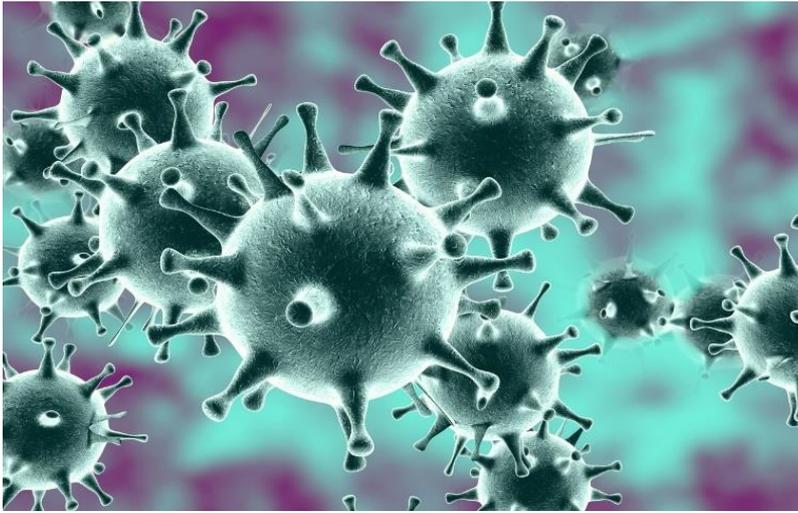


COVID-19 & BUSINESS AVIATION
BEST PRACTICES IN THE PATH TO REOPENING



INTRODUCTION

As the COVID-19 outbreak starts showing a decrease in new cases in many countries, businesses are beginning to resume day-to-day operations. Because aviation activity will follow the reopening of the economy domestically and internationally, it is paramount to adopt best practices that help mitigate the resurgence of widespread community spread of cases.

Despite the flurry of new information about COVID-19, many aspects remain

consistent and help form a dependable foundation for preventive strategies:

- The mechanism of transmission is primary through direct person-to-person contact
 - ▶ The contagion period starts one to two days prior to the beginning of symptoms
 - ▶ People carrying the virus may be infective but present with no symptoms at all
 - ▶ Physical distancing and face coverings are the recommended way to avoid direct contact
- The secondary route of transmission is indirect: touching a contaminated surface with one's hands, followed by touching one's face (eyes, nose, mouth)
 - ▶ Handwashing and surface cleaning are the most effective mechanisms to prevent this type of transmission

MEDAIRE ADVOCATES FOR A MULTI-LAYERED APPROACH, INCLUDING ACTIONS PRE-FLIGHT, IN-FLIGHT AND POST-FLIGHT

The International Civil Aviation Authority (ICAO) is proposing the "Public Health Corridor" concept as the framework for international cooperation. This framework aims to avoid operational disruption while minimising the chances for reintroduction of the virus into regions or communities where the outbreak has been controlled.

This document seeks to guide operators by providing a general framework of best practices aimed at minimising the chance of travel-related coronavirus transmission.

Best practices and mitigation measures should be considered as layers in a Reason's Swiss Cheese model, each having its own limitations, but, when superimposed, reducing the chances for the 'holes' to align and creating a threat.

Measures are generally applicable for both passengers and crews, but whenever appropriate, additional comments are made focusing on crewmembers.

MedAire realises there are different types of operations with unique needs, and often the need for a client-specific approach.

That said, none of the steps discussed hereafter are enough—in isolation—to guarantee a zero-risk environment—if such exists at all.

PRE-FLIGHT MEASURES

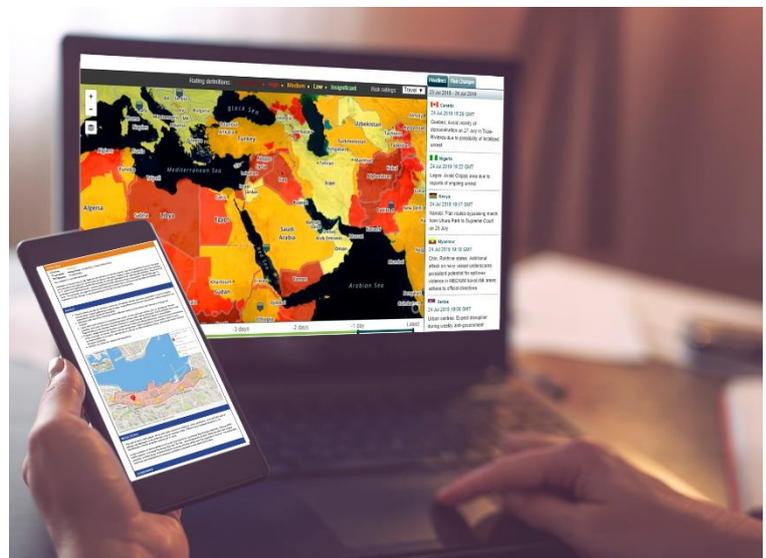
OBJECTIVE: REDUCE RISK OF EXPOSURE, INFECTION AND THE SPREAD OF COVID 19

PLANNING

Destination specific information and intelligence is more important than ever. It is critical to have the most up-to-date information about travel restrictions, entry and exit requirements and COVID 19 risks at your intended destination. Many countries are imposing quarantines for travellers entering the country as a measure to reduce risk of importing new cases. In addition, some countries are implementing testing procedures or requiring documentation of negative test results upon entry. As the situation evolves, make sure you have knowledge of the medical and security situation on the ground at your destination, with an alerting system to keep updated on changes, as well as contingency plans if detained for quarantine.

Utilise a flight risk assessment to quantify risk elements:

- ▶ Necessity of trip
- ▶ Length of trip
- ▶ Health and safety risks at destination
- ▶ Number of passengers
- ▶ Passenger health and risk factors
- ▶ Crew and passenger interaction
- ▶ Ground transportation
- ▶ Overnight lodging
- ▶ Off duty exposure
- ▶ Mental health considerations – distraction, stress, fatigue
- ▶ Contingency plan



QUESTIONNAIRE

Pre-flight questionnaires should be applied before or at the day of departure. They seek information on the presence of symptoms most often associated with COVID-19:

- ▶ Fever
- ▶ Cough
- ▶ Shortness of breath
- ▶ Recent loss of the sense of taste and/or smell

They also should include questions about travel history and recent (2 weeks or less) possible contacts with suspected or confirmed cases of COVID-19.

Crewmembers should self-apply this questionnaire as part of their "I'M SAFE" approach. Any crewmember presenting with COVID-19 symptoms should not report for flying duties and self-isolate until obtaining medical advice.

TEMPERATURE CHECKS



Temperature screening has become an established practice in many airports and businesses around the world.

Ideally, they should be done with contactless thermometers. Although there is no firm consensus, temperatures of 99.5° F (37.5° C) or higher, should trigger additional investigation.

Crewmembers should carry their own personal thermometers and monitor temperature at home and during layovers.

TESTING

MOLECULAR TESTING

There are essentially two main types of testing for COVID-19: Testing for the presence of the virus (molecular tests) and testing for evidence of exposure/immune response to the virus (antibody tests).

Molecular tests look for the presence of specific sequences of viral genetic material through amplification techniques known as PCR (polymerase chain reaction).

Molecular tests require sampling material from the person's nasopharynx, nose or throat, obtained through a swab. The sample collection usually requires well-trained and protected personnel and results are not immediate.

With COVID-19 it appears these tests are most sensitive from a day prior to onset of symptoms (2-14 days post exposure but usually within 4-7 days) through first 3-4 days of symptoms.

New developments are reaching the market with the possibility of self-sampling and faster processing, as well as options that analyse saliva for virus detection.

Antigen tests are a variation of molecular tests for the same purpose. Not to be confused with Antibody tests, their application is like PCR tests, although usually with inferior performance in terms of sensitivity.

As operators look for solutions to screen passengers prior to flight, many are asking about the viability of a testing solution.

Limitations for the practical use of molecular tests as a screening measure in the business and general aviation setting are:

- ▶ Possibility of false-negative results, primarily driven by faulty sampling techniques
 - Could be minimised by resourcing properly trained personnel
- ▶ Prolonged time for getting results
 - Minimised by utilising point of care machines/tests which give results within the hour
- ▶ Molecular test results only reflect the moment of sampling.
 - There is nothing preventing someone from being infected shortly after testing negative for the presence of the virus and consequently being able to transmit it a few days later



ANTIBODY TESTS

These tests look for the reaction to the presence of the virus in the human organism. Antibodies can become present in a blood sample soon after symptom onset or delayed several days to a week later, or more.

The presence of antibodies does not bear a correlation with the infectivity status of a person. They might appear while the person is still infecting others and persist after the contagion period is over.

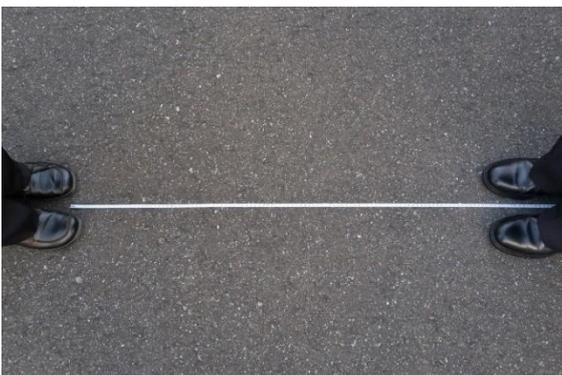
The main utility for antibody tests is for surveillance purposes.

They could provide useful information if applied serially in a pre-defined population such as crewmembers or known frequent travellers, in conjunction with other observation strategies such as quarantine or molecular tests, or even with information obtained through questionnaires.

KEY TAKEAWAYS

- ▶ **A risk assessment including destination specific information and intelligence is more important than ever.**
- ▶ **Temperature checks are being utilised as a primary screening measure in airports and businesses globally.**
- ▶ **Molecular tests are used for detecting if a person is infected.**
- ▶ **Currently, there is no practical solution for the use of molecular tests immediately pre-flight.**
- ▶ **Antibody tests obtained in isolation are not useful to ascertain infectivity and therefore of very limited utilisation in an immediate pre-flight setting.**
- ▶ **Testing will eventually become a crucial component in any structured programme to ensure a virus-free environment in aviation.**
- ▶ **Testing is recommended when part of a well-structured comprehensive system based on the operator's specific needs.**
- ▶ **A comprehensive programme should include a combination of travel planning, health and thermal screening and monitoring, where testing may act as an adjunct to reduce the risk of passengers exposing and being exposed during the trip.**

SOCIAL DISTANCING



The main mechanism of human transmission of the coronavirus is directly from person to person. Given that transmission can start before an infected person presents with any symptoms, social distancing is the single most important preventive measure to block the chain of transmission.

In the aviation sector, social distancing is important throughout the travel experience. From pre-flight routines at base, to layover measures at destination, avoiding contact with other people and maintaining 6 ft distance should be adopted as best practice.

Pre-embarkation procedures at airports and FBO's should promote social/physical distancing. Pre-marked waiting positions promoting a 6-foot separation should be put in practice.

Audio visual reminders should also be utilised to warn guests and employees to adhere to social distancing practices.

Crewmembers should also observe social distancing, from pre-trip preparation, when welcoming guests aboard, and while transiting through the airport/FBO area.

KEY TAKEAWAYS

- ▶ **Social distancing is the most effective way to break the chain of transmission of the coronavirus.**
- ▶ **Social distancing practices should begin pre-flight at the airport/FBO.**
- ▶ **Crewmembers should practice social distancing when welcoming guests aboard**

FACE COVERINGS

Face coverings are an adjunct to social distancing strategies.

Both surgical and cloth masks are not used primarily to protect the individual, but to protect others, given the possibility of pre-symptomatic transmission.

For that matter, there is no reason to utilise higher protection masks (e.g. N95, FFP2 or alike) which are better reserved for health care professionals or others directly dealing with known or suspected cases of COVID-19.

Health authorities worldwide consistently recommend their use where there is wide community spread, where asymptomatic transmission is more likely to occur.

Evidence is available that they are useful in reducing the number of droplets expelled by coughing or sneezing, and therefore the chances of exposing another person or contaminating the surfaces within reach.



KEY TAKEAWAYS

- ▶ **Face coverings are recommended when a person is in a public space, including in the pre-boarding area and in flight if passengers are travelling with a group beyond immediate family.**
- ▶ **Face coverings should never replace social distancing but be used in addition to it.**
- ▶ **Crews should use face coverings whenever in public, including when greeting passengers boarding the aircraft.**

CREW HEALTH

Despite the scarcity of cases of transmission between passenger to passenger, or passenger to crew, there have been a significant number of cases of transmission documented from crew to crew.



A recent study showed that the risk of acquiring COVID-19 was the same if one had an infected person in the household or an infected person as a travel companion. Travel companions tend to dine together, attend business meetings and social events while on the trip.

Crewmembers are exposed to community transmission carrying a risk that is certainly higher than other professionals who do not need to travel.

The need for quarantine and isolation for proven or suspected cases affecting their flying personnel can be significantly disruptive for flight departments. The eventuality of crew-to-crew transmission will only amplify the problem.

Flight departments may benefit from implementing structured health monitoring initiatives, while preserving medical confidentiality.

It is important to ensure that the primary objective of any health monitoring is the safety of the crewmember him/herself, as well as their families and friends.

A best practice implemented by many flight departments is to minimise crossover between their crews, by assigning different flight teams.

By doing so, if a case is detected, the other crewmember(s) that have been potentially exposed can be easily identified and monitored accordingly.

A structured programme may include:

- ▶ Crew education and safety training to include prevention and mitigation measures – including social distancing and face covering practices both at home, in-flight and during layovers.
- ▶ Application of pre-mission questionnaires screening for symptoms & contact history around potential or proven COVID-19 cases.
- ▶ Testing

Suspected cases detected within a structured programme can be handled in a more focused approach. For example, molecular testing could be reserved as a secondary measure for those who disclose symptoms or who tested positive for antibodies.

GROUND HANDLING

All the elements of social distancing and face coverings are also beneficial for ground handling personnel and for the operations team members.

KEY TAKEAWAYS

- ▶ Crew health monitoring is an essential component in ensuring COVID-19 free operations and minimise disruption.
- ▶ A minimum level of safety is to apply pre-flight questionnaires and self-monitoring for symptoms including fever.
- ▶ The best approach is a structured programme for monitoring crew health, including a combination of serological surveillance and molecular testing as needed.
- ▶ While servicing the aircraft or managing passengers, ground-handling personnel should abide by the same best practices of social distancing and face covering, minimising interaction with passengers and crews.

IN FLIGHT

The in-flight environment is not particularly conducive to the transmission of COVID-19, or any other infectious disease. Air ventilation and filtration standards are usually better in modern pressurized business and commercial aircraft than other air-conditioned environments, including office buildings, airports and even hospitals.

The latter might partially explain the significant global number of COVID-19 clusters associated with business meetings, public events, and religious gatherings, in contrast to the rarity of flight-related cases.

From the commercial aviation experience, an in-flight transmission of the virus was seldom suspected, even when proven infected persons were known to be on board. There are always additional confounding elements, including pre and post-flight interactions between passengers at the airport level.

Nevertheless, a series of best practices should be exercised as additional layers of protection.

SOCIAL DISTANCING

If possible, social distancing should be practiced by separating guests in the aircraft cabin, if they are not part of the same family group.



KEY TAKEAWAYS

- ▶ Passengers should avoid seating in a face-to-face position in the aircraft.
- ▶ Interactions between crew and passengers should be minimised.

FACE COVERINGS



The use of face coverings by all people in an enclosed environment is associated with a reduction in inter-personal transmission of viruses.

In addition, face coverings help in minimising the chances for environmental contamination by a passenger carrying and shedding the virus. The latter would have important implications when disinfection strategies are considered upon arrival.

Despite the potential risk of transmission between crews in the confined space of the cockpit, some argue that the risk of sudden decompression with immediate need to apply oxygen masks should be prioritised. Therefore, mask utilisation by pilots while in the cockpit is not universally accepted. Some operators leave that decision to the pilot's discretion.

KEY TAKEAWAYS

- ▶ **The use of masks by cockpit crew during the flight is debatable at this point.**
- ▶ **Passengers should wear face coverings if not part of the same family or proper physical separation is not possible.**
- ▶ **Crews should wear face coverings when interacting with passengers.**

GLOVES

Contamination from infected surfaces is considered a secondary means of transmission. For that to occur it is necessary that the individual touches their face (mouth, eyes, nose) after touching a contaminated surface. To read more on secondary transmission, visit CDC website [here](#).

The recommended best practice is washing hands frequently and always after touching a potentially contaminated surface or object. The routine use of gloves does not prevent the need for good handwashing and could provide a false sense of reassurance.

The main indication for crew to use gloves in-flight is in collecting leftovers from meal service, as per routine.

KEY TAKEAWAYS

- ▶ **No recommendations for either passengers or crew to routinely wear gloves in-flight.**
- ▶ **Crews collecting food could use disposable gloves as per routine practices.**

MEALS

There is no evidence to date of viruses that cause respiratory illnesses being transmitted via food or food packaging. Coronaviruses cannot multiply in food; they need an animal or human host to multiply.

In-flight meals prepared by catering services in accordance with the usual standards of quality should not present any concern regarding in-flight transmission of the virus.

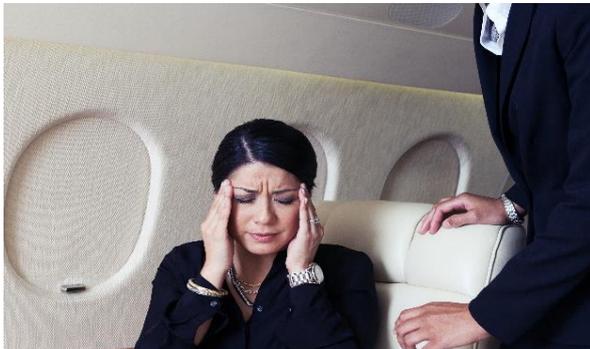
Studies have shown that the coronavirus can survive for a few hours to a couple of days in cardboard material. However, those studies were done under 'ideal' laboratory conditions with controlled humidity and temperature and may not reflect the real-world scenario.

Proper hand washing after manipulating food packaging is a good practice. The addition of disinfecting packaging before entering the aircraft offer an additional layer of protection out of abundance of caution.

KEY TAKEAWAYS

- ▶ **There is no evidence of transmission of coronavirus by food or food packaging.**
- ▶ **Current best practices for catering services provide already the necessary level of assurance against COVID-19.**

SUSPECTED IN-FLIGHT CASE OF COVID-19



The initial symptoms of COVID-19 are rather non-specific and common to other respiratory viral diseases.

It is possible for a passenger to present with one or more symptom in flight, despite best practices being applied pre-flight.

Any passenger presenting with fever, cough or shortness of breath, among other symptoms, should be considered as a potential COVID-19 case, given the widespread situation of the outbreak.

MedAire, through its MedLink service, can assist the crewmember in assessing a suspected case and the subsequent actions that should follow. MedAire has also developed a new App, which can help with handling a suspected case of infectious disease on board.

The chances of in-flight transmission of the virus are low and certainly less than other close space environments, thanks to air ventilation and filtration systems common to modern pressurised aircraft.

It is noteworthy that the absence of clusters of cases proved to be associated with air travel, in sharp comparison with the many associated with business or religious meetings, and cases occurring even after short cab rides.

Because of air renovation, the droplets carrying the virus, if not heavy enough to fall and stick to a surface, tend to be removed from cabin air and not stay for periods of more than 5 minutes.

Nevertheless, some immediate actions should take place:

- ▶ The affected guest should be wearing a face covering, if not yet
- ▶ As much as physically possible, the guest should be isolated from others around, ideally within 6 feet (2 meters) distance
- ▶ Any crewmember directly assisting the suspected case should be fully protected by PPEs, including:
 - Masks
 - Gloves
 - Eye protection
- ▶ MedAire's MedLink should be notified
- ▶ Notify health authorities



KEY TAKEAWAYS

- ▶ **The risk of in-flight transmission of COVID-19 appears low.**
- ▶ **There is no evidence that the virus can stay for long periods suspended in aircraft cabin air.**
- ▶ **MedLink should be contacted anytime a case of infectious disease is suspected among the guests or crews in-flight.**
- ▶ **The suspected case(s) should use a mask and be isolated from others by 6ft if possible.**
- ▶ **Crewmembers interacting with a suspected case should use full Personal Protective Equipment (PPE).**

POST-FLIGHT MEASURES

ACTIVATION OF PUBLIC HEALTH AUTHORITIES

Suspected cases of COVID-19 on board require mandatory reporting to most airports domestically and internationally. It is important to neither over nor under react, and a proper medical assessment of the situation while still in-flight is the best means to achieve that objective.

MedLink is able to assist with the medical assessment, as well as activate EMS to assist the aircraft upon arrival.

KEY TAKEAWAYS

- ▶ Suspected in-flight cases of COVID-19 will require further medical evaluation upon arrival.
- ▶ MedLink should be contacted anytime a case of infectious disease is suspected among the guests or crews in flight.
- ▶ Assist in alerting all individuals who shared a flight with that individual or have interacted with them at the workplace.
- ▶ Follow CDC guidelines for contact tracing.
- ▶ Report to airport authorities.

DISINFECTION OF THE AIRCRAFT



This coronavirus needs a living organism to survive and its primary means of transmission is from person to person.

The virus is not difficult to kill when present in the environment. Most of the common disinfectants available in the market can effectively kill the virus, similarly, to disinfecting against other lipid-enveloped viruses, like the one causing influenza.

Coronavirus are much easier to kill than some bacteria, spores and non-enveloped viruses, like the norovirus, that are more difficult to eliminate.

It only takes a minute to eliminate the virus from a contaminated surface if cleaned with an appropriate disinfectant product.

Disinfectants carry the risk of corrosion of certain aircraft material, particularly if utilised too frequently.

A risk-based strategy is the best approach for selecting the best disinfection strategy. Routine cleaning procedures are effective after a low risk for COVID-19 flight where best pre-flight and in-flight procedures were followed as outlined above.

A more thorough disinfection procedure is warranted for higher risk cases, as in when a known or suspected case of COVID-19 was present in the flight. For those situations, a disinfectant, recommended by the aircraft manufacturer, should be applied to the surfaces where the affected person was seated, such as tables, armrests, as well as commonly touched surfaces, such as lavatory doorknobs.

Other enhanced cleaning and disinfection procedures may play a role in public perception and building passenger reassurance of safety.

It is important to consider that new products and techniques that have been offered recently in reaction to COVID-19 are not necessarily supported by adequate scientific evidence. There is no proof they are better than long existing, usually less expensive, alternatives.

KEY TAKEAWAYS

- ▶ **Current knowledge suggests there is no need for additional air filtration measures or utilisation of devices aimed to clean aircraft cabin.**
- ▶ **Disinfection strategies should be based on risk assessment after each flight.**
- ▶ **Utilise products as recommended by aircraft manufacturers, such as those based on isopropyl alcohol or chloroxylenol.**



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GLOBAL MEDICAL DIRECTOR, AVIATION HEALTH, MEDAIRE WORLDWIDE

MedAire is the leading provider of aviation specific safety solutions for general and business aviation. We can develop solutions for your unique needs specific to COVID 19, travel risk management, pandemic planning, and organisational resilience programmes.

For a meeting with one of our subject matter experts to discuss how we can help with your COVID 19 response, please [click here](#) or arrange through your account manager.