

Policy Report 2: Regional Scenarios for COVID-19 Prevention and Control

Table of contents

| 01 | Summary of general recommendations towards incoming travellers | 44 |
|------|---|----|
| 02 | Q&A regarding incoming travellers in the british virgin islands | 46 |
| | 2.1. What are the currently available diagnostic tests for sars-cov-2 infection? | 46 |
| | 2.2. What is happening in other countries when they have a negative test from origin but positive upon arrival? | 46 |
| | 2.3. What is the current evidence and international practice on the quarantine length of incoming travellers? | 47 |
| | 2.4. Once they open for tourism, should they have different regimes for tourists (short quarantine) vs residents (long quarantine)? | 50 |
| | 2.5. Does flying from st thomas to tortola decrease the risk of covid-19 infection compared to making the journey by ferry? | 50 |
| I. | Summary on currently available evidence on diagnostic tests | 51 |
| II. | Summary on currently available evidence on isolation lengths | 54 |
| III. | Summary on currently available evidence on quarantine lengths | 58 |



Summary of general recommendations towards incoming travellers

The safest approach to travellers coming from non-COVID-19 free locations and/or on means of transport shared with people coming from COVID-19 affected locations would be requiring a 14-day quarantine upon arrival and a negative test to be discharged from the quarantine. Recognising the difficulty of attracting tourism if 14-day quarantines are required, the following sub-optimal alternative could be pursued:

The traveller must provide a valid proof of negative COVID-19 test performed within the 48h (max. 72h) prior to departure:

• On arrival every traveller will have to take an antigen test:

- If the antigen test at the airport is positive, the traveller will have to start an isolation of 10 days.
- If the antigen test is negative, the traveller will have to quarantine four days at their accommodation. On the 4th day after arrival the traveller will undergo a second antigen test:
 - if it's negative the traveller will be discharged
 - if the test is positive the traveller will start an isolation of 10 days.

These measures are recommended to capture people who got infected during travel or in the time between their pre-departure test and arrival, or whose negative pre-departure test was a false negative probably due to a too low viral load in the early 1-3 days since infection. Requiring a PCR negative result allows to retain infected individuals in their countries of origin, thus alleviating the burden of isolating them in BVI. The rationale of requiring an antigen test on arrival is to quickly discern individuals that are infected and probably contagious (have been infected or developed the disease right before the PCR or the time between PCR and arrival) so that they can be put into strict isolation and minimize risk of infecting other quarantining tourists. Finally, quarantining for four days and testing for clearance, allows to detect any individual that might be in the incubation period on arrival and thus negative on the first antigen test, but who would be contagious once the viral load rose.

This assumes that isolation and quarantine would be conducted at their booked accommodation, being isolation much stricter and quarantine allowing the use of outdoor spaces within the resort or hotel.



For passengers arriving from Saint-Thomas a proof of negative PCR would not be required as it is assumed that they have spent several days in the USVI. They will be subject to the two antigen tests and quarantine as all other travellers. Should the USVI suffer an increase in COVID-19 cases, more restrictive measures should be put in place.

Looser restrictions could be considered for the <u>CARICOM travel</u> bubble to incentivize regional travel and to travellers from low-risk countries who have not transited through middle and high risk-areas.

These control measures are preliminary and can be further developed according to the geographical distribution of the country and the logistics of transport and accommodation in the different islands, with an appraisal of the riskiness of each approach.



02 Q&A regarding incoming travellers in the British Virgin Islands

2.1. What are the currently available diagnostic tests for SARS-CoV-2 infection?

- PCR test: current gold standard tests.
- Antigen tests (rapid diagnostic tests): cheap (<\$5), ready to use at point of care, rapid turnaround time (~15min), lower sensitivity than PCR tests (<u>84.0%-97.6% sensitivity compared to RT-PCR</u>) due to viral load limits of detection that are 100-1000 times higher than RT-PCR, but preliminary observations suggests they are likely to detect cases during their most infectious period (up to 48h prior to symptom onset to 5 days after symptom onset) for the most infectious patients.

See Annex for current available evidence on SARS-CoV-2 diagnostic tests.

2.2. What is happening in other countries when they have a negative test from origin but positive upon arrival?

Because the sensitivity and specificity of diagnostic tests varies in different moments of disease progression, with most infected patients presenting negative PCR test results in the first 4 days after infection, a positive test upon arrival to the BVI could be consistent with an infected person whose viral load was too low in the pre-departure test to be detected. The discrepancy between the results of the pre-departure test and the test upon arrival could also be owed to errors in either of the tests.

Because of this, it is safe to consider the person as a COVID-19 case when their test upon arrival is positive, and thus follow isolation and case management procedures. In order to rule out the possibility of the test upon arrival having been a false positive, a second test could be conducted 1-4 days after the initial test.

In <u>South Korea</u> (an exemplar country in terms of COVID-19 control), travellers who test positive upon arrival are transferred to a hospital or residential treatment centre depending on the severity of their disease presentation. In <u>Iceland</u>, positive travellers undergo 10-day isolation if they present a fever, or 7-day isolation if they do not have a fever with re-testing on day 7 when the person can finish the isolation if they have a negative test result. Whereas the isolation facilities provided by the government are free of charge in Iceland and Barbados, in <u>Barbados</u> infected travellers can also isolate in their hotel or villa at their own expense.

See <u>Annex</u> for further information on current evidence on isolation.



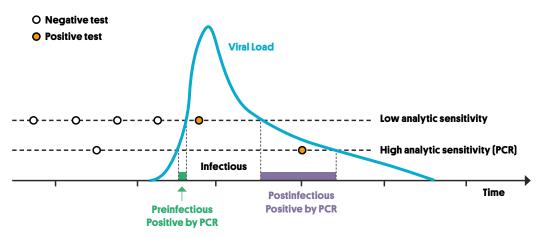
2.3. What is the current evidence and international practice on the quarantine length of incoming travellers?

Evidence

The first description of COVID-19 epidemiological factors in Wuhan and the recent literature review with pooled analysis of SARS-CoV-2 PCR detectability since time of exposure both point towards incubation periods of approximately 5 days (5.2 and 5.9 respectively). Viral load usually peaks on the day of symptom onset (usually day 5 after exposure), and transmissibility is thought to be <u>the highest the</u> day before onset of symptoms and the day of their onset, with viral shedding (as a proxy to transmissibility) usually lasting for approximately one week since symptom onset (see figure).

PCR tests are most effective when viral loads are high (i.e. around the time of symptom onset, usually day 5 post exposure), having the capacity to detect a large fraction of infections (but not all) on the day prior to symptom onset and usually remaining positive during 7-10 days after symptom onset although in some cases they may remain positive during much longer periods of time.

Taken together, this evidence suggests that if a person is infected the day of travelling, they could be identified with a very high probability as positive on the 5th day after arriving at the BVI, but could already transmit the disease from day 4. Hence a 5-day quarantine is recommendable to avoid secondary cases stemming from contacts on days 4 and 5 after arriving for people infected on the day of travelling. A 5-day quarantine would also capture the peak infectious days of people who were infected in the 5 days prior to travel, and whose pre-departure test may be negative because they were tested during their incubation period in which their viral load was too low to be detectable.



Source: https://www.nejm.org/doi/full/10.1056/NEJMp2025631



International practice

Countries have applied different approaches to control the risk of importation of COVID-19 when reopening their borders to tourists and nationals returning from abroad. See below several examples according to the degree of restriction, from less to more risky:

Countries with a zero-tolerance approach to international COVID-19 introductions:

- <u>South Korea</u>: as of 1st April foreign nationals were allowed to enter the country provided that they quarantined at a government-designated facility for 14 days. The decision to require 14-day quarantines for all travellers was taken after months of welcoming travellers with screening for symptoms upon arrival and no quarantine nor test, but strict tracing and follow-up investigations of all incoming travellers which yielded the observation that a large fraction of transmission chains were initiated by importation. Arrivals from the USA and Europe are now tested on entry before transferring to the quarantine facility; while arrivals from elsewhere are moved to the quarantine facility and be tested within 14 days. The number of tourists has been the lowest recorded, at around 65 thousand people in July and in August. A peak in infections was detected around August, thought to be linked to gatherings in churches and protests in streets.
- 14-day quarantines for all travellers are also required in other countries which have managed to keep very low numbers of infections and thus aim to totally avoid importation: New Zealand, Vietnam, Mozambique, among others.

Countries with semi-conservative, semi-relaxed approaches:

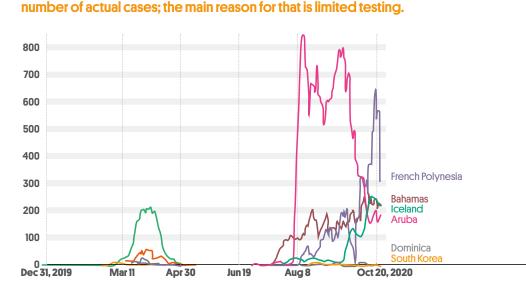
- Test upon arrival, short quarantine, test within several days:
 - <u>Iceland</u> reopened its borders in June requiring a PCR test on the airport (travellers were waved quarantine if the test was negative) or a 14-day quarantine instead. After a surge in cases, on the 19th of August the 'Double Border-Screening Procedure' was implemented, were travellers have the option to be tested for COVID-19 **upon entry** at Keflavík Airport, followed by a **five-day quarantine** and a (free) follow-up test at day 5. Or they can opt for quarantining during 14-days if they do not wish to take a test. Domestic cases have continued to increase thereafter while <u>travel cases have remained stable</u>, although some outbreaks are thought to be traced back to tourists who breached the quarantine. As a result, as of October 5th nonessential businesses are closed and public gathering restrictions have been tightened.
 - <u>Dominica</u> reopened it's bordens to international travel in August. Travellers coming from medium and high risk designated areas are required to undergo a rapid diagnostic test on arrival. If the test result is negative, travellers from high-risk undergo mandatory quarantine at a Government operated quarantine facility or Government-certified private property for a minimum of 5 days after which a PCR testing is administered.
- Pre-departure test, no quarantine, test within several days:
 - <u>French Polynesia</u> opened to tourism on July 15th. All visitors have to **prove a negative PCR test three days prior** to their international air departure (which might mean five days before entry to the country). A test consisting of an **oral and nasal swab** is given to each traveler upon their arrival at the airport, to be **self-performed four days after entry**. However, out of the 20,000 self-tests deployed, only 20 returned positive, which has been attributed to an



incorrect sampling. Cases rose dramatically and now French Polynesia has the highest per capita COVID rate in the world.

Countries with a relaxed approach:

- The Bahamas reopened for tourism on July 1st, welcoming all countries to enter with a **negative PCR test taken within seven days of the travel date**, masks are required in public spaces and at attractions; inside dining in restaurants is permitted. Due to a surge in cases just eighteen days afterwards flights from the USA were banned and just three weeks after reopening, many areas of the Bahamas went back into lockdown.
- <u>Aruba</u> reopened on July 5th for tourists from Bonaire, Curacao, Canada, Europe, the Caribbean excluding the Dominican Republic and Haiti, and the USA without any requirements. Visitors from the USA were required to show **PCR test negative result no older than 72 hours or** pre-pay for a **PCR test upon arrival and quarantine for up to 24 hours** waiting for results. After a steep surge in cases, on the 5th of August bars and nightclubs were closed after 8.30pm, and a curfew was mandated by the end of August, along with a readjustment of countries considered as high-risk.



Show is the rolling 7-days average. The number of confirmed cases is lower than the

Daily new confirmed COVID-19 cases per million people

Source: European CDC - Situation Update Worldwide - Last updated 20 October, 10:35 (London time)

For further information on each country's restrictions, <u>IATA</u> provides a daily updated map.

See <u>Annex</u> for further information on latest scientific evidence on quarantine length.



2.4. Once they open for tourism, should they have different regimes for tourists (short quarantine) vs residents (long quarantine)?

Having different regimes for tourists and for residents would be underpinned by the assumption that infected returning residents have higher chances of causing infections amongst community members because they have more contact or stronger ties with the community, and therefore their stricter quarantine would aim at reducing this higher chance and protecting the general population. Different regimes would make sense if this assumption is true because tourists are required to take extra measures than residents during their stay in the BVI, including the minimization of contact with residents. Thus different regimes should be embedded in an approach to tourists that aims at avoiding or minimizing the contact between tourists and locals.

However, different approaches would be unnecessary if both tourists and residents follow safe enough procedures to almost rule out the possibility of importation (for example, through the provision of a negative pre-departure test, 5-day quarantine upon arrival and test to discharge from quarantine), given that neither tourists nor nationals returning from abroad would not be putting the general population at extra risk. Having different regimes should be avoided if the population may perceive the difference as a discriminatory measure against them.

2.5. Does flying from St Thomas to Tortola decrease the risk of COVID-19 infection compared to making the journey by ferry?

The risk of contracting COVID-19 during <u>air travel</u> has been estimated to be very low, due to the fact that most modern aircrafts maintain clean air by circulating it through HEPA filters. However, smaller aircrafts might use other types of filters, and non-pressurized aircrafts (e.g. Cessna 402C), have uncontrolled interior air flow, which mimics the scenario of a closed space. Besides the travel time inside the plane itself, which is of only 25 minutes from Saint-Thomas to Tortola, travelling by air implies also spending time in security lines and airport terminals, plus the time of boarding and disembarking where a social distance of 6 feet might be difficult to be preserved.

Travelling by ferry, and using only deck sitters rather than passenger cabin sits, would allow a scenario of less enclosed space, even though the travel time is longer than by air (around one hour and a half). In addition, waiting lines could be done in an outside space.

These considerations have to be weighted along with other constraints, specially, bearing in mind that upon arrival to the ferry terminal or to the airport, testing facilities should be put in place.

Consideration should be given to a reciprocity scheme in which travelers arriving from St. Thomas are waived the requirement for a negative PCR prior to departure and instead receive a rapid test upon arrival, allowing those with negative results to enter freely. Additional considerations could include random sampling of a sub-group of tourists or nationals highly involved with tourism every day.



Annexes

I. Summary on currently available evidence on diagnostic tests

The gold standard for COVID-19 diagnosis remains **RT-PCR**, which is a molecular test that detects the presence of the genetic material of SARS-CoV-2 virus in, typically, a nasal swab sample. The nasal swab has to be taken by a healthcare professional and is then shipped to a laboratory with specialized equipment for its analysis. The turnaround time - time to obtain the result of a sample - depends very much on the human and material resources available, ranging from several hours up to several days.

RT-PCR is the most sensitive and specific test available since it can detect very low viral loads, although this is reliant on the detection kit used and the time elapsed since the contagious exposure. A research team at Johns Hopkins School of Medicine saw that the median false negative rate of RT-PCR test (the probability of the PCR being negative while the person is actually infected) on day 1 is 100%, on day 4 is 67%, on day of symptom onset is 38% and on day 8 is 20%, meaning that the the first four days after the contagious exposure, it is very unlikely to be detected by a RT-PCR. A person can have a positive PCR result up to 1-3 weeks, but detection of viral RNA does not necessarily mean that a person is infectious and able to transmit the virus to another person. This is supported by evidence from researchers in England who took samples from PCR positive patients admitted at a hospital, suggesting that viral load in the upper respiratory tract peaks around symptom onset and infectious virus persists for 10 days after illness onset and then plateaus. Probability of culturing virus declined to 8% in samples with Ct > 35 and to 6% 10 days after onset, and was similar in asymptomatic and symptomatic persons.

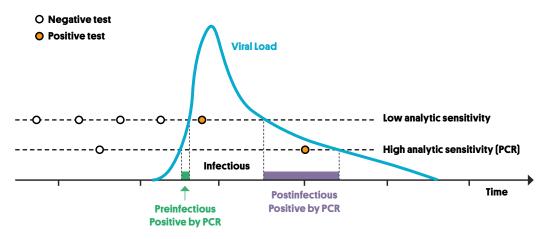
Transmissibility is thought to be <u>the highest the day before onset of symptoms and</u> <u>the day of their onset</u>, and these are estimated around day 5. Since the median false negative rate in days 3 and 4 is high, it would be recommended to do more than one test and keep quarantine in between them.

Recently, **antigen tests** have been developed. They are immunoassays that detect the presence of a specific viral antigen (a molecule on the surface of the virus), which implies current viral infection. First, a nasopharyngeal or nasal swab sample is extracted by a healthcare professional, and then immediately placed into the assay's reagent that lies in the same room and that typically returns results in approximately 15 minutes. They have a **lower cost** (<\$5) than RT-PCR tests, their **turnaround time is much faster** and they are ready to use at **point-of-care** without need of a laboratory with specialized equipment. Their general drawback is that rapid antigen



tests have a lower sensitivity than RT-PCR. The lack of an amplification step in antigen tests means their limits of detection are 100-1000 times higher than RT-PCR tests, but that is usually not a major drawback if the aim is to identify people who are currently transmitting the virus given their higher viral shedding. The first antigen tests to have received FDA emergency use authorization (EUA) demonstrate sensitivity ranging from 84.0%-97.6% compared to RT-PCR, while antigen levels in specimens collected beyond 5-7 days of the onset of symptoms may drop below the limit of detection of the test. This may result in a negative test result for a SARS-CoV-2 infected individual, while a more sensitive test, such as RT-PCR, may return a positive result. The specificity of rapid antigen tests is generally as high as RT-PCR – the first antigen tests that have received FDA EUAs have reported specificity of 100% – which means that false positive results are unlikely. According to the WHO, more evidence is needed on real-world performance and operational aspects. However, antigen rapid tests are most likely to perform well in patients with high viral loads (Ct values ≤ 25 or >106 genomic virus copies/mL) which usually appear in the pre-symptomatic (1-3 days before symptom onset) and early symptomatic phases of the illness (within the first 5-7 days of illness). This offers the opportunity for early diagnosis and interruption of transmission through targeted isolation and cohorting of the most infectious cases and their close contacts.

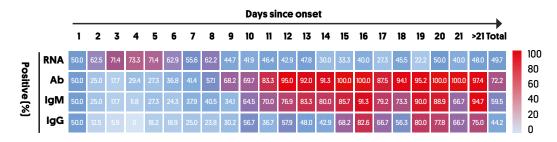
There is limited data to guide the use of rapid antigen tests as screening tests on asymptomatic persons to detect or exclude COVID-19. However, some experts are suggesting a shift in how we think about the sensitivity of testing, stating that "the key question is not how well molecules can be detected in a single sample <u>but</u> how effectively infections can be detected in a population by the repeated use of a given test as part of an overall testing strategy". In the image, we see that a high analytic sensitivity test (like RT-PCR) can detect very low viral loads, even after the person is not infectious anymore. Low analytic sensitivity tests (like antigen tests) detect higher viral loads, but with a lower cost they can be administered frequently and detect infections when the person is infectious, and thus more important to be detected, isolated and traced.



Source: https://www.nejm.org/doi/full/10.1056/NEJMp2025631



Antibody tests are a third type of tests which have limited diagnostic use: if a person is tested early in the course of infection, when their immune response is still building up, the test might not detect antibodies. Mean time to antibody detection has been estimated by <u>several studies</u> around 11 days. A <u>study assessing the antibody responses to SARS-CoV-2</u> found that within the first week since illness onset, less than 40% of patients with COVID-19 had detectable antibodies, while the RNA test had a sensitivity of 66.7%. However, the sensitivity of antibodies overtook that of the RNA test from day 8 after onset and reached over 90% by day 12 after illness onset.



Profiling of sensitivity performance of RNA, Ab, IgM, and IgG in time series since illness onset. **Source:** <u>https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa344/5812996</u>

Lists of approved molecular and antigenic diagnostic tests by: FDA and for the EU.

Usage of tests on travelers in other countries

Most of the countries have a list of high-risk countries from which travelers are required to provide a **negative PCR result from 72h prior to departure** from the country of origin.

Some countries like <u>Austria</u> or <u>France</u>, have implemented **PCR testing facilities at the airport** for passengers upon arrival, and disclose the results in 24h-48h. The test is compulsory for certain passengers coming from high-risk countries or in the case of being feverish after a temperature check, and voluntary and free for any other passenger.

Antigen-based tests are being used in some of Italy's major airports to screen people who arrive from four Mediterranean countries considered to have a high risk of infection. Negative results do not have to be confirmed with a PCR test.

In Barbados, persons travelling from or transiting through High-Risk countries with a valid negative COVID-19 PCR test result will have restricted movement at a designated holding hotel or approved villa at their own expense, or free of charge at a government facility. Persons will need to retest 4-5 days after their first accepted negative test result, for which the result is available within 24 hours. Should the second test be negative, they can then enjoy unrestricted movement. They will continue to be monitored for 7 days after arrival. If the test is positive, the person will be transported to a free-of-charge alternative accommodation for isolation and treatment. Travellers may request, from the Ministry of Health and Wellness, the option to self-isolate at their own expense at their hotel or villa, or government-approved isolation property under strict stipulations.

II. Summary on currently available evidence on isolation lengths

Isolation refers to the separation of sick people with a contagious disease from people who are not sick. While quarantine separates and restricts the movement of people who were exposed to a contagious disease to see if they become sick. These people may have been exposed to a disease and do not know it, or they may have the disease but do not show symptoms.

Evidence from researchers in England who took samples from PCR positive patients admitted at a hospital, observed that viral load in the upper respiratory tract peaks around symptom onset and infectious virus persists for 10 days after illness onset and then plateaus. Probability of <u>culturing virus declines to 8% in samples</u> <u>with Ct > 35 and to 6% 10 days after onset</u>, and was similar in asymptomatic and symptomatic persons. Which means that the probability of infecting another person is very low after 10 days.

In these lines, <u>ECDC</u> and the <u>CDC</u> recommend an isolation of 10 days for people who have a positive test or who have symptoms. The <u>WHO</u> recommends:

- For symptomatic patients: 10 days after symptom onset, plus at least 3 days without symptoms (without fever and respiratory symptoms).
- For asymptomatic patients: 10 days after test positive.

Isolation protocols implemented in other countries

Iceland

Travelers who test positive will receive a phone call notifying them within 24 hours (while negative results are also sent through the app Rakning C-19, or through text message). The health care service evaluates the person and offers **antibody test-ing** to determine whether it is an active infection. In the case of an **active infection**, **the person must self-isolate**, if they lack access to a suitable location they **will be given accommodation at a specialised isolation centre at no cost to them**. Isolation lasts 10 days and after fever resolves. In the case of not having a fever, the person undergoes another test at day 7 and if that sample is negative for the virus the isolation can be ended.

Other members of the household can be in quarantine in the same place if they do not want to leave the home, but should limit touching the one in isolation as much as possible, preferably keep a distance of a minimum 1 meter away from him/her. If more members of the household get sick while this situation progresses, it prolongs the quarantine and possible isolation.

People who live together and are all in isolation in the same place: when the first individual in the group recovers from COVID-19, that person may be released from isolation. The others who are ill must remain in isolation but may not be in the same place as the person who has recovered. In certain instances, the person who has recovered may remain in the same place as those who are ill. In those cases, the isolation is not lifted until the last person to recover has been released from isolation.



Barbados

In Barbados, persons travelling from or transiting through High-Risk countries with a valid negative COVID-19 PCR test result will have restricted movement at a designated holding hotel or approved villa at their own expense, or free of charge at a government facility. Persons <u>will need to retest 4-5 days after their first accepted negative test result</u>, for which the result is available within 24 hours. Should the second test be negative, they can then enjoy unrestricted movement. They will continue to be monitored for 7 days after arrival.

If the test is positive, the person will be transported to a free-of-charge alternative accommodation for isolation and treatment. Travellers may request, from the Ministry of Health and Wellness, the option to self-isolate at their own expense at their hotel or villa, or government-approved isolation property under strict stipulations that must be signed as accepted and proven to be in place.

III. Summary on currently available evidence on quarantine lengths

A 14-day quarantine for all travellers would virtually eliminate the risk of importation. The rationale for such a restrictive measure is that a <u>mathematical model sug-</u> <u>gested that when there are 4 imported cases there is a 50% chance of establishing</u> <u>community transmission</u>. Less restrictive approaches for tourists could be considered if the country chooses to prioritize the influx of tourism and aims at making tourism to BVI more attractive and feasible for shorter-term tourists. This measure should not be taken if the BVI population will feel that it is discriminatory against them. Less restrictive approaches would pose a certain risk of importation but would still aim at the early detection of cases and keeping transmission low. See below three examples of less restrictive approaches, ordered from less to more risky:

• Requiring only 7 **days of isolation and testing them on day** 7, allowing them to get out of the isolation hotel on the 8th day upon receival of a negative result from the test. Should this measure be taken, tourists should be required to wear a mask for at least 7 days after leaving the isolation hotel.

• Requiring only 4 days of isolation and testing them on day 4, allowing them to get out of the isolation hotel on the 5th day if the PCR result is negative. Should this measure be taken, tourists should be required to wear a mask for at least 10 days after leaving the isolation hotel.

• Testing all travellers by PCR upon arrival in adapted facilities at the airport. Results might be available the sooner within half a day and the later would depend on human and technical resources, but ideally no longer than 24 hours. Travellers should remain quarantined at their accommodations until reception of PCR results. Any traveller who may have had an infectious contact on the plane or the day before travelling would have a negative PCR upon arrival, but would become infectious around day 3 of their stay in Dominica and would only start to develop symptoms around day 5 (thus potentially having infectious contacts between day 3 and day 5) or could be infectious and never have symptoms. If this option is chosen (although not recommended from a public health perspective), strong syndromic surveillance on the tourists should be carried out as they are on the island.

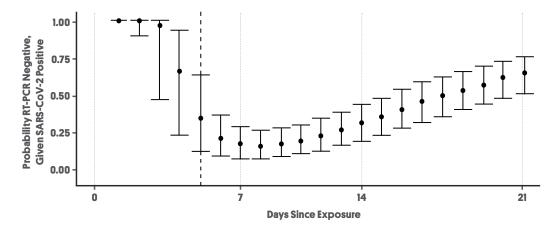


Reagent-sparing strategies, such as pooling samples could be considered for testing given the low likelihood of positivity in asymptomatic travellers returning from areas without current epidemic transmission.

Evidence towards the recommended quarantine lengths:

A research team at Johns Hopkins School of Medicine saw that the <u>median false</u> <u>negative rate of RT-PCR test</u> (the probability of the PCR being negative while the person is actually infected) <u>on day 1 is 100%</u>, on day 4 is 67%, on day of symptom onset is 38% and on day 8 is 20%.

Figure: Probability of having a negative RT-PCR test result given SARS-CoV-2 infection. On the first three days of infection since the contagious exposure, the probability of having a false negative result is very high.



Taken together, this evidence suggests that, in the worst case scenario, where a traveller was infected on the day of landing in the BVI, the person would most likely only have positive swab samples from day 5 until day 14. Travellers may have been infected prior to the day of travelling, in which case the number of days when they may have a positive swab whilst in the country may be shorter, but they are still very likely to have a positive sputum on day 5. In this line of evidence, travellers should quarantine and get tested on day 5 after arrival, when the majority of the infections occurring before entering the country should be detected by a PCR.

Strictly <u>pre-symptomatic transmissions account for ~42% of all transmissions;</u> early symptomatic transmissions (occurring on the day of symptom onset and the next day) account for an additional large fraction ~35% of all transmissions. Symptom onset is around day 5, meaning that the days with higher risk of transmission are day 4 and 5.

In the absence of any test quarantine should be of 14 days as recommended by <u>ECDC</u> and <u>CDC</u>. However, only 5% of the cases will have an incubation period longer than 10 days. For this reason <u>Spain</u> has reduced the quarantine time to 10 days if the contact tests negative on day 10, assuming a 5% risk.



In summary, the evidence suggests:

- In the absence of tests, 14-day quarantine in an isolation facility would very probably capture every case. A 10-day quarantine can be considered assuming that 5% of infected persons have an incubation period longer than 10 days and, thus, would be missed.
- In the presence of tests, everyone should land on the VBI with a PCR negative result from the previous 72 hours and quarantine until:
- Ideally testing by PCR on day 5 so that infections occurred on the arrival day might be captured with a high probability by the PCR.
- Acceptable to test by PCR on day 3 or 4 and, with some risk that people being infected the arrival day or the previous day are false negatives and still be somewhat infectious.

These can be adapted to be less restrictive in the case of travellers coming from low a middle-risk countries, and to children.



