

Measles: a new danger for Ukraine's children! The need for an effective and timely vaccination prevention campaign for an insidious disease that comes from afar

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Summary

Background. Measles, a highly contagious and dangerous disease that can cause disability or even death, remains endemic in Ukraine. This is a serious public health problem that absolutely needs to be monitored. Indeed, in the years 2017-2019, Ukraine was hit by a major measles epidemic, which caused serious problems for the population. The numerous efforts to contain the spread of measles in the country are now waning in the face of a devastating war, which has already lasted for over a year, and the COVID-19 pandemic, which has further complicated the general situation.

Method. In this paper, the authors highlight a very serious public health problem and invoke the immediate implementation of an effective vaccination policy.

Discussion. The percentages of measles vaccination coverage in Ukraine have decreased drastically since the beginning of the conflict (which began on February 24, 2022), and this is a source of

concern regarding the possibility of a new major measles epidemic. Indeed, a measles epidemic at this time would have frightening consequences, given the conditions in which the Ukrainian population is now living. The United Nations estimates that at least 6 million people have been displaced within Ukraine as a result of the conflict, and this internal mass exodus has significantly affected vaccination coverage and adherence to vaccination schedules, despite the efforts of the Ukrainian health authorities.

Conclusion. The ministry of health has prioritized vaccination programs with the help of the World Health Organization (WHO) and UNICEF, which are ensuring the free supply and delivery of vaccines through the deployment of mobile vaccination teams, even in areas where health facilities are not accessible. The main objective is to vaccinate as many people as possible in order to avoid a new epidemic, which could spread to the whole of Ukraine and also to other countries.

Introduction

The war that has been devastating Ukraine for over a year has not only caused death and destruction; it has also undermined the possibility to provide acceptable healthcare for the civilian population.

Ukraine is currently facing a double challenge with a severe and significant high risk of measles outbreaks.

On the one hand, the country struggles with low immunization coverage, leaving a significant portion of the population susceptible to the highly contagious measles virus.

On the other hand, the ongoing war scenario certainly complicates efforts to contain the disease, promoting the rapid spread of measles.

The most fragile and vulnerable subjects are children. Indeed, the thousands of Ukrainian children who have fled their homes cannot receive vital vaccines to protect them against diseases such as poliomyelitis [1], diphtheria, measles and other diseases, which threaten their lives as much as the bombs that continue to fall on their cities [2].

In March 2023, UNICEF delivered 35,200 doses of combined measles, mumps and rubella vaccines (MMR) free of charge to Ukrainian authorities as humanitarian aid

to support the National Immunization Program [3] and, in particular, to provide catch-up vaccination for children who have missed a dose in the vaccination schedule. The shipment of these vaccines has been brought forward, owing to reports of some confirmed cases of measles in Ukraine, the aim being to avoid the risk of an epidemic of one of the most contagious infectious diseases in the world, whose cases have returned to grow also in Europe and in Italy itself [4, 5]. In addition, in early April, UNICEF provided 543,000 doses of oral polio vaccine and 110,160 doses of inactivated polio vaccine, and by the end of April, 6 large, refrigerated vehicles to transport vaccines [3].

“Measles activity continues to be low in the EU/EEA, but outbreaks have started to occur, e.g. in Austria and Slovakia. In January 2023, a total of nine confirmed cases of measles were reported to TESSy by six EU/EEA countries. On a global scale, cases and outbreaks have been reported in England (UK), Ukraine and India, and are being reported in different WHO Regions (AFRO, PAHO), including the Democratic Republic of the Congo, Republic of Tanzania, South Africa, Canada, and the United States” [6].

Fig. 1. A child with the classic day-4 rash with measles (Public domain image)



Measles in Ukraine: a primed bomb

Measles is an extremely serious and highly contagious disease caused by a virus of the paramyxovirus family; it is normally transmitted through direct contact and through the air.

The crowded living conditions and population displacement resulting from the conflict create an ideal environment for the virus to spread. Insufficient and poor immunization coverage, coupled with a high influx of internally displaced persons and limited access to healthcare, increase the likelihood of measles outbreaks, especially among vulnerable populations such as children, the elderly, and those with weakened immune system. Measles outbreaks can have severe consequences, including complications such as pneumonia, encephalitis, and even death.

As has happened in the past for other epidemic diseases [7, 8], as a result of vaccination campaigns, the number of deaths from measles has declined markedly over the years. Before the introduction of the measles vaccine in 1963, exactly 60 years ago, measles epidemics occurred every 2 or 3 years, and the disease killed about 2.6 million children each year. "Even though a safe and cost-effective vaccine is available, in 2018 there were more than 140,000 measles deaths globally, mostly among children under the age of five" [9].

Measles is endemic in Ukraine, and two major outbreaks have occurred in the last decade. While 105 cases of measles were reported in 2015, and 102 in 2016, the number rose to 4,782 in 2017; the following year saw a surge up to 53,219 cases, and in 2019 the figure increased further, reaching 57,282 (Fig. 3) [10].

Moreover, between 2017 and 2019, more than 115,000

Fig. 2. Lithography of 1912 depicting the different arrangement of the rash in measles and scarlet fever (Private collection).

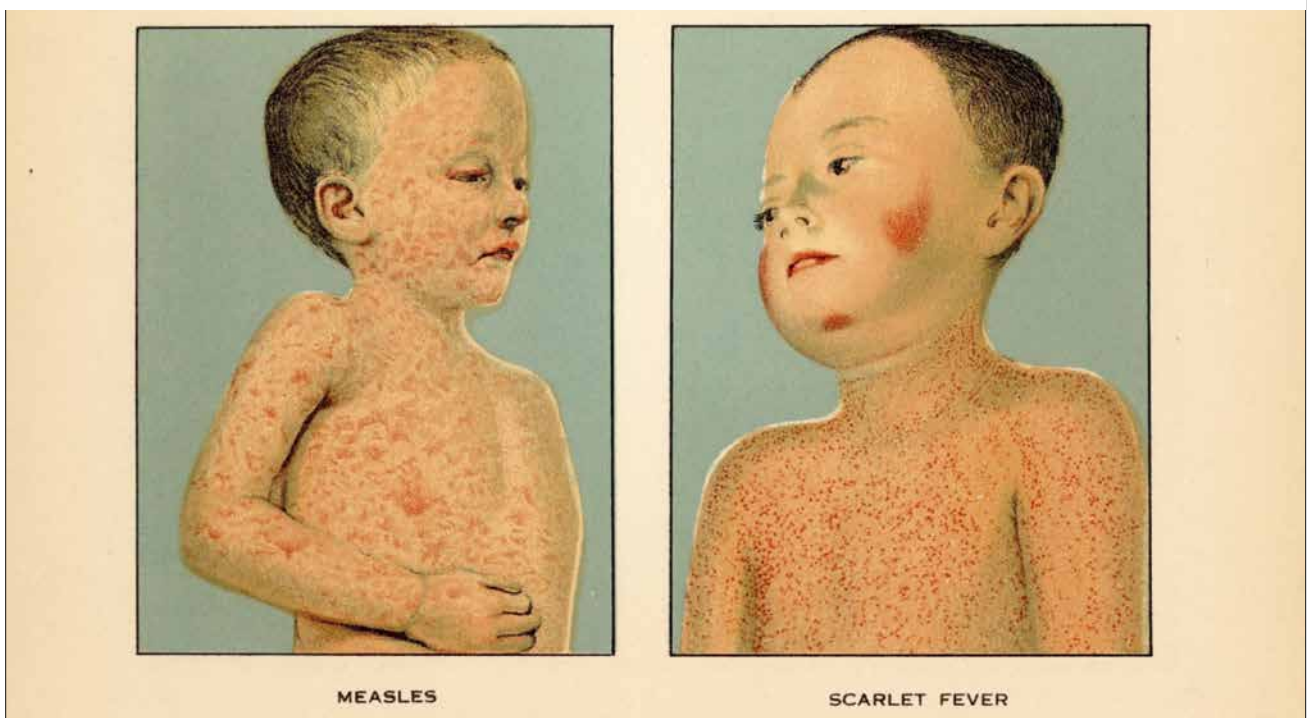


Fig. 3 Measles - Number of reported cases in Ukraine between 2015 and 2021 (Data from World Health Organization - The Global Health Observatory).



people in Ukraine were infected and 41 died [11]. Most of the infections occurred in people who had not been vaccinated or who had not completed their course of vaccination.

This was one of Europe's largest outbreaks in the last 20 years [12]: Professor Andrii Loboda of the Department of Paediatrics at Sumy State University in Ukraine said that 65-67% of those affected were children and 33-35% were adults [13].

Given the current condition of the country and the current insufficient levels of routine vaccination, there is now a high risk that a new epidemic could occur, and this absolutely must be avoided. The consequences this time could be truly devastating for a population exhausted by war, cold, disease and without the possibility of proper treatment.

At the start of the 2017-19 outbreak, measles vaccination coverage in Ukraine was 42%, a figure that was not even half of what the WHO considers necessary for herd immunity (95%) [13]. Vaccination coverage against measles has significantly decreased during the period 2008-2016 from 96% to 45%. This was due partly to shortages in vaccine procurement and partly to widespread vaccine hesitancy [14, 15] on the part of the population and also some healthcare workers [16-18].

Thanks to the efforts of the Ukrainian health authorities, the vaccination coverage rate subsequently reached 88% in 2021. However, owing to the war, this rate fell back to 74% in 2022 [13].

This serious lack of immunization causes significant percentage of vulnerable population.

As a result, there are recurring waves and surges of measles cases in Ukraine, with potentially devastating effects. We also add that displacement, population movement and overcrowded living conditions in affected areas can increase the risks and possibilities of measles transmission.

It is therefore necessary to reschedule vaccinations according to a schedule that includes two doses administered at the age of 12 months and 4-6 years. This is a considerable commitment for a country at war and with health facilities that do not work and partly destroyed. Then we must consider that part of the population is displaced. The situation makes it even more difficult to organize vaccinations, also because there are no reliable data on the number of births in recent years due to COVID-19 pandemic and war. The last certain figure is related to 2019 with 308,817 births in the year compared to 581,114 deaths, with an annual variation of -0.60%, in line with the trend of the years 2017/2019 [19].

The protracted conflict in Ukraine will increase the risk of measles epidemics.

Conclusions and perspectives

The risk of measles epidemics in Ukraine is certainly increased due to low vaccine coverage and the ongoing war scenario. Urgent action is needed to control and fill gaps in immunization coverage in Ukraine and it is important to improve public perception by population, exchange of information, public awareness, and development of public health strategies. All these preventive actions can reduce risk of measles outbreaks. It is therefore necessary now to support Ukraine in the effort to vaccinate at least 95% of the population against measles; only in this way can we interrupt the transmission of the virus and prevent the return of major epidemics [20].

Moreover, it is equally essential to raise public awareness of the risks of this potentially deadly disease. Preventing the spread of measles in Ukraine is extremely important not only for the local population, already exhausted

by more than a year of war, but also for the world's population.

Indeed, in 2021 alone, as a result of COVID-19, wars and unstable political situations, in addition to the phenomenon of vaccine hesitancy, almost 40 million children in the world missed a dose of the measles vaccine: 25 million did not have the first dose and another 14.7 million missed the second dose.

Collaborative efforts between government agencies, healthcare providers, humanitarian organizations, and international partners are crucial to really fight this dual challenge and protect the population from the harmful consequences of measles epidemics.

On the global journey towards achieving and sustaining the elimination of measles, this is a setback that we absolutely cannot afford...! Nor must we forget that measles remains endemic in 18 countries (34%), as does rubella, while 16 countries are endemic for both diseases, one of which is Italy [21].

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Conflict of interest statement

The authors declare no conflict of interest.

Authors' contributions

DO and MM designed the study, conceived, and drafted the manuscript; the authors revised the manuscript, performed a search of the literature. All authors critically revised the manuscript. All authors have read and approved the latest version of the paper for publication.

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