

Question 1: How have systems thinking approaches and tools been incorporated in activities to improve health equity? Were these approaches useful in achieving health equity goals? If so, what are the pathways by which these approaches helped to address the root causes of inequity?



# Leveraging telemedicine to improve health equity in Ukraine during and after the war

Vitaliy Karanda, Oleg Semeryk, Artem Liashenko, Svitlana Hlushchyk, Lauren Hartel, Yelyzaveta Noskova  
Local Health System Sustainability (LHSS) Ukraine

## Context

Over the past several years the Government of Ukraine (GOU) has enacted reforms in the health sector to combat deep-seated challenges such as corruption, unclear and shifting political leadership, and a persistent pattern of informal payments at all levels. These challenges adversely impact not only health outcomes, but also impede the effective use of scarce government funds. Further, these obstacles magnify inequities among vulnerable groups such as those living in rural areas, individuals suffering from chronic diseases, and populations living in areas experiencing active hostilities.

Telemedicine provides a unique and innovative resource to address these challenges. To date though, access to telemedicine has not been widely available in Ukraine for those who could most benefit from this technology. Barriers to access have been largely due to sporadic and uncoordinated efforts to provide telemedicine, lack of provider training at the facility level, and unclear guidance around reimbursement eligibility. As a result, underserved populations residing in areas with less developed infrastructure have been left behind, are less aware of their rights, and have generally lower levels of digital literacy. The full-scale invasion of Ukraine by Russia in 2022 has exacerbated these challenges:

- **As of May 2023, Russia has destroyed or damaged at least 978 medical institutions, 650 ambulances, and at least 596 pharmacies – totaling over \$2.5 billion worth of destruction.**<sup>1</sup> The immense devastation to healthcare facilities has crippled the health system's ability to provide quality services and instilled a sense of fear among citizens deterring them from seeking facility-based care.
- **Injuries caused by continuous missile strikes have exponentially increased Ukrainians' need to access health care, related not only to urgent care for the surging number of traumatic and burn injuries, but also escalating mental health needs.** The WHO estimates nearly 9.6 million Ukrainians may have a mental health condition.<sup>3</sup> Despite the mounting need, access to critical health care services remains limited.
- **More than 8.2 million Ukrainians have become refugees and 5.3 million are internally displaced, including patients and medical staff.**<sup>2</sup> The large-scale and fluid migration of the population has impeded the ability of citizens to access care, especially if they are sheltering in an unfamiliar location. MOH human resources have been constrained during the conflict, compounding the GOU's ability to allocate resources in an equitable and rational fashion.
- **Support from over 40 governments and hundreds of non-governmental organizations has totaled over \$100 billion in aid to Ukraine,** requiring immense coordination and further complicating the nation's ability to prioritize needs and allocate resources to effectively reach underserved populations across the country.<sup>4</sup>

All told, providing and receiving medical care has become extremely difficult throughout Ukraine, especially for those with chronic conditions and residents with limited access to healthcare facilities. To address these challenges, the Local Health System Sustainability Project (LHSS) in Ukraine is supporting the GOU in reaching underserved populations with essential health care services through telemedicine. Using a systems thinking approach, the project is engaging stakeholders, conducting analyses, informing decision-makers, and fostering public-private partnerships to achieve this goal.

<sup>1</sup> <https://moz.gov.ua/article/news/23-penad-rik-vijni-rozja-rujnuvela-ta-poshkodila-medichni-zakladiv-na-25-mird-dolariv-%e2%80%93-doslidzhennja-svitovogo-banku>  
<sup>2</sup> <https://reliefweb.int/report/ukraine/ukraine-situation-flash-update-47-19-may-2023>  
<sup>3</sup> <https://www.who.int/news-room/feature-stories/detail/scaling-up-mental-health-and-psychosocial-services-in-war-affected-regions--best-practices-from-ukraine>  
<sup>4</sup> <https://www.devex.com/news/funding-tracker-who-s-sending-aid-to-ukraine-102887>

## Activity Description

Immediately following the Russian invasion, LHSS held discussions with the MOH, USAID, and other key stakeholders to identify how the team should adapt in response to the rapidly changing context. To inform its work, the project participated in an inclusive dialogue with development partners and public-, private- and civil society-sector entities, conducted a stakeholder analysis, and applied an integrated, systems approach to developing a national telemedicine program with a focus on standardizing key organizational, legal, financial, and technological components. Consensus emerged from these to continue implementing telemedicine while prioritizing resiliency. This includes:

1. **Absorb health system shocks by rapidly deploying telemedicine to reconnect citizens to essential health services.** LHSS facilitated dialogue between the MOH and the private sector (international telemedicine companies) to deploy telemedicine solutions and rapidly strengthen health facility capacity. These include telemedical counseling for gunshot, burn, and explosion injuries, telerehabilitation gaming for neurosensory disorders, virtual operating rooms, and remote monitoring (e.g., fetal heart rates). LHSS supported the MOH in creating and standardizing the selection and testing of telemedicine solutions, streamlining the implementation process, and increasing decision-making transparency. LHSS then supported the installation of selected solutions at certain facilities championed by the MOH and created tailored training videos for health providers and adjusted these global solutions to ensure that they are contextually and locally fit for purpose. LHSS monitors implementation and adjusts as needed to maximize use by providers.

2. **Adapt to the rapidly changing context by making decisions and adjusting policies to allow implementation of innovative solutions.** LHSS and the MOH formed a cross-sectoral working group to create a common vision and strategy for the development of telemedicine. The group included representatives from multiple government agencies, private corporations, and patient representative organizations. Through a series of over 20 subgroup meetings, LHSS facilitated intensive discussions to highlight shared goals, critical factors, resource considerations, and group priorities.

3. **Transform key regulations and procedures to enable integration of telemedicine into the National eHealth System.** Diverse stakeholders weighed in on a wide range of topics including the forthcoming regulatory framework and improving contracting and purchasing arrangements for Program of Medical Guarantees services (e.g., telemedicine and the technical conditions and health care provider training required to provide telemedicine services). LHSS also conducted a landscape assessment of telemedicine in Ukraine to ensure decision-makers had accurate, holistic data informing these decisions.

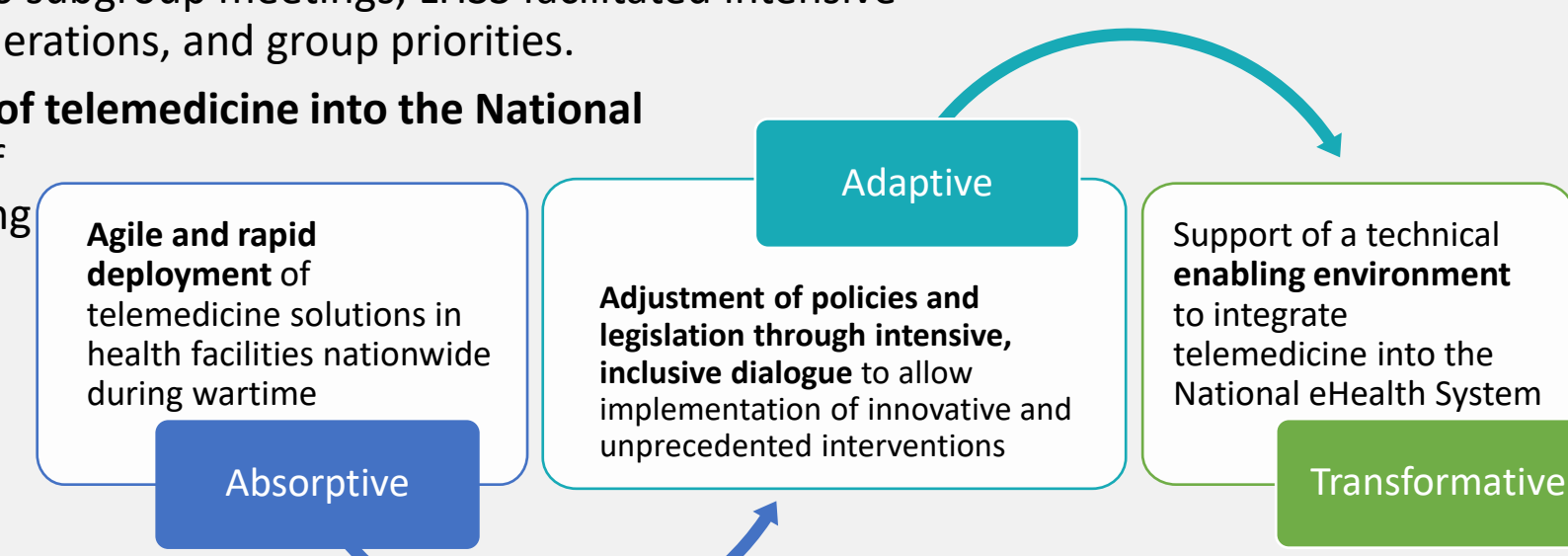


Figure 1. LHSS's systems approach

## Activity Impact

LHSS's systems thinking approach contributed to increased access to health services among underserved populations through the use of telemedicine.

Connecting populations to health services during the war

- The streamlined telemedicine solutions selection and implementation process contributed to **increased access to telemedicine services by people in all regions of Ukraine**, including in areas with active hostilities where demand is highest. Almost 8 percent of patients who requested health services across Ukraine received such services via telemedicine. The largest percentage of patients receiving telemedicine consultations were from the regions (oblasts) occupied or recently de-occupied: 12.6 percent in Luhansk, 15.2 percent in Kharkiv, and 13.5 percent in Kherson. Zhytomyr, Cherkasy, and Zakarpattia oblasts have the lowest rates.<sup>5</sup>
- LHSS strengthened the MOH's capacity to partner with the private sector, resulting in **successfully leveraging telemedicine solutions and equipment donated by private companies valued at \$3,490,100 USD.**
- LHSS supported the MOH in establishing **diverse partnerships with global corporations (e.g., Teladoc), local nonprofits (e.g., Superhumans), and other implementing partners (e.g., Pact)** that have helped to connect populations with critically needed health care services.

Strengthening health system resiliency by removing system gaps and barriers

- LHSS supported the MOH in **establishing a transparent policy dialogue platform** for key stakeholders (see Figure 2). This created a forum for inclusive dialogue to identify needs, obstacles, priorities, and ultimately to formulate a national strategy for telemedicine development.
- The MOH and key stakeholders **created a shared vision and national telemedicine strategy** in Ukraine. With LHSS support, the MOH developed necessary amendments to the legal framework that allowed rapid deployment of humanitarian telemedicine solutions and is scaling up use of telemedicine services.
- LHSS supported the MOH in **developing and implementing a strategic approach** to identify which donated telemedicine solutions to accept, and how to ensure that they are incorporated into Ukrainian health system in line with national requirements.
- LHSS is currently conducting an analysis of telemedicine costs and developing recommendations for the National Purchaser (NHSU) of health care services in order to clarify which telemedicine services would be covered by the GOU.

Figure 2. Stakeholders involved in the development, provision, and use of telemedicine services in Ukraine



<sup>5</sup> [https://www.lhssproject.org/sites/default/files/resource/2023-05/LHSS\\_UKRAINE\\_FY23\\_Landscape%20Assessment%20of%20Telemedicine%20in%20Ukraine\\_ENG.pdf](https://www.lhssproject.org/sites/default/files/resource/2023-05/LHSS_UKRAINE_FY23_Landscape%20Assessment%20of%20Telemedicine%20in%20Ukraine_ENG.pdf)

## Evidence

Connecting populations to health services during the war

LHSS has supported the provision of 3,990 telemedicine services and trained 1,027 medical providers across 304 health care facilities from all regions of Ukraine. Providers represented public (297), private (5), and nonprofit facilities (2). Trainings included proper use of hardware and software for solutions including traumatic injury consultations, burn consultations, remote fetal monitoring, AI-supported brain scans, and rehabilitation support.



Image 1. The process of telemedical consultation of Ukrainian doctors with foreign specialists



Image 2. A doctor with a child who received telemedical consultation

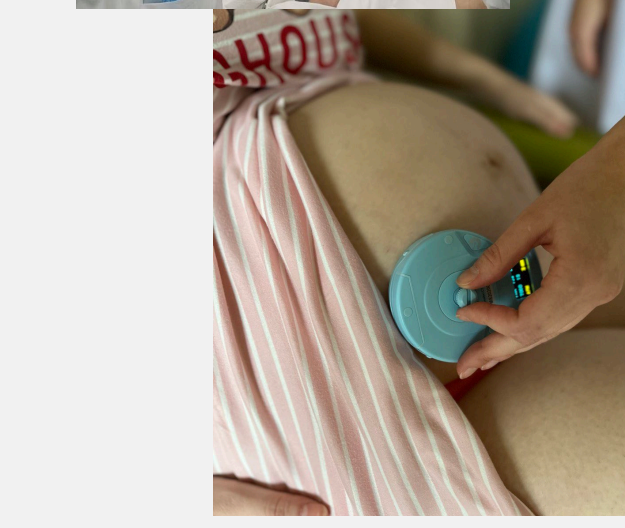
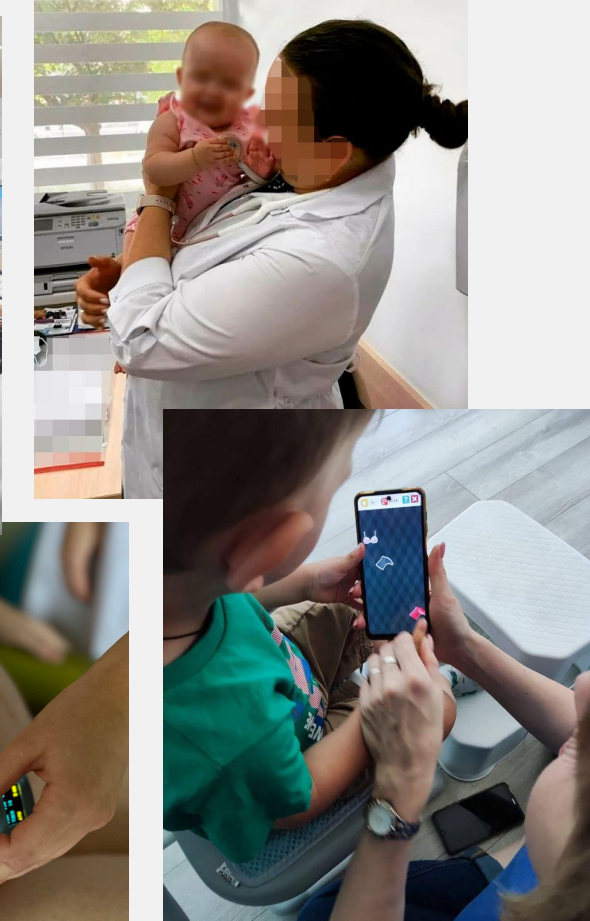
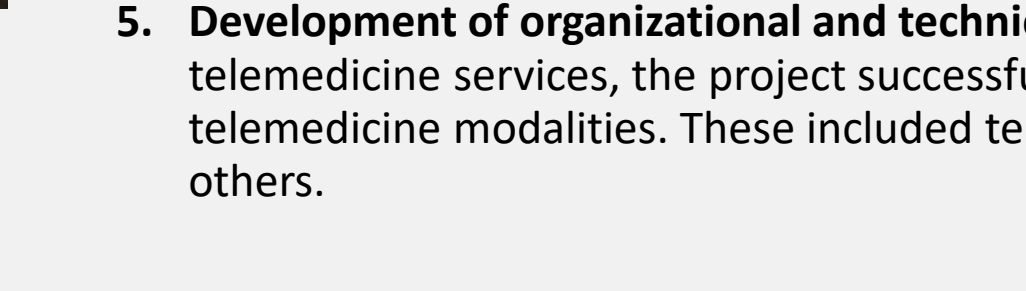


Image 3. Using a telemetry device to diagnose the condition of a fetus

Image 4. Using a telemedicine mobile application for telerehabilitation



**Strengthening health system resiliency by removing system gaps and barriers.** LHSS demonstrated significant achievements, showcasing its positive impact on enhancing the resilience of the health system. The following intermediate results highlight the project's success:

1. **Formation of a Working Group:** A dedicated working group was established, bringing together experts from various fields and stakeholders relevant to telemedicine. This collaborative effort enabled effective coordination and exchange of knowledge.
2. **Comprehensive telemedicine landscape assessment:** A thorough analysis was conducted to identify the existing obstacles and potential opportunities to develop a national telemedicine program. This assessment provided valuable insights into the current state of telemedicine, enabling informed decision-making and strategic planning.
3. **Development of a unified vision and strategy:** Through inclusive discussions and consultations, a unified vision and strategy for the development of telemedicine were formulated. This shared vision served as a guiding principle, aligning the efforts of all stakeholders involved and fostering a coordinated approach towards telemedicine advancement.
4. **Legislative amendments:** A pivotal outcome of the LHSS approach was the preparation of a comprehensive set of amendments to the legislation of Ukraine. The primary objective of these amendments was to incorporate telemedicine into the key laws governing the provision of medical assistance.
5. **Development of organizational and technical models:** To support the practical implementation of telemedicine services, the project successfully developed technical models for various telemedicine modalities. These included teleconsultations, telemetry, and telerradiology, among others.

## Facilitators

- **The need to address Russian military aggression and the challenges posed by the war** fostered a strong unity of purpose and brought together key stakeholders, both domestically and internationally.
- **War limited access to traditional methods of providing and receiving medical care**, particularly in front-line and de-occupied territories, easing uptake of remote delivery of healthcare services.
- **The intersectoral working group on telemedicine** created at the MOH with LHSS's support brought together experts from various fields including the Parliament of Ukraine, National Security Council, MOH, NHSU, the eHealth SOE, patients, health care providers and other national public and private partners. The working group is establishing effective, sustainable policies and processes for telemedicine implementation to extend critical health services to Ukrainians who lost access to these services due to the war.
- The imposition of martial law is **simplifying decision-making processes and minimizing typical bureaucracy**, potentially increasing the speed of developing and scaling up telemedicine approaches.
- **Increased collaboration** and development of public-private partnerships have facilitated the rapid mobilization of private sector resources to address health care needs of underserved populations.

## Challenges

- **Rapidly changing environment:** During the full-scale war, the project made several adjustments to its workplan, transitioning from developing a strategic and systemic telemedicine program to implementing ad hoc telemedicine solutions to ensure access to health care for underserved populations affected by the war. After a period of adaptation to working in war conditions, the MOH and LHSS made the strategic decision to continue implementing both streams.
- **Limited resources:** The war has resulted in significant losses and high national economic expenditures. Budget revenues have decreased, while defense spending has increased exponentially. As a result, the government lacks the financial resources to support innovative projects like telemedicine. However, this situation has fostered the development of public-private partnerships and donor support.
- **Destruction of critical infrastructure:** Continuous attacks by Russia on energy and other civilian infrastructure have posed challenges adversely affecting LHSS's work. These challenges include delays in data collection and analysis, delays in implementing activities, and difficulties connecting telemedicine equipment in healthcare facilities.
- **Limited data availability due to the war:** With the onset of the full-scale war, access to open data was blocked, and registries were closed. Institutions located in occupied territories had their access to the Electronic Health System cut off. Furthermore, institutions were allowed to report data with delays or submit hard copy instead of electronic documents (e.g., referrals and prescriptions). This has created a gap between the demand and the capacity to provide services, and discrepancies between the services provided and reported. Consequently, there have been gaps in data availability and challenges in informing stakeholders to support decision making.

## Lessons Learned

- **Emphasizing intersectoral cooperation:** Collaboration is essential for fostering constructive dialogues among experts from different fields and can be done even in periods of conflict. It enables the identification of urgent problems and the development of effective solutions by harnessing the collective efforts and potential of partners. Bringing together the unique perspectives of key stakeholders allowed LHSS to create a collaborative vision for telemedicine implementation.
- **Embracing (and vetting) public-private partnerships:** Private partners play a crucial role in driving change and can offer rapid and timely solutions when the state's focus is diverted towards more pressing military challenges. Their involvement brings innovative approaches to the implementation of telemedicine.
- **Leveraging telemedicine technologies:** In the context of war and limited resources, the utilization of modern telemedicine technologies is vital for ensuring equitable access to healthcare. These technologies can bridge the gap and provide essential medical services to those in need, regardless of their physical location.
- **Overcoming myths and prejudices:** Telehealth services, including telephone and video communication, offer more accessible means of delivering healthcare. Widely implementing these services requires proactive efforts to dispel myths and overcome prejudices. Informational and explanatory work is necessary to raise awareness and promote acceptance of telehealth options among the population.

By incorporating these lessons learned, future endeavors in telemedicine can more quickly and flexibly address challenges, enhance access to care, and improve healthcare outcomes, particularly in times of crisis or limited resource settings.

