized? What are the lessons learned from them?

5. What have been the obstacles that have prevented NATO from being better prepared to address these topics?

6. Are NATO countries informed of host nations' responsibilities and prepared to manage them?

7. How do Allies measure the effectiveness of their interoperability?

PART II: DIAGNOSIS

The diagnosis section presents the analysis used by the author to understand policy challenges and help inform relevant policy recommendations. This section identifies observations that Norwegian and NATO officials shared with the author in two parts: "Assessment of Norway" and "Assessment of NATO." Each "Assessment" section features findings (sub-section with bullet points) and presents themes and patterns from information provided by the interview participants to the author, suggesting shared concerns that interview participants had.

Assessment of Norway

The city of Severomorsk in Russia is the central administrative base of the Russian Northern Fleet, the country's largest naval fleet holding strategic submarines equipped with nuclear weapons. Norway's geographical proximity to Russia's lethal arsenal has become of deeper concern during the war in Ukraine. Meanwhile, from Russia's perspective, U.S. and NATO allies are storing higher numbers of military assets in Norway, closer to its nuclear arsenal in the Northern Fleet. As a result, Russia's strategic calculus in the event of a military attack against a NATO ally may be to establish control over part of northern Norway. In the event of a Russian invasion of Norwegian territory, the Northern Norway Regional Health Authority (Helse Nord) will be responsible for managing mass casualties, civilian and military, and contending with disruption to health infrastructure, personnel, and supplies.[10]

The Norwegian military medical services are a part of the civilian health care system, but only a small fraction, specifically 1.1% of the total defense's national health resources.[11] [12] Other smaller NATO countries similarly organize their armed forces and civilian health services in this manner. In the event of an invasion, military medical services alone will not be able to meet the needs of the front lines, which raises questions about whether the national health system is aware of these challenges and prepared to manage them.

In interviews, officials within the national health system admit the country's lack of preparedness to manage the surplus of casualties and disruptions to health workforce availability, equipment, supplies, and communication systems in the event of a foreign invasion.[13] The national health system's primary and current concern is managing the ongoing effects of the COVID-19 pandemic. For instance, the Norwegian health system, alongside other European countries, is significantly challenged by the lack of healthcare workers and general practitioners. Previously, rural and small communities struggled to receive care from general practitioners; however, larger cities and towns across Norway now face the same dilemma. As a result, patients nationwide are experiencing poorer treatment.[14]

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10. Published at: Jan 28 2022-11:46 Updated at: Jan 28 2022- 11:46 Text Hilde-Gunn Bye Text Astri Edvardsen, "'Extensive Russian Marine Exercises May Reveal Moscow's Thinking,'" https://www.highnorthnews.com/en/extensive-russian-marine-exercises-may-reveal-moscows-thinking.
11. Interview #15, Official from Norwegian Defence Research Establishment (FFI).
12. "Fremtidens sanitet – effektiv ressurs i Forsvaret og totalforsvaret," Norsk, https://www.ffi.no/publikasjoner/arkiv/fremtidens-sanitet-effektiv-ressurs-i-forsvaret-og-totalforsvaret.
13. Interview #16, Official from Norwegian Directorate of Health.
14. Mette Brekke, Jeanette Solheimslid Bjørke, and Torben Wisborg, "Where Did All the Doctors Go?," Tidsskrift for Den Norske Legeforening, November 8, 2021, https://doi.org/10.4045/tidsskr.21.0701.

Civilian policymakers and health practitioners are strained by ongoing national system disruptions, preventing them from addressing preparedness concerns related to an Article V scenario. Many interview participants noted that they had enjoyed a "long peacetime" since the end of the Cold War, causing a decrease in civil-military cooperation and resilience efforts. However, all interview participants reported their willingness to work on Article V preparedness due to the increasing threat from Russia but cited a lack of understanding, resources, and cross-sector coordination as barriers to improved civil-military cooperation. Interview participants serving in northern Norwegian health organizations, in particular, have a greater political and operational will to increase civil-military medical cooperation and preparation; while officials from a national entity report that the threat perception is less if the organization is farther south of the Norwegian-Russian border.[15]

In response to COVID-19, the prominence of cyberattacks, and other threats, the national health system has developed contingency plans for a variety of scenarios, from pandemics to mass migration influx to failures of IT, critical infrastructure, and disruption to the delivery of supplies and medications.[16] Interview participants noted that civil-military cooperation structures do exist in platforms such as national meetings, conferences, exercises, and liaisons. However, cooperation and coordination are insufficient to address an Article V scenario. A medical civil-military exercise to address the effects and capture the size and magnitude of a foreign invasion has yet to be developed and prioritized.

Findings

When addressing the threat of an Article V scenario, civilian and military medical practitioners and policymakers outlined the following six concerns:

- **Continuity of care:** In Norway, four regional health authorities are responsible for ensuring that primary and specialist health services remain available during military conflict. However, the diversion of health personnel, resources, and funding towards defense spending and combat-related medical services will likely affect services for baseline patients. The plans to balance these competing responsibilities remain unclear, with civilian health officials prioritizing the continuity of care while military medical officials focus on tactical and operational challenges such as mass casualties, national evacuation, and stockpiling.[17] This gap between civilian and military counterparts underscores the need for a clearer understanding of the most significant concerns.

- **Civilian-military interoperability:** Civilian interview participants reported a superficial understanding of armed medical services' roles and responsibilities. The national health system is unclear about the needs and expectations of the military medical system during an Article V scenario (e.g., mass casualty estimates and national evacuation plans). Interview participants cited insufficient common practices, clear and documented unified medical standards, and Clinical Practice Guidelines (CPGs) between the civilian health system and military medical system. While there is some civil-military cooperation, such as through small-scale exercises, these are not suitable for wartime conditions. As a result, both counterparts appear to be unaware of each other's ongoing work.

15. Interview #16, Official from Norwegian Directorate of Health.
16. Interview #10, Official at Northern Norway Regional Health Authority (Helse Nord).
17. Interview #11, Official from the Department of Security and Emergency Preparedness at Northern Norway Regional Health Authority.

- **Health governance:** There is a lack of understanding regarding the responsibilities and management lines of counterparts in the event of an armed conflict, specifically between different regions of Norway. Interview participants from the national health system noted the absence of clear plans to manage the disruptions around health governance, delivery, financing/payment, organization, and regulation during wartime.

- **Health delivery platform:** Overcoming the challenges of evacuating patients from combat zones and building more field hospitals in the north during a foreign invasion is crucial. In northern Norway, the population inhabits only 9% of the total land area, creating significant distance between patients and health delivery, which will likely exacerbate under extreme and severe weather conditions.[18] Even during peacetime, patient and personnel transportation between hospitals in the region relies heavily on air travel because of long distances.[19] Norway's existing air capacities will be insufficient in the event of mass casualties during wartime.[20] Health delivery platform issues will arise because the civilian health system and the Norwegian Armed Forces do not fully understand each other's capabilities and have not executed coordinated plans. However, patient transportation is just one aspect of a much larger healthcare system.

- **Health workforce:** A major concern is sufficient authorized medical personnel to cope with the surplus of patients.[21] Regional Health Authorities will be required to assign medical personnel closer to combat areas in support of military medical; while maintaining essential primary and specialized health services for civilians nationwide. How does the national health system serve patients with chronic conditions, in addition to civilians, national troops, allied troops, and enemy troops from an Article V scenario? What should be considered to assure workforce continuity, such as developing financing plans and increasing health employment? These are questions that policymakers should consider addressing.

- **Medical products, supplies, and technologies:** Norway and other European allies have an industrial dependency on foreign actors for medical supplies leading to ongoing concerns about supply shortages that are being discussed nationally and at a multinational level.[22] These concerns will heighten dramatically during an Article V scenario when the medical infrastructure is at greater risk.

18. Interview #11, Official from the Department of Security and Emergency Preparedness at Northern Norway Regional Health Authority.
19. Interview #17, Official at Northern Norway Regional Health Authority (Helse Nord).
20. Interview #15, Official from Norwegian Defence Research Establishment (FFI).
21. Interview #10, Official at Northern Norway Regional Health Authority (Helse Nord).
22. Interview #12, Chief/Surgeon General of Norwegian Armed Forces Joint Medical Services.

Assessment of NATO

The alliance's civil preparedness capabilities were well-organized and sufficient during the Cold War era. However, after the early 1990s, NATO's collective and national civil preparedness capabilities and structures diminished.[23] The war in Ukraine is a somber turning point for the alliance to assess health preparedness and whether the existing policies, plans, and structures are sufficient to meet the evolving threats of the 21st century. To address the increased threat, NATO released the Medical Support Capstone Concept (NMSCC), the first-ever strategic-focused document covering medical support, sustainment, and civil-military cooperation. A key argument in the NMSCC is that strengthened civil-military cooperation can enable military medical services to enhance the provision of civilian healthcare services when a large-scale medical response is required.[24] During the COVID-19 pandemic, this was especially evident when NATO facilitated the use of military medical services to assist civilian health programs.[25] After the invasion of Ukraine, NATO organized a meeting with many senior civilian and military medical officials to revitalize cooperation.[26] The NMSCC and recent civil-military meetings illustrate a basis of strategic civil-military cooperation; however, several opportunities for tangible cooperation remain.

Findings

When addressing the threat of an Article V scenario, NATO officials described the following concerns:

- **Health systems assessment and exercises:** The primary focus on managing mass casualties, in the 5th baseline requirement, features a limited fraction of the health system architecture. Furthermore, medical and health preparedness is often disaggregated and scattered across different reports, even when highlighted as a key risk. As a direct result, medical exercises receive insufficient investment and are not designed appropriately to scale. NATO medical exercises' primary focus is on Real Life Support to Exercising Troops, as seen in Trident Juncture. Medical exercises do not cover the point of injury to Role 4. Additionally, exercises are not integrated into multi-national medical exercises to an appropriate scale to sufficiently stress-test higher-level civil-military cooperation.[27]

- **Civilian-military cooperation:** Present civilian-military medical cooperation exists on a smaller-scale and ad-hoc basis. Counterparts are not clear on roles, responsibilities, and expectations between each sector to manage mass casualty estimates, national evacuation plans, and host nation responsibilities.[28] Senior-level civilian-military engagement is insufficient, making it challenging for NATO to achieve resilience goals. For instance, there is a difference in the level of roles of civilian representatives to the Joint Health Group across nations, leading to discrepancies in their scope to cover national resilience.[29]

23. Wolf-Diether Roepke and Hasit Thankey, "NATO Review - Resilience: The First Line of Defence," NATO Review, February 27, 2019, https://www.nato.int/docu/review/articles/2019/02/27/resilience-the-first-line-of-defence/index.html.
24. NATO, "NATO Medical Support Capstone Concept (UNCLASSIFIED)."
25. NATO, "Military Medical Support," https://www.nato.int/cps/en/natohq/topics_49168.htm.
26. Interview #1, U.S. Civil Expert to the NATO Resilience Committee's Civil Protection Planning Group (CPG).
27. Interview #9, Official at NATO.
28. Interview #5, Official at NATO.
29. Interview #4, Official at NATO.

- **Burden-sharing:** All interview participants noted an underlying tension: the friction from the "costs lie where they fall" rule in the alliance. This notion has a financial basis alluding to the general approach that nations are fully responsible for their funding, resources, and mission contributions. However, the principle of collective defense provides solidarity in that each ally is committed to protecting the other. This leads to differences in interpretation and a tendency for nations to 'rely upon others' to deliver medical support, which is seen in the latter phases of the Resolute Support Mission in Afghanistan (2015-2021), where 8 of the 11 deployed field hospitals were provided by the United States.[30] This existing dynamic creates complicated implications for host nation support and/or support from other allies. Moreover, differences and assumptions between national responsibility v.s. shared responsibility may stifle preparedness and resilience efforts. How can NATO address this gap?

- **Shortages and competition:** Across Europe, countries are challenged by significant health-care workforce shortages and foreign industrial dependency on pharmaceuticals and medical supplies. WHO estimates a shortage of 15 million health professionals by 2030 globally.[31] Insufficient domestic production capacity has led to serious medicine shortages across Europe and dependency on foreign actors, as seen during the COVID-19 pandemic with personal protective equipment. In a conflict scenario, these challenges will exacerbate.[32]

30. Interview #9, Official at NATO,
31. "Health Workforce," World Health Organization, https://www.who.int/health-topics/health-workforce.
32. Interview #8, Official at NATO.

PART III: SOLUTIONS

The following proposed recommendations for Norway and NATO aim to achieve three goals where relevant: (1) increase strategic civilian-military cooperation in a tangible way, (2) consider the relationship between civilian and military medical services and mimic the effects of health system disruptions accurately, and (3) mimic a realistic "situational landscape" to include multilateral organizations (the European Union, United Nations, World Health Organization) involved in a realistic Article V medical response.

Policy Recommendations for Norway

01 Undertake a comprehensive "Health System in Conflict" Framework to assess vulnerabilities and identify mitigation strategies.

Result: *A health system-wide approach will provide civilian and military counterparts in the national healthcare system with consistency, clarity, and efficiency to guide national programs and plans toward health system preparedness.*

Adopting a "health systems in conflict" framework can enable Norway's healthcare system to align its national preparedness goals and programs across various government agencies with a reference point to guide professionals from diverse backgrounds and experiences through a comprehensive assessment of health system vulnerabilities affected by armed conflict. The framework prompts policymakers to consider how disruption in one part of the health system can affect health system performance and outcomes as a whole and helps them identify strategies for mitigating these vulnerabilities. The framework described in the Background section is one potential framework Norway can build from to undertake this recommendation. Regardless of the specific framework used, it should guide counterparts through consideration of the aforementioned issues. Developed by Dr. Margaret Bourdeaux and Dr. Christian Haggenmiller, the health system framework for conflict-affected states draws upon elements of the WHO and World Bank Flagship frameworks. The Background section of this report briefly describes the proposed framework, providing readers with a contextual understanding of its components and functionalities. Below is a chart that outlines the three levels of a health system in separate panels and provides some potential considerations for policymakers preparing their health systems for armed conflict. The examples of questions provided are not exhaustive but rather serve as a starting point for policymakers to consider issues related to these categories.

Panel 1: Considerations for leaders and health policymakers

Selection Process	Which individuals and organizations should be involved in preparing the Norwegian health system for an Article V scenario? Who is responsible for leading the selection process? Which entities from civilian health services and military medical services will be in charge of prioritizing health spending and allocating resources in the event of an Article V scenario?

Roles of local, regional, national leaders	What are the roles of the four regional health authorities (RHA), municipalities, the Directorate of Health, and other agencies during an Article V response?
Data for decision making	What data do national healthcare policymakers need to understand the scope and scale of an attack's impact on the health system, such as mass casualty estimates?

Panel 2: Governance apparatus

Finance	How will an increase in defense spending impact health financing? Can anticipated increases in defense spending be funneled to the health system to reimburse it for expected costs of providing health care services to military personnel? What agreements need to be in place to facilitate this transfer of funds?
Payment	Are plans established to ensure the country's health workforce is paid appropriately and on time? Are there arrangements for paying for civilian care services outside the country if there are significant numbers of Norwegian citizen refugees?
Organization	Are roles, responsibilities, and management lines clear during an invasion? How will civilian and military counterparts communicate and share information? Do hospitals have emergency evacuation plans in the event of an impending attack? Does the MoH have contingency plans to transfer patients and referrals to other facilities?
Regulation	Will non-Norwegian doctors be allowed to work with the Norwegian Armed Forces? How will the health system regulate an influx of international humanitarian and relief agencies? How will standards be maintained, and fraud or criminal activity be monitored?
Persuasion	Who from the health system will communicate with the population about emerging health threats, and how will Norway address and prevent disinformation?

Panel 3: Health delivery platform

Workforce	Is credentialing of healthcare professionals from EU and NATO members clear? How will healthcare providers be recruited to care for patients and military personnel on the front lines? What is the estimated attrition rate of the health workers in this scenario, and how can it be addressed?
Infrastructure	Given an influx of need, does Norway have contracts for supplies, such as increased numbers of airplanes, ambulances, helicopter fleets, etc.?
Medications & technologies	How does Norway accept foreign blood supply donations and pharmaceuticals? How should Norway address foreign dependency on medicine and technologies? How can health data systems be resilient to cyberattacks? What other supply chain and stockpile challenges should the healthcare system address?
Services	How to continue chronic care for the civilian population/baseline patients who receive medical treatment such as dialysis, chemotherapy, etc.? What plans are in place for transnational patient redistribution?

02 Establish an organizational structure for Article V preparedness, such as a permanent task force.

Result: *Long-term common situational awareness (SA) and common situational understanding (SU) on the strategic level.*

Findings noted a lack of awareness and understanding on the higher operational and strategic level due to the fact that Norway does not have a dedicated and trained management structure for Article V-related preparedness. Civilian-military medical cooperation in Norway takes place in various liaisons across inter-agencies, which are separate and disconnected. A task force will provide a management structure to ensure collaboration, gather expertise, and deliver results more quickly and efficiently than existing civil-military medical cooperation strands. A permanent task force sets clear mandates and a set of responsibilities to support long-term planning, practices, and exercises. Additionally, a national task force enhances public trust and confidence in government institutions to address ongoing national security threats and develop mitigation strategies.

More importantly, civilian and military medical counterparts will benefit from an institutionalized structure that will build the basis for understanding each other's services, the development of proper and synchronized plans, and establishing responsibility for a strategic medical recognized picture (MedRP).

Developing an updated map of permanent structures, relationships, and roles will be the center of collaboration and help develop more explicit cooperation channels. Meeting regularly will help build trust and mutual understanding. A strategic MedRP, rather than solely an operational MedRP, will be better positioned to communicate guidance and direction to the national operational level and to allied support such as NATO partners. Furthermore, a permanent task force will help organize decision-making during a conflict.

Secondly, civilian and medical military counterparts should share their objectives, resources, and capacities to develop feasible strategies and plans. The shared objectives should balance each agency and organization's demands and concerns, ultimately revealing shared medical-related challenges. The task force can adopt an appropriate "health system in conflict" framework to organize its planning and address remaining uncertainties from the three panels. Longer-term endeavors for the permanent task force to consider include addressing adequate health system financing to contend with disruptions to medical services during an Article V scenario (mass casualties, increased stockpiling of medicines and supplies, etc.) and building a medical communication system during crises.

03 The Norwegian military should release a medical cooperation strategy report to civilian counterparts, outlining the threat and areas of opportunity in medical preparedness.

Result: *Address the gap of understanding between civilian health professionals and military counterparts by releasing a tangible product that addresses key challenges and priorities.*

Ensuring buy-in from civilian counterparts is crucial in developing high-level strategic collaboration on health system preparedness. A strategy report is the first step to communicating national security threats and relaying urgency to the civilian health sector. The Ministry of Defense, Surgeon General's Office, Chief of Joint Headquarters, and FFI should collaborate on a strategic document in line with the national Total Defence Concept, where civil-military medical cooperation is the primary subject. This strategic document should provide a clear path forward on the following strategic priorities:

Strategic Priority #1: Define the threat environment and assess the urgency to strengthen health system preparedness.

Scope of Action 1: Outline Norway's national security threats and clarify their impacts on the national healthcare system.
Scope of Action 2: Propose a "health system in conflict" framework to guide a strategic collaborative assessment of Norway's health system vulnerabilities in an Article V scenario.
Scope of Action 3: Identify the roles and capacities of health sector organizations, disaster management agencies, and other relevant stakeholders in cross-sectoral collaboration. List assumptions and gaps of understanding.

Strategic Priority #2: Communicate the military medical community's responsibilities, resources, and capabilities.

Scope of Action 1: Explain the host nation's responsibilities in conflict and NATO standardization agreements (STANAG) and why it is relevant to the national healthcare system.
Scope of Action 2: Outline the resources and capabilities of the Norwegian Armed Forces Joint Medical Services, in addition to identifying potential areas where civilian health counterparts and their capabilities may need to provide additional assistance and support.
Scope of Action 3: List existing infrastructure-related capabilities: field and temporary hospitals, ambulances, and aeromedical evacuation capabilities.
Scope of Action 4: Elaborate on the areas where infrastructure is insufficient in coping with the increased demands of an invasion and calculate financing required to address shortages.

Strategic Priority #3: Address immediate concerns related to Article V-scenario preparedness planning.

Scope of Action 6: Recommend developing an Incident Command (ICS) specific to an Article V scenario which illustrates a coordinated and hierarchical template to organize responsibilities, roles, and resources for a large-scale response. This will help clarify management and guidance during an Article V scenario between military medical services and civilian health services.
Scope of Action 7: Initiate a clear process for sharing classified information with civilian counterparts and collaborating on classified topics.
Scope of Action 8: Provide data-driven analysis on mass casualty estimates to civilian counterparts to help build institutional trust and prepare the national healthcare system to manage anticipated demands.

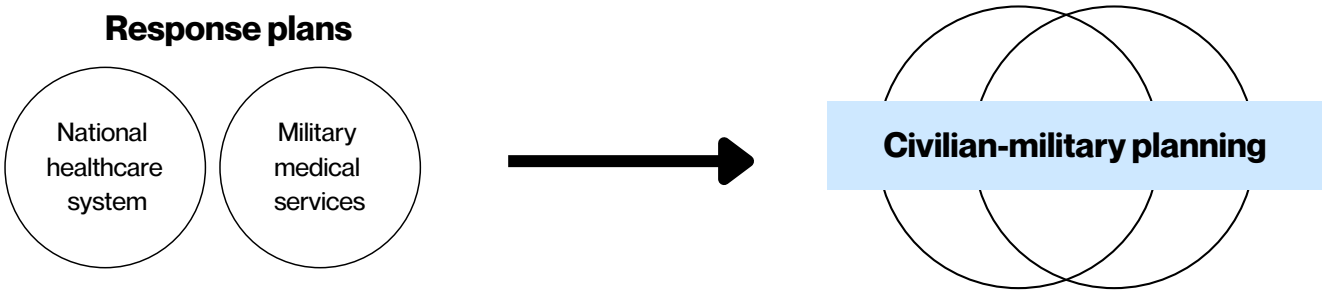
Strategic Priority #4: Address long-term concerns related to Article V-scenario preparedness planning.

Scope of Action 9: Lead the planning objectives to design and build an updated communication system for civilian and military professionals during an invasion.
Scope of Action 10: Outline future regional and national exercises to stress test the national healthcare system more effectively.
Scope of Action 11: Highlight concerns related to workforce, logistics, blood products, and medicine product challenges that require long-term strategic collaboration.

04 Draft and exercise updated coordinated response plans focused on the health system response to an Article V scenario.

Result: *Revised plans will build upon existing plans and procedures by developing them in cooperation with civilian and military medical counterparts, rather than in their current form where response plans are siloed.*

Norway's civilian health system and its military medical services have separate response plans to crises. In the event of a foreign invasion, counterparts should draft updated coordinated response plans focused on national health system preparedness. Operational response plans should incorporate common scenarios and medical lessons learned from the war in Ukraine, particularly that NATO allies are challenged by an adversary that violates the Geneva Conventions, which may not be explicitly incorporated in existing plans. Coordinated plans will enable civilian and military medical professionals to share information, utilize resources, and work together to achieve a more prepared and effective response. This will allow counterparts to become aware of available capacities and resources. Coordinated planning will discuss shared concerns such as workforce, medicine, and infrastructure shortages, which many interview participants noted. Response and contingency plans can be drafted with greater situational awareness and the inclusion of these realistic concerns which may affect health services and delivery. Specific planning proposals should include the development of an updated national evacuation plan and a digital secure platform for counterparts to communicate and make decisions during crises. Additionally, a clearer operational leadership structure should be included in each plan and scenario. Counterparts should regularly exercise revised preparedness and response plans to identify weaknesses and determine areas for improvement, leading to a more efficient response.



Policy Recommendations for NATO

01 COMEDS should develop a 'health system in conflict' framework with the Joint Health Group and the European Union to assess vulnerabilities and identify mitigation strategies.

Result: *A formal health system-wide framework will provide interlocutors in NATO and partner organizations with a necessary foundation and reference point to develop more comprehensive health system preparedness and resilience.*

Disclaimer: Attacks, disruptions, and challenges with the civilian health system and health service delivery are not directly in NATO's scope, but NATO should strongly consider addressing them, given the reliance of NATO allies' military medical services on the civilian health systems in their countries. The NATO-EU relationship is especially significant in addressing common civilian health system vulnerabilities and strengthening civilian-military cooperation.

An analysis of information provided by interview participants illustrates that NATO places significant emphasis on tactical and operational medical concerns, including addressing mass casualties, developing national evacuation plans, and maintaining adequate stockpiles, among other considerations related to the 5th baseline requirement for resilience. Although crucial for military medical services, it is also essential to consider overarching health system concerns when an armed conflict affects both the civilian and military medical care demands.

Many NATO allies, such as Norway, have national health systems serving civilian and military medical services. Therefore, resilience planning should encompass macro-level threats to the health system and build upon existing priorities, such as managing mass casualties and stockpiling. To engage civilian leadership, NATO should collaborate with the EU, which is responsible for coordinating responses to cross-border health crises. Since the EU shares 22 member countries with NATO, NATO-EU coordination to an Article V scenario will occur, and therefore, preparedness planning should replicate this operational partnership. NATO should consider working with its civilian and EU counterparts to develop a 'health system in conflict' framework to order disruptions, the effect on components of a health system, and the impact on the health service delivery to civilians and military personnel. A reference framework will help organize shared challenges across interlocutors and guide greater civil-military strategic cooperation going forward. Additionally, the Joint Health Group should encourage allies to recruit the most senior representatives whose portfolios appropriately cover the country's national health system resilience.

Below is a chart borrowed from the framework developed by Dr. Margaret Bourdeaux and Dr. Christian Haggenmiller to organize considerations about how NATO COMEDS can support allies' common and/or collective health system vulnerabilities and develop mitigation strategies. The framework is to help national health systems consider the effect of armed conflict. NATO may consider undertaking a framework with a multinational structure. The examples of questions provided are not exhaustive but intended to serve as a starting point for policymakers to consider issues related to these categories. The Background section explains the framework more in-depth.

Panel 1: Considerations for leaders and health policymakers

Selection Process	Which external organizations should be involved in preparing health systems for an Article V scenario and collaborate with NATO?
Data for decision making	What data do policymakers need to address medical-related challenges and disruptions from an armed conflict? Are updated estimates on mass casualty estimates and refugee flow available to allies?

Panel 2: Governance apparatus

Finance	How will NATO Common Funding be affected by conflict, and how will that trickle to military medical funding? What burden-sharing norms or financing schemes should be adopted to fund missions more cost-effectively?
Payment	Are plans established to ensure military medical personnel is paid appropriately and on time when deployed to a host nation?
Organization	Are roles, responsibilities, and management lines clear between multi-national civilian medical services and military medical services during an invasion? How will civilian and military counterparts communicate and share information?
Regulation	Are plans established to credential healthcare professionals, blood supply, and medical logistics? How can NATO work with the EU to develop regulations to help facilitate the movement of medical logistics and patients across borders?
Persuasion	How will NATO be involved in public health messaging and communication? How should NATO strengthen communication strategies to address mis/disinformation from foreign actors?

Panel 3: Health delivery platform

Workforce	How will the medical workforce be affected during an Article V scenario? What mitigation strategies can NATO develop with civilian counterparts to address workforce shortage challenges? How can NATO prepare healthcare professionals from the EU and NATO to be interoperable?
Infrastructure	How can intelligence on planned attacks be shared with civilian counterparts across the alliance? How will the destruction of health infrastructure impact military readiness/force protection measures?
Medications & technologies	What medical supply lines do multiple allies depend upon? How will increased demand for medical products across the alliance be addressed? Particularly, are medical countermeasures clear in the event of a CBRN attack (i.e. iodine for nuclear attacks) between allies? Are there common supply lines or stockpiles NATO could fortify or create respectively? How can NATO work with the EU to build its medical industrial base?
Services	How to continue chronic care for the civilian population/baseline patients who receive medical treatment such as dialysis, chemotherapy, etc.? What plans are in place for transnational patient redistribution, and are they shared or developed with the EU?

02 Release a health system assessment survey to NATO allies (Surgeon General's offices).

Result: *An assessment survey will help NATO collect necessary and adequate data to inform and build out medical-related policies, programs, and training exercises. Additionally, data collection from health system assessment surveys provides greater situational awareness for civilian and military medical counterparts.*

Similar to the defense planning capabilities survey, NATO should consider sending a health system assessment survey to allies to capture a baseline truth of each country's national health resilience. While many surveys and documents exist related to health systems and medical services in conflict, a singular survey focused on health systems will help the alliance organize allies' strengths, weaknesses, and areas of improvement. The health resilience assessment should be structured similarly to an adopted 'health system in conflict' framework to build upon the 5th baseline requirement for resilience and to gain a comprehensive understanding of allies' health systems.

In an Article V scenario, health system challenges in one allied nation will impact others as health workers, supplies, and even patients move across borders. NATO will be responsible for helping allies prepare for armed conflict and is positioned to coordinate assessments to discover shared health system vulnerabilities. Based on responses from the health system assessment survey, NATO will be better positioned to identify weak points across the alliance to develop improved resilience objectives, programs, or exercises. For instance, creative and innovative approaches may be considered to think through alliance agreements on financing, resource sharing, etc., during a military conflict, and a health system assessment survey will gather the necessary data to make informed policies and programs with the EU, WHO, UN, and related NGOs.

03 Conduct annual strategy-level tabletop exercises (TTX) to stress test the roles, responsibilities, and capacities of national, allied, and multilateral medical interoperability.

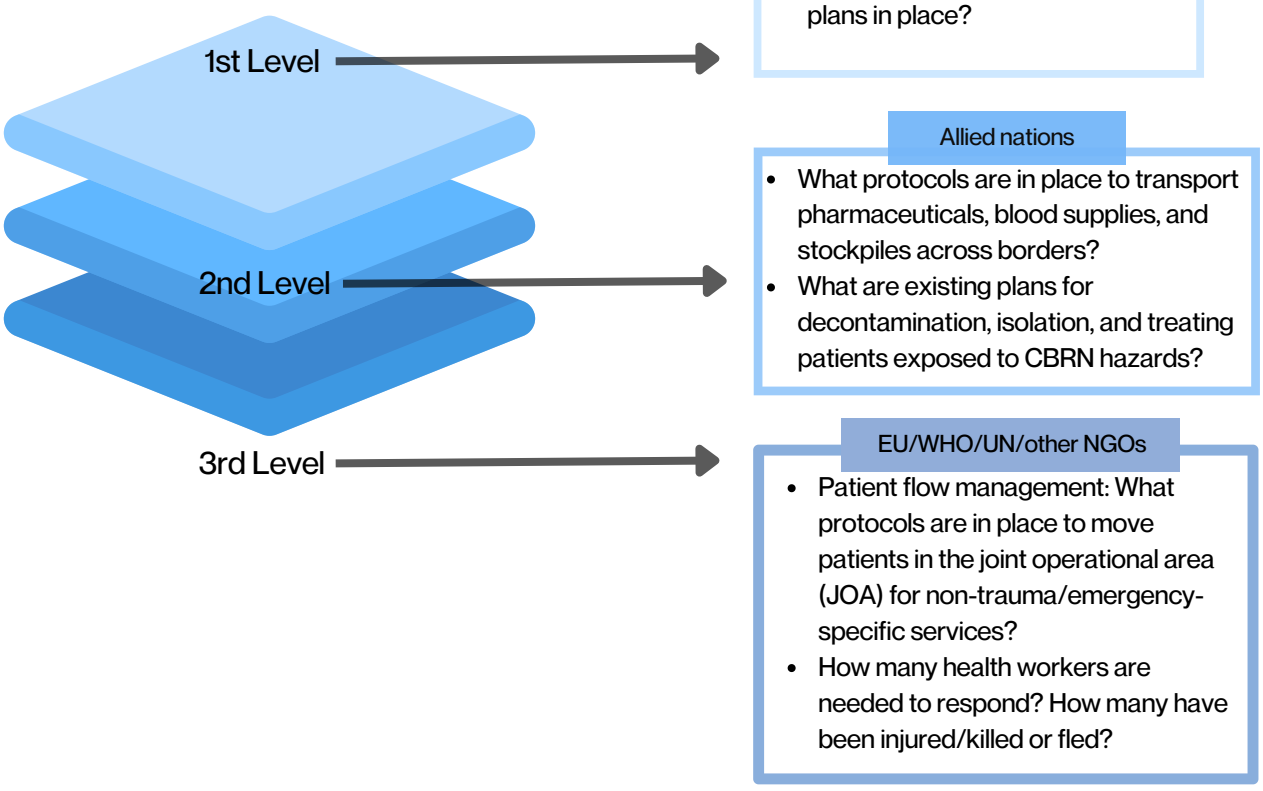
Result: *TTX will help establish a medical common operational picture (COP) in an international environment where all actors are aware of each other's roles, capacities, and capabilities.*

TTX between civilian and military counterparts will identify vulnerabilities, practice strategy-level decision-making, and evaluate interoperability in a low-risk environment. Senior-level medical civilian and military officials should assess their understanding of each other's roles and responsibilities and discover any assumptions, points of obscurity, and gaps in preparedness planning.
NATO should facilitate strategy-level TTX structured in layers:

(1) civilian-military counterparts of each nation,
(2) allied nations, and
(3) international institutions such as the European Union, the World Health Organization, United Nations, and related NGOs.

The third layer is especially important to simulate the complex system of interlocuters involved in the medical response to an Article V scenario. NATO should complement the EU, WHO, and UN responses to threats and scenarios. The design of the TTX may pull findings from the health system assessment survey, which discovers vulnerabilities across the alliance and components of the adopted 'health system in conflict' framework that require further operational detail. Additionally, this recommendation will help NATO allies evaluate and operationalize existing interpretations of burden-sharing norms, such as what constitutes a national v.s. NATO responsibility. A risk to this recommendation for NATO's consideration includes intelligence-related implications of sharing vulnerabilities with a wider network.

Hypothetical Scenario: A foreign actor has invaded a NATO ally and attacked hospitals and clinics, causing a significant increase in mass casualties and damage to medical infrastructure. This is one scenario that NATO may consider exercising, considering the significant incidence seen in the war in Ukraine. Additionally, this scenario broadens the range of NATO's tactical military medical objectives to include attacks on civilian health clinics and their impact on the delivery of military medical services. The diagram below lists the participants involved and medical-related considerations to include in a TTX design. This list is not exhaustive and requires further professional expertise.



04 Incorporate more extensive medical exercises into NATO multi-national military exercises.

Result: *Operationalize strategic goals and objectives by expanding medical exercises to mimic large-scale scenarios and responses accurately.*

Medical exercise components exist in multi-national military exercises (Trident Juncture) and siloed military medical exercises (Vigorous Warrior); however, they are relatively tactical and small-scale. Medical exercises should be a more integrated and larger part of multi-national military exercises to include the joint operational and strategic levels properly. Medical exercises should build out to include more role players and stress test the evacuation and treatment capacities of civilian and military medical services. NATO should consider including and exercising the point of injury to Role 4 to mimic realistic longer-term challenges from a foreign invasion. Additionally, this final recommendation guides NATO to include and exercise findings from the adopted 'health system in conflict' frameworks, health system assessment survey, and strategy-level table-top exercises to develop updated medical exercises. While this recommendation requires an increased amount of funding and commitment from allies, it is critically important to exercise responses to realistic and frequent medical challenges experienced in the war in Ukraine.

Appendix

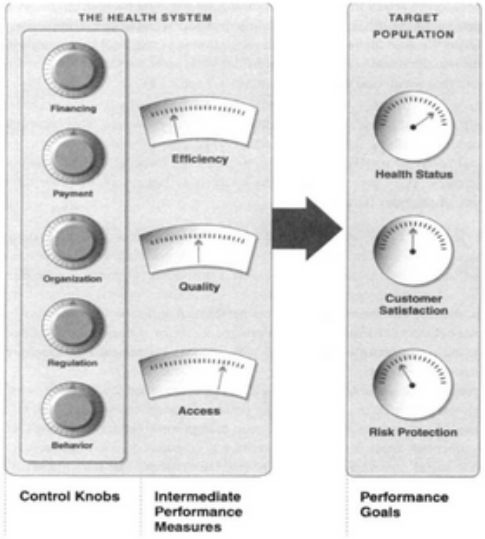


Figure 2: Getting Health Reform Right. A Guide to Improving Performance and Equity. Oxford University Press, Oxford, England. 2004 Roberts, Hsioa, Berman, Reich

The five control knobs in a health system from Roberts et al. aim to ensure efficiency, quality, and access. The fundamentals of a health system should be understood by all interlocutors involved:

Financing determines what resources are available by raising money to pay for activities in the health sector through taxes, insurance, and direct payments from patients. Financing determines the allocation of resources to health system priorities.[32]

Payment refers to transferring money to health sector workers. There are eight payment methods with different units of payment: Fee-for-service, salary, salary plus bonus, capitation, per diem, per admission, case-mix adjusted admission, line item, and global budget (pg. 194).

Organization refers to the roles and functions of providers internally. There are four major characteristics of the Organization control knob to note: (1) mix of organizations that provide health services, (2) division of activities of these organizations, (3) interactions among these organizations and their connection to the political and economic system to receive resources, and (4) internal administrative structures of each organization (pg. 213).

Regulation refers to the activities of a state to influence the behavior of actors in the health system, such as doctors, nurses, insurance companies, and patients, creating constraints on behaviors. Regulation involves legal instruments (orders, codes, guidelines) to enforce regulatory power to reform topics such as access to basic health care, market failures, unacceptable market results, etc. (pg. 284).

32. Marc Roberts et al., Getting Health Reform Right: A Guide to Improving Performance and Equity, 1st ed. (Oxford University Press New York, 2008), https://doi.org/10.1093/acprof:oso/9780195371505.001.0001.

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