

Editorial

COVID-19's impact on travel medicine surpasses that of all other emerging viral diseases

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COVID-19 does not even have such a high case fatality rate, yet it has devastated economies, led to widespread lockdowns and an extent of travel restrictions that the world has not seen for decades, if not a century. Other emerging or re-emerging viral diseases are associated with higher case fatality rates; e.g. the case fatality rate of rabies is ~100%,¹ of Ebola ~30–60%,² of Middle East respiratory syndrome (MERS) ~35%,³ of hospitalized yellow fever ~50%,⁴ of monkeypox ~10%.⁵ On the other hand, COVID-19 is associated with a case fatality rate ~3–5% (highly biased by testing rates) and an infection fatality rate <1%.⁶ Yet, COVID-19 is the worst pandemic in scale and speed associated with the highest number of global deaths. Why? Because of the basic reproduction rate. Transmitted by respiratory droplets between humans, it spreads readily between humans, further driven by superspreading events such as mass gatherings, is ubiquitous, and the entire world's population is susceptible. A high reproduction number even combined with a low infection fatality rate will result in more deaths than a pathogen associated with a low reproduction number but high fatality rates. Indeed, sadly, the number of global deaths by end November 2020 stands at 1.5 million. COVID-19 is now the third leading cause of death in the USA after cardiovascular disease and cancer; every fourth hospitalization in the USA in the moment is due to COVID-19. The highest number of deaths are reported in high-income countries (HIC), which stands in stark contrast to all other emerging diseases such as rabies, Ebola, MERS, yellow fever and monkeypox. Why? Because COVID-19 preferentially kills the old and those with co-morbidities including obesity—all more prevalent in HICs. Mobility within HIC may also be higher than in low- to middle-income countries.

How does COVID-19 compare to viral diseases that were declared a public health emergency of international concern (PHEIC) in the past 20 years? Currently, there are only two diseases still listed as PHEIC: COVID-19 and poliomyelitis. Poliomyelitis is a disease with a very high asymptomatic to symptomatic ratio of ~200–1, and very low case fatality rate (but

high disability).⁷ It was declared a PHEIC because the endgame of polio eradication was at stake due to international travel. The other diseases declared PHEIC before COVID-19 were Zika and H1N1. Zika was declared a PHEIC because of its case fatality rate (it basically does not lead to death) but because of the unusual cluster of birth defects and Guillain–Barre syndrome.⁸ The Zika PHEIC did not lead to massive travel restrictions, although pregnant women were advised not to travel to Zika endemic countries, and post-travel guidance on preconception advice was given.⁹

The first PHEIC to be declared by the revised International health regulations (2005) was the H1N1 pandemic in 2009. An estimated 62 million illnesses, 274 000 hospitalizations and 12 400 deaths were associated with the 2009 H1N1 virus occurred in the USA,¹⁰ far lower than the now 250 000 deaths due to COVID-19 reported in the USA. Influenza did not lead to travel restrictions, and although influenza outbreaks were reported on cruise ships,¹¹ the cruise ship industry continued during the H1N1 pandemic, whereas it stalled during the COVID-19 pandemic. Ebola was declared a public health emergency in 2014 in West Africa and again in 2018 in the Democratic Republic of Congo.¹² About 14 000 Ebola deaths were recorded, which now in hindsight pales against the 1.4 million deaths due to COVID-19, although at the time, it led to widespread panic and undue travel warnings.¹² Spread of Ebola via air travel has only rarely occurred,¹³ the main reason being that connectivity between the worst-affected Ebola countries is relative low and the fact that Ebola patients are too symptomatic to board a plane or are picked up at entry screening, whereas a large proportion of COVID-19 are asymptomatic.

COVID-19 has plummeted air travel and the tourism industry. The pandemic will change the way we do travel medicine, both before travel,¹⁴ risks during travel¹⁵ and how we assess fever in returning travellers. There is hope though: travel and travel medicine will recover from this crisis once effective vaccines and therapeutics are widely available.

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