

Perspective

Re-starting travel in the era of COVID-19: preparing anew

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Introduction

The coronavirus disease 2019 (COVID-19) pandemic has caused massive disruption of travel along with other aspects of life. The travel industry is a major part of the global economy. With 1.5 billion international tourist arrivals in 2019, the travel industry is the world's third largest export category and international tourism generated US\$1.7 trillion exports in 2018 or nearly US\$5 billion daily.¹ International tourism contributes immensely to global exports, accounting for 7% of global exports and 29% of the world's services exports.¹ COVID-19 has dramatically affected the travel industry, and travel can help to vitalize economic recovery worldwide.

Restarting business and travel share convergent considerations. Travel is essential for many types of business, accounting for 14% of international trips.² Travel for work also often encompasses leisure travel, visits to friends and family and other side trips. As businesses reopen and re-establish a new normal, business travel needs fresh assessments.³ The COVID-19 pandemic will inevitably lead to redefining essential travel. The crisis provides an opportunity to stimulate expertise among travel medicine clinicians, to utilize and promote skills and knowledge to assist in the recovery and reopening of the economy.

The ongoing COVID-19 pandemic requires detailed consideration of many factors especially in decisions about long-distance travel, although many of the same issues apply to domestic travel by car and return to the workplace and other daily activities. As COVID-19 erupted in Asia during the early phase, pre-travel evaluations weighed the 'go-or-no-go' decision heavily. This continues to be a key determination and must incorporate the assessment of the level of risk to that individual. Some activities can be controlled by the individual traveller in ways

to manage or reduce risk. Also important to consider but outside of individual control are policy elements imposed on the traveller and the itinerary.

Elements in Preparing for Safe Travel

With ongoing COVID-19 circulation in many parts of the world, preparation for travel must be detailed and expanded from the pre-COVID era. Three broad components include: (i) traveller's personal risk stratification,⁴ (ii) elements of travel and (iii) policies imposed by health insurance, employer and government regulations at both origin and destination countries (Table 1). The first component considers the individual traveller's risk factors for severe COVID-19 disease (age and underlying diseases including cardiac, diabetes mellitus, obesity, hypertension, renal failure, respiratory disorder), threshold for risk (individual risk tolerance taking into account the necessity to travel and the nature of the trip) and assessment of immunity—assuming that sufficient scientific evidence will correlate the presence of antibodies to immunity.⁵ Those at highest risk of death from severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (age ≥ 65 years and one or more high-risk conditions) may decide to defer international travel until an effective vaccine is available or there is some other game changer (see below). It is unlikely that circulation of the virus will have ceased in most parts of the world within 2020.

The second component assesses trip details that may influence the risk of exposure to COVID-19 (Table 1). The type of conveyance matters. Particularly challenging is ship/cruise travel with its exceptional vulnerability to COVID-19 illustrated,⁶ which will require much more specific planning. A private vehicle that is disinfected meticulously between passengers

Table 1. Elements to address in pre-travel consultation, incorporating assessment for risk for COVID-19

Components	Main elements	Description of risk factors and characteristics to assess	Pre-travel checklist
Component 1: Traveller's personal risk stratification	Risk for severe disease	Age Underlying diseases including cardiac, diabetes mellitus, obesity, hypertension, renal failure and respiratory conditions	
	Threshold for risk	How much risk is individual willing to accept for this trip How important is this trip (e.g. wedding, graduation, professional meeting, job interview, vacation)	
	Immunity	Confirmed history of COVID-19 If and when appropriate scientific evidence and adequate tests become available to substantiate the premise that prior infection (or antibody presence) can confer immunity for this trip's timeframe	
Component 2: Trip-based determinants	Ship/cruise travel	Exceptional vulnerability evident, confined space, passenger density, co-mingling onboard and sampling of multiple ports with different disease patterns (requires additional detailed and specific advice)	
	Ground transport	Size, seating configuration and density of seats, commitment of airline to cleaning, use of high frequency particulate air filters, frequency of filter change and air exchanges/hour	
	Airports	Origin and destination airports or more, size, volume of traffic, time spent in airports, potential to have to stay in 'in-transit' destination/country for prolonged period	
	Airplane/airline	Size, seating configuration and density of seats, commitment of airline to cleaning, use of high frequency particulate air filters, frequency of filter change and air exchanges/hour	
	Destination country	Socioeconomic status, healthcare facilities, public health infrastructure, surveillance for infections and current level of circulation of coronavirus	
	Hotel or other accommodations	Hotel, home, city, rural and standards for disinfecting/reduce density/physical distancing	
	Planned activities	Outdoor, indoor; presence of large crowds/nature of crowds e.g. local vs international from high-transmission countries, and numbers involved, proximity and duration of close contact; season of year	
	Healthcare facilities	Adequacy of services, capacity and service for foreigners	
	Public health infrastructure at destination (overlaps with destination country element)	Testing ability and appropriate detection of local cases/quarantine/isolation	
	Component 3: Policies including health insurance, employer mandate and government regulations (origin and destination)	Traveller's health insurance	Coverage for travel-related healthcare needs
Travel-related insurance (including medical, evacuation)		Coverage for delays, cancellations and healthcare need abroad	
Employer policy		Travel restrictions	
		Requirement/recommendation for quarantine upon return	
Destination (and in-transit) country government policy		Requirement/recommendation for testing upon return	
	Travel restrictions		
Origin country government policy	Requirement for mandatory quarantine on arrival		
	Requirement for testing on-arrival		
	Requirement for mask wearing or face covering		
Origin country government policy	Travel restrictions		
	Requirement for mandatory quarantine upon return		
		Requirement for testing upon return	

Table 2. Reliable public resources on data relevant in assessing COVID-19 risk at origin and destinations, transmission situation, their policies and requirements and healthcare preparedness*

Source	Website	Description
Epidemiology		
World Health Organization (WHO)	https://www.who.int/emergencies/diseases/novel-coronavirus-2019	Main WHO COVID-19 site that navigates to more specific information, data and guidance
Johns Hopkins University (Centre for Systems Science and Engineering (CSSE))	https://coronavirus.jhu.edu/map.html	COVID-19 dashboard with global situation that provides country-specific data and trends and intra-country details for the USA
Centres for disease control (CDC) and prevention	https://www.cdc.gov/coronavirus/2019-nCoV/index.html	Main CDC COVID-19 site that navigates to more specific information, data and guidance
European Centre for Disease Prevention and Control (ECDC)	https://www.ecdc.europa.eu/en	Main ECDC COVID-19 site that navigates to more specific information, data and guidance
Travel requirements and restrictions		
International Air Transport Association	https://www.iatatravelcentre.com/international-travel-document-news/1580226297.htm	Interactive COVID-19 travel regulations map can search for country-specific travel restrictions
US Department of State	https://travel.state.gov/content/travel/en/international-travel.html	Information and advice on international travel, with links to travel restrictions, enhanced screening procedures, and information from country-specific embassies and consulates
CDC Travellers' health	https://wwwnc.cdc.gov/travel	Travel health advice and interactive map on country-specific COVID-19 recommendations, including travel restrictions and quarantine upon return to the USA
UK Foreign and Commonwealth Office	https://www.gov.uk/foreign-travel-advice	Foreign travel advice for each country including destination country's entry requirements or restrictions
Healthcare level and capacity at destination		
GHSI (Project of Nuclear Threat Initiative and the Johns Hopkins Center for Health Security (JHU) developed with The Economist Intelligence Unit)	https://www.ghsindex.org/	Provides assessment and benchmarking of health security and related capabilities across 195 countries that make up the States Parties to the International Health Regulations (2005)
Policy responses to Covid-19 and national support for tourism		
OECD	https://www.oecd.org/coronavirus/policy-responses/tourism-policy-responses-to-the-coronavirus-s-covid-19-6466aa20/	Describes impact of COVID-19 on the tourism economy; includes Annex 1.A that provides an overview of impact on each country and national policy responses to COVID-19 targeting tourism

*Some subscription-based resources may provide additional relevant information (e.g. destination requirement SARS-CoV-2-free certification).

is safer than crowded buses, trains or subway systems. The airport location, size, volume of traffic and time spent in them will influence the level of potential exposure because of travellers co-mingling along the journey. Airplane-related exposure depends on the plane's size, seating configuration, density of seats, commitment of airline to cleaning, and air exchange and filtering. The destination country's level of risk is related to its socioeconomic status, capacity to identify and interrupt spread and current level of SARS-CoV-2 circulation, which can change quickly. Accommodations also contribute possible exposures related to their measures to disinfect, limit the density of guests and promote physical distancing. Planned activities differ in their levels of risk, e.g. outdoor versus indoor events, presence of large crowds, composition of crowds, proximity and duration of close contact, and season of year. Knowledge about healthcare facilities at destination is helpful, regarding their adequacy of services, capacity, access and service for foreigners. Finally, public health

infrastructure at the destination can determine the capacity to test, isolate and quarantine as needed.

Two resources provide insights on the health infrastructure and support for tourism that may help a traveller determine the appeal of a destination during the pandemic (Table 2). The global health security index (GHSI), a determination of healthcare facilities and public health infrastructure, is a massive collaborative effort of multiple organizations. The GHSI is a detailed and comprehensive framework that assesses a 'country's capability to prevent and mitigate epidemics and pandemic': prevent emergence or release of pathogens, detect and report epidemics of potential concern, respond rapidly and mitigate spread, have sufficient robust health system to treat the sick and protect health workers, and comply with international norms. It also assesses overall risk environment and country vulnerability to biological threats. The GHSI can give prospective traveller some idea of the preparedness of a country. Unfortunately, some countries that

scored well on the GHSI failed to successfully contain COVID-19. The other, produced by the Organisation of Economic Cooperation and Development (OECD) provides an overview of COVID-19's impact on each country and the policy responses targeting tourism (Table 2).

The third component addresses policies for which the traveller lacks control: health insurance, employer mandate and government regulations. Persons planning travel must be aware of health insurance policy regarding coverage if they should become severely ill abroad with COVID-19. Persons who engage in non-essential travel while a national travel advisory is in place will face difficulties if they need to make insurance claims. Employers may issue travel restrictions that differ from national guidelines and government regulations even differ between states in the USA. If lockdowns are reimposed, travellers risk being stranded abroad or quarantined on a ship.

Opening borders are decisions outside of the control of travellers or travel medicine providers. Restarting safe travel assumes that testing to identify acute infection in symptomatic persons and screening their close contacts are widely available. When travel resumes, it involves some elements under personal control and those that the individual cannot control (Table 1). Elements for which the traveller has partial control during travel include the use of mask, frequency of handwashing; types of meetings with others, number of persons at meetings and types of activities. Travellers need to be aware of risks from large sports events, concerts and mass events—especially indoors. In general, many outdoor activities are safe when accompanied by physical distancing ≥ 2 metres. Travellers must do homework on the trip details and assemble background information to develop a comprehensive plan for safe travel. The 2020 travel kit has expanded and should include abundant supply of hand sanitizer, masks, sanitizing wipes, thermometer and possibly pulse oximeter for some. The travel medicine clinician can assist individuals to make informed choices about whether to travel, which trips to choose, and how to make travel safer. Table 2 lists reliable public online resources relevant to assessing COVID-19 risk at destinations, transmission situation, their policies and requirements and healthcare preparedness.

Key Evidence Needed

Key evidence needed that will affect decision-making are those related to COVID-19 immunity. Limited data have demonstrated that persons with significant disease develop neutralizing antibodies that may protect them against reinfection and reduce disease severity in the short-term, and some tests correlate with virus neutralization.^{5,7-9} However, evidence is needed to define threshold for protection, duration of antibody persistence and immunity and assess interruption of transmission. Until answers are available, it is impossible to make truly informed decisions about whether those previously infected can safely travel and resume work and other activities without masks, physical distancing and other precautions.

Potential Game Changers

Potential game changers that could allow some or many individuals to travel more freely include:

- 1) Safe and effective vaccine is available to those who want it. The vaccines should be affordable.¹⁰
- 2) Highly effective and safe treatment can prevent severe disease and death and that is widely available.
- 3) Finding genetic or other markers that would allow identification of the 5–15% of individuals at risk for severe and fatal disease. Such markers should be accessible, sensitive, specific and inexpensive to allow wide testing. Those who tested negative should be aware that they might still become infected and could infect others.
- 4) Identification of safe, effective, available oral drug that could prevent infection, to be used prophylactically or in the event of probable exposure. The drug would need to prevent all severe infection and death.
- 5) Finding that immune plasma, concentrated coronavirus immune globulin or monoclonal antibodies could reliably prevent infection for some specified duration. Ideally the agent could be given via intramuscular route in many settings.

Even when 'game changers' arrive, travel will likely differ from the pre-COVID-19 era. Some COVID-19 era precautions may continue in order to avoid the threat of future pandemics.

New Roles for Travel Medicine?

The COVID-19 pandemic once again illuminates the pivotal role that travellers play in emerging infectious diseases and their spread.¹¹ The crisis also highlights the importance of travellers' health in global health security. Awareness of the need for pre-travel advice and intervention may rise.¹² Travel medicine clinicians have the expertise and knowledge to help the population return to work and resume travel. Travel medicine clinicians understand how and where infections are transmitted. They have experience interpreting serologies and administering vaccines. They can interpret antibody, antigen and other tests, and the use of vaccines and immune globulins, should those become available. New roles for travel medicine emerge: When and how is it safe to return to the workplace? Domestic travel in countries with geographic diversity in COVID-19 epidemiology and differing in requirements for social distancing/quarantine/face covering would also benefit from thoughtful consideration and advice. Should travel medicine clinics become places that offer testing and counselling, testing and travel centres and ultimately vaccination? Travel is integral to our lives and not a separate dimension. Many preparations and framing of issues for travel will overlap with those for returning to work and travel medicine clinicians are well prepared to help guide the reopening of work and travel safely.

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Conflict of interest

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