

Russia-Ukraine conflict and COVID-19: a double burden for Ukraine's healthcare system and a concern for global citizens

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ABSTRACT

The conflict between Ukraine and Russia significantly influences the healthcare sector. The ongoing COVID-19 pandemic and the armed conflict have badly devastated the established healthcare system. Only 36.08% of the Ukrainian population has received the COVID-19 vaccination, with the majority receiving two doses, and currently, Ukraine records the highest mortality rate in the world. In addition to the conflict injuries, increased susceptible deaths to COVID-19 can be found due to inadequate vaccination rates for the disease. To save their lives and for their well-being, many individuals have been relocating to the underground metro stations, other cities, nearby towns and countries. In these settings, social distancing, hand sanitation and wearing masks are not prioritised. In the current circumstances, the broken healthcare system needs to be rebuilt, and the Non-Governmental Organizations (NGOs), doctors and all the front-line workers should extend their humanitarian support to the Ukrainian population. Conclusion: It is an arduous task for healthcare organisations to supply vaccines and medicines in this 'armed conflict' between Russia and Ukraine. This can only happen when both parties extend their support to rebuild the shattered healthcare infrastructure.

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INTRODUCTION

Our history teaches us that conflict frequently ends up as a catastrophic disease and is often a handmaiden of disease. Russian forces have carried out air strikes and seized army posts as they advanced towards key towns such as Kyiv. This confrontation would throw Ukraine's daily operations into disorder, affecting food and water supplies, the education network, sanitation systems, and healthcare facilities. Furthermore, Russia's invasion of Ukraine coincides with the SARS-CoV-2 pandemic. According to Our World in Data estimates, only 36.08% of Ukraine's population has been vaccinated whereas 34.84% of them have completed the initial vaccination protocol, and there has been 27 538 new cases on the 24 of February 2022, the highest number of new cases reported on a single day.¹ The low vaccination rates during the COVID-19 outbreak were still a major concern and they resulted in a Polio outbreak in 2021. Vaccination initiatives had a low response during the COVID-19 outbreak, in the sense that the COVID-19 pandemic had an impact in providing vaccines. So as a result Polio cases started to rise.² Ukraine is currently fighting a dual war against SARS-CoV-2 and the conflict, with the conflict exacerbating the health problems. The WHO, the European Union and other agencies have gathered resources and endowments for Ukraine's population.³ Without a doubt, this support from the international community won't fulfil the entire demands of the people.

With limited flying routes, restrictions on mobility and travel, and unceasing bombardment and gunfire, the supply of vaccinations, medications and food will diminish. As a result, the number of COVID-19 cases is expected to rise as more people seek refuge in closed subway systems and bunkers or migrate to more shielded and safer places. In the past, conflicted regions such as Syria and Afghanistan have served as a sanctuary for disease outbreaks.^{4,5} If this disagreement continues, it will be disastrous for Ukraine's healthcare system.

IMPLICATIONS OF THE RUSSIA-UKRAINE CONFLICT COVID-19 spread, and the Ukrainian healthcare system

Since 2014, Ukraine was already engaged in a confrontation with Russia. And, as is well known, epidemics thrive on conflicts.⁶ As a result, although Ukraine has spent most of its resources defending itself against the Russian invasion, it has become exposed to multiple infectious diseases.⁷

The Russian invasion has wreaked havoc on primary healthcare facilities. Children in conflict zones suffer the most since they do not receive necessary vaccinations. This explains the Ukrainian polio outbreak from 2014 to 2017⁸ and the measles outbreak in 2016.⁹

Ukraine's failure in dealing with COVID-19 is exemplified by the fact that less than 36% of the Ukrainian population has received vaccines. This indicates that Ukraine has one of Europe's slowest immunisation rates.¹⁰ While the number of COVID-19 cases in Ukraine has significantly decreased, public health experts warn that large migrations of people in eastern Europe may result in newer infections.¹¹

Many Ukrainians are now seeking sanctuary in Poland, which has postponed its customary coronavirus quarantine and testing procedures for people fleeing the country. The present humanitarian and refugee crises in eastern Europe will have long-term health consequences, which the coronavirus pandemic will exacerbate.¹¹

Given the close relationship between war and disease, it is plausible to foresee a surge in reported COVID-19 cases as an aftermath of the current escalation of the Russian-Ukrainian conflict. To further complicate the situation in Ukraine, WHO reported that crucial health services such as ambulances are now at risk of getting caught in the crossfire. The consequences of such a major hurdle for patients requiring time-critical interventions in the hospital will be highly disastrous. Not only that, but patients who do make it to hospitals encounter severe constraints such as power outages and oxygen shortages.¹²

Concerns for human rights, food security, and impact on the EU and globally

The consequences of the Russian-Ukrainian conflict has had a negative impact on human rights. The long-term implications of this armed conflict on the protection and promotion of human rights in Ukraine will be profound, resulting in

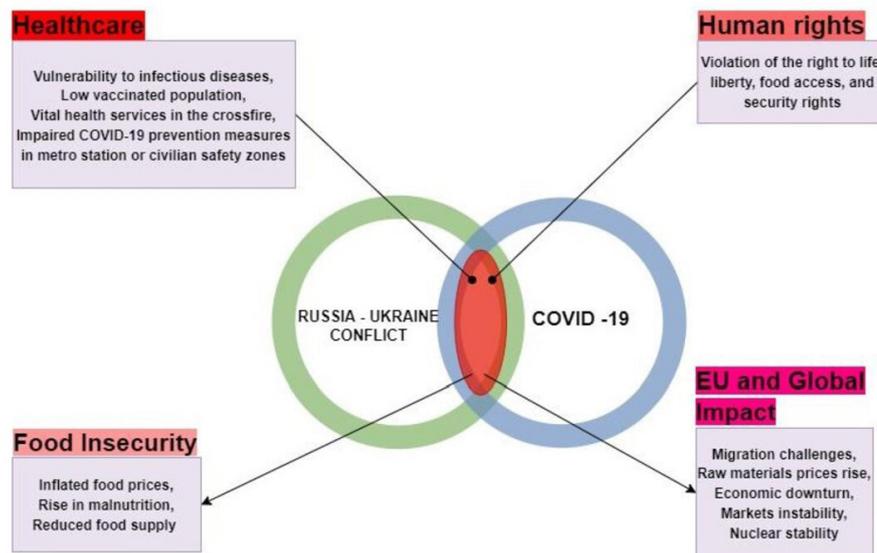


Figure 1 The Russia-Ukraine conflict and COVID-19: double burden for the healthcare system and a concern for global citizens (figure 1 was drawn and analysed by authors AM,¹⁷ OU^{1-3*} and AO¹⁸).

human rights infringements, law violations, forced civilian displacement and environmental destruction. This confrontation is undeniably a violation of human rights to life, liberty and security. Based on the above, further escalation in the Russian-Ukraine conflict raises a severe threat to human rights, including civilian lives, infrastructure and severe food shortage.¹³

The Ukraine crisis, coupled with the ongoing COVID-19 pandemic, threatens global food security and other factors pushing up food prices. Poor crops and huge global demand have reduced grain and oilseed supply, pushing prices to their highest levels since 2011–2013. Moreover, we must not forget that the conflict has directly impacted the local population. This conflict could lead to a migration of 1.5–5 million people in Ukraine, which would lead to a major food crisis and further complications of the problem.¹⁴

Russia’s invasion of Ukraine poses a severe threat to global food security, necessitating a variety of responses from nations and international organisations. However, the situation remains unstable, causing enormous uncertainty in an already chaotic global market.

The Russia-Ukraine conflict affects not just Ukraine, but also European security in general, as well as democracy, freedom, markets, economy and nuclear stability in particular.¹⁵ Unlike during the Cold War, the adversary is not hidden behind a curtain; it is someone from whom you purchase gas and to whom you export high-tech goods. This conflict will put

European economies under strain, increasing the likelihood of an economic downturn, higher energy prices and a migration problem.¹⁶

Furthermore, Russia is a major supplier of oil, gas and raw materials required to keep the world’s industries functioning. Europe imports approximately 40% of its natural gas and 25% of its oil from Russia, which is more liable to inflation and higher gas prices.¹⁷

The exponential rise in prices of gas, wheat and oil, may escalate in a world still recovering from a pandemic. However, the primary effects on the global economic structure may not be apparent until the foreseeable future.

Figure 1 below summarises how the Russia-Ukraine conflict and COVID-19 are becoming a double burden for the healthcare system and a concern for global citizens.

RECOMMENDATIONS

The armed confrontation between these two nations will have economic and geopolitical ramifications and a cascade effect in terms of another wave of COVID-19 infection spread. This might spark another health crisis, particularly in Ukraine, immersed in a direct conflict with Russia. While the number of COVID-19 cases in Ukraine started increasing significantly, public health experts warn that mass migrations of individuals in eastern Europe might result in newer infections of COVID-19 and other infectious diseases of concern.¹¹ According to Our World

in Data estimates, the number of vaccinated people in Ukraine does not surpass 36.08% presently.¹ This is due to the strength of the antivaccination movement in Ukraine. This leads to the response to the question: ‘What is the good of the conflict?’. Conflict is not a universal remedy for pandemic control. Answering this question will lead to the next: ‘What we can do in this situation?’.

The main recommendation is to prepare for the anticipated infectious illnesses that may impact army personnel and civilians. Primary resources include standard medical facilities such as medications, equipment, and medical military personnel and a combat support hospital with intensive care capacity. Once all of this is in place, military personnel can be educated on the many types of communicable diseases, available vaccinations, and how to avoid and treat them. Civilians can adopt a similar strategy that focuses on preparedness, education, personal protective measures, immunisations, chemoprophylaxis and surveillance.¹⁸⁻²²

What needs to be more specific for citizens are the standard precautions required to protect themselves from the virus, which include:

- ▶ They should be provided with appropriate facilities and consumables for COVID-19 precautions. This includes face masks, water and soap for better hygiene.^{23 24}
- ▶ Additional housing and spaces must allow distancing, especially during sleeping hours. Separate rooms for individuals from the same family should be provided.
- ▶ Encouraging citizens to get COVID-19 vaccination and other vaccines will be very helpful to fight against other outbreaks such as cholera, measles, polio and pneumonia in Ukraine.^{25 25-28}
- ▶ Although it is hard, returning peace to the land where army conflict is happening would allow people to return to their homes peacefully to practice the precautions adequately.²⁹

CONCLUSION

The Russia-Ukraine conflict would result in a global economic crises including raised food and fuel costs in the near future. Therefore, we call for the strict observance and respect of international law, including the laws of conflict relating to protecting civilian populations and the immediate cessation of hostilities and restoring the Ukrainian people’s ability to exercise all of their fundamental rights without external

interference. Moreover, the conflict of war and the COVID-19 pandemic have massively burdened the healthcare system, and presently the whole world needs to raise its helping hands and provide health resources to the fullest in terms of health education, vaccines and food supplies.

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Contributors OU: conceptualisation, project administration, writing-review and designing. HO: reviewed and edited the first draft. All authors: collection and assembly of data, data analysis and interpretation, manuscript writing, final approval of the manuscript. Figure 1 was drawn and analysed by AM, OU and AO.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Not applicable.

Ethics approval Not applicable.

Provenance and peer review Not commissioned; internally peer reviewed.



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To cite Uwishema O, Sujanamulk B, Abbass M, *et al.* *Postgrad Med J* Epub ahead of print: [please include Day Month Year]. doi:10.1136/postgradmedj-2022-141895

Received 3 May 2022
Accepted 14 May 2022

Postgrad Med J 2022;0:1–3.
doi:10.1136/postgradmedj-2022-141895

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REFERENCES

- 1 Coronavirus Pandemic (COVID-19) - Our World in Data, 2022. Available: <https://ourworldindata.org/coronavirus#explore-the-global-situation> [Accessed 10 Apr 2022].
- 2 UNICEF Welcomes Ukraine's Plan to Stop Polio Outbreak. Available: <https://www.unicef.org/ukraine/en/press-releases/unicef-welcomes-ukraines-plan-stop-polio-outbreak> [Accessed 28 Feb 2022].
- 3 World Health Organization. WHO is working day and night to keep medical supply chains open and preserve Ukraine's health system, 2022. Available: <https://www.euro.who.int/en/media-centre/sections/press-releases/2022/who-is-working-day-and-night-to-keep-medical-supply-chains-open-and-preserve-ukraines-health-system>
- 4 Sharara SL, Kanj SS. War and infectious diseases: challenges of the Syrian civil war. *PLoS Pathog* 2014;10:e1004438.
- 5 Gayer M, Legros D, Formenty P, *et al.* Conflict and emerging infectious diseases. *Emerg Infect Dis* 2007;13:1625–31.
- 6 Jedwab R, Khan AM, Russ J, *et al.* Epidemics, pandemics, and social conflict: lessons from the past and possible scenarios for COVID-19. *World Dev* 2021;147:105629.
- 7 European Centre for Disease Prevention and Control. *Operational public health considerations for the prevention and control of infectious diseases in the context of Russia's aggression towards Ukraine*. Stockholm: ECDC, 2022.
- 8 Polio outbreak Ukraine report 2015-2016 | the polio network. (2017). Available: <https://www.cominit.com/polio/content/polio-outbreak-ukraine-report-2015-2016> [Accessed 10 Apr 2022].
- 9 Wadman M. Measles epidemic in Ukraine drove troubling European year. *Science* 2019;363:677–8.
- 10 Associated Press. With Europe's second-worst vaccination rate, Ukraine suffers COVID surge | Euronews, 2021. Available: <https://www.euronews.com/2021/10/23/with-europe-s-second-worst-vaccination-rate-ukraine-suffers-covid-surge#vuukle-comments-1706702> [Accessed 16 Apr 2022].
- 11 Morris L, Diamond D. *Ukraine conflict could spark surges of Covid, polio, other diseases, say experts*. 1. The Washington Post, WP Company, 2022.
- 12 World Health Organization. "Dangerously Low Medical Oxygen Supplies in Ukraine Due to Crisis, WARN WHO Director-General and WHO Regional Director for Europe.", 2022. Available: <https://www.who.int/news/item/27-02-2022-dangerously-low-medical-oxygen-supplies-in-ukraine-due-to-crisis-warn-who-director-general-and-who-regional-director-for-europe#>
- 13 Stuart W, Conall M. Applying the European convention on human rights to the conflict in Ukraine. *Russian Law J* 2018;6:3:8–78.
- 14 "Russia's war with Ukraine Will Hurt Global Food Security.", South China Morning Post, 2022. Available: <https://www.scmp.com/comment/opinion/article/3168562/russias-war-ukraine-will-hurt-global-food-security>
- 15 Baev PK. "Around the Halls: Implications of Russia's Invasion of Ukraine.". Brookings, 2022. Available: https://www.brookings.edu/blog/order-from-chaos/2022/02/25/around-the-halls-implications-of-russias-invasion-of-uk*/raive/
- 16 Ruitiña J. "The Crisis of European Security: What Europeans Think about the war in Ukraine.". ECFR, European Council on Foreign Relations, 2022. Available: <https://ecfr.eu/publication/the-crisis-of-european-security-what-europeans-think-about-the-war-in-ukraine/?amp>
- 17 Cohen P, Ewing J. "What's at Stake for the Global Economy as Conflict Looms in Ukraine." The New York Times, 2022. Available: <https://www.nytimes.com/2022/02/21/business/economy/ukraine-russia-economy.html>
- 18 Uwishema O, Nnagha EM, Chalhoub E, *et al.* Dengue fever outbreak in Cook island: a rising concern, efforts, challenges, and future recommendations. *J Med Virol* 2021;93:6073–6.
- 19 Murray CK, Horvath LL, Ericsson CD. An approach to prevention of infectious diseases during military deployments. *Clin Infect Dis* 2007;44:424–30.
- 20 Uwishema O, Alshareif BAA, Yousif MYE, *et al.* Lassa fever amidst the COVID-19 pandemic in Africa: a rising concern, efforts, challenges, and future recommendations. *J Med Virol* 2021;93:6433–6.
- 21 Uwishema O, Ayoub G, Badri R, *et al.* Neurological disorders in HIV: hope despite challenges. *Immun Inflamm Dis* 2022;10:e591.
- 22 Uwishema O, Chalhoub E, Torbati T, *et al.* Rift Valley fever during the COVID-19 pandemic in Africa: a double burden for Africa's healthcare system. *Health Sci Rep* 2022;5:e468.
- 23 Uwishema O, Okereke M, Onyeaka H, *et al.* Threats and outbreaks of cholera in Africa amidst COVID-19 pandemic: a double burden on Africa's health systems. *Trop Med Health* 2021;49:93.
- 24 Uwishema O, Lawal L, Sun J, *et al.* Colombia protests amidst the COVID-19 pandemic: implications and recommendations. *Med Confl Surviv* 2022:1–6.
- 25 Uwishema O, Adriano LF, Torbati T, *et al.* Measles crisis in Africa amidst the COVID-19 pandemic: delayed measles vaccine administration may cause a measles outbreak in Africa. *J Med Virol* 2021;93:5697–9.
- 26 Uwishema O, Taylor C, Lawal L, *et al.* The syndemic burden of HIV/AIDS in Africa amidst the COVID-19 pandemic. *Immun Inflamm Dis* 2022;10:26–32.
- 27 Uwishema O, Onyeaka H, Alshareif BAA. Current context of pneumonia amidst the COVID-19 pandemic in Africa. *JCSEPH* 2021;2.
- 28 Uwishema O, Onyeaka H, Badri R, *et al.* The understanding of Parkinson's disease through genetics and new therapies. *Brain Behav* 2022:e2577.
- 29 Claude KM, Serge MS, Alexis KK, *et al.* Prevention of COVID-19 in internally displaced persons camps in War-Torn North Kivu, Democratic Republic of the Congo: a mixed-methods study. *Glob Health Sci Pract* 2020;8:638–53.