



How **COVID-19** impacts airport operations planning
– Physical distancing, volatile schedules, and limited budgets

Challenge 5: COVID-19 measures



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CONTENTS

The reader	3
Article summary	4
New times, new measures	6
How to implement COVID-19 measures	14
Recommendation 1	14
Recommendation 2	16
Recommendation 3	18
Recommendation 4	19
Conclusion	21

THIS ARTICLE IS AIMED AT READERS WHO ARE LOOKING FOR

- A breakdown of the upcoming COVID-19 related measures aimed at identifying and isolating passengers unfit for flying
- A structured assessment of the operational areas best suited to host such measures
- An outline of the key considerations to make when implementing the measures

ONE-MINUTE SUMMARY

Besides physical distancing, cleaning and PPE, airports face requirements to implement measures to identify and isolate (potentially) passengers with COVID-19 throughout the airport journey: validation of immunity passport, temperature checks, and on-site blood samples are just some examples. In the latest IATA/ACI joint approach statement, they propose some international guidelines to safely restart aviation worldwide. The content of this article is in line with these guidelines and it will focus on how airports can mitigate operational impact after implementation of such measures.

In this article we outline how to assess the impact on operations of such measures, and evaluate how suited they are for implementation across operational areas based on:

- Requirements from measures: space, staff, tools
- Suitability of operational areas for measures: space availability, spread containment, operational continuity

The outcome is a handy qualitative assessment, which is complemented with our recommendations on the key considerations to make when implementing measures related to COVID-19 measures.

Recommendations

1. Identify the measures most suited for your airport, and plan accordingly
2. Some passengers will test positive, so plan for it
3. Coordinate measures and align responsibilities with authorities and airlines
4. Remember to reflect changes in processes in your planning tools

**Besides physical distancing,
cleaning and PPE measures
efforts will be put on
stopping (potentially)
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New times, new measures

As air traffic recovers, airports, in coordination with local authorities, will adopt measures to minimize the risk of spreading the virus. Besides physical distancing, cleaning and PPE measures, discussed in the previous two articles of this series, efforts will be put on stopping (potentially) virus-carrying passengers from departing/arriving. This can be achieved through the implementation of testing and/or document control procedures (e.g. “immunity passports” are one of the options being discussed). The duration and extent of such measures is probably even more unclear than measures for physical distancing and cleaning & PPE, but, most likely, they will stay in place until sometime after a vaccine or cure is found and deployed globally.

The range of measures is broad and varying in intrusiveness: from analysis of travel history (to identify stays in high-risk zones) to on-site blood testing.

In this article we distinguish three types of testing measures:

Document validation: control of documentation released by certified authority attesting that the passenger is not infected and/or not capable of infecting others. A concept that has been talked about is the immunity passport, a document that will prove that you are immune to COVID-19. Although, currently there are a lot of unknowns on how long immunity lasts. Also, there are still few people showing immunity to COVID-19. It is likely that Immunity passports will play an important role in the future facilitating air travel, once more medical information is available, and more testing has been carried out to determine the immunity effectiveness.

Thermal screening: temperature check aimed at identifying potentially sick passengers (based on the fact that COVID-19 causes high temperatures). This can be done manually by trained staff using thermometers, through body scanners, or with thermal cameras. Temperature screening has not been proved to be 100% effective and can mislead to false positives, people with fever but no COVID-19; and false negatives, people with COVID-19 that has no fever or any kind of symptoms.

On-site testing: all proven methods to detect the presence and activity of the virus in the passenger (blood sample, throat swabs, etc.). Current testing methods either involve long waiting times for the results, or high degree of false negatives and some degree of false positives. These methodologies are being developed to improve the speed of COVID-19 detection and the degree of success. Until better results are achieved it will be difficult to implement as a validation process for airports.

All methods can be implemented at the same airport in different checkpoints as they can provide different intelligence for airports and authorities. A well-prepared airport will have in their playbook different outcomes for the same operational plan. These plans may require exercising and sharing across the business, so everyone is prepared to affront any situation.

Different measures, different requirements

The measures adopted will vary from airport to airport and will be largely dependent on local and international regulation. To understand the impact on operations planning we assess testing and checking measures across two dimensions:

- Requirements of measures
- Suitability of operational areas for measures

Requirements of measures













Regardless of the measure adopted, the implications and requirements on operations planning will be in terms of:

Space: physical space is required to carry out “testing” procedures: to host equipment and dedicated personnel, to allow waiting and queues (with physical distancing) during tests/checks.

Staff (and processes): as new and additional checking and testing processes are introduced; staff needs to be trained accordingly. For some measures, such as blood sampling, specialized staff will be required. However, we expect local authorities to at least support airports with managing more specialized medical staff.

Tools: some of the measures require equipment not commonly available at airports, such as thermometers, thermal cameras, and body scanners equipped with temperature measurement systems. The investment and implementation of such equipment will most likely be on the airports. For specialized medical equipment, as for staff, we expect local authorities will support and/or coordinate procurement and implementation activities.

Below we assess the requirements for space, staff and tools, across the three types of testing:

Space, staff, tools requirements across type of testing				Low requirements	High requirements
	Space	Staff	Tools		
 Immunity passport	 Traditional document control checkpoints can be used	 National differences across documentation may require ad-hoc training	 Traditional document control methods can be used (visual inspection, scan)		
 Thermal screening	 Dependent on technology: lower for thermometers and cameras, higher for body scanners	 Training required dependent on technology used	 Investment required in most airports, with cost dependent on technology used		
 On-site testing	 Requires dedicated facilities / areas (for testing, awaiting results)	 Requires specialized medical staff (can be provided by health authorities)	 Requires specialized testing equipment (can be provided by health authorities)		

Suitability of operational areas for handling measures

Operational areas in the airport have different characteristics that make them more/less suited for deployment of testing measures.




















Provided that each airport has a unique layout that affects how testing measures would impact operations, we believe that a general assessment of “suitability” can be based on:

Containment: the capability of containing the spread of the virus by identifying and isolating (potentially) infected passengers through testing/checking in an operational area. Here we limit our assessment to operational considerations rather than medical. Regardless of the measure, the earlier in the airport journey a sick passenger is identified and isolated, the lower the risk of infecting other passengers.
















Operational continuity: deploying testing or document control activities anywhere in the passenger journey poses risk of disrupting or complicating other airport operations. For instance, thermal screening cameras require structured queuing for passengers, hence requiring space to set up new queues or take advantage of current infrastructure, while manual thermic screening processes might increase waiting times on top of the queuing area space. Identification after check-in (e.g. at border control or gate) might require the unloading of checked bags. Hence, under this criterion we evaluate the likelihood that setting up testing/checking procedure in an operational area will ensure continuity of other operations.

Finally, to fully understand the impact on airport operations, it is worth pointing out the difference between testing of departing and arriving passengers (ultimately, testing/checking at one end of the journey or both will depend on authorities and airport internal policies).

Pre-departure testing means that the passenger is tested before boarding the plane. This can happen at any point between the arrival at the airport and boarding the plane. Most likely, it will happen as early as possible to mitigate virus spread.

 Suitability of operational areas for measures - DEPARTURES					
	Spread containment	Health passport	Thermal screening	On-site testing	
Forecourt and entrance		 Requires new structured flows and control mechanisms	 Requires structured flows (today not existing); thermal cameras hindered by difficult pax isolation	 Requires structures and flows currently not available, but space is available	
Check-in hall		 Can be integrated to current document control process and/or digitalized	 Can be integrated to current check-in process	 Likely lacking space for facilities set-up and obstruction to pax flow	
Security		 Can be integrated to current control process and/or digitalized, but requires unloading of checked bags	 Best integration possibility with current processes and technology, but requires unloading of checked bags	 Limited space availability and creation of additional queues; requires unloading of checked bags	
Airside (border, gates)		 Can be integrated to current process, but requires unloading of checked bags	 Can be integrated to current process / technology, but requires unloading of checked bags	 Very late separation of sick pax (e.g. requires unloading of checked bags)	
					Not suited  Very suited 

Post-arrival testing means checking the passenger at the destination airport, implying the passenger could already be infected in the arriving country and the passenger could have infected others during the flight. If then the passenger is not allowed in the country of arrival, repatriation is an added cost for the airline or passenger.

 Suitability of operational areas for measures - ARRIVALS				
	Spread containment	Health passport	Thermal screening	On-site testing
In aircraft / Disembarking gate	 HIGH	Requires new set-up for control at arrival, but avoids pax mixing with the flow 	Cameras and manual tests can be set-up at the exit of gate and provide early identification 	No space availability and complex set-up 
Immigration	 MED	Can be integrated to current passport control, but risk of increasing queues and wait times 	Can be integrated to current passport control, but risk of increasing queues and wait times 	Likely lacking space for facilities set-up; high risk of extreme increase in queues and wait times 
Arrivals forecourt	 LOW	No similar process today, but available space to set-up areas for separation after identification 	Very unstructured flows complicate manual control or identification through cameras 	Space availability, and possibility to block pax before leaving airport 
Not suited  Very suited 				



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Some passengers will **test positive, so plan for it**

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How to implement COVID-19 measures

We expect that most airports will implement several of the measures described in this article in the attempt to ensure safety of passengers and staff (and compliance with regulation). The assessment of different measures and their operational suitability is an initial guidance in planning future airport operations with COVID-19. Below we complement it with our key recommendations.

Recommendation 1: Identify the measures best suited for your airport, and plan accordingly

No matter the specific measures that will be implemented, they will bring new processes and technology. In deciding the measures to implement, airports should answer questions such as:

- Where in the passenger journey should testing and checking measures be implemented to minimize the risk of spreading the virus and the disruption or other airport operations?
- Given the airport layout, where is the best place to implement a testing checkpoint?
- What equipment do we already have? And what equipment would we need? Can current facilities and tools be “reused”?
- What staff capabilities and availability are required?

Answers are region-specific, as each government, authority and the current COVID-19 spread will dictate the approach. ACI and IATA released a joint approach to influence governments and industry to have a similar approach

implementing new measures. For instance, one of their guidelines recommends the implementation of screening measures as upstream as possible in the passenger journey:

"Should health screening measures be necessary, it should be introduced as upstream as possible in the passenger process while minimizing impact on operations. It is preferable for passengers to arrive at the airport "ready to fly". Likewise, and for international travel, it is preferable for admissibility"

Nonetheless, the examples given below can provide an idea of what to consider and its impact to the operation.

For instance, the terminal entrance is a good spot to implement a testing checkpoint, as it allows to identify sick passengers before they enter the terminal building. Obviously, this requires the right space (covered, large enough to contain necessary medical equipment and staff) – if not readily available, what time and costs would occur for its construction? Another option will be using part of the airport car parks, although this will reduce its capacity and revenue. An important thing to keep in mind is not to create bottlenecks implementing these new processes, there is no point of creating queues outside the terminal building and having spare capacity inside.

Similarly, thermal screening can be an efficient and precise method to spot high temperature passengers, although is not a very effective method to detect COVID-19 passengers due to its high rates of false negatives and false positives. Nevertheless, this method can help reassuring passenger travel and it should be implemented early enough in the passenger journey to allow that feverish passengers can be identified and isolated for further testing, before mixing with other passengers or being quarantined.

As new technologies and processes are introduced, assess the need for ad-hoc staff training and plan for it.

In terms of equipment, any specialized technology may be provided from the government or health agencies for those airports considered critical infrastructure. Some less specialized equipment like thermal screening will most likely be privately funded. There is a vast number of new providers supplying thermal camera technology, it is worth verifying how reliable these sources are and how likely are they to be integrated with the current CCTV software. Usually the implementation times are not long if it fits with the current airport infrastructure.

Any kind of document validation (immunity passport) will fit well with the check-in process for departing flights, and with the border control process for arriving flights: infrastructure and similar processes are already in place, although, most likely, the extra checks are bound to increase process times and queues. Furthermore, border control will be conditioned by Government policies and agreements of movement freedom being reinstated.

Recommendation 2: Some passengers will test positive, so plan for it

Most passengers will prove “fit-for-flight”, but a few will not. mishandling these cases can be disastrous for the passenger itself, and the airport: reimbursement costs, spread of virus among passengers, operational disruption is only some of the potential consequences. Hence, processes dedicated to passengers proving unable to fly should be planned for. Such processes include considerations on:

- Need for temporary quarantine facility
- Special flows through airport for passengers proved “unable to fly”
- Rebooking processes for passengers delayed/denied by testing

The responsibility for the need of a temporary quarantine facility should be shared between the airport authority and the government and health agencies. Most airports already have contingency plans for quarantining an airplane on arrival but providing a temporary quarantine facility is not part of the airport expertise and will most likely be led and coordinated by health agencies.

As mentioned in recommendation 1, early identification of passengers will make it easier to separate healthy passenger from risky ones. Any testing checkpoint should allow two channels to separate the flows: healthy passengers will continue the journey through the airport, passengers at risk will be redirected to a secondary testing facility or towards a quarantine facility. Any kind of rebooking process with the airlines should be handled remotely from home if possible, this will avoid crowded areas in the terminal and a better service for passengers.

Finally, all cases and situation should be considered. Local passengers departing the country or coming back can easily be quarantined home. But who is responsible to quarantine a passenger that was healthy arriving to the country but has been infected after? If the airline does not allow them to travel back to their origin country, is the passenger responsibility to quarantine at his expenses? All these questions should be agreed beforehand between governments, airport authorities and airlines and be shared amongst passengers.

Recommendation 3: Coordinate measures and align responsibilities with authorities and airlines

COVID-19 testing and document control measures involve authorities and airlines, hence, where not already happening, it is essential to coordinate measures and communication with passengers. Below we outline a suggested split on responsibilities across some of the key processes we expect airports will be involved in within the COVID-19 testing context:

Process	Authorities	Airport	Airlines
COVID-19 testing	Provide guidelines and minimum requirements	Define and implement exact measures	Communicate measures to passengers
Handling of positive passengers	Provide guidelines and receives passengers	Defines and implements processes, and hand-over passengers to authorities	Communicate regulation of destination
COVID-19 Document validation (e.g. immunity passport)	Provides guidelines and resources for border control	Provides facilities for document control	Control documents and informs passengers
Rebooking of delayed/denied passengers	Provides guidelines	Provides facilities	Handle rebooking process and costs

Recommendation 4: Remember to reflect changes in processes in your planning tools

Most of the changes to processes outlined in this article may well affect processing times, airport flow and queue layouts, passenger presentation profiles and other critical planning input parameters. Remember to reflect these changes in your planning tools on an ongoing basis so that these can support the measures implementation. For example, if a testing facility is implemented at the departures forecourt it will act as a flow bottleneck influencing the check-in and security show up profiles. Further checks, like an immunity passport, at check-in and border will increase the passenger process times.

Most importantly these tools, with the updated parameters, should be the base for any decision from management. Making sure the final decision has the right balance between effectiveness, disruption, and cost.



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CONCLUSION

Plan for the right measures in the right place

It is unclear how long airports will face the consequences of the pandemic. It is clear, though, that business recovery will come through the implementation of a mix of measures: physical distancing, cleaning, PPE, on-site testing, and internationally recognized documentation of health. This will bring along massive changes, which it is important to plan carefully and according to each airport's characteristics: routes and traffic, infrastructure layout, capacity, available equipment.

As we have done for testing and document validation measures, evaluate where and how measures are best suited and offer the best chances to be effective. Then plan accordingly.

This article is part of a series on the challenges of COVID-19 for airport operations planning, and on how to best handle these challenges. Our focus is both short-term and long-term when we refer to the post-COVID-19 situation.

READING MATERIAL MENTIONED IN THIS ARTICLE

<https://www.who.int/news-room/commentaries/detail/advice-on-the-use-of-point-of-care-immunodiagnostic-tests-for-covid-19>

<https://www.iata.org/contentassets/5c8786230ff34e2da406c72a52030e95/safely-restart-aviation-joint-aci-iata-approach.pdf>

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If you would like to learn how we can help your airport navigate through the COVID-19 aftermath, reach out to us for a personal talk via:

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