

Quo vadis? Reflections on the future direction of travel medicine practice and research

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“Prediction is very difficult, especially if it’s about the future” – Niels Bohr

The global pandemic of infection with the novel pathogen SARS-COV-2 has plunged the travel industry into uncharted waters. No previous pandemic has disrupted the movement of humans to this extent. From a period of steady growth in international passenger arrivals, travel has recently assumed a negative significance as a vector of potentially deadly infection and, indeed, so-called ‘non-essential’ travel has been demonised in some quarters. Yet, this association is not new, if we reflect on the medieval attempts at maritime ports to prevent the entry of bubonic plague-infested wayfarers through the application of a crude method of passenger quarantine, lasting “forty days”. History may indeed repeat itself, but will we learn its lessons? This editorial sets the current status of international travel against the backdrop of the dual disruptors of the Covid-19 pandemic and the global climate change emergency, and dares to predict how we as travellers, the travel industry and the practice of travel medicine will ultimately adapt. The editorial title borrows from the Latin to pose the question “where are you going”. This question has never been more pertinent for both travel and travel medicine.

The exhortation of Mark Twain to “sail away from the safe harbor” has been replaced by the universal public health advice to “stay home and stay safe”. Yet, in this period of almost universal lockdown, the human

need for freedom, connection with others, cultural experiences, and an escape from mundane routines, remains strong. Whether the gradual re-lifting of travel restrictions causes a rebound desire to explore remains to be witnessed. Could it be that the post-pandemic traveller will adopt an entirely new phenotype, with a carefree attitude replaced by a more anxious approach, but armed with a heightened awareness of the importance of respiratory and hand hygiene, and of routine and recommended travel vaccines?¹ Only time will tell.

Before Covid-19 was first recognised, a growing awareness of the environmental impact of uncontrolled travel had begun to surface, with a vocal flight-shaming movement starting to gain traction. An editorial published in a travel medicine journal speculated on how a greater focus on climate destruction might accelerate the development of eco-friendly transportation methods, resuscitate rail transport, and lead to a shift away from conventional business and conference travel.² The digital transformation of society catalysed by this pandemic has been impressive, if not unsettling, to behold. Education and healthcare have been early adopters of digital technology in this era of physical distancing and border controls. The major biennial international conference in travel medicine, originally destined to take place for the first time in Asia in cosmopolitan Kuala Lumpur, has instead been converted to a virtual event, using an avatar-based immersive technology platform.³ Whether early forays into tele-medicine involving travellers abroad will evolve into an increased use of tele-health in pre-travel consultations remains to be seen. Online video-consultations followed by appointments at local drive-through vaccination hubs may be more acceptable to the public in the future.

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The era of precision medicine will see a greater use of vaccinomics in travel medicine, where individual travellers will receive targeted vaccine schedules based on unique genetic susceptibility signatures.⁴ The successful development of novel mRNA vaccines against SARS-CoV-2 may lead to the more rapid design and ongoing modification of vaccines that will protect travellers against endemic travel-related infectious diseases such as malaria, dengue, Zika, and chikungunya.

International travel itself will witness rapid technological development resulting from this pandemic. With the widespread adoption of remote working practices, digital nomads may enjoy greater freedom of movement, and so-called 'workcations' may involve a new alliance of leisure and business travel. Virtual reality technology will be deployed in travel clinics to prepare anxious travellers or those planning to visit hostile or emotionally challenging environments. It seems far-fetched at present, but more environmentally conscious travellers may prefer to eschew physical transportation and instead rely solely on virtual reality as a three-dimensional, incorporeal travel experience. A generation of video-gaming enthusiasts may embrace such alternative portrayals of reality with gusto. Whether such an approach will confer the mental health benefits of actual travel would be an interesting focus of travel health research.

Mindful of the needs of a more hygiene-conscious travelling public, the travel industry will employ more biometric and other touchless technologies at airports. Augmented reality applications will allow the traveller to recognise potential travel health risks in their vicinity. Imagine a scenario where travellers visiting malaria-endemic regions would receive smartphone alerts about the malaria parasite density at their immediate location.

Sophisticated wearable sensor devices will provide real-time feedback to travellers about environmental threats, such as painless insect bites, ultraviolet index and altitude. Mobile health technology will assume even greater importance for both traveller and travel medicine researcher, with endless possibilities arising from analysis of real-time geo-located health and environmental data.⁵ No longer will travel health advice largely be provided at a national level, but rather travel medicine will be able to generate specific, customised advice based on more localised data acquisition.

Our smartphones already use artificial intelligence algorithms, but deep machine learning will play a greater role in the future of travel health, perhaps from the stage of informing holiday itinerary decisions. The traveller with pre-existing medical illness could be alerted, for example, to the lack of specialised healthcare options when contemplating travel to particular destinations. Automated robot hotel staff are already deployed in quarantine hotels during the Covid-19 pandemic and they are likely to become as commonplace as touchscreen menu boards at our local fast food restaurant. The greater digitisation of the travel experience will bring with it heightened cybersecurity threats, however, and personal online protection advice will need to become a standard element of pre-travel health counselling.

Promotion of domestic staycations, while Draconian border control measures are in place to prevent the importation of variant viral strains, may have a lasting impact on future travel patterns. With the consolidation of commercial airlines, streamlining of aviation routes, and reduction in levels of business travel, the cost of leisure travel may become prohibitively high for some. Future travellers are likely to be both Covid- and carbon-conscious in their choice of transportation and

destination. High-speed railway networks, hypersonic hyperloop tubes linking large cities, intercontinental submarine tunnels, low emission jet eco-fuels, electric and solar-powered aircraft will reduce the environmental footprint of travel. This scenario, combined with the predicted trend towards so-called 'workcations', may result in longer holidays abroad, where travellers spend more time at fewer destinations and immerse themselves to a greater extent in the local community. The cultural benefits are obvious.

The potential risks and benefits of international travel for people with mental health disorders have gained increased recognition in the recent travel medicine literature.⁶ Pandemic lockdown cycles have also thrown the subject of mental health into sharper focus. Future travellers may seek out itineraries that explicitly promote mindful travel and positive mental health, such as yoga retreats, forest bathing, and wellness tourism packages. Psychological screening of travellers may be integrated into the pre-travel consultation to identify more vulnerable clients who would benefit from targeted mental health promotion efforts.

Prolonged periods of local confinement during this pandemic have engendered a greater appreciation of natural cycles and the adverse effects of air pollution on global health.⁷ While domestic travel will take on a more exotic perspective, at least in the short-term, post-Covid international travellers may be constrained by tourism capacity limits based on physical distancing requirements, in response to the current or future respiratory pandemics. They will be drawn to less densely populated and overcrowded settings and prefer wilderness over city experiences, nomadic road trips over resort-based excursions, and longevity spa retreats over urban sightseeing. Private customised tours will be

more attractive than large group shore excursions for cruise ship passengers. Mass gatherings, such as religious pilgrimages, sports events, and music festivals will be severely curtailed, and may even fall out of favour among visitors conditioned to maintain social distance. Routine use of more accurate lateral flow rapid antigen tests will become a sine qua non of the travel experience. Diagnostic technology that facilitates travel will be widely embraced and economies of scale will make it more affordable to travellers over time.

It is intriguing to contemplate the future face of international travel and the practice of travel medicine. Will the final obstacles in the path of suborbital and lunar space tourism be removed? Will advances in quantum mechanics eventually enable humans to teleport from one location to another? Some of these prospects must reside for now in our collective imagination. However, as the global Covid vaccination programme gathers pace and herd immunity gradually consigns SARS-CoV-2 to endemic viral status, the resumption of more normal international travel is sure to command public attention. We will become accustomed to the use of mandatory Covid vaccination certificates, as we did for yellow fever.⁸ Medical fitness to fly assessments will assume greater importance, especially for passengers with underlying illnesses that predispose them to severe Covid-19 disease.⁹ Travel medicine will become more interdisciplinary, with a greater focus on non-communicable diseases. Malaysia and Ireland are leading the way in undergraduate travel medicine education.¹⁰ Others must follow their example. Formal specialty recognition for travel medicine practitioners is an inevitable outcome. While the future may be difficult to predict, we can rest assured that Mark Twain's counsel to explore, to dream and to discover will continue to motivate those who love to travel.

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