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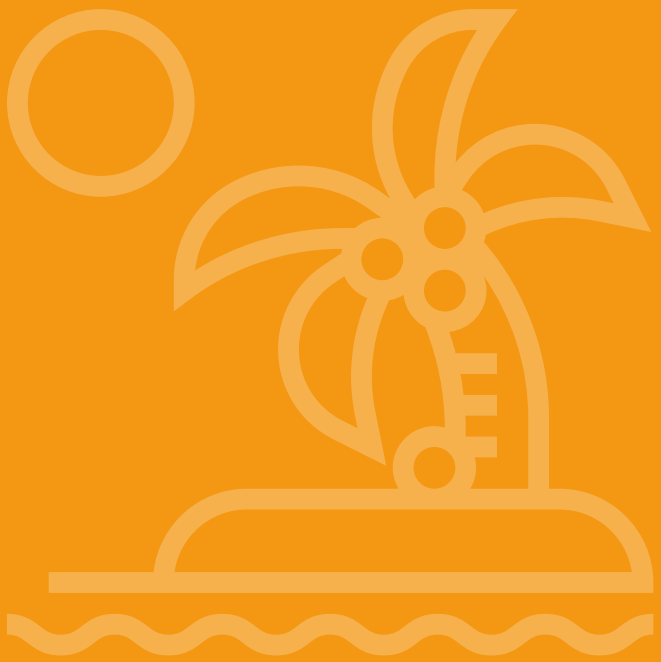

COVID-19 Policy Reports for Recovery in the Eastern Caribbean:

Analysis, Scenarios and Considerations for Opening to Tourism

October-December 2020

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Preface

The COVID-19 pandemic has caused unprecedented shifts across the globe. It has required Governments of the Caribbean to face the intrinsic vulnerabilities of their nations and re-examine health care systems and economies even amidst actively deploying national responses to the threat of this deadly virus in the context of already challenged fiscal realities, physical infrastructure and service delivery systems.

The economies of most of the countries and Territories in the Caribbean rely on the heavily impacted tourism sector, foreign direct investment and trade for growth; the massive slow-down in output and imports will amplify the first order effects of the disease in the region. The pandemic's combined impact is therefore likely to not only be widespread, affecting virtually all aspects of the economy, but to continue well after the population has recovered from the physical health symptoms of the disease. In the case of most countries in the Eastern Caribbean, the impact of the virus will reinforce existing social and economic vulnerabilities, inequalities and risks.

As a global pandemic threatens to profoundly deepen disparities and undo progress towards sustainable development more broadly, international and regional partners are working together to enhance the region's capacity and will assist nations as they build forward better in order to become more resilient to exogenous shocks.

Given the vulnerabilities and dependencies of the Eastern Caribbean region, assessing and addressing the socio-economic impacts of COVID-19 including possible scenarios and technical assistance for the reopening of the economy has been a central element of UNDP response in the Eastern Caribbean. This reopening dialogue benefits from the added support of ISGlobal, a consolidated hub of excellence in research, with platforms in the Latin America and African regions and focuses on transferring of knowledge to close the gaps in health disparities between and within different regions of the world. This joint support aims at bolstering decision-making processes to safely reopen the economy as the region navigates the delicate balance between population health and economic viability.

Collaborations such as this are beneficial in the advancement of sustainable development and allow for a robust understanding of impacts and outcomes which provides governments and leaders with the support to build more resilient nations. In 2017, in collaboration with the IFRC, UNDP and ISGlobal worked together in the elaboration and publication of the "Socio Economic Impact Assessment of the Zika virus in the Latin America and the Caribbean: with a focus on Brazil, Colombia and Suriname" with excellent results and appreciation from relevant partners.

Now amidst the global COVID-19 pandemic, while PAHO/WHO is leading the UN health response, UNDP and ISGlobal have joined forces again to accelerate socio-economic recovery and work with the ten countries and territories of the Eastern Caribbean to provide technical assistance and elaborate country epidemiology situation analyses and prospective COVID-19 scenarios that can be instrumental for governments and decision-makers with regards to policy options for prevention measures, economic reopening, deconfinement and communication to populations.

This report has been possible thanks to the invaluable contributions of the respective government technical officers in the Eastern Caribbean, Luis Francisco Thais (UNDP) and Lucia Massini (ISGlobal) to which to which the joint team is very grateful.

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Introductory note for the reader of UNDP-ISGlobal Policy papers on COVID-19 in the Caribbean

Author's note on the current edition of the report.

Three policy papers were generated in the period of October to December 2020 addressing the COVID-19 pandemic in the Caribbean, as per the request of the UNDP:

- "Considerations towards the opening of the British Virgin Islands to tourism" (date of submission: October 2020).
- "Regional Scenarios for COVID-19 Prevention and Control" (date of submission: 10th December 2020).
- "COVID-19 Epidemiological Situation and Response in Eastern Caribbean States" (date of submission: 10th December 2020).

These papers answered specific questions posed by the countries and proposed regional recommendations focusing on the analysis of ten English-speaking countries and Territories in the Eastern Caribbean (Anguilla, Antigua and Barbuda, Barbados, British Virgin Islands, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines). Nonetheless, recommendations enclosed in them may apply to other Caribbean and non-Caribbean countries, especially other island-states. These papers are not intended to be holistic or prescriptive, but rather targeted and with enough information to serve as complementary source for countries in their development of COVID-19 guidance and their decision-making processes.

While proposed thresholds in the "Regional Scenarios for COVID-19 Prevention and Control" and most of the recommendations still stand, it is important to note that countries priorities should focus now in accessing and providing vaccination to respective populations while ensuring necessary protocols to control the spread, particularly of those new strains with much higher transmissibility.

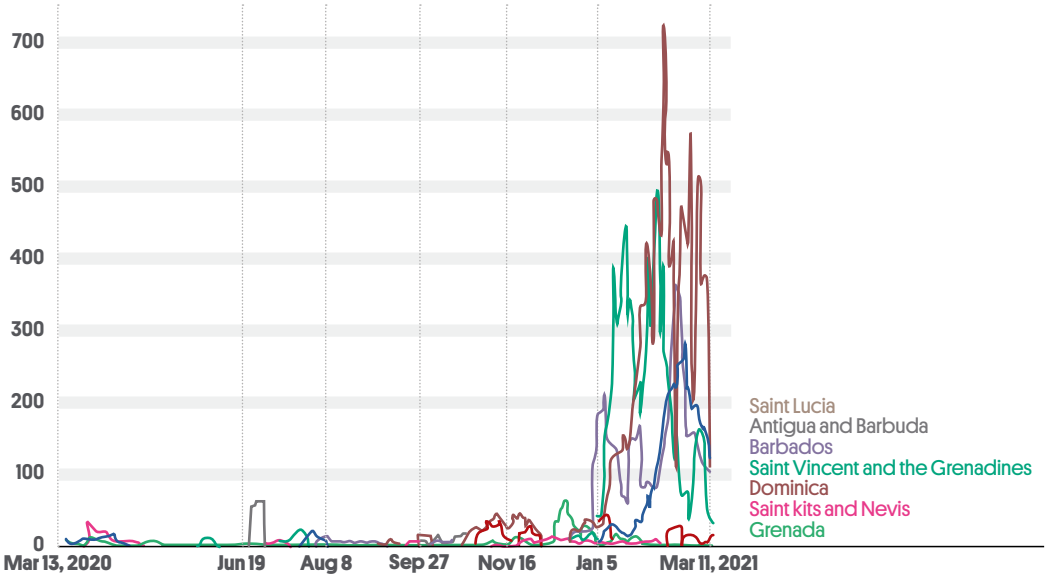
Evolving context since the writing of the policy papers

At the time of writing the last reports (mid December 2020) Eastern Caribbean States had been able to keep low levels of COVID-19, with the country that had recorded most cases per day being Saint Lucia with 8 cases in one day in November, and Barbados being the country with the highest cumulative number of cases since the start of the pandemic, with a total of 266 cases until the 27th of November 2020. However, the first quarter of 2021 has observed the first waves of the COVID-19 pandemic in a number of Caribbean countries. In the period of January to March

2021, Antigua and Barbuda, Barbados, Saint Lucia, and Saint Vincent and the Grenadines registered most COVID-19 cases since the start of the pandemic. The British Virgin Islands observed a second wave in December-January which seems to be now controlled, after having had a first wave in August 2020. Grenada saw their surge in cases in December, and the situation seems to have been controlled from January onwards. All these surges are now in their downward trend, mimicking the downward trend in cases worldwide.

Daily new confirmed COVID-19 cases per million people

Show is the rolling 7-days average. The number of confirmed cases is lower than the number of actual cases; the main reason for that is limited testing.



Source of graph: Our World in Data

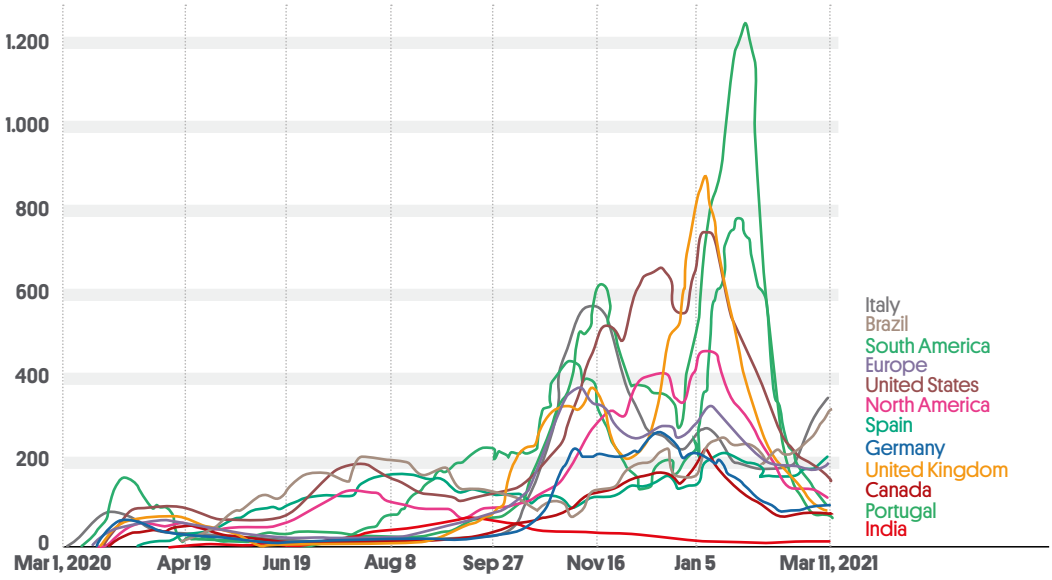
In an interview published in the scientific journal The Lancet, the executive director of the Caribbean Public Health Agency (CARPHA), Joy St John, argues that the return of tourism per se is probably not the main driver of the spike in cases in the Caribbean, given that several countries managed to re-open their borders for several months. Nonetheless, she points out that the introduction of the highly transmissible COVID-19 variant B.1.1.7. in the Caribbean in late 2020 may have played a role, together with Christmas gatherings and the COVID-19 fatigue causing a certain letting down of the guard, aside from country-specific factors. This surge in cases in the Caribbean countries has caused a strengthening of measures in many countries including lockdowns or curfews in some instances.

At a worldwide level, at the time of writing the policy papers a second wave was on the rise in the northern hemisphere – which is now seeing its decline or end in most countries –, with countries in Asia, Africa and Oceania managing to avoid by and large the dramatic increases in cases compared to population totals that have been observed in Europe and North America.

Nonetheless, with many northern countries going into easter holidays at the end of March and the rapid spread of the new more transmissible variants in these countries, the advent of a third wave is likely to be observed in the coming weeks.

Daily new confirmed COVID-19 cases per million people

Show is the rolling 7-days average. The number of confirmed cases is lower than the number of actual cases; the main reason for that is limited testing.



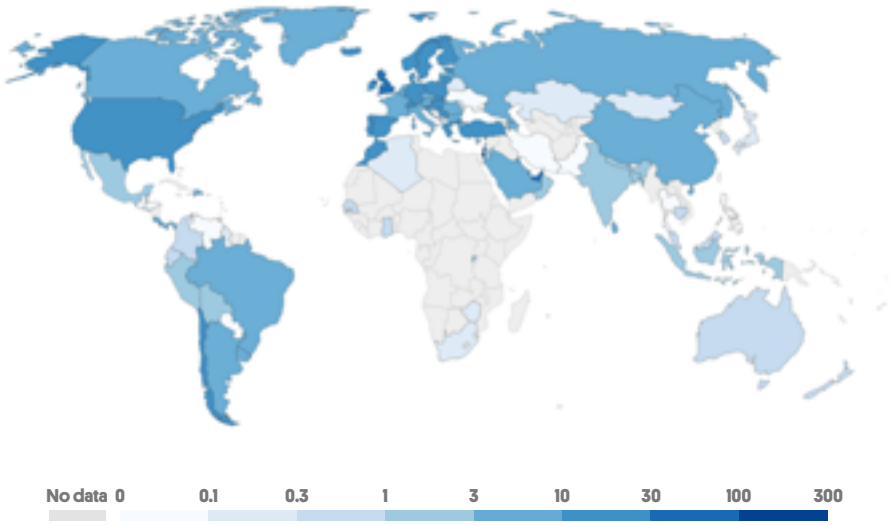
Source of graph: Our World in Data

Worldwide, 2,5% of the population has so far received at least one dose of any vaccine against the SARS-CoV-2 virus and 0,9% has been fully vaccinated. To date, most doses have been administered in the global north. High-income countries have bought about half of the world's current vaccine supply even though they represent only 13% of the world's population. Low and middle income countries have recently started to receive vaccines through the COVAX initiative, although in very small amounts which are mainly intended for healthcare workers. It is predicted that wide access to vaccines by the general population will not be achieved until 2022 or 2023 in low and middle income countries.

Vaccination in several Caribbean countries has already started (Barbados, Dominica, Antigua and Barbuda, Saint Vincent and the Grenadines, or British Virgin Islands), with some nations leveraging the COVAX initiative for vaccination and others reaching bilateral deals with the manufacturers. The British Virgin Islands has already started vaccinating their population with the AstraZeneca vaccine through the doses dispatched from the UK.

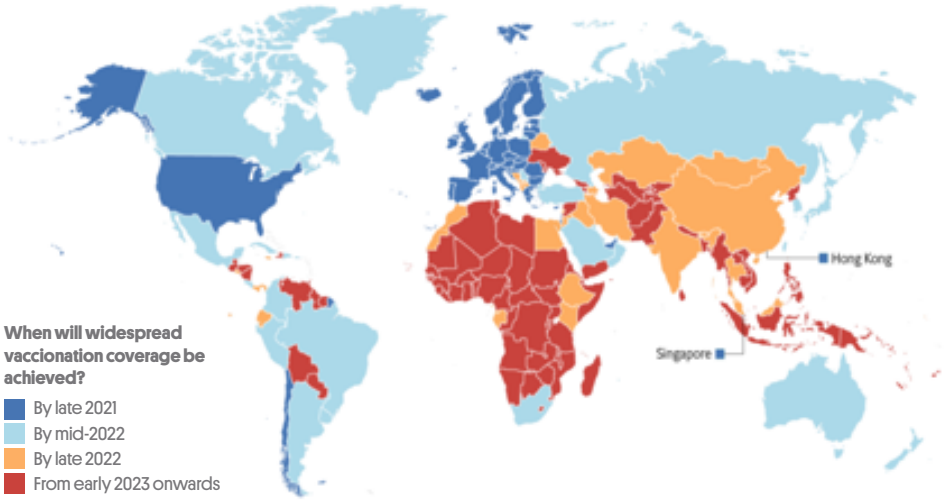
COVID-19 vaccine doses administered per 100 people, Mar 10, 2021

Total number of vaccination doses administered per 100 people in the total population. This is counted as a single dose, and may not equal the total number of people vaccinated, depending on the specific dose regime (e.g. people receive multiple doses)



Source of graph: Our World in Data

Rich countries will get access to coronavirus vaccines earlier than others



Source of graph: The Economist Intelligence Unit

During the last quarter of 2020 and first quarter of 2021, several variants of SARS-CoV-2 virus have posed concern because of their higher transmissibility – which ultimately leads to more deaths than higher lethality – and the fear of vaccines being less effective against them. Three variants have outstanded and are now widespread across the globe. The first variant is the B.1.1.7, originally detected in the UK and known to be more transmissible and to possibly increase severity and mortality. The second variant is the B.1.351, first detected in South Africa and observed to be more transmissible and less susceptible to protection derived from prior infection from other variants and vaccines. The third is the P1 variant, first detected in Brazil, which is also more transmissible than previous circulating variants. Its capacity to evade vaccine's protection is still under investigation.

Most studies assessing the efficacy of vaccines against the new variants are laboratory based. In laboratory-based studies, both Pfizer-BioNTech and Moderna's vaccines showed lower eliciting of immune responses against the B.1.351 variant, and it is still under investigation whether the immune response elicited are sufficient to offer protection. The first clinical trial assessing the efficacy of AstraZeneca's vaccine against B.1.351 showed no protection of the vaccine against mild and moderate infections, and its protection against severe COVID-19 is still to be determined. When an increased fraction of the population is vaccinated in the future, observations at clinical level of re-infections or severe COVID-19 cases in vaccinated individuals will themselves be informative. Besides, mRNA-based vaccines, like the ones developed by Pfizer-BioNTech and Moderna, can easily be tweaked to be effective against new variants and clinical trials can potentially be shortened in duration.

WHO provides actualizations on the spread and key information of the variants of concern in weekly epidemiological updates and summarises relevant information and advice regarding the effects of virus variants on COVID-19 vaccines in a dedicated page.

At this pace of vaccine rollout, it is very likely that western countries will have high proportions of their populations vaccinated and starting to return to 'normal' pre-COVID-19 ways of interacting in late 2021 or early 2022; and that southern countries will still not be widely vaccinated and still have sustained COVID-19 transmission and COVID-19 related economic and social effects for another two years at least. In that scenario, where some regions are still largely susceptible to infection, it is very likely that new variants will appear, and although only a few might be of concern, some could escape vaccine's elicited immunity and potentially cause new outbreaks even amongst people who have already been vaccinated for the current strains. This could mean that a number of disease-causing coronavirus variants sustain transmission in the coming years and new vaccines need to be developed in a cyclical manner every time a new coronavirus strain appears for which already-developed vaccines are not effective.

Adaptation of the measures and recommendations to the new and future contexts

With the worldwide and regional context changes, and especially as new strains evolve and vaccines become available, the measures applied in countries will need to be adapted. At the moment, a key priority should be ensuring vaccine accessibility and to vaccinate the population, while still sustaining the basic public health measures to avoid spread and, importantly, reinforcing or putting in place genomic surveillance.

The currently proposed thresholds in the "Regional Scenarios for COVID-19 Prevention and Control" still stand. These may need to be re-evaluated if strains with much higher transmissibility evolve or arrive in the region. For this, it is recommended that genomic surveillance is strengthened, to be able to promptly identify local transmission of SARS-CoV-2 variants and if required adapt public health measures to them.

The recommendations in "Considerations towards the opening of the British Virgin Islands to tourism" also still stand. However, it should be noted that some countries are starting to apply stricter quarantines (generally, 14 or 10-day quarantines with the option of shortening to 7 days if the person has a negative COVID-19 test in the quarantine) for travellers coming from Southern African countries and from some Latin American countries including Brazil, to prevent the spread of the new more dangerous strains. COVID-19 vaccination certificates might come into play, as they are being discussed in the European Union and other nations, although they are discouraged by WHO. Their usefulness, however, is subject to vaccines proving to be efficacious against the transmission of the virus (beyond their already known efficacy against COVID-19 disease development). Another turning point in the control of SARS-CoV-2 importation, but also of local transmission, would be the widespread availability of rapid COVID-19 tests. For instance, in Germany they can be bought at supermarkets, and in Denmark they are performed for free and anytime at clinics. Their accessibility would allow to increase the frequency of testing and thus counteract their limitation of not detecting early infections.

In order to be on top of the changes in recommendations, the reader can find in the following resources information on the evolution of the pandemic, recommendations and scientific updates.

Sites with periodically updated information, recommendations and new tools available:

- WHO technical guidance, organized by topic and by date of publication.
  - WHO's main updates since December 2020 relate to vaccines and treatment for COVID-19, clinical management, genomic sequencing for SARS-CoV-2 (implementation guide to genomic sequencing), and using routine data to monitor the effects of COVID-19 on essential health services.
  - Given the current situation in the Caribbean (namely, the need to control the current wave and then to re-open sectors), the following new resources in the WHO technical guidance site may potentially of interest to the Caribbean countries:
    - Considerations for implementing a risk-based approach to international travel in the context of COVID-19 (16 Dec 2020)
    - Checklist to support schools re-opening and preparation for COVID-19 resurgences or similar public health crises (11 Dec 2020)
    - Guidance on developing a national deployment and vaccination plan for COVID-19 vaccines (16 Nov 2020)
    - Corrigendum to "Contact tracing in the context of COVID-19" (1 Feb 2021)
    - Update of "COVID-19: Occupational health and safety for health workers" (2 Feb 2021)
    - Considerations for implementing and adjusting public health and social measures in the context of COVID-19 (4 nov 2020)
    - Critical preparedness, readiness and response actions for COVID-19 (4 nov 2020)

  - Update of "Infection prevention and control guidance for long-term care facilities in the context of COVID-19" (8 Jan 2021)
  - Roadmap to improve and ensure good indoor ventilation in the context of COVID-19 (1 March 2021)
- WHO tracking the effects of virus variants on COVID-19 vaccines
- PAHO Technical guidance
- CARPHA (Caribbean Public Health Agency) Vaccine Information, including the "Recommended Steps For Regulatory Decision-Making For COVID-19 Vaccines By CARICOM Member States" algorithm (29 Jan 2021)

Tracking COVID-19 in the Caribbean islands:

- PAHO Subregional and Country Epidemiological Curves and PAHO COVID-19 situation reports contain disaggregated information for Antilla, Montserrat and the British Virgin Islands.
- WHO COVID-19 Dashboard by country.
- COVID-19 surveillance reports by country in the Caribbean, including daily reports and weekly summaries.
- Our World in Data COVID-19 Tracker including vaccine roll outs.

Policy Report 1:

Considerations towards the opening of the British Virgin Islands to tourism

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How to use this document

This document is intended to project which could be the epidemiological scenarios faced by the Caribbean region in the months to come, in particular for Antigua and Barbuda, Barbados, British Virgin Islands, Dominica, Grenada, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Anguilla and Montserrat.

The first part introduces the differences in the public health strategies that countries have followed and that have led them to different epidemiological scenarios. A brief mention is made about the irruption of vaccines in these scenarios.

Understanding that the scenario that a country may face can be anticipated and shaped by the implementation of public health measures, the level of compliance and/or enforcement and their timing and duration; WHO's "Situational Levels" are described along with indicators and thresholds to assist the above mentioned Caribbean countries in the identification of the degree of risk at each given moment.

In the second part, non-pharmacological measures for each situational level are presented. For each, the epidemiological, social and economic impact is estimated. Furthermore, the landscape of pharmacological measures - including vaccines and profilaxis - is addressed by paying special emphasis on access, deployment and populations to be prioritized.

01 Potential epidemiological scenarios

1.1. Short introduction to the scenarios faced globally

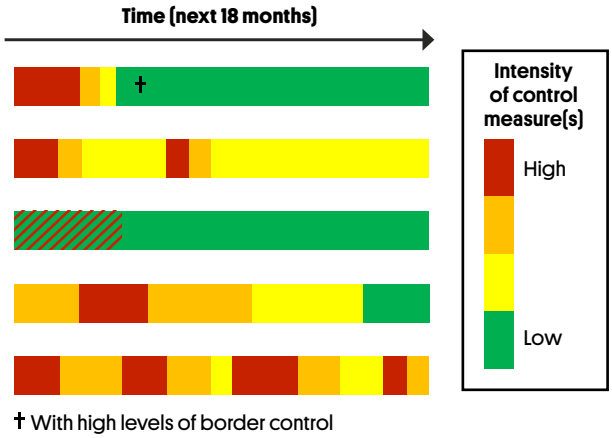
The strategies undertaken to control the COVID-19 pandemic have been diverse worldwide. This has led to countries recovering an almost normal life after the first wave, as Australia or New Zealand, to suffering a more harmful second wave as in the United States. Modelling analysis and observational and ecological studies have made clear that the scenarios faced now are highly dependent on the measures taken and, crucially, their timing.

Countries like New Zealand, South Korea, Taiwan, Singapore or Vietnam prioritized a strategy of elimination or "zero-COVID", implementing stringent measures when transmission was still low and sustaining them until virtually no transmission was reported (Han et al). Other countries have aimed at mitigating the transmission level in order to avoid the collapse of the health system, the so-called "bending the curve" strategy, implementing stringent measures only when community transmission was already very high[1]. However, this partial containment has led to a sway of restrictive measures and has failed to smoothen economic recession (Patel et al).

In this figure we see that implementing very stringent measures during a longer period of time may then be followed by only very mild measures thereafter. This is the strategy followed by New Zealand, which started a strict confinement on the 23rd of March after 100 cases had been declared and lifted it on the 13th of May when no daily cases were being reported. Delaying the implementation of strict measures or prematurely lifting them may imply a partial containment of the transmission and a sway of restrictive measures in the following months. This is the strategy that has been followed by the majority of the countries in Europe, this has led to a surge of cases since October, in some cases forcing reinstatement of confinement as it occurred in France or Austria.

[1] ¿Qué es una estrategia de COVID cero y cómo puede ayudarnos a minimizar el impacto de la pandemia?.

Figure 1 "Illustration of intensity of control measures over time under different strategies" Extracted from Background and overview of approaches to COVID-19 pandemic control in Aotearoa / New Zealand



The basis on which transition and adaptation of public health measures is made has also been diverse. In some countries like Singapore, Norway or Spain, politicians, drawing on expert advice, decide when and which restrictions to relax without previously defined criteria. Whereas Japan, Germany, the United Kingdom (UK) or South Korea, lift or reimpose restrictions on the basis of epidemiological thresholds (Han et al). The UK as an example of transparency, makes available to the public the discussions of the SAGE experts' committee on the latest available evidence that then shape the policies.

We present a table with different scenarios that countries have experienced following implementation of different strategies. These four countries have been chosen due to their high economic dependence on tourism and to the fact of being islands, to illustrate the transmission scenarios that caribbean countries could face in the future.

Reference country	New Zealand	Dominica	French Polynesia	Iceland
Scenario	**"Sustained cero"** Eliminated local transmission after first wave and has since then declared very sporadic cases.	**"Contained basal transmission"** Keeps transmission very low, transmission chains are controlled and mainly within clusters.	**"Epidemic transmission"** Sudden very severe increase of transmission.	**"Alternating pattern"** Sway of restrictive measures and relatively important epidemic waves.
Epidemiological curve (Daily new confirmed COVID-19 cases per million people)	Peak of incidence 15.5 cases/M.	Peak of incidence 37.7 cases/M.	Peak of incidence 1,681 cases/M.	Peak of incidence 253 cases/M.

Strategy and measures taken	**Zero-Covid, hard and early** Four level alert system. Strict lockdown after 100 cases and no deaths, after which mild measures were maintained: no social distancing, mask wearing on public transport except for borders which are closed for tourists. Testing capacity increased; manual and app-based tracing, expansion of ICU capacity [Patel et al].	**Border screening, wide contact tracing and community testing** Lockdown with some exceptions until June. Reopened its borders to international travel in August. Travellers coming from medium and high risk designated areas are required to undergo a rapid diagnostic test on arrival, quarantine for a minimum of 5 days after which a second PCR testing is administered [ref]. Large contact tracing and community testing.	**Favored reopening to tourism with minimal restrictions** One month lockdown. Borders reopened on the 15th July asking a negative PCR result and a self-administered test 4 days after arrival. Tourism has not been restricted although cases ramped reaching one of the highest incidences worldwide.	**Favors tourism sector while adapting public health measures** Quarantine and testing were imposed promptly and avoided a full lockdown. On 15 June, Iceland opened its borders to tourists with robust screening and contact tracing. In mid-September, the number of infections increased abruptly, from 1 to 55 in a week [Nature news], but opted to assume intermittent outbreaks with community transmission without it affecting the tourism industry.
Costs	**Health:** 5 deaths/ million **Economic:** -6.1 GDP, lower than in most high-income countries [IMF]. Tourism sector is highly affected. **Societal:** very strict lockdowns that might be unacceptable for some people given the relatively low risk.	**Health:** 0 deaths **Economic:** tourism has decreased but no official economic report is available.	**Health:** 270 deaths/ million and very likely an increase in other causes' mortality because of the health system collapse **Economic:** very likely worse impact in the long term No official economic report available **Societal:** fear of contagion.	**Health:** 79 deaths/ million **Economic:** –7.2 GDP [IMF] **Societal:** pandemic fatigue, people disregard health precautions after months of being careful.
Savings	**Health:** pandemic impact very low **Economic:** very likely in the long term *(No official projections)* **Societal:** after it's ended society can resume an almost normal daily life.	**Health:** pandemic impact very low **Economic:** saved part of tourism sector **Societal:** saved part of livelihoods of those working in the tourism sector.	**Health:** none Economic: saved part of tourism sector **Societal:** saved part of livelihoods of those working in the tourism sector.	**Health:** lower impact than other European countries **Economic:** saved part of tourism sector **Societal:** measures are not undertaken when risk is perceived "too low" by the population.

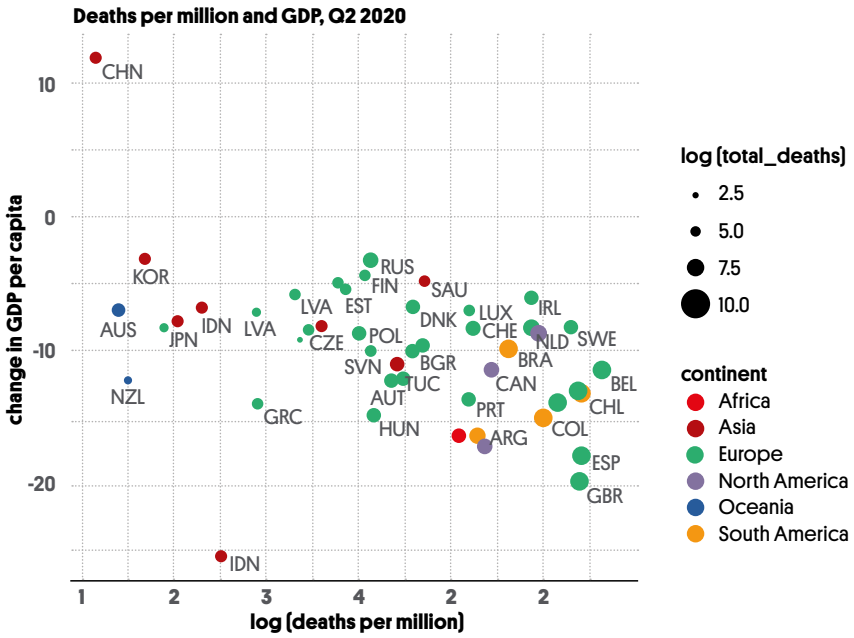
New Zealand opted for the elimination strategy, at the cost of keeping the borders closed, acknowledging that suppressing all risk of importation is unfeasible. However, this strategy might not be an option for most countries in the Caribbean, whose fragile economy substantially relies on tourism.

Dominica reflects the strategy of reopening tourism to safeguard such an important sector, while implementing preventive measures to preserve the health of the population. When it reopened to tourists only thirty cases had been reported in the country. A strict protocol for travellers entry was implemented, seeking to detect any imported case that might otherwise very likely lead to community transmission. So far Dominica has declared 72 cases and no deaths. Most cases have been imported and nearly all cases since the border reopening have been traced back to imported cases. 5,752 PCR tests have been contacted between community testing and contact tracing which has tested up to 131 contacts for a single case.

The **French Polynesia** opted for a more relaxed strategy of travellers screening: a negative PCR result and a self-administered test 4 days after arrival with no restriction of movement. Very few cases were detected by these means and cases ramped from summer to peak in November with figures doubling those in mainland France. As of December 7th the country has above 10,000 active cases (while only 62 had been declared before reopening to tourism) with death rates still increasing. Borders have not been closed, a nightly curfew has been in place since late last month and meetings in public are limited to six people (Source).

Unlike **New Zealand**, which has not opened its borders yet to tourism, elimination was never supported in **Iceland** for fears that the country would go bankrupt without tourism. Iceland opted to assume intermittent outbreaks with community transmission without it affecting the tourism industry. On 15 June, Iceland opened its borders requiring a negative PCR test upon arrival which was then further extended to a five-day quarantine followed by a second clearing PCR test. The incursion of two tourists that tested positive but did not quarantine led to a small bump of cases in August centred on two pubs and a fitness centre visited by the tourists. Then, in mid-September, the number of infections increased abruptly, from 1 to 55 in a week (Nature news). However, domestic infections have exceeded by many folds those imported. The question remains as to which extent domestic cases could be traced back to tourism. Since October 31, a gathering ban of groups over 10 is in effect. Bars and clubs are closed nationwide and a two-metre rule distancing rule is in effect in all regions of the country for those who do not have a close relationship. Mask use is mandatory in shops and on public transportation. Data has been the backbone of the response. Sequencing of the virus has allowed to identify linkages between cases. An open dashboard providing data disaggregated regionally, on border screening, number of quarantined and beyond is daily updated and open to the public.

Graph 1 "Log(deaths per million) by percentage change in Q2 2020 GDP per capita." Extracted from "Data from 45 countries show containing COVID vs saving the economy is a false dichotomy" by Michael Smithson



Governments have justified the timings and aggressivity of restrictions on the trade-off between health and economic costs. However, academics affirm that there is no dichotomy between economy and health. Data from 45 countries represented in the graph above support the notion that rapidly containing the pandemic may well lessen its economic impact. Nations like **New Zealand**, **South Korea**, **Japan or Australia** have suffered lower decreases in GDP per capita and have had fewer deaths per million than countries like **Spain or Great Britain** which have borne a much higher toll in deaths and suffered a bigger recession *(Graph 1)*. The two outliers are **China**, in the upper-left corner, with a positive change in GDP per capita, and India at the bottom. Which might be explained by the fact that China imposed successful hard lockdowns and containment procedures that meant economic effects were limited. India imposed an early hard lockdown but its measures since have been far less effective.

1.2 Anticipating the different scenarios

Although a certain degree of uncertainty and chance might play a (non-negligible) role, the scenarios that a country may face can be anticipated and shaped by (a) the implementation of public health measures, (b) the level of compliance and/or enforcement and (c) their timing and duration.

Monitoring the transmission level is key to anticipate the unfolding of the different scenarios and be able to adjust public health measures according to which scenario is desired. For example, New Zealand acted "hard and early" mandating a strict lockdown when only 100 cases had been confirmed in the country and no deaths, and went out of lockdown only when transmission was zero. Taiwan, which had previous experience and public health infrastructure from the SARS outbreak, also aimed - and achieved - a transmission zero scenario by anticipating the importa-

tion of cases with border closure and massive testing and quarantines. Before the first case was reported, tests on certain travellers were performed and after the first case flights from China were cancelled and then all borders were closed.

Table 1 Situational Level assessment matrix using transmission level and response capacity indicators to guide adjustment of Public Health and Social Measures. Table from WHO interim guidance on adjusting public health measures in the context of COVID-19.

	Response capacity		
Transmission level	**Adequate**	**Moderate**	**Limited**
No cases	0	0	1
Imported/Sporadic cases	0	1	1
Clusters of cases	1	1	2
Community - CT1	1	2	2
Community - CT2	2	2	3
Community - CT3	2	3	3
Community - CT4	3	3	4

WHO classifies four **"Situational levels"** according to the **level of transmission and** the **response capacity**, considering that the same level of transmission can result in different situations depending on the capacity of clinical care and public health services and their performance.

- **Situational Level 0** corresponds to a situation where there has not been known transmission of SARS-CoV-2 in the preceding 28 days and the health system and public health authorities are ready to respond.
- **Situational Level 1** clusters of cases or very low community transmission is ongoing but controlled through effective measures around the cases and with limited and transient localized disruption to social and economic life.
- **Situational Level 2** represents the situation with low community incidence or risk of community transmission beyond clusters.
- **Situational Level 3** is a situation of community transmission with limited additional capacity to respond and a risk of health services becoming overwhelmed.
- **Situational Level 4** corresponds to an uncontrolled epidemic with limited or no additional response capacity available.

These four situational levels can serve as a frame to describe the pandemic unfolding, and as triggers to adapt public health measures.

1.2.1. Indicators and thresholds

WHO's situational levels are build up of two main components:

1. The **epidemiological situation / transmission classification** - which responds to the question *"Is the epidemic controlled?"*
2. **Health system and public health services capacity and performance** - which responds to the question *"Is the health system able to detect and cope with COVID-19 cases while maintaining other essential health services?"*

The rationale behind is that if transmission is very low but the health system does not have further capacity, a "worse" scenario or situational level should be expected.

Lists of indicators and their classificatory thresholds are presented in the following tables and in the Annex. Countries should prioritize the use of those indicators that are available and reliable. Trends can be used instead of quantitative thresholds where data are not reliable but denominators are stable.

These indicators could be presented in a dashboard format in official portals like in the case of Iceland, so that people are aware of the trends and the risks and might so adapt their behaviors accordingly. This approach provides an opportunity for citizen engagement and fostering individual responsibility.

Table 2 Primary Epidemiological Indicators and Proposed Ranges to Assess the Level of COVID-19 Community Transmission. Table from WHO interim guidance on adjusting public health measures in the context of COVID-19.

Domain	Indicator	Advantages/ Rationale	Limitations	Transmission level classification					
				No cases	Imported / Sporadic	CT1	CT2	CT3	CT4
Hospitalization Rate	New COVID19 hospitalizations per 100 000 population per week averaged over two weeks.	Unlikely to be subject to surveillance policy changes/ differences.	May be influenced by hospitalization policy, e.g. if even mild cases are hospitalized for isolation purposes. Delayed measure of incidence.	0	0 - <5	<5	5 - <10	10 - <30	30+
Mortality	Number of COVID-19 attributed deaths per 100 000 population per week averaged over a two-week period.	Minimally influenced by surveillance policy if testing is comprehensive.	Delayed measure of incidence. Peak of mortality occurs 15 days approximately after peak of cases. In small geographical regions can be sensitive to minor fluctuations (e.g. one versus two deaths).	0	<1	<1	1 - <2	2 - <5	5+
Case Incidence	New confirmed cases per 100 000 population per week averaged over a two-week period.	Direct measure of incidence.	Heavily influenced by surveillance system performance, testing policy and laboratory capacity. In small geographical regions, can be sensitive to minor fluctuations in case counts, particularly due to batch reporting.	0	<20	<20	20 - <50	50 - <150	150+

Domain	Indicator	Advantages/ Rationale	Limitations	Transmission level classification					
				No cases	Imported / Sporadic	CT1	CT2	CT3	CT4
Testing	Test positivity proportion from sentinel sites[2] averaged over a two week period.	Not influenced by surveillance capacity or strategy. Minimally influenced by testing strategy or capacity.	May not be representative of the general population if there are only limited sentinel sites. May miss mild or atypical cases if testing criteria require influenza like presentation.	0%	~0%	<2%	<2% - <5%	5% - <20%	20%+
Overall (non-sentinel) test positivity	Test positivity proportion from sentinel sites averaged over a two week period.	Heavily influenced by testing strategy and capacity. If very few tests are performed and only in highly probable cases, the proportion of positives will be very high and not indicative of transmission level. Also informs on how adequately countries are testing.	Useful if there are limited sentinel sites.	0%	0 - 1% [On tourists and their contacts]	<2%	<2% - <5%	5% - <20%	20%+

In addition to calculating the category of transmission classification, it is also important to understand the **direction of the trends** of contributing indicators (stable, decreasing or increasing) over several weeks. This can assist in determining whether measures implemented are improving the epidemiological situation in the area, for planning future changes, or putting in place anticipatory measures based on transmission trends.

It must be noted that the increase in incidence rate follows an exponential trend. For example, New Zealand declared 4 new cases on the 17th March, 8 on the 19th, 50 on the 22nd and 85 new cases on March 25th. This illustrates that cases escalate very rapidly and can be 20 fold higher within a week. The "Doubling Time" can assist in making predictions on this escalation, it measures the number of days required to double the total cumulative number of cases (see Annex). In this sense, reactive measures are by definition late, a fact that must be taken into consideration during planning.

[2] If one or two sentinel cohorts are established (doing PCR or antibody (IgM/IgG) tests to the cohort members on a regular basis, e.g. weekly), the PCR / seroconversion rate in these groups would act as sentinel of different settings (community transmission in the case of teachers vs very exposed workers in the case of people in contact with tourists or healthcare workers).

Table 3 Primary Epidemiological Indicators and Proposed Ranges to Assess Level of COVID-19 Health system and public health services capacity and performance. Table adapted to the Caribbean region from WHO interim guidance on adjusting public health measures in the context of COVID-19 and the CT workforce estimator by the Fitzhugh Mullan Institute for Health Workforce Equity.

Domain	Indicator	Rationale	Limitations	Response capacity classification		
				Adequate	Moderate	Limited
Contact tracing workforce	Number of contact tracers per 100 000 population (full time).	Having enough contact tracers is key to be able to identify, isolate, test and follow contacts.	If the geography of the country is spread like in the case of islands, the numbers might be adapted to each territory, since a contact tracer might spend too many work hours travelling between territories.	>18	18-15	<15
Contact tracing performance	Percentage of cases that are from contact lists and can be linked to known clusters.	If cases can be traced back it indicates that most transmission chains have been identified, offering the opportunity for follow-up. It is a measure of the spread in the community beyond known clusters.	This may be limited by the fact that the information will certainly not have been collected at the height of the epidemic. It is heavily influenced by case investigation and contact tracing capacity.	>90%§	60% - 90%	<60%
Public health response capacity	Number of persons tested per 1000 population per week, averaged over a two-week period.	Without sufficient testing, it is difficult to appropriately isolate and treat cases.	Not all laboratories are able to report individuals tested. Laboratories not reporting location of cases may mask disparities in testing (e.g. among nonurban populations). If using rapid diagnostic tests, these should be used according to guidance, and thresholds may need to be raised.	2+	1 - <2	<1
Public health response performance	Proportion of cases for which an investigation has been conducted within 24 hours of identification.	This indicates that the capacity to identify transmission risks and exposed contacts. Where investigation is not recorded directly, can be measured by proxy indicator - proportion of cases with contacts listed.	May be difficult to obtain timely data.	80%+	60-<80%	<60%
Clinical care capacity	Proportion of occupied hospital beds.	20% of COVID19 cases need hospitalization. High morbidity and mortality will occur if there is insufficient capacity to hospitalize severe cases. Should count all ospitalizations, not only COVID-19.	May be influenced by hospitalization policy (e.g. if all cases are isolated in hospital), which does not indicate true saturation of hospital capacity.	<75%	75-<90%	90%+†

Domain	Indicator	Rationale	Limitations	Response capacity classification		
				Adequate	Moderate	Limited
ICU capacity	Proportion of current ICU beds occupied.	32% of COVID19 hospitalized patients require ICU admission.[3] This indicator assesses sufficient clinical capacity to respond to cases most likely to lead to mortality.	In countries with very few ICU beds can be substituted with proportion of occupied hospital beds +/- oxygen in these situations. If the country relies on another hospital's ICU, capacity for evacuation of patients should be leveraged.	<80%	80% - 90%	>90% †
Clinical care performance	Case fatality rate of resolved (i.e., outcome known) hospitalized cases.	Overall impact indicator of adequate COVID-19 care.	Highly dependent on age and various biases. Must take into account any changes in case detection or testing strategy.	Decreasing trend.	Stable trend.	Increasing trend.
Public health response performance	Support for / Adherence to PHSM.	Qualitative assessment based on observation, media monitoring, perception or behaviour surveys, hotlines, focus groups, etc. Predictor of effectiveness of measures put in place; it is important to identify not only the current status but any barriers or enablers to improvement.	May be highly variable between sub-groups and across individual PHSM. Difficult to assess objectively.	High (nearly universal adherence to most PHSM).	Moderate (modest adherence to most PHSM, or variable adherence across individual PHSM).	Low (minimal adherence to most PHSM).

† Hospital occupancy routinely varies considerably between countries, and so baseline occupancy must be taken into consideration.

§ WHO does not provide thresholds for this indicator and thus they should be interpreted with caution. However, it recommends for transmission to be controlled at least 80% of cases should be contacts of cases and can be linked to known clusters.

Most people recover from the disease without needing special treatment, and for the majority – especially for children and young adults – illness due to COVID-19 is generally minor. About 20%, all ages included, requiere hospital attention of which 32% are estimated to require ICU admission. Of those admitted the mortality rate is about 39% (SM Abate et al).

In general terms, WHO states that for a health system to be sustainable, even if it had to absorb a surge in cases resulting from loosening public health and social measures it must be able to absorb or can expand to cope with at least a 20% increase in COVID-19 case load. This includes sufficient staff, equipment, beds, etc. However, most countries in the Caribbean have very few hospital beds and/or limited ICU capacity. This can be sufficient for normal situations but not to face an epidemic when cases (and consequently also severe cases) can rapidly escalate, specially among tourists that can in some cases cause a several-fold increase the countries populations; and which might typically, in other circumstances, not require ICU services (See Annex). Namely, Anguilla and Montserrat have no ICU capacity. This rebounds in the fact that if a given country has 10 ICU beds, with a habitual occupancy of 80%, only 2 spare beds are available. Although severe cases are only a small proportion, the margin of reaching full occupancy of ICU beds is extremely short. For this reason, considering the lowest capacity response level would be the most prudent.

[3] A meta analysis published in July 2020 by SM Abate et al, estimated the rate of ICU admission was 32% and the mortality rate in those admitted of 39%.

1.3. Scenarios in the case of vaccine availability

Mass vaccination has already started in Russia and the UK and many countries have scheduled to start within the next few months. It has been estimated that 55-80% of a population must be immune to achieve herd immunity and prevent the spread (Kowk et al). Achieving it will depend on the effectiveness of the vaccine, but also on the capacity of its production and delivery and, most importantly, vaccine acceptance by the population.

Besides, the duration of the elicited immune response may be a critical factor. Although to date, immunology studies on natural infection have suggested a long-lasting immune response for greater than six months (Dan et al).

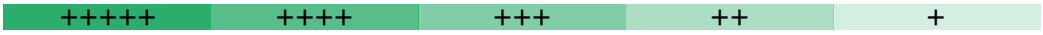
It is thus very likely that, in spite of vaccine rollout, public-health interventions will still be needed.

02 Country Roadmaps: COVID19 control measures and their socio-economic impact

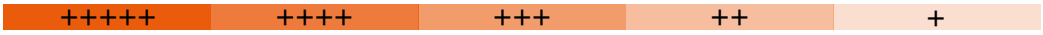
2.1. Non-pharmacological control measures

The following tables suggest non-pharmacological interventions that should be considered for each of the Situational Levels defined by WHO and that can be identified with the indicators previously mentioned.

For each measure an estimated degree of epidemiological impact is identified from very high impact (+++++) to very low impact (+):



Furthermore, the degree in which these measures impact societies and economies has also been estimated and represented as very high impact (+++++) to very low impact (+):



Situational level 0
No transmission detected in the preceding 28 days and health system and public health authorities ready to respond.
Surveillance should ensure that any new case can be detected and managed as early as possible.

Potential measures	Measure impact on transmission	Measure societal impact	Measure economic impact
Robust surveillance in borders and sentinel centers	+++++ Essential at Level 0 to detect any imported case at borders or in the community in the sentinel centers.	+ Impact on tourists.	++ Cost of facilities and tests.
Hand washing and sanitizing available in public spaces	+++ Viable SARS-CoV-2 persists for up to 72 hours on common surface materials indoors. The relative importance of transmission through hands for SARS-CoV-2 is not known. Meta-analyses have found that 20% of respiratory illness can be prevented by all hand hygiene interventions.	+ Very simple.	+ Very cheap.
Communication of individual precautionary measures (hygiene, cough etiquette, physical distancing) and protocol when having compatible symptoms	+++ If people practice hand hygiene and preventive measures they are less likely to spread the virus. If they are trained to identify their symptoms earlier, they reduce the number of days in blue, and hence their overall contagiousness.	+ Very simple.	+ Very cheap.

Situational level 1 **Clusters of cases or very low community transmission is ongoing but controlled through effective measures.** Specific measures should be taken around cases and/or clusters, and individual measures should be strengthened, with limited impact on social and economic activities.			
Potential measures	**Measure impact on transmission**	**Measure societal impact**	**Measure economic impact**
Contact tracing	+++++ Essential at level 1 to contain the spread.	+ Only impacted those contacts that will have to quarantine.	++ Moderate cost and taskforce.
Intensive testing (NZ) / Community testing	+++++ Allows for detection of asymptomatic or undetected clusters in the community.	+ Little impact on daily life.	+++
Promote avoidance of the '3 Cs': Closed spaces, Crowded places and Close-contact settings	+++++ Social distancing has been estimated to decrease 42.94% Rt [Bo et al].	+++ Moderate impact on daily life.	+++ Moderate impact on the economy.
Mandatory masks in closed spaces and transport. School buses and children under 6 exempt along with people with disabilities or mental health conditions	++ Important because asymptomatic or pre-symptomatic can transmit the virus. Decrease 15% Rt [Bo et al].	+	+
People and organisers of gatherings encouraged to maintain a record of where they have been	++ Facilitates contact tracing.	+ Very simple.	+ Very cheap.
COVID-app	++ Effectiveness may depend on the number of users.	+ Very simple.	++ Moderate cost.
Bans of social gatherings above 100 persons, including weddings, birthdays and funerals	+++ Reduction of 28% in Rt [Brauner et al].	++ Moderate long term harms particularly at the level of communities and social networks.	+++ Moderate impact on the economy.
Close nightclubs	++++ They are big gatherings in closed spaces with close contact and loud speaking.	++ Affects mainly younger age groups.	+++ High direct impacts resulting from loss of income for staff.

Situational level 2 **Low community incidence or risk of community transmission beyond clusters** Measures should be applied to limit the number of social encounters in the community while ensuring services can remain open with safety measures in place.			
Potential measures	**Measure impact on transmission**	**Measure societal impact**	**Measure economic impact**
Temperature checkpoints	+ Transmission mainly occurs before symptom onset and a high proportion of cases are asymptomatic.	+ Very simple.	+ Very cheap.
Work from home when possible	++++ Over 1/3rd of contacts are made at work, often long duration and highly clustered. In UK reduction of 20 - 40% Rt.	++ Mild harms associated with poor ergonomics at home, social isolation and increased prevalence of domestic violence. Inequity: Younger people and those on lower incomes will not be able to telework and will be at increased risk.	+++ Some businesses might be impacted.
Bans of social gatherings above 10 persons including weddings, birthdays and funerals	++++ Reduction of 36% in Rt [Brauner et al].	++ May also create unintended harms by increasing levels of protest, amplifying the numbers of unlicensed music events/house parties and provoking confrontations with police, and have a disproportionate impact on young people.	++ Impacts resulting from loss of income for staff working in these sectors.
Limit inter-regional travel (except for critical workers, and others considered)	+ Impact depends on the level of seeding of the epidemic. If the epidemic is already widespread, then internal travel restrictions will have little benefit.	+ Impact in family visits and work commuting.	++ Might indirectly impact other sectors.
Strict application of PPE and IPC measures, heightened surveillance and managing visits in long term care and other residential facilities	+ Impact can be small at country level but may prevent potentially severe cases leading to death.	++ Loneliness, isolation, caregivers impeded taking care.	+

Situational level 2 **Low community incidence or risk of community transmission beyond clusters** Measures should be applied to limit the number of social encounters in the community while ensuring services can remain open with safety measures in place.			
Potential measures	**Measure impact on transmission**	**Measure societal impact**	**Measure economic impact**
People instructed to stay home in their immediate bubble other than for essential personal movement – including to go to work, school if they have to, or for local recreation	++ Reduction of 10% in Rt (Brauner et al).	++ Increases risk of deepening economic disadvantage (e.g. shared childcare and eldercare between homes).	+
Close businesses that offer services that involve close personal contact (e.g., hairdressing, beauty therapy, etc), except for supermarket, pharmacy, petrol station or hardware store providing goods to trade customers, or it is an emergency or critical situation	++ Reduction of 20% in Rt (Brauner et al) UK estimated the reduction of Rt up to 5% because of the relative infrequency of their use.	+ Low psychological impact through reduced social contact for customers.	+++ High direct impacts resulting from loss of income for staff. Economic impact would most affect the poorest and women.
Closure of indoor gyms, leisure centres, fitness etc.	++ UK estimated reduction of 10% although precises estimation is very difficult. Outbreak reported in fitness class in South Korea.	++ Limits access to exercise for physical and mental health but high potential for substitution to outdoor physical activity though may be harder in winter months.	+++ Loss of income for employees of sports facilities.
Closure of indoor hosterly, while terrace service still allowed	+++ UK estimated 10-20% reduction in Rt Environmental risk in bars, pubs etc is likely to be higher than many other indoor settings due to close proximity of people, long duration of exposure, no wearing of face coverings by customers, loud talking that can generate more aerosols. Some venues are poorly ventilated, especially in winter. Consumption of alcohol impacts on behaviour.	+ Low psychological impact through reduced social contact for customers.	+++ High indirect impacts resulting from loss of income for hospitality employees.

Situational level 3 **Community transmission with limited additional capacity to respond** A strengthening of all PHSM is needed to avoid more stringent restrictions on movement and other related measures applied under level 4. All individuals should reduce their social contacts, and some activities may need to close while allowing for essential services and in particular schools to remain open.			
Potential measures	**Measure impact on transmission**	**Measure societal impact**	**Measure economic impact**
Mandatory masks outdoors	+ Low transmission rates outdoors and most risky contacts are made indoors. May have a small impact for those people who have to come into close contact with others. [UK].	+	+
Close in face secondary school learning	++++ Reduction of 41% in Rt [Brauner et al] UK estimates reduction of 35% in Rt for closure of secondary schools.	+++ Increases in school drop out, reduces quality education, domestic violence. Parent's productivity and work from home reduced.	++
Close in face university learning	++++ Reduction of 41% in Rt [Brauner et al] UK estimates reduction of 30%-50% in Rt for closure of secondary schools.	++ Decreased quality education.	++
Close borders (or partially)	++ Impact depends on the level of transmission in the countries of origin.	++ Impact in family visits and work commuting.	+++++ Tourist sector highly affected.
Bars and restaurants close	+++ UK estimated 10-20% reduction in Rt Could have positive impact on adherence to other measures as it will reduce perceived inconsistencies between home and non-home restrictions.	+ Low psychological impact through reduced social contact for customers.	++++ High indirect impacts resulting from loss of income for hospitality employees.
Businesses closed except for essential services (e.g. supermarkets, pharmacies, clinics, petrol stations) and lifeline utilities	+++ Reduction of 29% in Rt [Brauner et al]. UK estimated very minimal impact on R of closure of non-essential retail.	+ low psychological impact through reduced social contact for customers.	+++++ High direct impacts resulting from loss of income for staff. Economic impact would most affect the poorest given employment in non-essential retail with consequences for health inequalities.

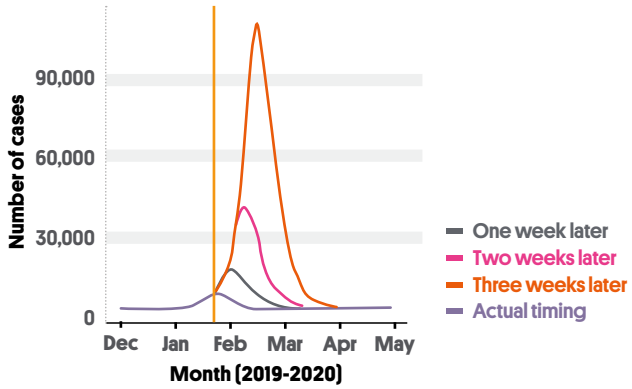
Situational level 3
Community transmission with limited additional capacity to respond
A strengthening of all PHSM is needed to avoid more stringent restrictions on movement and other related measures applied under level 4. All individuals should reduce their social contacts, and some activities may need to close while allowing for essential services and in particular schools to remain open.

Potential measures	Measure impact on transmission	Measure societal impact	Measure economic impact
Closure of places of worship / community centres	++ UK estimated a 10% reduction in Rt. Strong association with places of worship including significant outbreaks linked to religious communities in South Korea, cases in churches in Singapore, and Germany (despite social distancing). Environmental risks vary depending on the building. Small venues are higher risk than large spaces as the volume mitigates aerosol transmission. Some ceremonies involve touch surfaces and proximity for short duration (e.g. communion). Singing/loud talking can enhance risk.	+++ Mental health impacts from limiting social and spiritual connections. Risk of social division / anger if places of worship are closed ahead of recreational sectors (e.g. bars). Places of worship and community centres play a variety of roles beyond their core function: food banks, coordination of volunteers, child contact centres, and more Possible increases in domestic abuse without community refuge.	+

Situational level 4
Uncontrolled epidemic with limited or no additional response capacity available.
Reducing transmission in the community will be challenging, and more stringent movement restrictions and related measures may need to be put in place to significantly reduce the number of in-person encounters.

Potential measures	Measure impact on transmission	Measure societal impact	Measure economic impact
Large scale disinfection	+	+	++
Lockdown except for essential businesses and schools if they remain open	+++++ France reduced 80% the daily incidence within a month [ref]].	+++++ Very high impact on mental health and wellbeing.	+++++ Impact most on the poorest given employment in jobs least amenable to home working with consequences for health inequalities.
School closure	+ + UK estimated a reduction in Rt of 20%-50%. Very few outbreaks have been reported.	+++++ Increases in school drop out, child injury, domestic violence, child abuse. Parent's productivity and work from home greatly reduced.	+++++ School gap, inequality, opportunity cost. WHO recommends to consider all options for continuity of in-person learning. And closure only considered when there are no other alternatives.
In-person visits prohibited in long-term care and other residential facilities	+ Impact can be small at country level but may prevent potentially severe cases leading to death.	++ Loneliness, isolation, caregivers unable to take care.	+ Little to no impact on economy.

Graph 2 "Estimates of the COVID-19 outbreak under various scenarios of intervention timing and lifting of travel restrictions across China". *Extracted from Lai et al.*



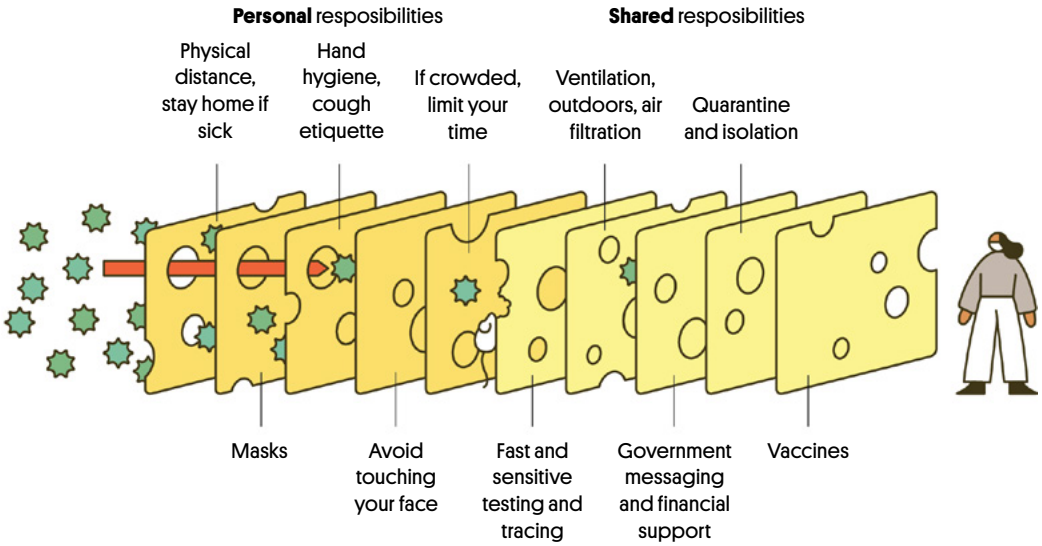
Each situation level should always incorporate the measures already implemented under the previous level or further reinforce them, and consider the ones that were recommended for the previous level but not taken into force. The measures can be applied at country level, or locally if cases are only being detected in a subregion, such as an island.

Timing of implementation of public health measures matters. The sooner the reaction the smother the curve will be, as it can be seen in the following graph. The later the measures are taken, the more stringent they will have to be to rapidly stop the spread at risk of overwhelming the healthsystem.

This is evidenced in the preceding tables. Measures recommended for Level 4 have significantly more impact on non-COVID factors, such as societies and economy than measures recommended for previous levels.

Approximate impact degrees are given for each measure, these will vary depending on the context. Nevertheless, there's clear evidence supporting that a combination of measures will be more impactful, as it is illustrated by Ian Mackay in the so-named "Swiss Cheese Respiratory Virus Pandemic Defense": no one layer is perfect; each has holes, but several layers combined — social distancing, masks, hand-washing, testing and tracing, ventilation, government messaging — significantly reduce the overall risk. Vaccination will add one more protective layer.

Image 1 "Swiss Cheese Respiratory Virus Pandemic Defense" version 3 by Ian Mackay



Source: Adapted from Ian M. Mackay (virologydownunder.com) and James T. Reason. Illustration by Rose Wong

These recommendations are mainly based on the interim guidance by WHO "Considerations for implementing and adjusting public health and social measures in the context of COVID-19". These measures should be updated on the basis of new scientific knowledge about COVID-19 and information about the effectiveness of the interventions in the countries themselves and elsewhere.

WHO provides guidelines on

- preparedness,
- risk communication and community engagement,
- managing the COVID-19 infodemic,
- considerations while resuming international travel,
- improve hand hygiene practices,
- advice on the use of masks,
- public health surveillance,
- investigation of cases and clusters,
- considerations for quarantine,
- considerations for school-related public health measures,
- adapting the workplace,
- infection prevention and control guidance for long-term care facilities
- mass gatherings

Experts at ISGlobal have prepared a series of policy briefs. Of special relevance for this paper are:

- The G20, Vaccines and COVID-19: Why is the Success of the COVAX Initiative Vital?
- What Are the Health Priorities of Older Adults During a Pandemic?
- COVID-19 in Latin America: What does it take to go from a highly-vulnerable region to a pandemic-ready region?
- How Should We Deal With New Outbreaks of COVID-19?
- How Can We Resume International Travel During the COVID-19 Pandemic?
- What Are the Barriers to Achieving Universal Immunisation Against COVID-19?
- Improving Case and Contacts Tracing During the COVID-19 Pandemic
- How Should Work Environments Adapt During the COVID-19 Epidemic?
- Should We Allow Physical Activity During The Coronavirus Disease Pandemic?

2.2. Pharmacological control measures

2.2.1. Vaccines

There are currently more than 100 COVID-19 vaccine candidates under development, with a number of these in the human trial phase. Those in phase 3 clinical trials are foreseen to be in the production pipeline within weeks or months (see *Table*).

Table Current vaccine candidates*

Strategy	Company	Reported efficacy	Conservation
RNAm	Moderna	94% (Phase 3 efficacy)	-20ºC, 4oC (1 month)
	BioNTech/Pfizer	95%*	-70ºC
Viral vector	AstraZeneca/Oxford (ChAd)	70% (preliminary results)	4ºC
	Gamaleya Institute (Ad5, Ad26)	91,4%*	4ºC
	CanSinoBio (Ad5)	Ongoing Phase 3	4ºC
	Johnson & Johnson (Ad26)	Ongoing Phase 3	4oC
Protein	Novavax	Ongoing Phase 3	4ºC?
Inactivated virus	Sinopharm	Ongoing Phase 3	4ºCcases/M
	Sinovac Biotech	Ongoing Phase 3	4ºC
	Bharat Biotechcases/M	Ongoing Phase 3	4ºC

Source: Who to vaccinate first when the first doses become available? Policy & Global Development Brief Series #27. *ISglobal Dec 4th, 2020. *Updated as of November 30, 2020*

Considerations regarding access

WHO is working in collaboration with scientists, business, and global health organizations through the COVID-19 Tools (ACT) Accelerator to speed up the pandemic response making COVID-19 tests, treatments, and vaccines readily available by working in collaboration to accelerate the development, production, and equitable access to. COVAX is the vaccines pillar of the Access to COVID-19 Tools (ACT) Accelerator and it is co-led by Gavi, the Coalition for Epidemic Preparedness Innovations (CEPI) and WHO. Its aim is to accelerate the development and manufacture of COVID-19 vaccines, and to guarantee fair and equitable access for every country in the world, assuring doses for at least 20% of countries' populations by the end of 2021.

COVAX Facility has identified two different groups of countries:

- Self-financing countries, which can either make a firm commitment or acquire options to purchase the number of doses they wish under the same pre-established conditions for all.
- Lower- and middle-income countries, which are eligible for the Advance Market Commitment (AMC) mechanism, a tool that enables Official Development Assistance (ODA) donor countries to fund vaccine access in developing countries once manufacturing begins.

Some Latin American countries, including those of the Eastern Caribbean region are eligible for the AMC mechanism, including Haiti, Bolivia, El Salvador, Honduras, Nicaragua, the Dominican Republic, Grenada, Guyana, Saint Lucia and Saint Vincent and the Grenadines. For the rest, as an ISGlobal policy brief analyzes, the only option would be to choose one of the two modalities offered to self-financing countries under the same conditions as economies with greater resources. Mexico, Argentina, Brazil, Chile, Costa Rica and Suriname have all entered into optional purchase agreements with COVAX. Guatemala, Belize, Panama, Venezuela, Colombia, Ecuador, Peru, Paraguay and Uruguay and many Caribbean countries, including Jamaica, the Dominican Republic and Barbados, have opted for the committed purchase arrangement. Except for Chile, Uruguay and some of the Caribbean nations, the rest of the countries in the region are classified as upper-middle or lower-middle income economies. PAHO recognises COVAX as the key option for providing early access to vaccines for most of the countries in the region and is contributing on behalf of the bloc through the PAHO Revolving Fund for Vaccine Access.

Who to prioritize

Several countries and regions are starting to develop COVID-19 Vaccine Values Frameworks (WHO) and Deployment Strategies (WHO, ECDC, CDC).

Patterns of exposure to SARS-CoV-2, as well as the incidence, burden and geographical distribution of COVID-19, are key asècts that will influence choices about vaccine deployment. There are still some uncertainties about the characteristics of COVID-19 vaccines that could become available worldwide, as well as remaining gaps in the scientific knowledge of the virus and the disease. Vaccination plans and strategies will therefore need to be adapted as more information becomes available.

The following are components that are usually taken into account when a new vaccine is available on the market and integrated into national vaccination schedules:

- a robust COVID-19 disease surveillance system;
- post-marketing studies on effectiveness and impact;
- active and passive monitoring of adverse events following immunization;
- robust and timely vaccination coverage data;
- evidence-based decision-making;
- legal and regulatory frameworks for vaccines deployment;
- vaccine delivery infrastructure and supply chain management;
- monitoring of vaccine acceptability and behavioural research;
- communication plans;
- ethical and equitable access to vaccination.

Once vaccines against COVID-19 are available, their supply is likely to be limited, at least initially. Supply capacity, both initially and over time, will thus determine vaccine usage and delivery prioritisation. Deployment will need to be adjusted accordingly to promptly optimise vaccine allocation and ensure vaccine availability to those most in need. The following non-mutually exclusive approaches for vaccine deployment can be considered when building vaccination strategies, taking into account different levels of vaccine supply and stages of the pandemic:

- focusing on selected groups (e.g. individuals at risk of severe COVID-19, essential workers, vulnerable groups, tourism workers in highly tourist-dependant island economies);
- vaccinating according to age strata (e.g. all individuals above a certain age);
- targeting groups with an increased risk of exposure and onward transmission of SARS-CoV-2 (e.g. exposure in professional settings, younger adults);
- prioritising geographical regions with high incidence of COVID-19;
- deploying the vaccine to control active outbreaks;
- adaptive approaches to be modulated according to circumstances;
- conducting a universal vaccination strategy.

Given the anticipated initial shortage, countries will need to identify priority groups for vaccination. A broader characterisation of these groups will need to further categorize them into different priority tiers. The identification of the priority groups, and of the tiers within them, will depend on several factors, including the disease's epidemiology at the time of vaccine deployment, the evidence of risk of severe disease and of exposure to COVID-19, the preservation of essential societal services and equity principles, among others.

2.2.2 Perspectives on profilaxis

There is a possibility that a preventative drug will be developed in the coming months and used as a bridge to protect the population until a vaccine is available and deployed. The key difference with a vaccine strategy is that prophylactic drugs would require repeated administration to sustain their effect. Several considerations are important regarding this potential measure.

The first decision to be made is to define whether such a strategy is of interest to the country should it become available.

Potential demand

Just as with vaccines, high demand of a prophylactic drug can be expected. Preparatory activities are advised to facilitate early acquisition and rollout. This may include:

- Enumeration of potentially eligible populations. Scenarios should be calculated with minimally essential and desired coverage. Eligibility could follow the criteria defined above for vaccines.
- Calculation of potential doses required to cover the period until a vaccine is expected to be rolled out.
- Costs for each deployment scenario should be estimated in advance.

Access and deployment

The capacity to cover the demand predicted in each scenario with national funds or the potential requirement for external support should be considered.

In a similar fashion, calculating the potential resources required for the rollout once procurement is completed would be of use in case such a drug becomes available. This includes personnel, warehousing, timing and distribution facilities.

Annex

Additional indicators to assess the level of epidemiological transmission

Indicator	Definition / Rationale	Limitations
Effective reproductive number (Rt)	The number of secondary cases that a given case can generate.	While this is a widely used indicator of transmission, it requires familiarity with the various methods for calculation and sufficiently reliable and timely data on incidence[4].
Doubling time	The number of days required to double the total cumulative number of cases. This is linked to Rt.	-
ICU proportional occupancy	The proportion of current ICU beds occupied by patients with COVID-19, out of all occupied ICU beds.	-

Additional indicators to assess the health system and public health services capacity and performance

Indicator	Definition / Rationale	Limitations
Number of trained ICU staff per 10 000 population	This indicates sufficient clinical capacity to respond to cases most likely to lead to mortality.	This indicator may be more relevant when measured against the population of clinically vulnerable persons (individuals aged >60 years and/or with comorbidities), if data are available. This indicator is difficult to measure. It is a necessary but insufficient measure of ability to provide intensive care.
Number of ICU beds per 10,000 clinically vulnerable population (individuals aged >60 years and/or with comorbidities)	Mortality from COVID-19 will be highest if capacity for intensive care is exceeded.	Strictly counting the number of ICU beds does not guarantee successful care if there is inadequate staffing, equipment or supplies.

[4] Theoretically, Rt below 1 is the best indication that the epidemic is controlled and declining. A package to estimate Rt is available, together with an interactive application. In countries constituted by several islands, Rt might vary across them and should be estimated at a subnational level.

Health system and public health services capacity and performance indicators in the Caribbean countries

Country	Contact tracing workforce	Public health response capacity	Clinical care capacity	Clinical care performance	ICU capacity	ICU staff
	number of contact tracers / 10,000 pop (source)	number of tests / pop* (source)	number of beds available **	case fatality rate*** (source)	number of ICU beds available **	
Anguilla		1 test every 6 people	Princess Alexandra Hospital: 36 beds	Stable trend (no deaths)	No ICU capacity	NA
Antigua and Barbuda		1 test every 21 people	St John's Medical Center: 185 beds	Decreasing trend	ICU at St John's Medical Center	2 physicians, 33 nurses/10000 (general, no ICU)
Barbados		1 test every 6 people	Queen Elisabeth Hospital:519 beds	Decreasing trend	Intensive Care Unit at Queen Elisabeth Hospital	2005 Total physicians:489 Total nurses:900
British Virgin Islands		1 test every 5 people	Peebles Hospital: 44 beds. 63% occupancy rate [2003]	Stable trend (1 death in April)	Intensive Care Unit at Peebles Hospital. 8 ventilators available	35 physicians registered to practice in the BVI,112 Registered Nurses
Dominica		1 test every 13 people	Princess Margaret Hospital: 224 beds. Occupancy rate 2002: 75,4%	Stable trend (no deaths)	Intensive Care Unit at Princess Margaret Hospital	2000 8,3 physicians/100000 people,48 nurses/10000 people
Grenada	Hired a surveillance official. Contact tracing through nursing students. St. George also supported with PCR testing.	1 test every 18 people	St John's General Hospital: 198 beds. Plus two more acute care facilities. Occupancy rate 2001: 64.1%	Stable trend (no deaths)	2 ICU beds	8 physicians per 10,000 population [2001]

Health system and public health services capacity and performance indicators in the Caribbean countries

Country	Contact tracing workforce	Public health response capacity	Clinical care capacity	Clinical care performance	ICU capacity	ICU staff
	number of contact tracers / 10,000 pop (source)	number of tests / pop* (source)	number of beds available **	case fatality rate*** (source)	number of ICU beds available **	
Montserrat		1 test every 9 people	The 30-bed Glendon Hospital provides medical, surgical and obstetric care. No tertiary care on the island	Stable trend (1 death in April)	No ICU capacity	NA 4 medical practitioners (total) as per 2005
Saint Kitts and Nevis		1 test every 15 people	The country's main referral centers are the 150-bed Joseph N. France General Hospital in St Kitts and the 50-bed Alexandra Hospital in Nevis. Low occupancy rates	Stable trend (no deaths)	Intensive care Unit at Joseph N. France General Hospital	11.8 doctors per 10000 population (2004)
Saint Lucia	No new HR for contact tracing	1 test every 11 people	Victoria Hospital is the main local trauma facility, with 150 beds and 6 acute care beds. Golden Hope Hospital has 162 beds. St Lucia suffers from a great shortage of medical staff, as per 2008	Decreasing trend	6 ICU beds	71 doctors, 248 nurses (2008)

Health system and public health services capacity and performance indicators in the Caribbean countries

Country	Contact tracing workforce	Public health response capacity	Clinical care capacity	Clinical care performance	ICU capacity	ICU staff
	number of contact tracers / 10,000 pop (source)	number of tests / pop* (source)	number of beds available **	case fatality rate*** (source)	number of ICU beds available **	
Saint Vincent and the Grenadines		1 test every 11 people	Milton Cato Memorial Hospital: 211 beds. 2000-2004: bed occupancy averaged 67% 58 beds in 5 rural hospitals, 12 beds in private facilities	Stable trend (no deaths)		2004, per 10000 population: 9.51 doctors, 34 nurses

* Should be estimated weekly averaging two weeks and per 10,000 population.

** Should take into account the percentage of occupied.

*** Due to the small magnitude of the number of cases, this indicator is very sensitive to minor fluctuations.

Policy Report 2:

Regional Scenarios for COVID-19 Prevention and Control

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01 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 CARICOM travel 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 (84.0%-97.6% sensitivity compared to RT-PCR) 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 South Korea (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 Iceland, 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 Barbados infected travellers can also isolate in their hotel or villa at their own expense.

See Annex for further information on current evidence on isolation.

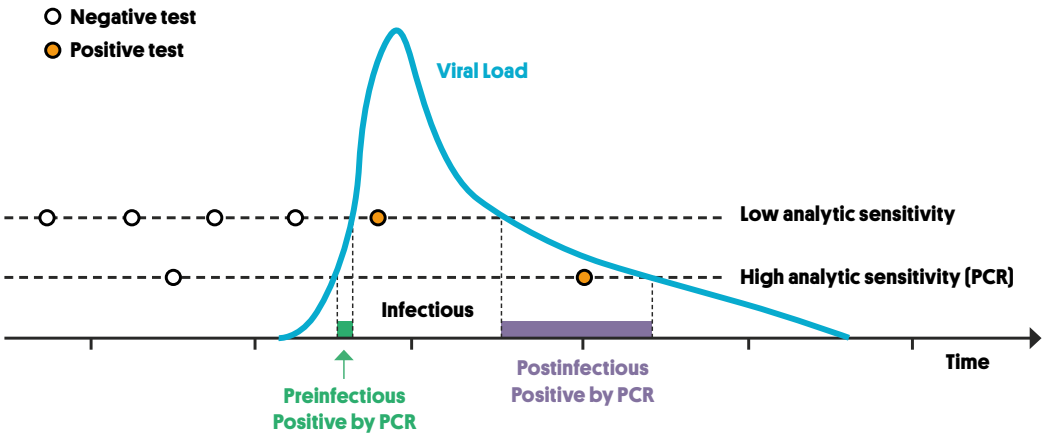
2.3. What is the current evidence and international practice on the quarantine length of incoming travellers?

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 the highest the 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:

- South Korea: 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:**
  - Iceland 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 travel cases have remained stable, 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.
  - Dominica 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:**
  - French Polynesia 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

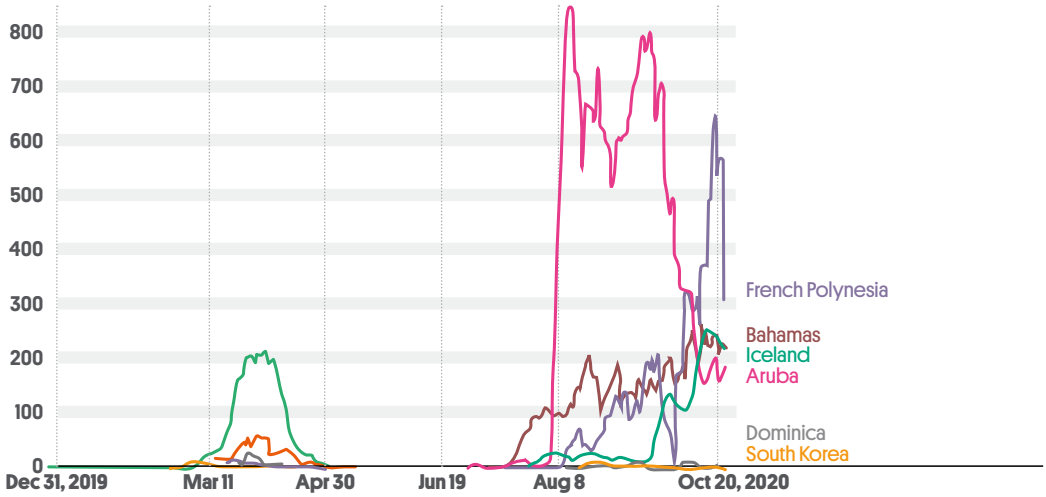
incorrect sampling. Cases rose dramatically and now French Polynesia has the highest per capita COVID rate in the world.

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.
- Aruba 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.

Daily new confirmed COVID-19 cases per million people

Show is the rolling 7-days average. The number of confirmed cases is lower than the number of actual cases; the main reason for that is limited testing.



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

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

See Annex 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 air travel 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 subgroup 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.

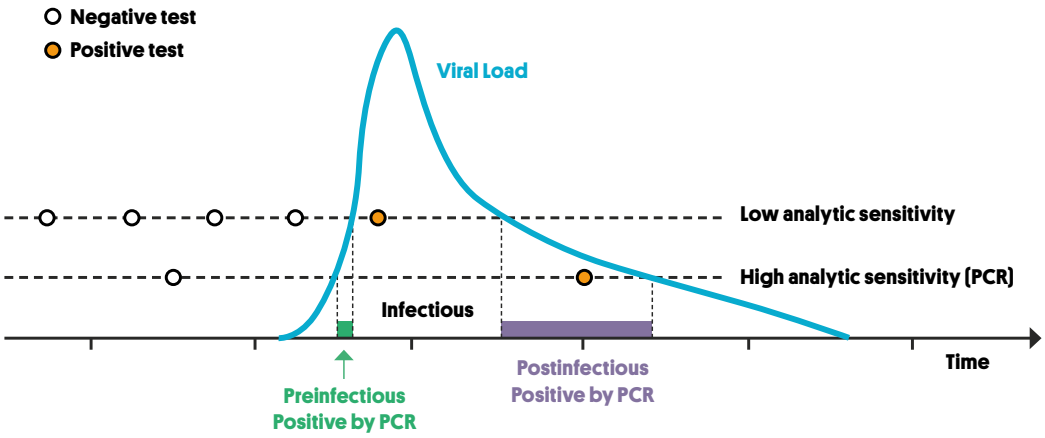
RT-PCR is the most sensitive and specific test available since it can detect very low viral loads, although this is reliant on the detection kit used and the time elapsed since the contagious exposure. A research team at Johns Hopkins School of Medicine saw that the median false negative rate of RT-PCR 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 the highest the day before onset of symptoms and the day of their onset, 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

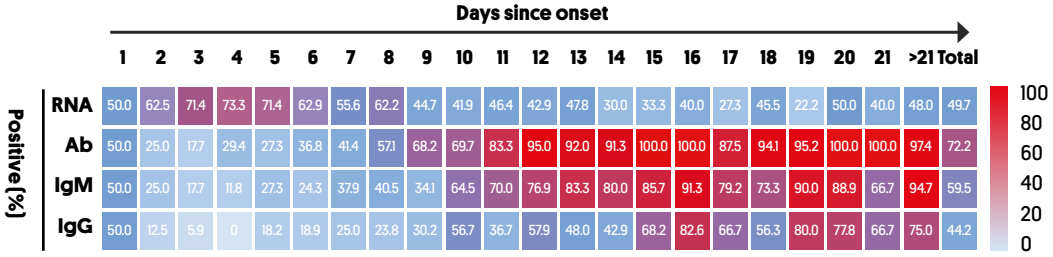
tests have a **lower sensitivity than RT-PCR**. The lack of an amplification step in antigen tests means their limits of detection are 100-1000 times higher than RT-PCR tests, but that is usually not a major drawback if the aim is to identify people who are currently transmitting the virus given their 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 but 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 several studies around 11 days. A study assessing the antibody responses to SARS-CoV-2 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: https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa344/5812996

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 Austria or France, 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 culturing virus declines to 8% in samples with Ct > 35 and to 6% 10 days after onset, 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, ECDC and the CDC recommend an isolation of 10 days for people who have a positive test or who have symptoms. The WHO 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 testing** 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 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 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 mathematical model suggested that when there are 4 imported cases there is a 50% chance of establishing community transmission. 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.

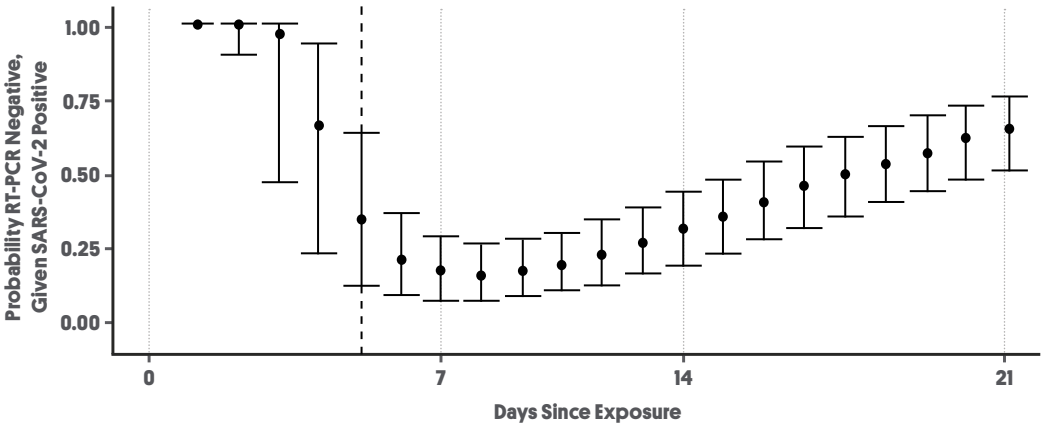
- **Testing all travellers by PCR upon arrival in adapted facilities at the airport**. Results might be available the sooner within half a day and the later would depend on human and technical resources, but ideally no longer than 24 hours. Travellers should **remain quarantined at their accommodations 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 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%.

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.

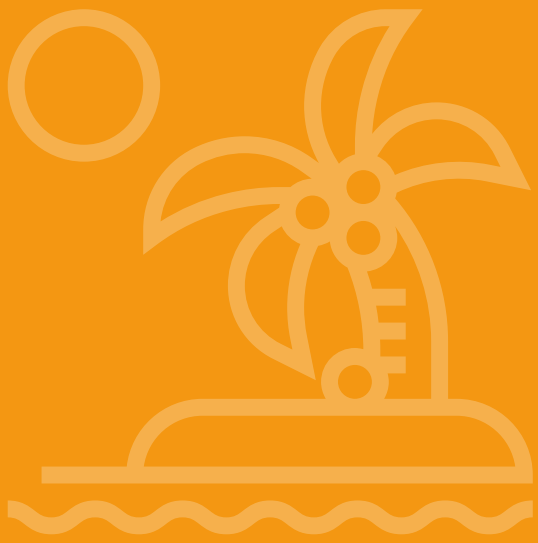
Strictly pre-symptomatic transmissions account for ~42% of all transmissions; early symptomatic transmissions (occurring on the day of symptom onset and the next day) account for an additional large fraction ~35% of all transmissions. Symptom onset is around day 5, meaning that the days with higher risk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

In the absence of any test quarantine should be of 14 days as recommended by ECDC and CDC. However, only 5% of the cases will have an incubation period longer than 10 days. For this reason Spain 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.



Annexes:

COVID-19 Epidemiological Situation and Response in Eastern Caribbean States

December 2020

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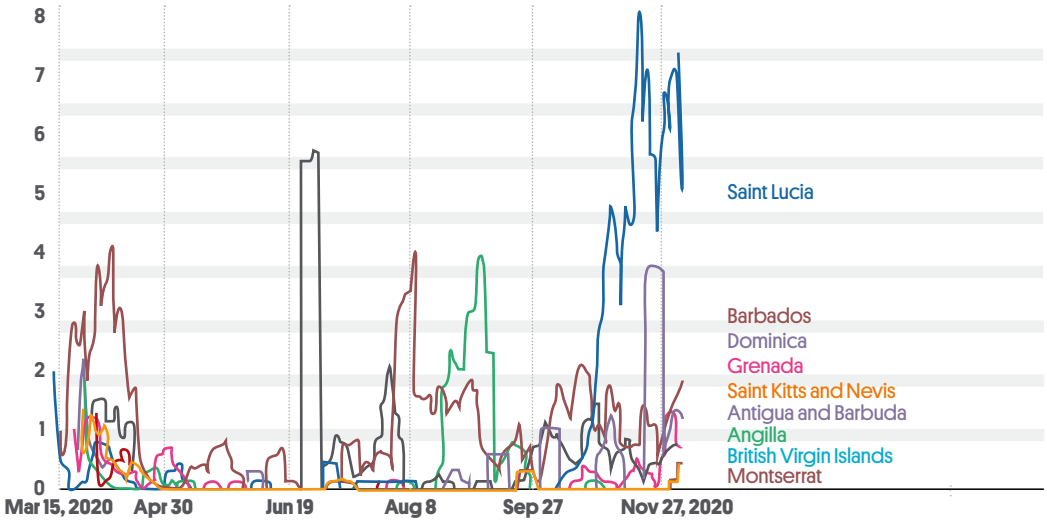
01 Regional overview: epidemiology and control response

Figure 1 Daily new COVID-19 confirmed cases in English-speaking Caribbean



Source: European CDC - Situation Update Worldwide - Last updated 27 november, 10:06 (London time) CC BY

The East-English Caribbean States have suffered a unique experience with the effects of the COVID-19 pandemic. Like other island-states, Mauritius or New Zealand, they have faced similar challenges, but also found similar solutions. Results in positive cases and death rates in the entire region show that their preventive measures have proven effective. As we can see on the chart, there was a first wave in March in the region, particularly accentuated in Barbados. We can observe some peaks in June (Antigua and Barbuda), August (Barbados) and September (British Virgin Islands), and what seems as a second wave starting in October, higher than the one in March. Currently, Saint Lucia is having the highest number of cases per day, at a maximum of 8.

Evidence suggests that the key strategy for such countries is the investment on PCR testing. While The World Bank classifies most of the Caribbean islands as middle-income or high-income countries, these island developing states share a common set of environmental, economic, and social vulnerabilities because of their absolute size and geographical remoteness. Partly in response to these vulnerabilities, the Caribbean has a history of regional collaboration. Since 1973, the

Caribbean Community (CARICOM) has provided this collaborative framework, and two intergovernmental agencies lead the regional support structures for disaster preparedness and response (Caribbean Disaster Emergency Management Agency) and for public health (Caribbean Public Health Agency). In February and March, Caribbean governments, watching the COVID-19 outbreak unfold across Europe and North America, and perhaps aware of their own health system fragilities, acted swiftly. In a review of the Caribbean response, national measures to restrict human movement into countries were implemented up to 27 days before the first confirmed case and 23 days before selected international comparator countries. The Caribbean response to the regional COVID-19 outbreak might be described as a network of national responses strengthened by a familiar regional support structure.

However, despite the low death rate in the island group countries - as opposed to countries like Spain with over 1,6M cases and 45k deaths - the Caribbean States have taken a considerable hit in their economic development. Their heavy reliance on tourism and the lack of economic diversification brought along some serious consequences for the population's resilience due to the unprecedented cut off brought by the inevitable restrictions to stop the pandemic. It is predicted that the impact of the virus will reinforce existing social and economic vulnerabilities, inequalities and risks. Governments of the Caribbean, already finding themselves in a challenging fiscal situation, have now put in place several initiatives to combat the consequences of the restrictions. Among them, the active deployment of national responses with infrastructural support and service delivery systems. Furthermore, as many regions in the world, the CARICOM region established a *travel bubble* in September 2020. The project included not only many of the islands in the group, but also some low-risk countries (like Canada), allowing tourism to slowly begin to recover.

The governmental response to the pandemic in the region could be divided into two main courses: the initial attention was focused on the strengthening of the healthcare systems, the acquisition of PPE testing and rapid isolation facilities. Once the disease was contained enough, the efforts towards the economic recovery of the region began. Timelines and temporality of measures being taken can be consulted elsewhere (Cepal, Reuters). Every country has followed different paths of procedure, but they all have collaborated towards a common set of goals for the period after the pandemic. These would involve different forms of economic stimulus packages, social welfare expansion, boosting agriculture, job creation and enhancement of support systems for Micro, Small and Medium enterprises. The main risk post-pandemic is the debt that these countries may find themselves in.

The following is an analysis of the epidemiological situation in every one of the nine countries that conform this region and the consequent preventive measures taken on by the government to ensure the containment of the virus. It should be noted that, due to the small denominator (the relatively small population of these states) of incidences and rates, they should be approached cautiously.

02 Anguilla

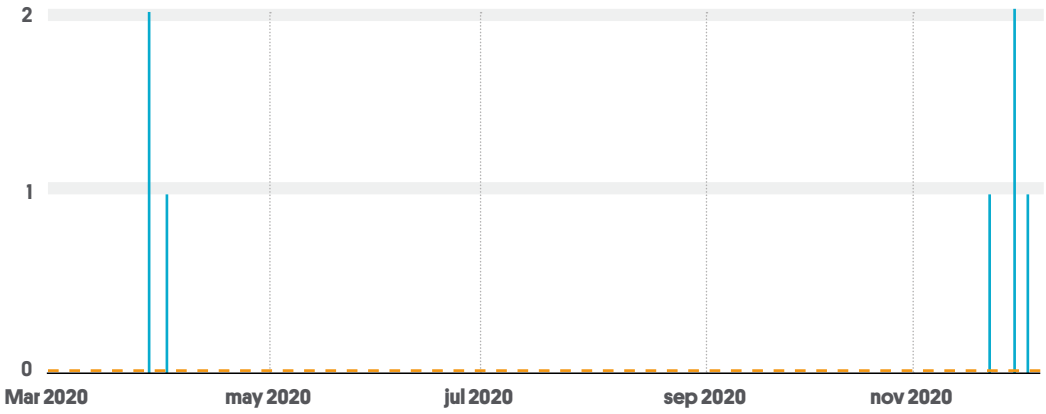
The government of Anguilla has reported a total of 7 cases, and no deaths since the beginning of the pandemic. The first two cases were reported on March 27th, followed by a third on April 4th. No other cases were reported until November 23rd, when the last case was diagnosed on the island. This case remains active.

The cumulative incidence is 598 cases per million people.

2,308 tests were performed in the island during the pandemic (153,284 test per million people)

Princess Alexandra Hospital, the main healthcare facility in the island, as per 2015, has no ICU capacity.

Figure 2 Epidemic curve of cases in Anguilla



Anguilla	
Covax	-
Curfew	
Lockdown	No stay-at-home lockdown.
Transportation	No information
Education	School lockdown from March 16th 2020 until mid-2020. Hybrid methods of distant and in-person learning applied from the summer until late 2020.
Business	On March 27th all businesses but those considered 'essential' close until further notice. April 29th they announce the lifting of movement and business for locals.
Masks	Anguilla Youth Sports Foundation donated gloves, masks and hand sanitisers to the Princess Alexandra Hospital. Despite the de escalation period and the lack of recording of cases in 60 days, the government recommends that "Members of the public, as well as the public and private sectors, [..] maintain social distancing measures, respiratory hygiene and cleanliness protocols which have been in force over the last few months. These protocols are now the new normal and should be maintained into the foreseeable future."
Social events	Maximum of 12 people. 29 April onward, churches, places of worship, all retail stores, hair salons and barber shops, accommodation suppliers, gyms and spas, recreational facilities, official lotteries, restaurants and bars can reopen, as long as social distancing is observed. On May 20th all restrictions were lifted.

03 Antigua and Barbuda

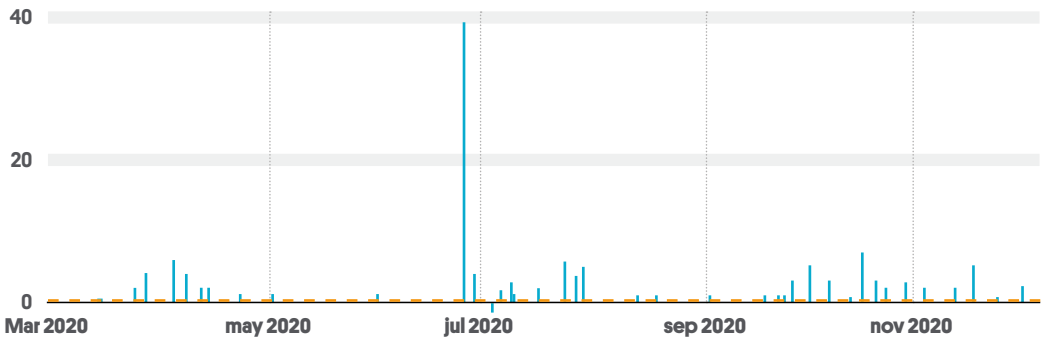
To date, 140 cases of COVID-19 and 4 deaths have been reported in Antigua and Barbuda. 7 cases remain active as of November 27th.

The cumulative incidence is 1,435 cases per million people.

4,502 tests have been carried out since the beginning of the pandemic (45,818 per million people).

The only facility with ICU services is Mount St. John's Medical Center, a 185-bed hospital.

Figure 3 Epidemic curve of cases in Antigua and Barbuda



Antigua Barbuda	
Covax	Participant
Curfew	Gradually freer: 11pm-5am under state of emergency
Lockdown	March 31st, originally until April 9th, with extensions lasting until May 14th.
Transportation	Travelling in groups only for people who inhabit the same household. Always use of masks.
Education	School lockdown from march 2020 until september 2020. Hybrid methods of distant and in-person learning applied.
Business	Need to pass government's controls and respect curfew. Pharmacies and other selected businesses can skip curfew. Restaurant dining protocols include enhanced cleaning and disinfecting of frequently touched surfaces, incorporate physical distancing measures, and will offer a la carte dining and delivery or takeout services, instead of buffet.
Masks	They must be worn in public at all times. Nose and mouth covered. Not at the same time as head coverings or dark glasses.
Social events	Cannot include more than the inhabitants of a single household. Religious events, weddings and funerals can be performed as long as security measures of social distancing and masks are worn at all times. Applies to social clubs. In March there was a 30-day ban on all social gatherings to control the spread of the virus. International sports competitions cancelled, as well as prison visits for a limited period of time.

04 Barbados

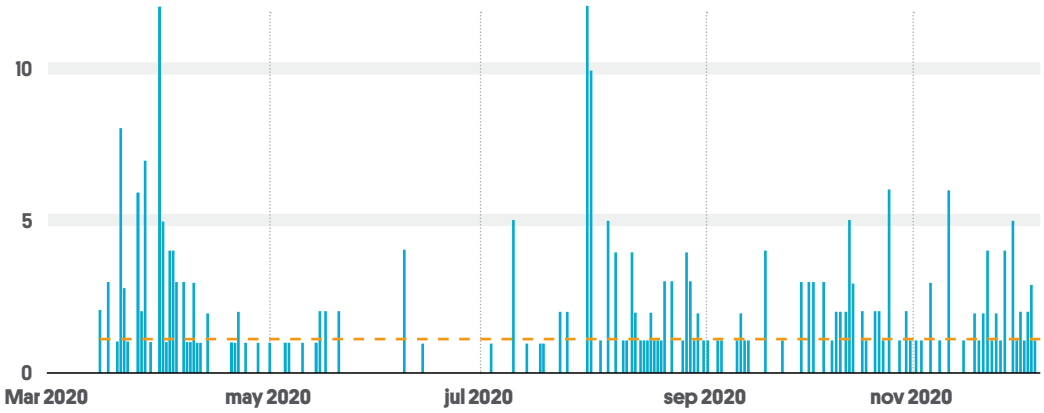
As of November 27th, a total of 266 COVID-19 cases have been confirmed in Barbados. The government has also reported 7 deaths, all of them between April and May. 13 cases remain active in the country.

The cumulative incidence of COVID-19 cases is 925 per million people.

The country has performed 46,028 tests to date (160,087 per million people).

The Queen Elizabeth Hospital, the main healthcare facility in the island, has an Intensive Care Unit.

Figure 4 Epidemic curve of cases in Barbados



Barbados	
Covax	Participant
Curfew	Gradual times for operation (even outdoor activities). Lifted restrictions by June 15th.
Lockdown	28th march - 31st may
Transportation	Travelling in groups only for people who inhabit the same household. Always use of masks.
Education	School lockdown from march 2020 until september 2020. Hybrid methods of distant and in-person learning applied.
Business	Village shops and pharmacies open with restrictions. Fuel stations only open to essential service providers during the 24 hr curfew. All beaches and parks were closed but reopened on May 4 with restricted times. The sale of alcohol was also prohibited during curfew.
Masks	Recommended. People in the care sector have been provided with masks and trained.
Social events	Starting on June 15th public gatherings are permitted but those that would exceed 250 participants need the approval of the Ministry of Health.

05 British Virgin Islands

According to WHO, British Virgin Islands have reported a total of 72 cases of COVID-19, and 1 death, in April.

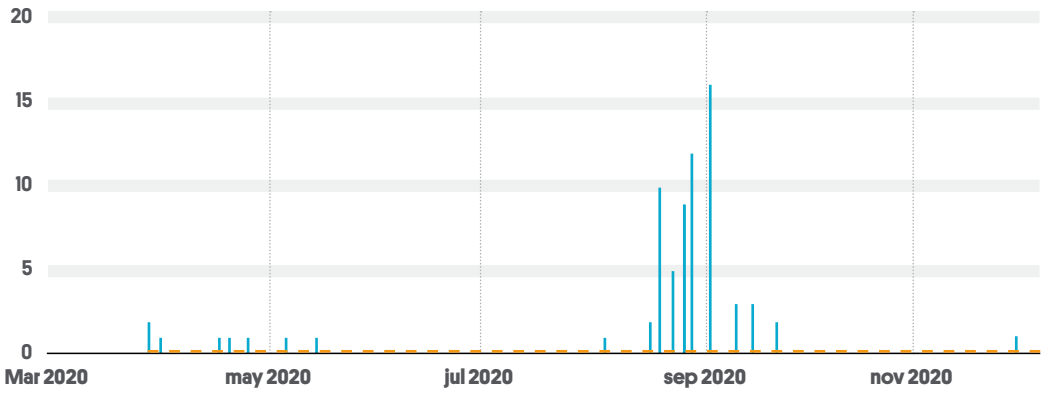
There are no active cases in the country as of November 28th.

The cumulative incidence is 2,342 cases per million people.

5,193 tests have been carried out during the pandemic (171,313 per million people).

The main healthcare facility in the country, Peebles Hospital, has an Intensive Care Unit.

Figure 5 Epidemic curve of cases in British Virgin Island



British Virgin Islands	
Covax	-
Curfew	5pm-5am (peak)
Lockdown	Twice. From march 27th to April 25th. July 21st to 28th.
Transportation	Travelling in groups only for people who inhabit the same household. Always use of masks.
Education	School lockdown from march 2020 until september 2020. Hybrid methods of distant and in-person learning applied.
Business	Need to pass government's controls and respect curfew. Pharmacies and other selected businesses can skip curfew. Restaurant dining protocols include enhanced cleaning and disinfecting of frequently touched surfaces, incorporate physical distancing measures, and will offer a la carte dining and delivery or takeout services, instead of buffet.
Masks	They must be worn in public at all times. Nose and mouth covered. Not at the same time as head coverings or dark glasses.
Social events	Cannot include more than the inhabitants of a single household. Religious events, weddings and funerals can be performed as long as security measures of social distancing and masks are worn at all times. Applies to social clubs. In March there was a 30-day ban on all social gatherings to control the spread of the virus. International sports competitions cancelled, as well as prison visits for a limited period of time.

06 Dominica

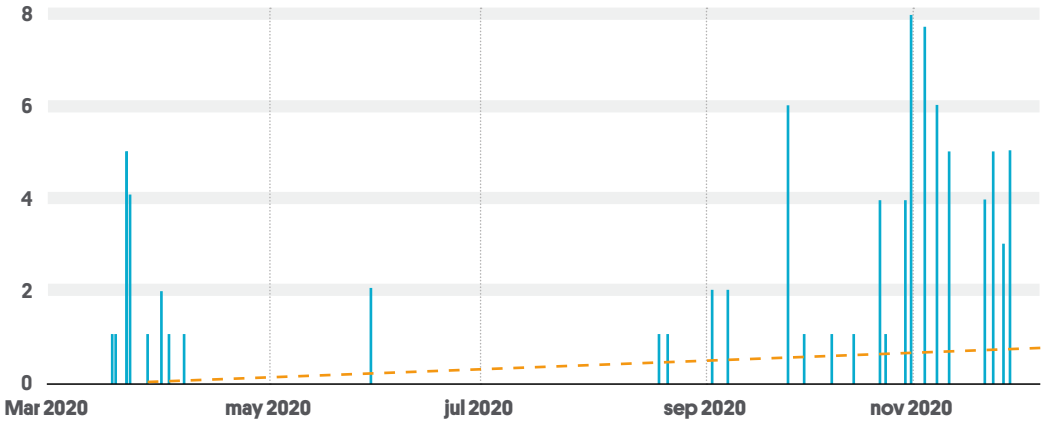
Dominica has reported a total of 85 confirmed cases, and no COVID-19 deaths since the pandemic started. 14 cases remain active as of November 28th.

The cumulative incidence is 1,069 cases per million people.

The country has performed 5,655 tests (78,477 per million people).

The main healthcare facility, Princess Margaret Hospital, has an Intensive Care Unit.

Figure 6 Epidemic curve of cases in Dominica



Dominica	
Covax	IDA eligible
Curfew	8pm - 5am
Lockdown	?
Transportation	Face masks and social distancing norms are in place at all times.
Education	School lockdown from march 2020 until september 2020. Hybrid methods of distant and in-person learning applied. For in-person learning new infrastructures to ensure safety protocols are followed.
Business	Non essential businesses closed until the government declared safety to open again (church, nightclub, sporting facilities, schools, etc.)
Masks	They must be worn in public at all times. Nose and mouth covered. Not at the same time as head coverings or dark glasses.
Social events	Limited to a maximum of 10 people.

07 Grenada

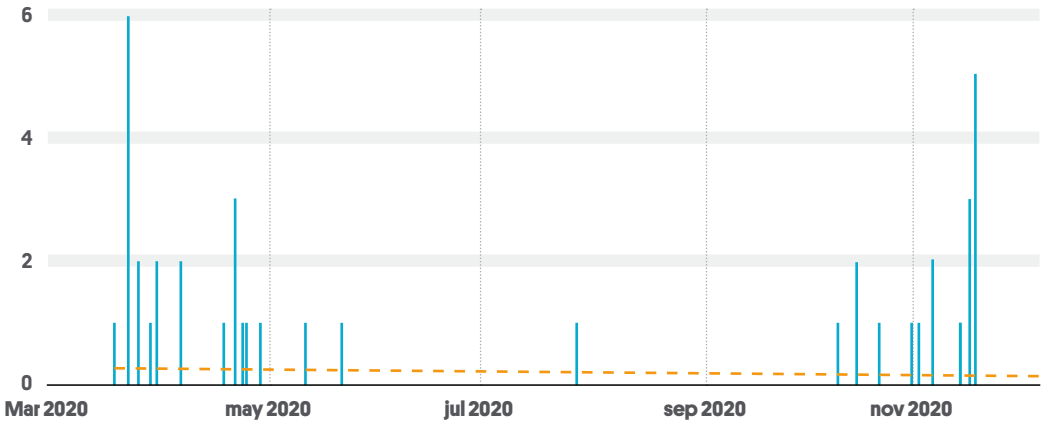
Grenada has reported 41 COVID-19 confirmed cases, as well as 0 deaths since the pandemic started. 11 cases remain active at the moment.

The *cumulative incidence* is 364 cases per million people.

Grenada has performed a total of 6,252 tests (*55,457 per million people*).

There are three acute care hospitals in Grenada, and one of them, St. George's General Hospital, has an Intensive Care Unit.

Figure 7 Epidemic curve of cases in Grenada



Grenada	
Covax	IDA elegible
Curfew	5pm - 8am
Lockdown	March 30th until april 6th. Extended until May 12th.
Transportation	Everyone must observe social distancing, including when travelling by car or public transport, and wear a face mask when out in public.
Education	Schools reopen starting september 2020. Hybrid methods of distant and in-person learning applied. Request parents to assist their children with hand sanitisers and face masks to do so. they will follow a blended approach to education between in-person and remote learning. The demand for adoption in e-learning across the education sector, 24,000 plus devices (laptops and tablets) have been secured for students and teachers.
Business	Need to pass government's controls and respect curfew. Pharmacies and other selected businesses can skip curfew. Restaurant dining protocols include enhanced cleaning and disinfecting of frequently touched surfaces, incorporate physical distancing measures, and will offer a la carte dining and delivery or takeout services, instead of buffet.
Masks	Mandatory.
Social events	All public and other social gathering, including cultural, sporting and entertainment events be suspended until further notice.

08 Montserrat

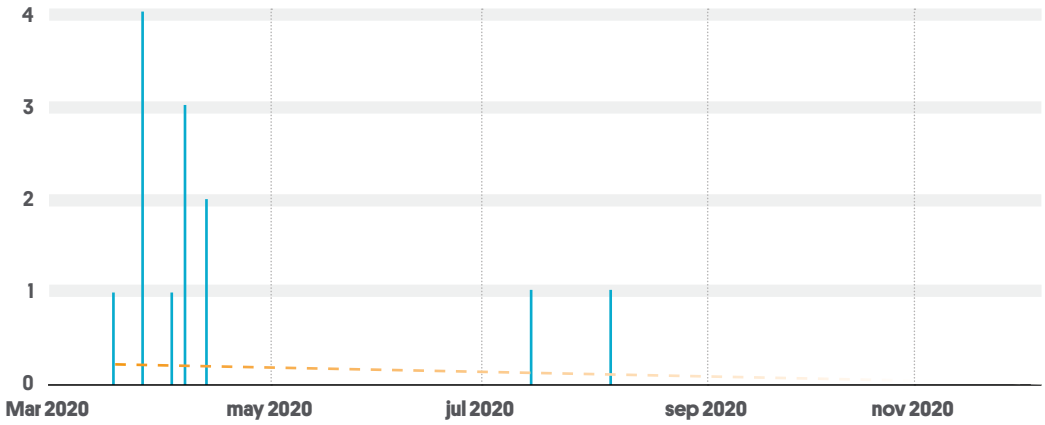
Montserrat has confirmed 13 COVID-19 cases and 1 death (in April). The last confirmed case was on July 27th. Currently, there are no active cases on the island.

The cumulative incidence is 2,604 per million people.

Montserrat has carried out 577 tests (115,562 per million people).

The main health facility in Montserrat is St. John's Hospital, with 30 beds and no ICU capacity.

Figure 8 Epidemic curve of cases in Montserrat



Montserrat	
Covax	-
Curfew	7pm - 5am
Lockdown	28th march until 14th april. Extended until may.
Transportation	-
Education	School lockdown from march 14th 2020 until september 2020. Hybrid methods of distant and in-person learning applied.
Business	All retail stores can reopen. Restaurants can reopen as take away only. Construction work can resume. Visits to retirement homes are possible for family only. Barbers, churches, buses, and taxis are allowed to reopen with strict conditions. Bars, night clubs, gyms, and schools will remain closed.
Masks	They must be worn in public at all times. Nose and mouth covered. Not at the same time as head coverings or dark glasses.
Social events	Prohibited gatherings of over 50 people. Progressive reduction until March 25th where gatherings of over four people were forbidden.

09 Saint Lucia

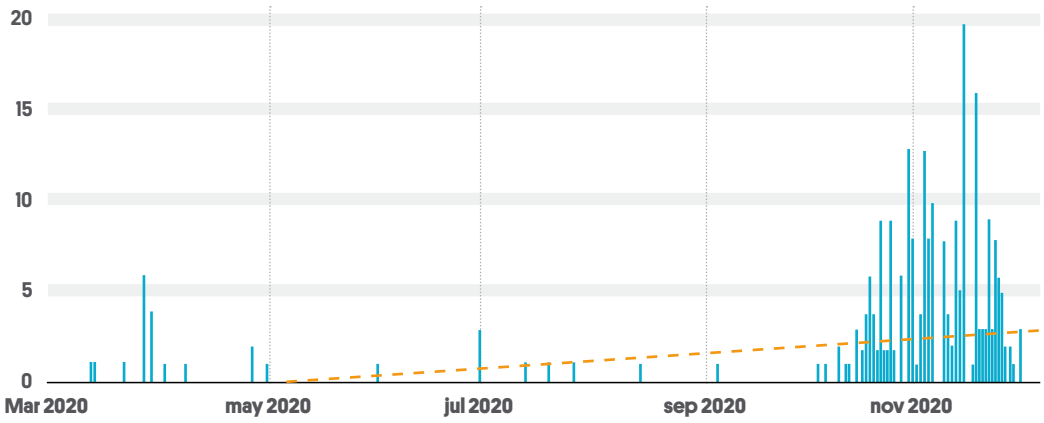
Saint Lucia has reported 252 confirmed COVID-19 cases, most of them since mid-October. There have also been 2 COVID-related deaths, both in November.

The cumulative incidence is 1,294 cases per million people.

The country has performed a total of 15,448 tests (83,971 per million people).

There are two general hospitals that provide secondary care. Victoria Hospital is the main local trauma facility, with 150 beds and 6 acute care beds. Golden Hope Hospital has 162 beds.

Figure 9 Epidemic curve of cases in Saint Lucia



Saint Lucia	
Covax	IDA eligible
Curfew	11pm - 5am
Lockdown	-
Transportation	-
Education	School lockdown until the end of April 2020. Home study packages ready for students (primary). Lockdown in October for two weeks due to two positive cases.
Business	Partial scale down of all non-essential economic and social activities. Businesses with the possibility of teleworking are encouraged to do so. Essential businesses may request a governmental approval to operate regularly.
Masks	They must be worn in public at all times.
Social events	Some social activities including parties, picnics and receptions are allowed with the established physical distancing and public health protocols. Discouraged mass crowd events of over 50 persons, which already resulted in a cancellation of Saint Lucia Jazz 2020.

10 Saint Kitts and Nevis

Saint Kitts and Nevis has reported 22 confirmed cases and no deaths.

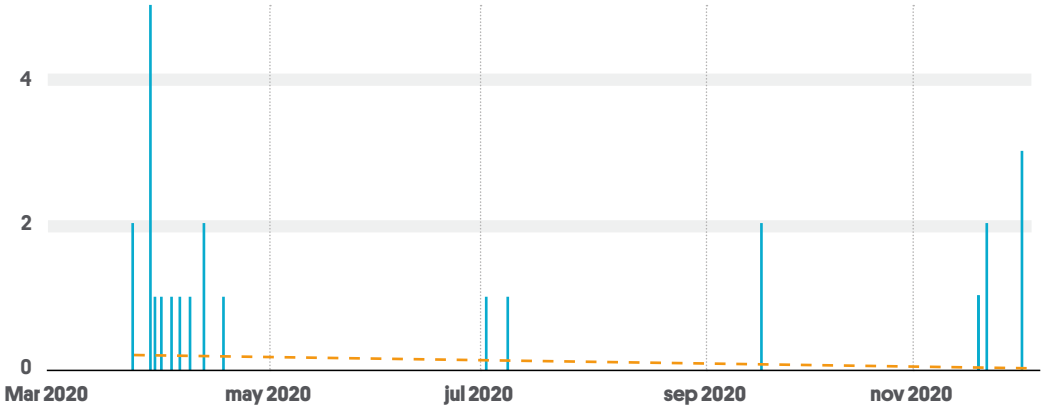
3 cases remain active as of November 30th.

The cumulative incidence is 412 cases per million people.

The government has performed 3,677 tests (68,920 per million people).

The main public referral hospital is the 150-bed Joseph N. France General Hospital, located in Saint Kitts, with an Intensive Care Unit. The Alexandra Hospital is a 50-bed hospital located in Nevis.

Figure 10 Epidemic curve of cases in Saint Kitts and Nevis



Saint Kitts and Nevis	
Covax	Intent to participate
Curfew	Punctual for days at a time.
Lockdown	March 31st to april 3rd - extended until april 25th.
Transportation	Travelling in groups only for people who inhabit the same household. Always use of masks.
Education	School lockdown from march 2020. Maintenance of meal programs for students in need.
Business	Businesses are open. Certain businesses may have a curfew.
Masks	They must be worn in public at all times.
Social events	Limited visitors at homes for the elderly, prisons and sports events. Everyone is required to practice social and physical distancing protocols, maintaining 6 feet distance and ensuring hand sanitising.

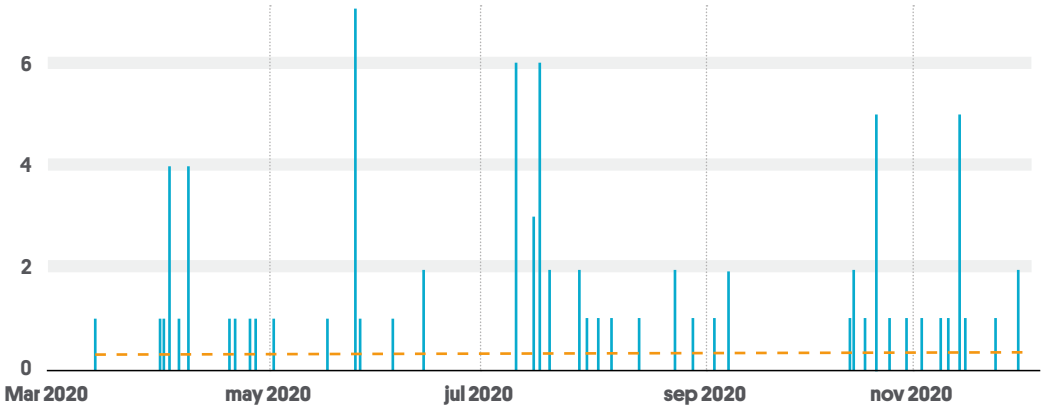
11 Saint Vincent and the Grenadines

The government has reported 85 confirmed cases and no deaths. There are currently 5 active cases.

The cumulative incidence is 765 cases per million people.

St. Vincent and the Grenadines has performed a total of 10,072 tests (90,666 per million people).

Figure 11 Epidemic curve of cases in Saint Vincent and the Grenadines



Saint Vincent and the Grenadines	
Covax	IDA eligible
Curfew	-
Lockdown	-
Transportation	Mask encouraged but not enforced.
Education	School lockdown from march 2020. Support for online learning. Sporting activities cancelled until further notice.
Business	Banks and credit unions to offer up to 6-month moratorium on loan and mortgage payments. Relief packages for certain companies, including the field of art, tourism and culture. Direct support in agriculture, animal husbandry, etc.
Masks	Encouraged but not enforced.
Social events	Limited access to public gatherings and religious services. Advised but not ordered to social distance and avoid going out.

12 Response from multilateral agencies

CARICOM	41st meeting that led to the agreement on regional priorities. **1. Ending the pandemic:** Mass vaccination at earliest availability, further access to tests and treatment for the entire population. Critical investment on the ACT-Accelerator (COVAX program). **2. Recovery of the economy.** Based on the SDGs and other forms of sustainable development.The possible access to monetary aid from the international community via small and medium enterprises. Tourism recovery. Possible long-term solution involves attracting long-stay visitors that could enhance the local economy. Study to enable agricultural investment post-pandemic.
CARPHA	CARPHA is leading the Public Health Response in the Caribbean Region and providing laboratory capacity among others. It publishes: • Periodic regional situation reports with surveillance data • More than 50 technical guidance reports • COVID-19 Health rounds (webinars)
Caribbean Development Bank	• Provision of numerical data through statistical analysis and represented in dashboard. • Approval of a multi-pronged financial package to help member states. With loans of US$ 140 million; emergency loans totalling US$ 67 million to seven countries; and US$ 3 million programme to provide essential personal protective equipment for Caribbean health care and frontline workers in 14 countries.
CEPAL	Compilation of all the action taken to prevent the spread of the virus by countries. Chronologically, and through a wide range of topics that affect the lives of locals and travellers.
FAO	The role of FAO in the response to the COVID-19 pandemic has four parts: **1.** Understanding and mitigating **2.** the pandemic's impact on food and agriculture. **3.** Safeguarding the food security and livelihoods of the most vulnerable. **4.** Understanding the virus's origin and spread. **5.** Ensuring a unified, One Health approach. The organization has developed the comprehensive and holistic **COVID-19 Response and Recovery Programme** to address the socio-economic impacts of the pandemic. They are requesting donations that could amount up to USD 1.3 bn in order to ensure the provision of food during and after the pandemic.
IFRC	• IFRC, with 192 National Societies and 13 million volunteers, is providing critical information and health and social services, while ensuring that communities participate in the response. • More than 6 million items of personal protective equipment have been procured for frontline volunteers, including masks, goggles, face shields, gloves and surgical gowns. Red Cross and Red Crescent volunteers are installing water distribution points and providing hygiene kits, food and shelter to protect vulnerable people.

OCHA	• Emergency Funding -Globally programmes in more than 50 countries have been supported through combined funding of $361 million from CERF and CPBFs. • Coordination -Involves mobilizing finances, assessing needs, developing response plans, and advocating to reach people in need. OCHA has set up a COVID-19 response team to drive these efforts, and to support and boost the UN system-wide response. • Intel -Ensure that they can keep providing life-saving help for those people, while supporting the wider system's response to COVID-19.
OECS	Provision of numerical data through statistical analysis and represented in a dashboard.
Oxfam International	Scaling up its global COVID-19 response in more than 45 countries, to deliver clean water, soap and other hygiene supplies and spreading prevention messages through community outreach, training, radio, social media and more. Oxfam is addressing ongoing urgent needs for those facing food insecurity and displacement through cash, voucher and food distributions.
PNUD	UNDP has a summary of COVID-19 responses by LAC countries: "*The Impact of COVID-19 on Latin America and the Caribbean*". The objective is a continuously updated dataset containing the chronology of the policy response in LAC, that we put at the service of policymakers, researchers and the general public in the region. - Inclusion of a featured graph to track level of infection. - Policy document series to draw up from UNDP's experience. - Tool to address the public's ¡ipinion based on data.
UNESCO	Several initiatives in place: • Support during the pandemic based on very diverse webinars (provide educative videos with tips, explanations, use of technologies, examination of emerging challenges and possible solutions at a transversal level for the government, etc.) and guidance to different institutions (governments, schools, teachers, parents, etc.). • Publications regarding education - from disruption to recovery. • 'Next normal' campaign. • Urban solutions. • Resilient artists.
UNFPA	Prioritizing the needs of women and girls, as the pandemic is disrupting access to life-saving health services and increasing the risk of gender-based violence. Delivery of protective supplies to health workers, providing services and setting up hotlines for survivors of gender-based violence, supporting midwives and other health workers to provide sexual and reproductive health services for women, and providing training in psychosocial support. Access the document with the elaborate response at the link.
UNICEF	Current multifaceted and multi-organization program involving early development, education, emergency response, monitoring and equality. During the pandemic period efforts continue with several initiatives in place: • Publications of pieces of media and reports on the impact of the pandemic on children. • Call for papers made by teenagers for UNICEF research. • Webinars on distance learning, e-counseling, etc. in collaboration with OECS, PAHO and others. • Small publications, quizzes and other resources for the people to access tips, facts about COVID-19 and other quick information needed.

World Bank	Collaborative approach with the Caribbean countries in order to build economic resilience with a sustainable development. - Provision of finance (for immediate health response comes from the global COVID-19 Fast-Track Facility, Catastrophe Deferred Drawdown Options (CAT DDOs), etc.) and knowledge for countries to address the health threat and the social and economic impacts of the pandemic (procuring essential supplies to detect, contain, and treat COVID-19, strengthen health systems, and expand social protection for vulnerable groups, etc.). - The countries that receive support are the following: Dominica, Grenada, **International Finance Corporation (IFC):** Small and medium-sized enterprises (SMEs), which generate half of all jobs in the region, need financial assistance to recover after the forced stoppage of their activities. Disruptions have affected all steps in trade flows and manufacturing processes. - IFC has conducted an Evaluation of the economic effects of the pandemic in the region - IFC support will be located on supporting trade finance flows and the working capital needs of the private sector. Mobilizing part of IFC's global $8 billion fast-track facility to the region in order to support existing clients as well as promoting new economic activities.
WHO	PAHO Elaboration of a thorough document tackling the assessment of Human Resources in the health field available, disposed and managed during the pandemic as well as the factors that have contributed to the state of the pandemic in the Caribbean. The 'effectiveness' with which the CARICOM countries responded to the pandemic was a product of their health system, level of decentralization, the type of leadership, but mostly of their disaster **preparedness**.
World Vision International	World Vision has supported more than 30 million people, with over 13 million of those being children (based on figures from 64 countries, as of 25 May 2020). • More than 20 million people were reached through promotion of preventive measures and behaviours to limit the spread of COVID-19. • Over 56,000 community health workers were trained and supported in their focus to strengthen health systems and workers. • Almost 25,000 front-line actors were reached or trained on child protection. • In a round-up of the first 100 days of its response to the COVID-19 pandemic, World Vision reports that thousands of staff, volunteers and partners have already reached 44 million people with support, including more than 18 million girls and boys. World Vision and partners have adapted to remote response coordination.

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