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Cancer Medicines Shortages in Surrounding Countries During the War in Ukraine

Results from a pilot survey by the European Society of Oncology Pharmacy (ESOP) and the Special Network on the Impact of the War in Ukraine on Cancer

Acknowledgements

This report was jointly produced by the European Society of Oncology Pharmacy (ESOP) and the European Cancer Organisation (ECO), with input and support from the European Society for Medical Oncology (ESMO). It is based on the data retrieved by the 'drug shortage monitor' study conducted by ESOP on the impact of the war in Ukraine on the healthcare system in the countries surrounding Ukraine. This study made use of the list of medicines developed by ESMO and ESOP as part of the ESMO and ESOP surveys on the accessibility and availability of anti-cancer medicines.[1,2]

The report was created in support of the work conducted by the Special Network on the Impact of War in Ukraine on Cancer.

We would like to express our kindest gratitude to all the pharmacists across Europe who gave of their time to reply to the survey. This is especially appreciated knowing how time-pressured the daily pharmacy environment is. The pharmacist contributions to the survey have created a unique early picture on the impact of the war in Ukraine on cancer medicines shortages that could not have been achieved otherwise. The European Society of Oncology Pharmacy, the European Cancer Organisation and our partners commit to ensuring the intelligence revealed is rapidly shared with the relevant decision-makers guiding response to the ever-evolving situation.

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Foreword

Background

Following the invasion of Ukraine by Russia on 24 February 2022, it is estimated that **12 million Ukrainian citizens have been displaced**, of which **six million have fled the country**. Most of the refugees reached neighbouring countries: up until to 13 May 2022, United Nations High Commissioner for Refugees (UNHCR) numbers suggest 3.2 million refugees have arrived in Poland, 895,828 refugees in Romania, 583,066 refugees in Hungary, 459,546 refugees in the Republic of Moldova and 409,527 refugees in Slovakia.[3]

Among those leaving the country, a population of particular concern is **cancer patient refugees**, namely refugees who were previously receiving treatment for cancer. Health systems in hosting countries are now trying to take responsibility for them by continuing their care. This unexpected influx of new patients represents a significant additional pressure for cancer centres and hospitals across the region, potentially exacerbating pre-existing gaps in national health systems' resilience. This includes but is not limited to **shortages of medicines, shortages of medical equipment, lack of hospital beds and workforce gaps**.

Scope of the Survey

To better quantify this issue, the **European Society of Oncology Pharmacy (ESOP)** launched and completed a pilot study in collaboration with the **European Cancer Organisation (ECO)**. The survey has collected data from Ukraine's neighbouring countries and other affected Eastern European countries. It aims to determine the **consequences of the displacement of Ukrainian cancer patients** to clinical facilities, with a specific focus on **shortages of anti-cancer drugs. Shortages of anti-cancer drugs** are of critical importance, as they lead to sub-optimal treatment for cancer patients in hospitals and become an economic burden for the health system. In fact, studies have shown that drug shortages could cause excess spending, for example as hospitals might resolve to buy additional supplies of the medication that is lacking, or to look for more expensive alternatives of the same drug. Moreover, drug shortages could turn into additional labour costs associated with managing the dearth of certain medications. It has been shown that in the United States, these labour costs associated with managing shortages amount to $216 million annually.[4]

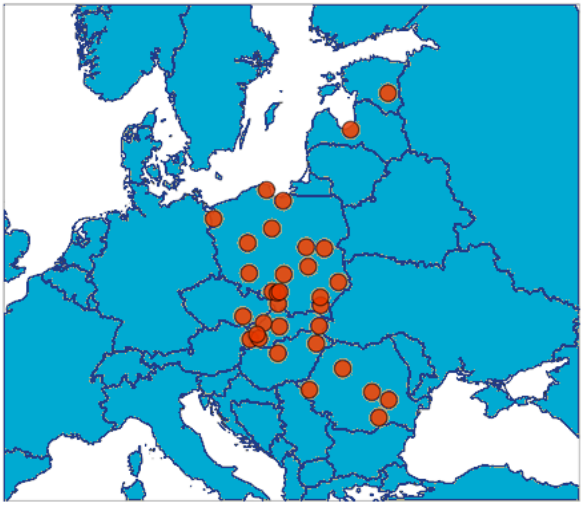
With respect to cancer care, delays and interruptions to chemotherapy treatment caused by medicines shortages can also be highly distressing for patients, their families, their carers and healthcare professionals, as curative treatment often requires a precise treatment regimen with no disruption of dosing schedules. Furthermore, cancer medicines affected by shortages often have few or no proven effective alternatives. The ESOP survey was designed to discover the extent to which the war in Ukraine has exacerbated shortages in neighbouring countries and, in so doing, help provide accurate intelligence to inform the most appropriate intervention.

Methodology

An online survey was developed using the survey tool Lamapoll (Lamapoll, Berlin, Germany). The survey consisted of four general demographic questions (country and city of origin, name of the hospital and profession of the respondent), followed by a general question regarding the number of Ukrainian patients with cancer under treatment in the hospital of the respondent. Next, four questions on drug shortages were posed, where the respondents were asked to indicate whether or not they experienced drug shortages in one of the following classes of drugs necessary to treat patients with cancer: anti-cancer drugs, pain medication, anesthetics, supportive drugs. This study made use of the list of medicines developed by ESMO and ESOP as part of the ESMO and ESOP surveys on the accessibility and availability of anti-cancer medicines.[1,2]

If there was a shortage, the respondent was asked to indicate for which type(s) of drugs. The survey ended with an open question inviting the participant to submit any comments regarding their experiences in treating refugee patients with cancer.

Figure 1. Map with respondents' locations



Before distribution, the questionnaire was validated by three independent pharmacists from three different countries on content and language. The link to the survey was sent to the ESOP country delegate of the countries surrounding Ukraine (including the Baltic states), asking them to forward the survey to their national colleagues, indicating that one response per hospital was needed.

Results

Respondents' Locations

The present survey was conducted between **31 March and 13 April 2022**. Data were collected from hospitals in countries neighbouring Ukraine concerning cancer patient refugee influx and medicine supplies. In total, **46 hospital pharmacists** from seven countries participated in the survey. The countries included in the survey were Estonia, Czech Republic, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, and Slovakia. We received responses from **Poland** (23 respondents), **Romania** (eight respondents), **Hungary** (six respondents), **Slovakia** (six respondents), **Latvia** (four respondents), **Czech Republic** (one respondent) and **Estonia** (one respondent) (Figure 1). The higher response rates received from Poland, Romania,

Hungary and Slovakia, reflect the trend of the migratory wave as of 5 May 2022, where Poland, Romania, Hungary and Slovakia are among the countries with the highest refugee influx from Ukraine, as per the data from UNHCR.[3]

Number of Ukrainian Cancer Patient Refugees

Although not all the respondents of the survey could provide an estimate of the number of Ukrainian cancer patient refugees that had shown up at their hospitals, a total of 23 respondents (50%) gave an estimate of the cancer patients that they provided support to, which **ranged between zero and 50 (mean = 10) refugees**, with an average of six refugees per facility. Notably, 21% of the respondents indicated that they were hosting ten or more cancer patient refugees at their facilities at the time of the survey (Table 1).

Shortages

In countries receiving the most refugees and people in need from Ukraine due to the ongoing war, supplies of anti-cancer drugs might be impacted. Disruptions might occur due to higher demands for drug supplies due to the arrival of new patients requiring cancer medicines. This might be especially true for countries which already had lower levels of drug supplies. Shortages of drug supplies are particularly harmful, as they could disrupt the overall medical supply chain, having consequences for both local cancer patients and refugees.

Table 1. Number of Ukrainian cancer patient refugees hosted by each respondent

NUMBER OF REFUGEES	NUMBER OF RESPONDENTS	PREVALENCE
0	8	34.78%
1	3	13.04%
2	1	4.35%
3	1	4.35%
4	2	8.70%
5	2	8.70%
6	1	4.35%
7	1	4.35%
8	1	4.35%
9	1	4.35%
10	1	4.35%
Total	23	100%

Shortages of anti-cancer drugs

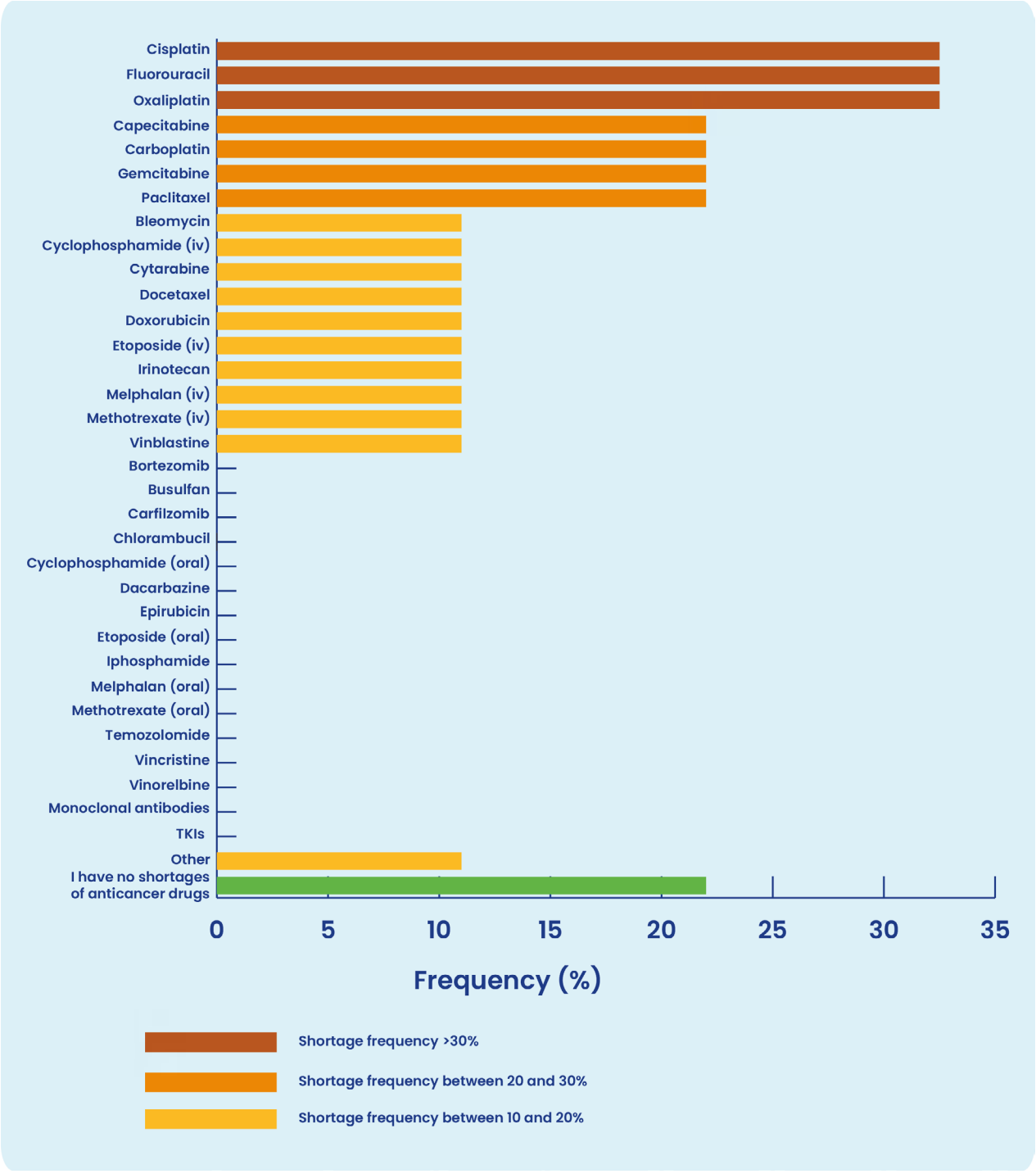
Respondents who indicated shortages in anti-cancer drugs were located in Hungary, Latvia, Romania and Poland. Remarkably, these four countries in which medicines shortages were reported are from the EU area: **Latvia**, where 100% of respondents reported medicines shortages, **Hungary** (80% medicines shortages), **Romania** (40% medicines shortages) and **Poland** (28% medicines shortages) (Table 2).

Overall, at the time of the survey, 36% of the hospitals involved in the survey reported shortage of medications used to treat cancer. The anti-cancer drugs which are most in short supply are: **Oxaliplatin, Fluorouracil, Cisplatin** (33% of the respondents, three respondents each) followed by Gemcitabine, Carboplatin, Capecitabine, Paclitaxel (22% of respondents, two respondents each) and by Cyclophosphamide (iv), Cytarabine, Docetaxel, Doxorubicin, Etoposide (iv), Irinotecan, Melphalan (iv), Methotrexate (iv), Vinblastine (11%, one respondent each). A single respondent indicated shortages of Calcium folinate. No shortages of Monoclonal Antibodies or Tyrosine Kinase Inhibitors were reported.

Table 2. Medicines shortages by country of the respondents

COUNTRY	NUMBER OF RESPONDENTS	HOSPITALS WITH MEDICINES SHORTAGES (%)
Czech Republic	1	0
Estonia	1	0
Hungary	6	80
Latvia	4	100
Poland	23	28
Romania	8	40
Slovakia	6	0

Figure 2. Shortages of anti-cancer drugs



Notably, most shortages of anti-cancer drugs identified are shortages of inexpensive classical cytotoxic drugs, available as generic medicines (Figure 2). Moreover, if we compare shortages of intravenous medicines with shortages of oral medicines, it emerges that intravenous drugs are those mostly affected. Oxaliplatin, fluorouracil, cisplatin are all administered intravenously, and most of the respondents reported shortages of Cyclophosphamide (iv), Melphalan (iv), Methotrexate (iv), Etoposide (iv) as opposed to shortages of the oral version of the same drugs.

Shortages of pain medication

The majority of respondents reported no shortages of pain medication (62.5%, five respondents). However, two respondents reported shortages of Acetaminophen, while two other reported shortages of intravenous opioids (representing 25% of the respondents each).

Shortages of anaesthetics

Overall, the majority of respondents reported no shortages of anaesthetics (75%, six respondents). Among those who reported shortages, there were two who reported shortages of Midazolam, and one reported shortages of Polstigmin.

Shortages of supportive medication

Overall, the majority of respondents reported no shortages of supportive medication (75%, six respondents). However, a single respondent reported shortages of oral 5HT3 antagonist.

Discussion

Overall, this pilot survey has indicated that the refugee crisis has taken a significant toll on. hospitals treating cancer patients and on the health systems in Ukraine's neighbouring countries. The number of respondents per country reflected the intelligence concerning the refugee influx.

Countries that received the highest number of overall refugees from Ukraine were also those from which we received most responses. When it comes to cancer medicines shortages, Latvia and Hungary were the two countries where most facilities reported shortages, with 100% of the facilities in Latvia reporting medicines shortages and 80% of Hungarian facilities. Poland and Romania also reported shortages in cancer medicines. Interestingly, the anti-cancer drugs most lacking were inexpensive classical cytotoxic medicines, meaning that shortages of medicines might not be related to drug cost. Additionally, from this pilot survey, it appears that the drugs mostly lacking were those administered intravenously, which might indicate a link to the method of administration of the drug.

Future steps

Given the results from the present survey on medicines shortages, it appears of the utmost importance to follow-up this pilot survey with a more extensive and more layered survey, in order to gather additional information on medicines shortages, and broader impacts of the Ukraine war on multidisciplinary cancer services. Given that the most recent data on the refugee influx from Ukraine show a reduction in numbers, it is important to gather data on the evolution of medicine supplies, in order to see if shortages might follow the same trend and reduce in future months or if, on the contrary, the problem will persist or even increase. Capturing an up-to-date picture of the situation and acting promptly will help manage and contain possible consequences on healthcare systems and, most importantly, on the lives of cancer patients.

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Policy Message

The findings of the ESOP survey indicate that, in order to support the welfare and care needs of Ukrainian cancer patient refugees, as well as other users of the health services in the countries neighbouring Ukraine, attention must be paid to the issue of medicines shortages. This should include regular public reporting on the extent of shortages.

The findings also indicate that special attention may be required in particular for generic medicines supply chain shortages, given the consistent reporting of such shortages across countries neighbouring Ukraine.

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As the not-for-profit federation of member organisations working in cancer at a European level, the European Cancer Organisation convenes oncology professionals and patients to agree policy, advocate for positive change and speak up for the European cancer community.

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