



War in Ukraine: an immense threat to the fight against tuberculosis

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To the Editor:

As reported by the Global Tuberculosis Network in the *European Respiratory Journal*, coronavirus disease 2019 (COVID-19) has distressingly resulted in a plateauing of the global decrease in tuberculosis (TB) incidence as well as entailed a surge in mortality for the first time in a decade [1, 2]. As the COVID-19 pandemic response is gradually being integrated into healthcare systems worldwide, the war in Ukraine poses a new threat to TB control in Europe. Over the years, an admirable progress in combating TB has been achieved globally and regionally, although optimal control of TB was not yet fully in sight in Ukraine or Russia [3]. Incidence and mortality rates have been falling steadily in both Ukraine and the Russian Federation, and between 2010 and 2020, the number of TB deaths in Russia has fallen by as much as 10% per year [4]. Nevertheless, the eastern areas of the World Health Organization European region, including Ukraine and Russia (and also bordering countries such as Belarus and Moldova), account for the largest burden of multidrug-resistant (MDR)-TB in the world and also have a relatively high burden of drug-susceptible TB [4]. Russia and Ukraine have the second and fifth highest rates of confirmed individuals with extensively drug-resistant (XDR)-TB [4], respectively, along with high prevalences of latent TB infection [5]. Even before the military conflict, the diagnosis and treatment of patients with M/XDR-TB in Ukraine was limited by availability of diagnostic tools and medicines [6]. Together with HIV, social determinants, and other risk factors for TB, drug-resistant TB is among the major challenges in controlling TB in the European region, and there is a dire need to ramp up case-finding [7]. The reported proportion of HIV/TB co-infection is 22% and 24% among patients with a known HIV status for Ukraine and Russia, respectively, which is also highly unsettling [4].

Currently, with the Russian invasion of Ukraine, much seems at stake. A risk of a long-lasting increase in TB incidence and mortality appears high, and not necessarily confined to the war-stricken countries. The internal displacement of citizens, especially within Ukraine but also in Russia, and migration of war refugees has large consequences for the individual but could as well have vast ongoing societal consequences, including the dispersal of drug-resistant *Mycobacterium tuberculosis* in both the affected and neighbouring countries, which are presently facing an un-precedented flow of migrants and refugees. Taking only the number of Ukrainians externally displaced into account, the United Nations High Commissioner for Refugees has stated that at least 3.1 million are presumed migrated by 16 March, 2022, day 20 in the conflict. This constitutes the fastest-ever refugee migration since World War II. The significant clinical and logistical challenges in treating M/XDR-TB [8] could reach even more problematic levels as healthcare resources are already challenged in many of the involved and surrounding regions. Treatment of drug-susceptible TB itself is likely to put a considerable burden on involved healthcare systems, not to mention HIV/TB co-infection and childhood TB. Initiating and maintaining a course of anti-TB therapy during war, or during migration, is undoubtedly also associated with a higher risk of inappropriate or interrupted treatment and, followingly, an increased likelihood of drug-resistance, treatment failure and death.

The risk of a growing TB-associated morbidity and mortality in the times of war has been shown consistently after World War I and II, the Vietnam War, and several civil wars, among others [8]. Alarmingly, armed conflicts and displacements have been associated with an up to 20% increase in the risk of TB [8]. This surge of the disease is probably strongly associated with reduced nutrient intake, poor housing, hygiene and sanitation, disrupted healthcare services, and crowding. Transmission of



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The eastern areas of Europe, including Ukraine and Russia, account for the largest burden of drug-resistant TB in the world. With the ongoing war, a risk of increase in TB burden appears high and not necessarily confined to the war-stricken countries. <https://bit.ly/3NuNA0b>

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M. tuberculosis may lead to an immediate increase in the incidence of TB but may also induce an increase in the following years of war.

With most refugees being women and children, we also want to raise attention to the higher risk of transmission, progression to active disease and mortality in children. Moreover, children are often considered a proxy for ongoing *M. tuberculosis* transmission and should be a particular population of concern. Furthermore, the life-changing consequences for individuals fleeing war, including stigma and non-TB health risks, are expectedly inevitable.

The combination of the effects of the COVID-19 pandemic and of the movement of migrants and refugees will make reaching the End TB Strategy Goals more difficult [9].

Despite the long co-evolution of humans and *M. tuberculosis* and its dire impact on world health, TB is often in the shadow of other healthcare concerns [10], and we hope that global society can continue its united efforts against TB in times of war. The international health community must be prepared to intensify the capacity of detection and treatment of both drug-susceptible and drug-resistant TB, and to strengthen screening programmes for TB prevention and treatment of active disease among migrants and close contacts of people with TB, ultimately to diminish the impact of the ongoing conflict and its future consequences for global health.

Victor Dahl ^{1,2}, **Giovanni Battista Migliori** ³, **Christoph Lange** ^{4,5,6,7} and **Christian Wejse** ^{1,2}

¹Department of Infectious Diseases, Aarhus University Hospital, Aarhus, Denmark. ²Center for Global Health, Aarhus University (GloHAU), Aarhus, Denmark. ³Servizio di Epidemiologia Clinica delle Malattie Respiratorie, Istituti Clinici Scientifici Maugeri IRCCS, Tradate, Italy. ⁴Division of Clinical Infectious Diseases, Research Center Borstel, Germany. ⁵German Center for Infection Research (DZIF) Clinical Tuberculosis Unit, Borstel, Germany. ⁶Respiratory Medicine and International Health, University of Lübeck, Lübeck, Germany. ⁷The Global Tuberculosis Program, Texas Children's Hospital, Immigrant and Global Health, Department of Pediatrics, Baylor College of Medicine, Houston, TX, USA.

Corresponding author: Christian Wejse (wejse@ph.au.dk)

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