

VIEWPOINT

Cancer and War in Ukraine

How the World Can Help Win This Battle



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In Ukraine, with a population of about 44 million, there are more than 1.3 million cancer patients. Approximately 160,000 new cases of cancer are diagnosed each year.¹ In almost every region, there are local cancer centers; specialized oncological centers are located in large cities. In Kyiv, highly specialized care for cancer patients is provided by the National Cancer Institute, the Kyiv City Cancer Center, and several other centers.

Patients with cancer traditionally had access to all modern diagnostic methods, including biopsy, molecular genetics, and imaging modalities, such as positron emission tomography-computed tomography. Patients had access to all types of cancer treatment: surgery, chemotherapy, immunotherapy, radiation therapy, and hematopoietic cell transplantation. Moreover, in recent years, cardio-oncology has rapidly developed in European countries and Ukraine.² In 2016, the first cardio-oncology unit in Ukraine was formed at the M.D. Strazhesko Institute of Cardiology in Kyiv.³ Educational programs have been held among oncologists, hematologists, cardiologists, general practitioners, and pharmacists.⁴ Recommendations and standards of treatment for cardiovascular complications during anti-tumor therapy and in long-term follow-up were developed and implemented.⁵ Thus, a well-

established system of medical care for oncological patients was organized.

This all changed dramatically on February 24, 2022, when a full-scale armed conflict began in the territory of Ukraine. What followed was a mass movement of the population to the safer, mainly Western regions of Ukraine. Part of the population rushed to the nearby located countries of Western Europe. As of March 16, 2022, it is estimated that approximately 4.2 million have left for neighboring countries, and an additional 6.5 million people have been displaced within Ukraine.⁶

Simultaneously, our well-organized medical care system for cancer patients was disrupted. In areas of active hostilities, care completely stopped.⁷ Several hospitals that provide cancer care were damaged, destroyed, or even closed. Extreme, life-threatening pressure exists for health care professionals and patients. Warehouses of medicine were partially destroyed. A lack of medication and medical products exists, especially in the Eastern and the South regions of Ukraine.

At the beginning of March 2022 in Kyiv, according to the data of the National Cancer Institute and the Kyiv Cancer City Center, only short courses of chemotherapy were possible. In mid-March, many types of cancer treatment were restored, including some surgical interventions, given the critical need for life-saving cancer care.⁸

In the cancer centers located in the Western Ukraine, medical care is still being provided. However, difficulties exist owing to the large number of displaced people; chemotherapy and radiation therapy are still provided on a limited basis. Some patients have crossed the border and receive care in neighboring countries. For example, children with cancer have been moved largely to Poland to receive their care.

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On March 10, 2022, the European Cancer Organization (ECO) and the American Society of Clinical Oncology (ASCO) held an important online meeting—the ECO-ASCO Special Meeting: Impact of the War in Ukraine on Cancer—with >200 participants. The ECO-ASCO Special Network on the Impact of War in Ukraine⁸ serves to: 1) enhance collaboration and coordination across oncology societies, cancer patient groups, and every organization trying to support Ukrainian cancer patients at this time; 2) provide information in national languages, and signpost and amplify the work being done for Ukrainian patients; 3) advocate with the World Health Organization (WHO), European Union (EU), and national governments; and 4) evolve over time based on the population's needs, and work collaboratively with other organizations.

At the meeting, information was provided on the state of oncological care in Ukraine, emphasizing that specific intelligence about cancer care needs to be continuously obtained to properly plan and mobilize resources. The representatives from Ukraine expressed their gratitude to all countries providing assistance to Ukrainian patients. Here, we summarize the efforts, goals, and challenges that were discussed at the meeting by the various community organizations and neighboring countries.

WHO Europe is convening partners and assisting on the ground in Ukraine. It is important to identify cancer patients among refugees through questionnaires and pamphlets written in Ukrainian to inform them about the next steps regarding their cancer care. The EU and WHO are working together to transport people from Ukraine to receive care. The WHO is also working to help ensure that displaced patients do not bear the burden of treatment cost.

The European Commission's Directorate General for Health and Food Safety expressed solidarity with all frontline health care professionals working through this crisis. Coordinating efforts is key to maximize impact. Unity is needed from the entire EU for both sanctions and support. The European Commission is working to meet requests from Ukraine for aid: medicines, medical equipment, ambulances, and so forth. Three hubs have been created for the distribution of aid in neighboring countries. The Directorate General for Health and Food Safety and the Directorate General for European Civil Protection and Humanitarian Aid Operations are working together to coordinate the evacuation of patients in need of treatment. Children make up many of the patients in need of evacuation.

The European Society of Medical Oncology is seeking to support Ukrainian cancer patients in its

role as a professional organization for medical oncologists in Europe. This includes helping to place health care professionals in touch with experts who can help in the provision of care and treatment for Ukrainians with cancer. The European Society of Medical Oncology also seeks to assist in the development of strategies to improve access to needed medicines, including collaborations with foundations and industry to meet Ukrainians' needs.

ROMANIA

The Ministry of Health in Romania is seeking to help with medical supplies to Ukraine. A hub has been created in North-East Romania to facilitate logistics and transportation. New legislation is being put in place to enable Ukrainian people arriving in Romania to benefit from medical assistance, including for cancer.

For the Institutul Oncologic din Cluj Napoca, a key issue is that many Ukrainian cancer patients leaving the country do not have access to their medical records for the recipient country's care providers to review. Romania expects increasing numbers of Ukrainian cancer patients to arrive. The health system in Romania will require increasing support to meet this need. Support is also needed to provide accommodation and travel for these people, often women and their children.

POLAND

The Polish Cancer League has recommended a European database with institutions offering treatment to Ukrainian cancer patients. Such patients also need accommodation and resources to travel. Information to patients is a significant issue. Call centers in Poland are now operating with Ukrainian-speaking operators. Recommendations were made to have printed materials placed on the website of all relevant key nongovernmental organizations (NGOs). Transportation of medicines to Ukraine faces legal problems, as some medications cannot be exported without specific arrangements.

The Fundacja Onkologiczna, based in Warsaw, started the OncoUkraine campaign, with a website collecting information in the Ukrainian language. Email addresses are provided to support patients in need. More than 1,000 users and 100 Ukrainian cancer patients have asked for help over email. A significant part of the need has been in women with breast or other gynecological cancers. There is also a critical need for care for families of cancer patients. Displaced women are often the only caregiver for their accompanying children. Treatment strategies are also

different between Ukraine and Poland. Guidance is needed for Polish doctors in such cases.

CZECH REPUBLIC

The Masaryk Memorial Cancer Institute noted that redistribution of refugees to other countries may be required, especially for highly specialized cancer care. They felt it is important to build a website for provision of cancer care to Ukrainian refugees across the EU, where key information can be found in a single place. In the Czech Republic, there is a contact point for refugees to ask for help and to then be sent to cancer centers, with a Ukrainian interpreter's support. Again, a frequent problem is the lack of information on medical records and history.

SLOVAKIA

For the Slovak League Against Cancer, key problems are in the identification of patients in need of urgent care and lack of access to patients' medical records. Provision of health care in Slovakia for arriving Ukrainians is presently free of charge. However, after 30 days, co-payments risk impact. NGOs such as Slovak Cancer League are working on the ground to coordinate actions, but limited capacity in the Slovak health system exists. Transfer arrangements for patients to receive care in other countries may need more consideration.

HUNGARY

For the National Institute of Oncology, documentation is a big issue, and there is also a lack of translators. Hungary has established a central interpreter line for oncology care providers to use in case of need. Capacity issues, for now, are in order. However, further intergovernmental efforts should be invested in the evacuation of cancer patients from Ukraine.

This is only part of the information that was presented on the forum. With the assistance of various NGOs, including those from the United States, and governments of countries that provide assistance to oncological patients from Ukraine, a specific plan is being developed, starting with the formation of call centers to the provision of highly specialized oncological care. Additional supplies of medical equipment and medicines are carried out with the assistance of commercial enterprises and charitable foundations. There are many ongoing issues that need to be addressed.

Other organizations have joined the ECO and ASCO Impact of the War in Ukraine on Cancer Initiative. On

March 18, 2022, >300 organizations from around the world participated in the second meeting. Many agreed on the need for better, more efficient data collection from cancer centers in impacted countries. There is also need for the community of oncologists, pharmacists, nurses, and patient organizations to share the intelligence that they are receiving on the front line. The organization [Onco-Help.org](https://onco-help.org) was presented.⁹ This resource indexes informative materials and links within the sections for Ukraine, Poland, Romania, Moldova, and Hungary, with translation to Ukrainian language. Among the several issues and pressing needs emerging from the war in Ukraine, the Special Network has identified mental health and psychosocial support as important priorities for cancer patients who are still in Ukraine or have migrated to neighboring countries. As a result, a consulting group aimed at providing psychological assistance to cancer patients was created at the National Cancer Institute in Kyiv.

UKRAINE

Many citizens have moved to Western Ukraine and are not going to leave the country. It is very important to properly organize the provision of cardiovascular and oncological care on site, especially in Western Ukraine. The website of the Ministry of Health of Ukraine and the National Health Service of Ukraine regularly updates information about cancer centers, including contact details. The logistics of the supply of medicines and medical products have been disrupted, but the Ukrainian Government has simplified the procedures for the import of essential medical supplies. Ongoing work is focused on establishing contacts with cancer centers in Western Europe.

Unfortunately, providing cardio-oncological care has faded into the background, and patients receive consultations online mostly. Cancer patients have limited access to diagnostic methods and biomarkers.

What do we need to do? In our view, we need to 1) employ oncologists and pharmacists who left for Western Ukraine on site; 2) establish contact with oncologists and pharmacists who remained at their workplaces to obtain medical records; 3) inform patients and medical personnel involved in providing care to cancer patients that it is important to keep medical documentation with them; and 4) procure and provide cancer therapies. Charitable foundations and patient organizations (e.g., Inspiration Family, Afina) have been instrumental in providing information about topics such as the possibility of

accommodations in Western Ukraine to the provision of medical care in cancer centers in Western Europe. They also provide information on the availability of cancer therapies across all cancer centers in Ukraine.

SUMMARY

The world is faced with a global problem. Armed conflict in Ukraine has led to the formation of a new front—the organization of necessary medical care for cancer patients in a large-scale war. Restoration of an oncological service in a country with a devastated economy will be directly associated with the entire public health system reconstruction. After the end of active hostilities, it will be necessary to study the impact of military conflict on cancer-associated risk, morbidity, and mortality on the population that survived the war.

Through the evaluation of the experiences of countries that have gone through military conflicts, it seems that one highly important task to reduce oncological morbidity and mortality in the country is the development of state programs for the

prevention, screening, and early diagnosis of cancer. The unified efforts of all countries, their government and public organizations, charitable foundations, patient organizations, and commercial enterprises are necessary to achieve this. The post-war period in our country may last for many years and, undoubtedly, international support will be required for the reconstruction of Ukraine. The long-term medical and scientific impact will be studied in the years to come.¹⁰

Every patient has the right to live and every patient has the right to medical care.

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REFERENCES

1. Cancer in Ukraine 2020-2021: incidence, mortality, prevalence and other relevant statistics. Bulletin of the National Cancer Registry of Ukraine. Vol. 23. Accessed January 1, 2022. http://www.ncru.inf.ua/publications/BULL_23/index_e.htm
2. Zamorano JL, Lancellotti P, Rodriguez Munoz D, et al. 2016 ESC position paper on cancer treatments and cardiovascular toxicity developed under the auspices of the ESC Committee for Practice Guidelines: the Task Force for Cancer Treatments and Cardiovascular Toxicity of the European Society of Cardiology (ESC). *Eur Heart J*. 2016;37:2768-2801. <https://doi.org/10.1093/eurheartj/ehw211>
3. Kozhukhov S, Dovganych N, Smolanka I, Lyhyrda O. Cardio-oncology in Ukraine: experience at Strazhesko institute of cardiology. *Onco Rev*. 2018;8:65-69. <https://doi.org/10.24292/01.OR.120918>
4. Kozhukhov S, Dovganych N. Cardio-Oncology Educational Program: national survey as the first step to start. *Front Cardiovasc Med*. 2021;8:697240. <https://doi.org/10.3389/fcvm.2021.697240>
5. Kozhukhov S, Dovganych N, Smolanka I, et al. Cardiotoxicity risk prediction in breast cancer patients. *Probl Radiac Med Radiobiol*. 2021;26:498-512. <https://doi.org/10.33145/2304q8336q2021q26q498q512>
6. BBC News. How many Ukrainians have fled their homes and where have they gone? Accessed April 7, 2022. <https://www.bbc.com/news/world-60555472>
7. Fontanarosa P, Flanagan A, Golub R. Catastrophic health consequences of the war in Ukraine. *JAMA*. 2022;327(16):1549-1550. <https://doi.org/10.1001/jama.2022.6046>
8. Russia's war in Ukraine is killing cancer care in both countries. *BMJ*. 2022;376:o701. <https://doi.org/10.1136/bmj.o701>
9. ECO-ASCO Special Network. Impact of the War in Ukraine on Cancer. European Cancer Organization. Accessed April 6, 2022. <https://www.europeancancer.org/topic-networks/20:impact-war-in-ukraine-on-cancer.html>
10. Biondi-Zoccai G, Pirlamarta P, Sabouret P, et al. Cardiovascular scholarly challenges following the Russian invasion of Ukraine. *Minerva Cardiol Angiol*. Published online March 28, 2022. <https://doi.org/10.23736/S2724-5683.22.06102-6>

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