



Ukraine's most vulnerable need healthcare: Priorities during the armed conflict

Yevheniia Varyvoda^a, Nadia Akseer^{b,*}, Volodymyr Sadkoviychuk^c, Richard Carmona^d, Myra Muramoto^e, Kerri Wazny^f, Tessie San Martin^g, Douglas Taren^h

^a Department of Community, Environment and Policy, Mel and Enid Zuckerman College of Public Health, University of Arizona, USA

^b Department of International Health, Johns Hopkins Bloomberg School of Public Health, USA

^c National University of Civil Protection of Ukraine of the State Emergency Service, Ukraine

^d 17th Surgeon General of the United States, Department of Health Promotion Sciences, Mel and Enid Zuckerman College of Public Health, University of Arizona, USA

^e Department of Family Medicine, School of Medicine, University of Colorado, USA

^f Children's Investment Fund Foundation, United Kingdom

^g FHI 360, Durham, NC, USA

^h Department of Pediatrics, School of Medicine, University of Colorado, USA

The Ukrainian healthcare system is one of the primary targets for destruction in the armed conflict in Ukraine and has been hit hardest in the East and the South. As of May 3, 2022, WHO has verified 186 attacks on healthcare facilities, killing 73 people and injuring 52 [1]. Ukraine's government reported 347 of 1-600 hospitals [2] have been damaged, and 38 completely destroyed [3]. There are 1-658 medical workers including 1-023 doctors and 435 nurses and other healthcare personnel who have been forced to change their place of residence and find employment in other regions of the country [4].

The physical and mental health of women and children who have stayed in Ukraine deteriorates daily and has been well documented [5]. Due to active hostilities, health professionals and patients fear travelling to health facilities. The lack of medical records limits access to basic services and people are even unable to confirm their vaccination status. Disruptions in electricity and mobile services have limited access to emergency medical services. Many lifesaving healthcare activities for Ukrainians in conflict settings have been undermined.

To respond strategically to the needs of the affected population, a set of the essential interventions need to be supported by international organizations.

Maternal and child health care. There are many ways to provide rapid health care services to mothers and children who remain in Ukraine. We support increasing international aid to develop mobile maternal and child health clinics that provide services closer to households and families. This is relatively expensive, but availability of volunteers and international support can make this an excellent option to improve safer access to health care and provide critical mental health aid for women

and children, labor and delivery support, emergency management of complications, family planning, treatment for sexual assault survivors, immunization, and management of childhood illness. These clinics can also become Children and Family Protection Support Hubs known as Blue Dots [6], safe spaces where women and children also receive legal support and emergency items such as clothing, blankets, and hygiene items [7].

Assistance in rapid and widespread digital healthcare services expansion and uptake. Ukraine's digital healthcare infrastructure increased during the pandemic and aided the country's resilience under the latest phase of the war [8]. Creating small-scale telehealth-based treatment stations across the affected regions linked to remote central expert clinical decision support represents a realistic solution for rapid deployment of expert care triage across a wide region of land where no other services are presently available [9]. Assistance in developing cybersecure telehealth services utilization will bring strategic positive changes by building capacity for an equitable healthcare system with improved access for the vulnerable population.

Advancement of the Workforce in Military Medicine, Public Health, and Complex Humanitarian Emergencies. With regards to the unprecedented danger of chemical, nuclear, biological weapons use and attacks on Ukrainian nuclear power plants and non-power facilities, on top of existing health care needs, there is an urgent need to increase all-hazards approach training because of the limited number of medical professionals competent in Chemical, Biological, Radiological, and Nuclear (CBRN) hazards preparedness [10].

We believe that international assistance in rapid training of

* Corresponding author.

E-mail address: nakseer1@jhu.edu (N. Akseer).

competency-based skill sets to both civilian and military health practitioners alongside wide-scale infrastructure support and the adoption of digital technologies and health solutions to aid the sick and wounded is essential and will have enormous potential to mitigate the current public health emergency crisis and provide the foundations for building a resilient health system.

Author contribution

The initial text was written by YV, NA, and DT. Comments, edits and revisions were made by all other authors. All authors approved the final version prior to submission. We also acknowledge the review of a previous version by the following people: James Bever and John Ordway from SPOON, and Michael O'Brien, Audrey Rangel, Christian Pitter, Coy Isaacs, and Debbie Kennedy from FHI 360.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- [1] SSA Home [Internet]. Who.Int, 2022 [cited, <https://extranet.who.int/ssa/Index.aspx>. May 3]. Available from.
- [2] Statistical Yearbook of Ukraine for 2020, State Statistics Service of Ukraine, Gov. ua, 2022 [cited, http://ukrstat.gov.ua/druk/publicat/kat_u/2021/zb/11/Yearbook_2020_e.pdf. Apr 23]. Available from.
- [3] V. Lyashko, The Shelling of Health Care Facilities Is a Deliberate Destruction of Hospitals, Gov.ua, 2022 [cited, <https://moz.gov.ua/article/news/viktor-ljashko-obstrili-zakladiv-ohoroni-zdorovja--cilesprjamovane-rujnuvannja-likaren>. Apr 23]. Available from.
- [4] More than 1,600 IDPs Have Been Employed by Other Health Facilities. Ministry of Health of Ukraine, Gov.ua, 2022 [cited, <https://moz.gov.ua/article/news/ponad-1600-vnutrishno-peremischenih-medikov-pracevlashtuvalisja-v-inshi-zakladi-ohoroni-zdorov'ja>. Apr 23]. Available from.
- [5] Ukraine: Humanitarian Impact Situation Report (As of 12:00 p.m. (EET) on 26 April 2022) - Ukraine [Internet], ReliefWeb, 2022 [cited, <https://reliefweb.int/report/ukraine/ukraine-humanitarian-impact-situation-report-1200-pm-eet-26-april-2022>. May 3]. Available from.
- [6] Ukraine Emergency in Neighboring Countries "BLUE DOTS"- Children and Family Support Hubs [Internet], UNHCR Operational Data Portal (ODP), 2022 [cited, <https://data2.unhcr.org/fr/documents/details/91739>. Apr 27]. Available from.
- [7] How Cash Assistance Is Helping Refugees from Ukraine [Internet], Unrefugees.org, 2022 [cited, <https://www.unrefugees.org/news/how-cash-assistance-is-helping-refugees-from-ukraine/>. Apr 29]. Available from.
- [8] How Virtual Healthcare Services Are Coming to the Aid of Ukraine [Internet], Genevasolutions.news, 2022 [cited, <https://genevasolutions.news/peace-humanitarian/how-virtual-healthcare-services-are-coming-to-the-aid-of-ukraine>. Apr 23]. Available from.
- [9] C.R. Doarn, R. Latifi, R.K. Poropatich, N. Sokolovich, D. Kosiak, F. Hostiuc, et al., Development and validation of telemedicine for disaster response: the NATO multinational system, *Telemed. J. e Health* 24 (9) (2018) 657–668.
- [10] S. Morgun, L. Ustinova, N. Barasyi, A. Yevtodiev, V. Saglo, Y. Havrilko, N. Kurdil, The Current State of the System of medical Protection of the Personnel of the Armed Forces of Ukraine from Radiation-Nuclear Threats and Terrorism. *EM* [Internet], 2021. Oct.1 [cited 2022Apr.23];(7.94):54–58. Available from, <https://emergency.zaslavsky.com.ua/index.php/journal/article/view/1021>.