

The analysis of the challenges brought about by the war in Ukraine for pediatric healthcare

INTRODUCTION

Russian invasion to Ukraine started on the 24th of February 2022¹ has created the biggest refugee crisis within Europe since the 2nd World War. It is estimated that 5,186,744 Ukrainians were forced to leave their homes.² 2,899,713 of people searched for protection in Poland³ and the others moved to: Hungary, Moldova, Slovakia, but also other European countries. It is estimated that 90% of the refugees are children and women, which presents a challenge to the pediatric healthcare system in Poland and other Schengen countries. The purpose of this study was to mark the potential challenges to be faced on the basis of the 1,5-month experience of working with Ukrainian refugees in the public hospital in Krakow, one of the cities that received the highest number of refugees during the conflict.

MATERIAL AND METHODS

We performed a retrospective analysis of the records of refugees admitted to the emergency department of St. Louis Children's Hospital, a public hospital located 600 meters from Krakow's main train station between February 24 and March 31, 2022. The reason for admission, admission to the inpatient service, the presence of chronic diseases, and the vaccination status were analyzed. The admission of refugees contributed to about 10% of all admissions to our hospital in this period of time.

RESULTS

During the first five weeks of war we admitted 237 children (130 females, 107 males) in the mean age of 55 months [0.3; 218]. 33% of the patients present in the emergency department with respiratory tract complaints (mainly upper respiratory tract infections or pneumonia), 46% with gastrointestinal tract complaints (mainly diarrhea), 1% with neurological

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ABSTRACT

Introduction: The Russian invasion to Ukraine, which started on February 24, 2022, has created the biggest refugee crisis within Europe since the Second World War. The purpose of this study was to mark the potential challenges to be faced on the basis of the 1,5-month experience of working with Ukrainian refugees in the public hospital in Krakow, one of the cities that received the highest number of refugees during the conflict.

Materials and Methods: A retrospective analysis of the records of refugees admitted to the emergency department of St. Louis Children's Hospital, a public hospital located 600 meters from the Krakow main train station between February 24 and March 31, 2022. **Results:** During the first 5 weeks of war we admitted 237 children (130 females, 107 males) in the mean age of 55 months [0.3; 218]. 33% of the patients present in the emergency department with respiratory tract complaints (mainly upper respiratory tract infections or pneumonia), 46% with gastrointestinal tract complaints (mainly diarrhea), 1% with neurological system complaints (epilepsy), 1% with allergies (acute urticaria), 5% had fever of unknown origin, 19% had other causes of admission. Chronic diseases with which the patients were admitted were mitochondrial myopathy, epilepsy, cystic fibrosis, type 1 diabetes, mucopolysaccharidosis, arrhythmia, juvenile rheumatoid arthritis, Gaucher's disease, asthma, severe atopic dermatitis, status after heart transplant or osteogenesis imperfecta. 8% of patients have not been vaccinated by parental choice.

Conclusions: Although in the first weeks of war, children who fled Ukraine appeared mainly with acute illnesses, as the conflict continues, pediatricians in Europe will have to accept the challenge of continuing care for chronically ill patients with Ukraine, as well as prepare to face an unexpected number of traumatized patients. Several vulnerabilities in the field of infectious diseases among Ukrainian refugees should also be noted.

KEYWORDS

war, Ukraine, childcare, healthcare

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system complaints (epilepsy), 1% with allergies (acute urticaria), 5% had fever of unknown origin, in 19% there were other causes of admission. In 5 cases, we had to admit the apparently healthy sibling of the other patient to the hospital because the caregiver was unable to care for them while staying in the hospital with their other child. 97 (41%) of the patients required hospitalization. 8% of the patients had a chronic disease that was a main cause of admission or was complicating the picture of the current disease. These included mitochondrial myopathy, epilepsy, cystic fibrosis, type 1 diabetes, mucopolysaccharidosis, arrhythmia, juvenile rheumatoid arthritis, Gaucher disease, asthma, severe atopic dermatitis, status after heart transplant or osteogenesis imperfecta. 8% of the patients have not been vaccinated by parental choice, however, in many cases the physician relied on the parental declaration because the documentation was missing.

DISCUSSION

Most of the patients admitted to our services in the first 5 weeks of war required only conservative management of simple childhood diseases. On the other hand, a significant number of patients with chronic conditions entered the Polish healthcare system seeking introduction or continuation of treatment. Based on the experience of these 5 weeks and the literature data we would like to point several challenges, noticeable also in the small, but representative population of our patients that need to be faced by Poland and other European countries in the upcoming months.

INFECTIOUS DISEASES

Several vulnerabilities to infectious diseases among people fleeing Ukraine were identified and described in the document published in April 2022⁴.

Ukraine is a country characterized by a high prevalence of tuberculosis (TB). The estimated incidence of tuberculosis is 73 per 100,000 population, compared to 9.5 per 100,000 in the European Union (EU)⁴. Furthermore, due to historical reasons⁵ former Soviet Union countries are considered high risk for multidrug resistant TB, Ukraine reporting more than 1/3 of bacteriologically confirmed pulmonary TB cases being multidrug resistant⁶⁻⁸. The incidence of TB among children in Ukraine is thought to be low⁹, however migrants are considered a group of increased risk of TB development due to poor nutrition and general health status, reduced access to adequate healthcare and overcrowded temporary living conditions¹⁰. The European Center for Disease Prevention and Control (ECDC) and the World Health Organization (WHO) in a

report published in April 2022 recommend screening Ukrainian migrants for TB only in risk groups (such as HIV infection or confirmed household contact with TB case) and preventive treatment in selected clinical situations⁹. None of our patients met the criteria for TB screening or preventive treatment, however, these cases are certainly to be observed in the upcoming months.

High rates of antimicrobial resistance (AMR) are reported in Ukraine, particularly in gram-negative bacteria⁴. People, especially those with recent contact with healthcare facilities in the home country are at high risk being colonized with antibiotic-resistant bacteria¹¹. In concordance with ECDC guidelines⁴ we implemented a screening process for AMR for all patients who fled Ukraine admitted to the inpatient services to identify risk and introduce preventive procedure. One patient with mitochondrial myopathy was identified to be a carrier of The New Delhi metallo-beta-lactamase-1 (NDM-1) producing *Escherichia coli* and contact isolation was implemented.

According to data from 2020 85.9% of children aged 12-23 months were immunized against measles, which is a nearly three-fold increase compared to 30.6% observed in 2015¹². The measles epidemic in 2019, when nearly 60000 measles were detected among children, contributed to this situation. However, immunity against other diseases among children in Ukraine is still below the European mean, with 78.1% being vaccinated against diphtheria, pertussis, and tetanus (DPT)¹³ 77% being immunized against hepatitis B¹⁴ and only 78.3% being immunized against poliomyelitis¹⁵. In our sample we detected relatively low incidence of unvaccinated children. However, we relied upon the parental declaration only in most cases and the language barrier might have effected medical history taking. Additionally, the practice of buying false vaccination certificates was previously described in Ukraine¹⁶. Therefore, according to ECDC guidelines⁴, we prepared our Immunization Center for an increasing number of patients who might need to be seen in the facility.

Ukraine is considered a country of relatively high prevalence of hepatitis B and C, with an incidence of 1.3% and 2.7%, respectively¹⁷. The incidence of HBV among young children appears to be low 0.29% (0.23 - 0.35) no data are available on the incidence of HCV in the pediatric population. In our hospital we decided to introduce screening patients from Ukraine admitted to the inpatient services for HCV (anti-HCV antibodies) and HBV infection (HbS antigen). HCV or HBV cases have not been detected so far.

Human immunodeficiency virus (HIV) infection remains an important consideration in Ukraine. Ukraine has the

second highest HIV prevalence in the WHO European Region: 37.5 per 100,000 population compared to the EU rate of 3.3 per 100,000 population¹⁸. Although the indicators of mother-to-child HIV transmission decreased in the past 10 years (the number of new diagnoses in children infected through mother-to-child transmission decreased by 46%, from 523 in 2011 to 285 in 2020, representing 1.1% of all new HIV diagnoses in 2011 and 0.7% in 2020)¹⁸ HIV infection must be considered among children who fled Ukraine with the relevant symptoms. We performed HIV testing for all children presenting with FUO and other symptoms that might suggest HIV infection, however we have not detected any patient with HIV.

CHRONIC DISEASES

For the last 10 years, the Ukrainian government has attempted to apply serious reforms to the healthcare system. However, many problems remain unsolved such as inequality in access to medical services based on geographical and social factors, corruption, inconsistency of healthcare policies, and outdated infrastructure¹⁹. The healthcare expenditure of Ukraine (7,1% GDP)²⁰ was still below the EU mean, however it exceeded those in many countries including Poland. Therefore it can be expected that the treatment for chronic diseases available in most European countries was available in Ukraine before the war, although not all patients might have had access to it.

In 2019 in Ukraine there were 41 national programs that were fully funded with public funds or co-funded by international organizations (UNDP, Crown agents, UNICEF)²¹. The Ministry of Health approved clinical protocols for the treatment of mucopolysaccharidosis, Gaucher's disease, epidermolysis bullosa, cystic fibrosis, phenylketonuria, Wilson's disease²¹. Patients with mucopolysaccharidosis, cystic fibrosis and Gaucher's disease in our sample were treated with protocols that correspond to European standards. We continued the treatment according to Polish regulations.

PSYCHIATRIC, NEURODEVELOPMENTAL AND SOCIAL PROBLEMS

The patients included in our sample fled Ukraine relatively early and most of them have not faced the war itself. Therefore, we have not observed severe psychiatric disturbances among them. However, many disorders, including posttraumatic stress disorder (PTSD), can develop up to 6 months after a traumatic event²². The

unusual cruelty with which Russian soldiers treat civilians in Ukraine makes us think that this generation of Ukrainian children will face an immeasurable number of psychiatric problems. We applied a screening process based on the validated tool²³ and provided a training for the personnel to effectively diagnose post-traumatic symptoms. It should be noted that many of these can appear as somatic complaints such as abdominal pain or diarrhea / constipation, as well as eating disorders, and the psychological impact must be taken into account when diagnosing a war refugee²⁴.

In Ukraine before the war there were approximately 100 000 children age 0-18 years without parental custody. The Ukrainian system of foster care has not been revised since the soviet times and is based on institutional care in which up to several hundred children of different age live together and one caregiver is assigned to 15 children²⁵. This model of care increases the risk of attachment disorders, trauma and violence²⁶. An unknown number of these children have intellectual or physical disability, fetal alcohol spectrum disorders, autism, or other neurodevelopmental disorders. It can be assumed that their problems have not been addressed properly. A large number of these children have been placed in European countries including about 4000 Ukrainian orphans who found shelter in Poland. The legal regulations do not let European countries introduce these children into the local foster/adoption systems, however, their medical and psychological needs are to be met urgently²⁷.

SUMMARY

The sudden influx of a very large number of people has put the Polish healthcare system under unexpected pressure. Although indispensable legal regulation was introduced rather early, there are issues that Polish healthcare professionals have been facing until now.²⁸ One of these matters is undoubtedly the presence of Polish-Ukrainian interpreters and the responsibility of covering the costs of their employment. The Polish Ministry of Health has accelerated the path of the recognition of diplomas and licenses to practice of Ukrainian medical professionals; however, these new employees will not solve the problem especially in small medical offices and provincial hospitals. The challenges faced by Polish and other European pediatric care systems as a consequence of the current refugee crisis will encompass not only the continuation of care for chronically ill patients and control of transmissible diseases, but also psychiatric care and the fulfillment of educational and social needs of war-torn children.

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KEY POINTS

- ▶ A large number of new pediatric patients entered European healthcare systems due to the war in Ukraine.
- ▶ Patients who fled Ukraine could be vulnerable to several communicable diseases.
- ▶ Continuation of treatment of chronic illnesses of children who fled Ukraine as well as assessment of /psychological needs should be prioritized.