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How to Respond to COVID-19 in a Small Island State

The Experience of the English-Speaking Caribbean and the Importance of International Cooperation

Series | COVID-19 and response strategy

ISGlobal Barcelona Institute for Global Health

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[This document is a one of a series of discussion notes addressing fundamental questions about the COVID-19 crisis and response strategies. These documents are based on the best scientific information available and may be updated as new information comes to light.]

30 July 2021

Photo: Necker Island (British Virgin Islands) Kevin Wolf / Unsplash

The pandemic caused by SARS-CoV-2 has affected every country in the world to a greater or lesser extent. Strategies for dealing with it have depended on the characteristics and priorities of each country. In the fight against COVID-19, island nations are in a unique situation because of their geographical isolation and dependence on tourism. In many cases, they have adopted **successful strategies for dealing with the pandemic**.

The **English-speaking countries of the Caribbean**, for example, have faced the dilemma of whether or not to keep their borders closed. Closing borders to isolate small island populations is a relatively easy option in these countries and one that facilitates pharmacological and non-pharmacological prevention measures. The alternative option is to keep borders open, taking measures to ensure the safety of the population and adapting these to the epidemiological context as this evolves. The advantage of the latter option is that it allows the country to continue to welcome the tourists on whom their economy largely depends.

During the first wave of the pandemic, this group of island states **acted promptly** and were much less affected than many other countries. By April 2020, most of them had reported some 20 cases and the situation did not change until after the summer owing to the imposition of strict measures to close the islands to tourists. Some countries, including the British Virgin Islands and Dominica, even closed their borders to their own citizens travelling abroad at the time, who were not allowed to return home until early summer 2020.

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This document is based on the report published by the United National Development Programme (UNDP) and ISGlobal entitled COVID-19 Policy Reports for Recovery in the Eastern Caribbean. Analysis, Scenarios and Considerations for Opening to Tourism (October-December 2020), funded by the UNDP. That report was authored by Marta Ribes, Clara Marin, Carlos Chaccour, Júlia Montañà, Oriana Ramírez-Rubio and Berta Briones, and coordinated by Oriana Ramírez, Gonzalo Fanjul and Leire Pajín.

For the **transition out of lockdown and reopening of the tourist sector**, the English-speaking island states of the Caribbean benefited from the **technical assistance** provided by the **United Nations Development Programme (UNDP)** and the Barcelona Institute for Global Health **(ISGlobal)**. These two organisations worked together to elaborate a number of different scenarios and pandemic control strategies. The purpose of the present document is to describe that work for two reasons:

- To illustrate the complexity of decision making when responding to a critical public health risk such as the coronavirus crisis.
- To demonstrate the **potential for technical cooperation and collaboration** between countries, experts and multilateral agencies in pandemic response

1. Technical Assistance as an Instrument of Development Cooperation

"Within the framework of the UNDP regional assistance program and in collaboration with UNDP experts and local authorities, ISGlobal provided technical support to ten countries and territories in the Eastern Caribbean."

Within the framework of the UNDP regional assistance program and in collaboration with UNDP experts and local authorities, ISGlobal provided **technical support**[1] **to ten countries and territories in the Eastern Caribbean**: Anguilla, Antigua and Barbuda, Barbados, British Virgin Islands, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia, and Saint Vincent and the Grenadines. The assistance was more extensive in the case of the British Virgin Islands and Dominica, as specific questions from the governments were answered during the transition out of lockdown and reopening of tourism. The assistance was detailed in the report entitled COVID-19 Policy Reports for Recovery in the Eastern Caribbean. Analysis, Scenarios and Considerations for Opening to Tourism, published on 30 March 2021. Several other documents were produced, but these were not published at the time.

Figure 1. Presentation on 30 March 2021 of the "COVID-19 Policy Reports for Recovery in the Eastern Caribbean: Analysis, Scenarios and Considerations", by UNDP and ISGlobal.

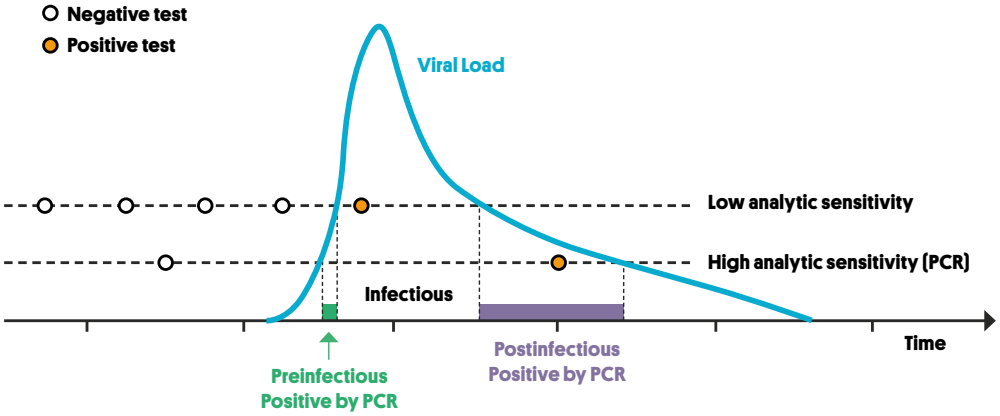
Source: ISGlobal.

[1] ISGlobal. COVID-19 Policy Reports for Recovery in the Eastern Caribbean. Analysis, Scenarios and Considerations for Opening to Tourism. 30 March 2021.

a. Technical assistance to the British Virgin Islands

In the case of the British Virgin Islands, the focus of the **technical assistance was to draw up technical recommendations for reopening tourism**, a key sector that had been shut down for eight months. The challenge was to establish a balance between minimising the economic impact of the restrictions while maximising their epidemiological impact. The aim was to minimise the duration of quarantine for people entering the country so as to avoid discouraging tourism but to make it as long as possible in order to maximise the number of cases detected. The technical team reviewed the latest scientific evidence on the incubation period for COVID-19 and the detection capacity of the various tests available *(see Figure 2)*. They also took into account the experience of other countries, analysing the measures taken and their impact on the epidemiological curve. The **final recommendation was a protocol that required three tests**: the first in the country of origin before travel; the second on arrival in the country; and the third after four days of quarantine.

Figure 2. High-frequency Testing with Low Analytic Sensitivity versus Low-frequency Testing with High Analytic Sensitivity.



Source: Mina MJ, Parker R, Larremore DB. Rethinking Covid-19 Test Sensitivity - A Strategy for Containment. *N Engl J Med* 2020;383:e120.

During the pandemic, information from experts and the scientific community has been abundant and accessible: large numbers of documents have been made available to the public and prestigious webinars have been accessible from all parts of the world, either live or recorded. It was, however, necessary to **adapt this knowledge to the particular context of the islands** because of their unique characteristics. In meetings with the country's technical team, for example, the experts assessed the risk of infection on the same journey for travel on a ferry or a specific model of aircraft. The comparative risk was estimated on the basis of the latest scientific papers on shipborne transmission and the recommendations of international organisations and agencies, adapted to the particular context and situation of the British Virgin Islands.

b. Technical assistance for all the English-speaking Caribbean countries

Initially, the technical assistance provided to the English-speaking Caribbean countries took the form of a **plan for managing the transition** out of lockdown and the reopening of everyday activities. The plan specified the indicators for moving from one phase to the next and for the relaxation or tightening of public health measures in each phase *(see Table 1)*. It also included **recommendations for the medium to long term** relating to the creation of a health system capable of sustaining the structure of the plan and **recommendations relating to specific sectors**, such as employment and education. Finally, the team constructed **economic scenarios** based on the containment measures de-

scribed in the plan, modelling three different approaches to reflect varying degrees of control: a zero tolerance approach as followed in New Zealand, a low incidence approach and, finally, an approach specifically designed for areas highly dependent on tourism. *(see Table 2)*.

Table 1. Proposed Indicators for Phase Transitions and the Implementation of Public Health and Social Measures (PHSM) in the English-Speaking Caribbean Countries.

Domain	Indicator	Response capacity classification		
		Adequate	Moderate	Limited
Contact tracing workforce	Number of contact tracers per 100 000 population (full time)	>18	18-15	<15
Contact tracing performance	Percentage of cases identified from contact lists that can be linked to known clusters	>90%	60% - 90%	<60%
Public health response capacity	Number of persons tested per 1000 population per week, averaged over a 2-week period	2+	1 - <2	<1
Public health response performance	Proportion of cases for which an investigation was conducted within 24 hours of identification	80%+	60-<80%	<60%
Clinical care capacity	Proportion of hospital beds occupied	<75%	75-<90%	90%+†
ICU capacity	Proportion of current ICU beds occupied	<80%	80% - 90%	>90%
Clinical care performance	Case fatality rate of resolved (i.e., outcome known) hospitalised cases	Decreasing trend	Stable trend	Increasing trend
Public health response performance	Support for / Adherence to PHSM	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).

* 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

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

Source: ISGlobal. COVID-19 Policy Reports for Recovery in the Eastern Caribbean. Analysis, Scenarios and Considerations for Opening to Tourism. 30 March 2021.

Table 2. Three Approaches Proposed in the Transition Plan Elaborated by the ISGlobal Team for the English-speaking Caribbean Region.

	Zero tolerance approach	Low-incidence approach	Tourism specifc approach
Tourism and external demand	• Assuming gradual reopening of tourism capabilities from October • VERY HIGH negative impact on GDP due to tourism sector losses	• Assuming gradual reopening of tourism capabilities from August • VERY HIGH negative impact on GDP due to tourism sector losses	• Assuming gradual reopening of tourism capabilities from August, at a higher level • HIGH negative impact on GDP due to tourism sector losses
Other economic sectors	• Non-essential services will be 80% to 100% reopened in phase 4 • The additional negative impact on GDP generated by the closure will be MODERATE	• Non-essential services will be 100% reopened in phase 4 • The additional negative impact on GDP generated by the closure will be MODERATE	• Non-essential services will be 100% reopened in phase 4 • The additional negative impact on GDP generated by the closure will be MODERATE
Imports	• Positive net effect on the GDP of the reduction in imports will be MODERATE	• Positive net effect on the GDP of the reduction in imports will be MODERATE	• Positive net effect on the GDP of the reduction in imports will be MODERATE
Overall effects of closures and reopening plan	• VERY HIGH negative impact on GDP • SIZEABLE increase in fiscal deficit	• HIGH negative impact on GDP • MODERATE increase in fiscal deficit	• HIGH negative impact on GDP • MODERATE increase in fiscal deficit

Source: ISGlobal.

A **report was prepared outlining the scenarios** that the countries and territories of the Eastern Caribbean might be facing in 2021, almost one year after the start of the pandemic. These scenarios have been shown by modelling analysis and observational and ecological studies to be highly dependent on which measures are taken and, above all, on the timing of such measures. The outcomes were illustrated using examples of countries which, because they are islands and heavily dependent on tourism, resemble those of the English-speaking Caribbean *(see Table 3)*.

- **New Zealand** served as an example of a country that adopted a zero COVID strategy, which led to rapid recovery and return to a relatively normal life.
- **Iceland**, by contrast, alternated between implementing and relaxing public health measures, a strategy that led to recurring epidemic waves.
- **French Polynesia** opted for an approach that involved reopening tourism with minimal restrictions, which led to a high incidence of COVID-19 and ultimately a high mortality rate.

Table 3. Examples of Pandemic Response in Island States.

Reference Country	New Zealand	Dominica	French Polynesia	Iceland
Scenario	**"Sustained zero"** Eliminated local transmission after first wave and has since reported only very sporadic cases.	**"Contained baseline transmission"** Keeps transmission very low: transmission chains are controlled and mainly within clusters.	**"Epidemic transmission"** Sudden very sharp increase in transmission.	**"Alternating pattern"** Cycling between restrictive measures and relatively large epidemic waves.
Epidemiological curve (Daily new confirmed COVID-19 cases per million people)	Peak incidence 15.5 cases/M	Peak incidence 37.7 cases/M	Peak incidence 1,681 cases/M	Peak 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 control measures were light (no social distancing, mandated mask wearing on public transport) except for borders, which are closed to 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 borders to international travellers in August. Travellers coming from areas designated medium and high risk required to undergo a rapid diagnostic test on arrival. Quarantine for a minimum of 5 days after which a second PCR test is administered (ref). Large-scale contact tracing and community testing.	**Favoured reopening to tourism with minimal restrictions** One month lockdown. Borders reopened on 15 July to travellers with a negative PCR test, who were obliged to take a self-administered test 4 days later. Tourism has not been restricted despite sharp rise in case numbers leading to one of the highest incidences worldwide.	**Favours tourism sector while adapting public health measures** Quarantine and testing were imposed promptly and a full lockdown was avoided. 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). The authorities opted to accept intermittent outbreaks with community transmission to facilitate the tourist industry.

Costs	**Health:** 5 deaths/ million **Economic:** -6.1 GDP, lower than in most high-income countries (IMF). Tourism sector 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 deaths due to other causes 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 available.)* **Societal:** once lockdown has 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

Source: ISGlobal. COVID-19 Policy Reports for Recovery in the Eastern Caribbean. Analysis, Scenarios and Considerations for Opening to Tourism. 30 March 2021.

The method used was based on the assumption that the scenario a country may face can be predicted and will be shaped by the public health measures implemented as well as the timing and duration of such measures. The technical team used the Situational Levels defined by the World Health Organisation (WHO) in combination with a series of indicators and thresholds designed to help the Caribbean countries **identify the degree of risk** in a specific situation at a given time. WHO Situational Levels are fundamentally based on **transmission levels** but they also take into account the response capacity of the health system, since similar transmission levels can result in higher mortality or even an uncontrolled epidemic when **other capacities, for example hospital response or case tracking systems, are weaker, which is the case** in these island countries. As many of these countries have populations under 100,000 inhabitants, infrastructure in terms of intensive care unit (ICU) beds, specialised hospitals and case-tracking capacity is limited or non-existent.

Epidemiological indicators can also fluctuate enormously when the total population size is small: a small increase in reported cases can result in a very marked **increase in incidence expressed in terms of a proportion of the population**. All of these considerations had to be taken into account in the report, which provided indicators for determining the situational level *(see Table 4)*. This was complemented by an appendix summarising some of the indicators, the non-pharmacological measures implemented and the epidemic curves for each country.

Table 4. Situational Level Assessment Matrix Using Transmission Level and Response Capacity Indicators to Guide Adjustment of Public Health and Social Measures.

Interim guidance from the World Health Organisation (WHO) on the adjustment of public health measures in the context of the COVID-19 pandemic.

	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

CT = community transmission

Source: World Health Organisation (WHO). Considerations for implementing and adjusting public health and social measures in the context of COVID-19: Interim guidance. 4 November 2020.

Appropriate public health measure were recommended for each level and a colour code was used to indicate the **impact on transmission** and the **social and economic impact** of these measures. The key message was that the more critical the Situational Level, the greater would be the social and economic impact of the public health measures. By extension, early and forceful action would favour success in the control of virus transmission.

The report also considered the **pharmacological measures** available, including vaccines and prophylactic drugs, with particular emphasis on access, their deployment and which populations should be prioritised. The development of several vaccines in under a year is evidence of the breath-taking speed with which knowledge about SARS-CoV-2 has grown. This has made the task of producing reports with the latest information complex because documents quickly become outdated. Consequently, ISGlobal chose to point to **frequently updated online resources**, where decision-makers and readers could learn about the latest developments. Examples of such resources include the documents made available by the WHO relating to public health and social measures[2], and on preparedness and response[3] ●

[2] WHO. Considerations for implementing and adjusting public health and social measures in the context of COVID-19. 14 June 2021.

[3] WHO. Critical preparedness, readiness and response actions for COVID-19. 27 May 2021.

2. The Importance of International Cooperation for Small Island Developing States

"These countries are particularly vulnerable to the COVID-19 pandemic and other emergencies because of their dependence on tourism, the high cost of imports and certain geographical particularities that make them highly vulnerable to natural disasters."

Due to their unique characteristics, Small Island Developing States (SIDS) belong to a **special group within the United Nations**[4]. These countries are **particularly vulnerable** to the COVID-19 pandemic and other emergencies because of their dependence on tourism, the high cost of imports and certain geographical particularities that make them highly vulnerable to natural disasters[5].

One example of their exceptional circumstances can be seen in their **poor access to SARS-CoV-2 vaccines**: most of this group of SIDS are medium-income countries and therefore ineligible for programmes, such as COVAX, designed to ensure equitable access to COVID-19 vaccines. As a result, they found themselves in a kind of no-man's land with respect to vaccine acquisition[6]. To address this problem, the international community, and particularly high-income countries, can help to strengthen the infrastructure and institutions of these countries through **international cooperation**. Cooperation is even more important today because we are also facing the early effects of the **climate crisis**, which will be disastrous for SIDS because of their particular vulnerability.

ISGlobal's technical cooperation with the English-speaking Caribbean countries as part of the UNDP regional program is an excellent example of such collaboration: the technical assistance directly influenced the countries' pandemic control strategy and helped them to improve their preparedness and resilience. The broad perspective of the collaboration, which took into account both the unique characteristics of the countries and the economic implications of the recommendations, makes the resulting report a valuable instrument for achieving the **reopening of safe and rational tourism** ●

[4] United Nations. Conferences: Small Island Developing States.

[5] Jeffrey Sachs, Isabella Massa. The Rich World's Debt to Island States. *Project Syndicate*. 15 June 2021.

[6] Virginia Rodríguez. The G20, Vaccines and COVID-19: Why is the Success of the COVAX Initiative Vital? Barcelona Institute for Global Health (ISGlobal). Series 'COVID-19 and response strategy' No. 25. November 2020.

Box 1. Preparedness and Response in Health Emergencies.

The COVID-19 crisis has highlighted the **need for more integrated and cross-sectoral policies** for preparedness and response in health emergencies. These policies require a high level of coordination across multiple sectors and a robust Global Health strategy to ensure the provision of public health services and medical care during a crisis.[7] The WHO has identified a number of factors that should be taken into account when assessing the capacity of a health system to respond to an emergency[8]:

- Leadership and governance.
- Health workforce
- Medical products, vaccines and technology
- Health information
- Health financing
- Service delivery

For countries with weaker and less resilient health systems, **technical assistance is a valuable tool** that can help them to implement preparedness policies and make a significant difference in health outcomes.

[7] ECDC. ECDC country preparedness activities. 2013-2017.

[8] WHO. Strengthening health-system emergency preparedness. 11 August 2012.

3. Conclusions and Recommendations

"Preparedness and response has become a crucial concept for dealing with the demands of a future in which health emergencies will become increasingly frequent."

Through prompt action, the English-speaking countries of the Caribbean achieved early control of the COVID-19 pandemic. In order to ensure the subsequent safe and well-informed reopening of the tourist sector, they requested **technical assistance from international cooperation experts**, who worked closely with those responsible for managing the pandemic in each state. The results of this collaboration took the form of four reports that guided the exit from lockdown and relaxation of public health and social measures in the countries of the region.

- Small island states have a series of singular characteristics that make them **particularly vulnerable to the current pandemic**. Despite their prompt response to COVID-19, the English-speaking countries of the Caribbean must remain vigilant and closely monitor the epidemic trend because of the potential consequences of a rise in case numbers in the islands.

- This collaboration is an example of the **usefulness of technical assistance** for countries that are particularly vulnerable to emergencies because of their particular characteristics. Moreover, such cooperation is important not only because of the pandemic but also given the **climate crisis, which has already started**.

- In this evolving context, preparedness and response has become a crucial concept for dealing with the demands of a future in which health emergencies will become increasingly frequent. A **culture of cooperation and information exchange between countries** could be key to dealing with future disruptions.

- We must develop public policies that enhance the preparedness of states for health emergencies and **create resilient societies** capable of coping with a wide range of disruptive situations and adapting to all kinds of threats

FOR MORE INFORMATION

• UNPD-ISGlobal. COVID-19 Policy Reports for Recovery in the Eastern Caribbean. Analysis, Scenarios and Considerations for Opening to Tourism. 30 March 2021.

• United Nations Development Programme (UNDP). Developing Capacity through Technical Cooperation: Country Experiences. 2002.

• WHO. Strengthening health-system emergency preparedness. 11 August 2012.

How to cite this document:

Clara Marín, Júlia Montañà, Oriana Ramírez-Rubio, Marta Ribes and Carlos Chaccour. **How to Respond to COVID-19 in a Small Island State. The Experience of the English-Speaking Caribbean and the Importance of International Cooperation**. Barcelona Institute for Global Health (ISGlobal). Series 'COVID-19 and response strategy' No. 38. July 2021.

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