

Best practices and experience of Mauritius' preparedness and response to COVID-19 pandemic



**World Health
Organization**

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1. Executive summary

This After Action Review report for the COVID-19 outbreak in Mauritius documents and assesses the country's capacity to respond to the outbreak and identifies the best practices, strengths, gaps and challenges of the national response. Areas requiring improvements or sustained actions have been identified across the 9 strategic pillars of World Health Organisation (WHO)'s COVID-19 Strategic Preparedness and Response Plan and an additional pillar for the country's response beyond health. On an overall, the review aims to enhance and sustain the national response with a particular focus on strengthening the health systems.

Following the detection of a cluster of pneumonia patients in Wuhan City, Hubei Province of China in December 2019 and the identification of a novel coronavirus as the cause in January 2020; the WHO Director General declared the outbreak to be a public health emergency of international concern on the 30 January 2020. The whole world was on alert including Mauritius which was classified as priority one country by WHO due to its tight links with China, high volume of international travellers and high population density. Mauritius increased its preparedness by reinforcing surveillance of passengers at the points of entry. With the alarming levels of transmission of COVID-19 on the global level, WHO characterised the spread as a pandemic.

Mauritius was not spared from the pandemic. The first three cases, all imported cases, were detected on the 18 March 2020. The outbreak quickly evolved from sporadic cases to clusters to local transmission and was contained after 39 days on the 26 April 2020 with no local cases recorded since then.

The table below highlights the main findings of this review by strategic pillar:

Pillar 1: Country-level coordination, planning and monitoring	
Observations	
Best practices	<ul style="list-style-type: none"> - Early assessment and strengthening of preparedness and response capacities. - Clear leadership and strong political commitment in COVID-19 response with the creation of a High-Level committee on COVID-19 chaired by the Prime Minister. The composition of the committee also evolved along with the needs of the response. - Early activation of the Incident Management Centre and creation of an inter-sectoral committee within MOHW. - Evolving preparedness and response plans to adapt to the ever-changing global and local context and WHO guidelines. - Early stakeholders' coordination by the MoHW. - WHO's pivotal support in the national response to COVID-19 in Mauritius. - Government embracing partnerships and support from bilateral and multilateral agencies, private sector and foundations and friendly countries. - Inclusion of COVID-19 Responses in Health Sector Strategic Plan 2020-2024

Challenges and Gaps	<ul style="list-style-type: none"> - Unprecedented situation for country has never faced a pandemic of that scale. - Gaps in the implementation of the recommendations from the two WHO missions for the strengthening Mauritius' preparedness and response to COVID-19.
Recommended actions	
<p>a. For immediate implementation:</p> <ul style="list-style-type: none"> - Continuously update the national COVID-19 Preparedness and Response Plan COVID-19 to include Pillar 9 – <i>Maintaining Essential Health Services</i>. - Consolidate preparedness and response of Rodrigues and Agalega across WHO's nine strategic pillars. <p>b. For mid to long term to improve response to next waves of COVID-19 outbreak:</p> <ul style="list-style-type: none"> - Elaborate of a whole-of-government health emergency response plan for harmonised coordination across sectors in response to a second wave of COVID-19 or in the advent of the outbreak of another emerging infectious disease. - Explore new funding avenues due to high-income country status. 	

Pillar 2: Risk communication and community engagement	
Observations	
Best practices	<ul style="list-style-type: none"> - Early intense sensitization campaign on COVID-19 by the Ministry of Health and Wellness (MoHW) starting on 23 January 2020 across wide range of media with the close collaboration of key stakeholders for maximum reach. - All official diffusion of information from the Government emanated from the National Communication Committee on COVID-19 via the daily press conference, resulting in direct and harmonized dissemination of information. - Daily press conference during the COVID-19 outbreak for regular, real time, credible and transparent information sharing, addressing rumours and encouraging community engagement in the response. - Use of several feedback mechanisms to understand public perceptions and monitor the behaviour of the population in regards the different measures applied. - Diverse platforms for diffusion of communication as the hotline, daily press conferences, the Facebook pages, websites and mobile application, for maximum reach and met the varied information seeking behaviours of the different segments of the population. - Fake news on social media was sanctionable to dissuade the spreading of misinformation.
Challenges	<ul style="list-style-type: none"> - Rapidly spreading rumours and 'fake news' which were easily accepted by the population.

	<ul style="list-style-type: none"> - Striking the right balance in information sharing between sharing accurate and reliable information and stressing on public health measures put in place without creating fear and panic among the population. - Diffusion of personal information on patients in the media and on social media platforms.
Recommended actions	
<p>a. For immediate implementation:</p> <ul style="list-style-type: none"> - Maintain continuous and intense sensitisation campaigns since Mauritius is COVID safe and not COVID free. - Scale-up the training of trainers for stakeholders working directly with the general public for increased sensitisation of the population on COVID-19 and community engagement. <p>b. For mid to long term to improve response to next waves of COVID-19 outbreak:</p> <ul style="list-style-type: none"> - Maintain the current strategies put in place for detection and mitigation of misinformation and rumours. 	

Pillar 3: Surveillance, rapid-response teams, and case investigation	
Observations	
Best practices	<ul style="list-style-type: none"> - Early increase in surveillance at points of entry of incoming passengers with double temperature checks and specific investigation followed by community surveillance by health inspectors for 14 days. - Efficient and prompt case investigation and scaled up contact tracing with 155 contacts tested positive representing of 46% of COVID-19 cases. - Multiple surveillance systems namely surveillance at borders, community surveillance, hospital and laboratory surveillance and the sentinel surveillance system for influenza-like illness and Severe Acute Respiratory Infection. - Mass testing of frontliners with 154 916 tests were carried out to ensure there was no cases of COVID-19 in Mauritius in preparation for the phased deconfinement.
Challenges	<ul style="list-style-type: none"> - Urgency of the contact tracing exercise due to the escalating number of positive cases from 3 to 81 from 18 to 26 March 2020. - Difficulty in locating contacts due to inaccurate addresses slowed down the contact tracing exercise. - Resistance to self-isolation for asymptomatic contacts and no guarantee that the contacts were abiding to the instructions. - Despite being done in a rational way prioritising of the contacts for testing was challenging due to the significant number of contacts and fears and concerns. - Positively tested contacts especially asymptomatic once opposing transfer to treatment centres for isolation and follow-up.

	<ul style="list-style-type: none"> - Responding to dengue outbreak amidst the COVID-19 response. - Ill-intentioned people posing as officers of the MoHW to get access to residences. - A large part of community surveillance for incoming passengers relied on the self-reporting of symptoms and there is a risk of passengers concealing their symptoms.
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Recommended actions

<p>For mid to long term to improve response to next waves of COVID-19 outbreak:</p> <ul style="list-style-type: none"> - The robust surveillance system and contact tracing system in Mauritius has proven to be effective. With strong experience and existing structures, the government needs to continue to capitalise on its strengths. - Elaborate a scaling-up plan for contact tracing to activate the rapid deployment of additional contract tracing teams during periods of high rates of local transmission. - Develop standard operating procedures (SOPs) to strengthen efficacy of contact tracing including innovative follow-up measures to ensure isolation is been respected. - Introduce the use of simple Global Positioning System such as Google maps can be considered to facilitate the location of contacts during the contact tracing. 	
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Pillar 4: Points of entry

Observations

Best practices	<ul style="list-style-type: none"> - Early quarantine measures for incoming passengers with high-risk characteristics. - Promptly imposing travel restrictions for high-risk countries. - Rapid closure of borders upon detection of the first three cases of COVID-19, all of which were imported cases. - Free compulsory quarantine for all returning Mauritian citizens. - Amended testing strategy for quarantine from the only exit test to regular testing on Day 0, Day 7 and Day 14 for early detection and isolation of cases and reduced costs of quarantine. - Repatriation for Mauritian citizens required a negative result for COVID-19 test done less than 5 days prior to check-in.
Challenges	<ul style="list-style-type: none"> - Lack of preparedness for unprecedented border closure and the need to rapidly scale up quarantine capacities and Infection Prevention and Control (IPC) measures to welcome the high volume of incoming Mauritian citizens in the last flights.

	<ul style="list-style-type: none"> - Economic toll of closed borders due to heavily reliance on both tourism and import and export services and close links to Asia and Europe. - Incidences of disturbance in quarantine centre from individuals contesting the restriction in spite of lengthy and repeated sensitisation.
Recommended actions	
<p>a. For immediate and mid to long term implementation:</p> <ul style="list-style-type: none"> - Current measures for control at points of entry have proven to be very efficient and authorities should build-up on these good practices to inform the next stages in the reopening of borders. <p>b. For mid to long term to improve response to next waves of COVID-19 outbreak:</p> <ul style="list-style-type: none"> - Develop of a health emergency contingency plan for port and airport to increase preparedness and response at points of entry in Mauritius. 	

Pillar 5: National laboratories	
Observations	
Best practices	<ul style="list-style-type: none"> - Creation of an internal committee within the National Health Laboratory Services for early preparedness and coordination. - Expanding the testing capacities of the central health laboratory recruitment of additional technicians, 24/7 operating and acquiring of additional laboratory equipment. - Large scale testing strategy including the testing of asymptomatic contacts of positive cases, frontliners, repatriated Mauritians and vulnerable groups. Mauritius has one of the highest testing rate for COVID-19 in the world with 180 tests done per 1 000 persons. - Presence of the Director of Health Laboratory Services on the High-Level Committee fast-tracked the strengthening of laboratory services during the outbreak. - Introduction of the Laboratory information management system (LIMS) for COVID-19 during the outbreak to improve the management, access and storage of key data and facilitate quick dissemination of results. - Introducing PCR testing in the private hospital laboratory to scale up testing capacity and as back up for the central health laboratory. - Mitigation of biosafety risks with intensified safety measures such as increase in number of biosafety cabinets, training the staff in and providing them with wearing personal protective equipment (PPE).
Challenges	<ul style="list-style-type: none"> - Management of laboratory resources without compromising the quality standards for testing for other pathologies and biological/clinical tests while facing an increased demand for COVID-19 testing.

	<ul style="list-style-type: none"> - Slow dissemination of negative COVID-19 in the early stage of the outbreak with the focus on isolating positive cases. - Shortage of consumables and reagents for testing at the beginning of the outbreak with the rapid escalation of positive cases and increase demand for testing. - Being the only entity performing PCR tests for COVID-19 at the beginning of the outbreak was a great risk in case technicians got infected and all the team had to go in isolation. There also the risk of burn-out of the staff. - Delayed delivery of equipment due to the closure of borders and lockdown in importing countries. - Difficulty in purchasing purchase of consumables and reagents, due to high global demands and competition among countries and relatively small orders compared to other countries.
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Recommended actions

a. For immediate implementation:

- Capitalise on the experience in building LIMS for COVID-19 to create the new system dedicated to passengers.

b. For mid to long term to improve response to next waves of COVID-19 outbreak:

- Ensure optimum pre-stocking of consumables and reagents in the advent of a second wave of COVID-19 outbreak.
- Capacity building of private laboratories to scale-up the testing capacities beyond the public sector.

Pillar 6: Infection prevention and control

Observations

Best practices	<ul style="list-style-type: none"> - Setting up of isolation wards, fever/flu clinics and COVID-19 testing centres to isolate suspected cases. - Establishment of Flu/Fever clinics and subsequent constructions of COVID-19 testing centres for triage of symptomatic patients - Strict IPC measures implemented for the safety of the health care workers such as provision of adequate PPE, isolation during their working shifts with provision of accommodation, quarantining and testing at the end of their work shifts. - The leading private hospital had strict IPC measures in place and registered no cross contamination during isolation of suspected cases. - Immediate and stringent national lockdown following the detection of the first three cases to halt the spread of COVID-19 and allow for the detection of positive cases via contact tracing.
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	<ul style="list-style-type: none"> - Introduction of the Work Access Permit for workers of essentials services to facilitate the monitoring of the movement of citizens during locked. - The creation/amendment and implementation of legal frameworks to prevent the spreading of COVID-19 to provide the necessary guidelines for IPC measures. - Phased deconfinement for the monitoring the situation in preparation for the total lifting of restrictions. - Adoption of IPC measures across all sectors by dint of the whole-of-government approach facilitated by the High-Level Committee on COVID-19 and different multisectoral initiatives.
Challenges	<ul style="list-style-type: none"> - Initial challenges in implementing IPC measures in healthcare settings with limited availability of the PPE and health personnel poorly adopting the new sanitary measures. - The number of COVID-19 infection among staff of the MoHW stands at 36 representing about 10% of reported cases and was associated to inconsistent implementation of IPC measures. - Immediate lockdown was counteractive with the rush towards commerce premises for panic buying at the start of the outbreak. - Difficulty in applying IPC measures upon resumption of activities in some specific sectors such as manufacturing and construction due to high residential density of dormitories or the configuration of the working premises.
Recommended actions	
<p>a. For immediate implementation:</p> <ul style="list-style-type: none"> - Assess implementation of IPC measures among health personnel to reduce the number of infection rate and improve IPC trainings to include table-top exercise and drills at healthcare facilities in their trainings. 	

Pillar 7: Case management	
Observations	
Best practices	<ul style="list-style-type: none"> - Systematic isolation of all person infected with SARS-CoV-2 in treatment centres, including asymptomatic patients and free treatment. - High quality and optimum care was provided due to strategic sorting of patients, the relatively low prevalence of COVID-19, latest modern technologies and local expertise. - Continuous training and support for health personnel in treatment centres. - Knowledge exchange with international experts on latest updates about testing and treatment about COVID-19 and offer the best treatment and care.
Challenges	<ul style="list-style-type: none"> - The high prevalence of noncommunicable diseases in Mauritius impacted

	<p>the mortality rate of COVID-19 with 8 out of 10 deaths associated with comorbid cardiovascular diseases and related conditions.</p> <ul style="list-style-type: none"> - Lack of existing specialised health facility for infectious diseases equipped with modern medical technologies and with a high-bed capacity. - Fear and concerns among the healthcare workers at the treatment centres. - Initial reluctance of nearby inhabitants on the use of New Souillac Hospital as a quarantine and isolation centre at start of the COVID-19 response with fears being infected. - Organising for the care taking of dependents of infected persons especially in cases where several members of the family have been infected.
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Recommended actions

a. For immediate implementation:

- Find immediate strategies for treatment centres to prepare for the expected rise in imported cases due to the partial re-opening of the borders without adding pressure on the already overloaded health facilities. Consider alternative options such as the conversion and upgrading of district hospitals into treatment centres.
- Boost morale and support offered to health personnel at treatment centre so that they can respect all IPC measures as they are one of the few links which could result in new local transmissions.

b. For mid to long term to improve response to next waves of COVID-19 outbreak:

- Accelerate efforts in reducing noncommunicable disease to reduce the burden of future outbreaks of infectious diseases.

Pillar 8: Operational support and logistics

Observations

Best practices	<ul style="list-style-type: none"> - Mapping of stocks and forecast of materials needed for COVID-19 response. - Activation of the emergency procurement for timely delivery of essential medical materials. - Centralised storage of medicals materials for COVID-19 response for better stock management, monitoring and distribution. - Multisectoral collaboration for efficient delivery of ordered medical materials. - Local production of protective masks and hydro alcoholic gels to meet the local demands. - Optimum repurposing of resources from various ministries for use in the national response to COVID-19 since most of the government services were halted during the national lockdown.
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	<ul style="list-style-type: none"> - Mobilization of support from the bilateral and multilateral agencies for support in terms of resources for the response.
Challenges	<ul style="list-style-type: none"> - Late delivery of essential materials with increased competition between countries, limited supplies globally and Mauritius' vulnerability as a small island developing state. - Heavy reliance on the importation of medical materials and rising costs medical materials due to both increase in competitions and the depreciation of the Mauritian rupees.

Recommended actions

a. For immediate implementation:

- Pre-stock of medical materials.
- Conduct a mapping of regional suppliers of essential medical materials.

b. For mid to long term to improve response to next waves of COVID-19 outbreak:

- Advocate for an accelerated implementation of the pooled procurement initiative for essential medicines among the small island developing state in the African region.
- Invest in local production of medical materials.
- Explore the possibilities of pre-positioning of medical materials.

Pillar 9: Maintaining essential health services during an outbreak

Observations

Best practices	<ul style="list-style-type: none"> - Maintained essential services implemented IPC measure to protect inpatients and outpatients. - Maintaining and scaling-up of the yearly anti-influenza vaccination campaign. - Maintained essential health services and the introduction of teleconsultation in the private health sector. - Stock evaluation and ensuring the availability of essential medications, equipment and supplies for diseases and life course conditions other than COVID-19.
Challenges	<ul style="list-style-type: none"> - Reduced and suspended public health services. - Significant decrease in hospital attendance during lockdown with hospital services registering an estimated 10-15% of their usual attendance with lack of transport identified as the main reason for this reduction. - Consequent backlog in elective care and increase attendance post lockdown since resumption of services. - Transfer of New Souillac Hospital and New ENT Hospital specialised services putting additional pressure on already overwhelmed elective care.

	<ul style="list-style-type: none"> - Difficulties in organising treatment abroad for patients necessitating specialised surgery. - Difficulties in detecting the scale of the dengue outbreak due decrease in healthcare facilities. - Risk of increase incidence of Hepatitis C and HIV due to the observed increase in risky behaviours among people who inject drugs caused by the disruption of needle and syringe programmes. - Interrupted immunisation vaccination campaigns for infants, children and adolescents presented a risk of reversing the past achievements of other communicable diseases in Mauritius. - Disrupted public health services in Rodrigues despite no registered cases of COVID-19 on the island.
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Recommended actions

a. For immediate implementation:

- Develop an operation plan for the continuity of health services including a mapping and prioritising of all public health service as well as a plan for the restoration of services.
- Conduct a rapid assessment of the impact of reduced public health services on health seeking behaviour across all diseases and life course states to inform efficient post lockdown responses such as catch-up campaigns, introduction of new services or adaptation of existing services.

b. For mid to long term to improve response to next waves of COVID-19 outbreak:

- Implement a phased reduction of services based on the prioritisation of health services for a more balanced decision making after considering the prevalence and transmission rate of COVID-19, the burden of diseases among the population and changing contexts and needs.
- Conduct a rapid assessment of the availability, capacity and distribution of the health workforce to inform scaling-up strategies and/or re-distribution strategies such as re-assignment and task sharing coupled with rapid training mechanisms.
- Set-up of alternative service delivery in the public health sector such as the use of digital platforms for teleconsultation services or outreach mechanism to ensure delivery of health services.

Pillar 10: Responses beyond health

Observations

Best practices	<ul style="list-style-type: none"> - Whole-of-government approach in the national response to COVID-19 and rapid understanding of the impact of the pandemic on livelihoods. - Distribution of food packs to vulnerable families. - Price control on essential food and hygiene commodities. - Maintaining the food supply chains for fresh food products and investing in local food production. - Continuity of education classes via distance learning strategies. - Creation of the COVID-19 Solidarity fund. - Door to door distribution of pensions. - Repatriation of stranded Mauritian citizens.
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	<ul style="list-style-type: none"> - Rapid introduction of the Wage Assistance Support Scheme and the Self-employed Assistance. - Elaboration of the '<i>Plan de Soutiens aux Activites Economiques</i>' with offering a wider range of financial support to economic operators.
Challenges	<ul style="list-style-type: none"> - Limited continuity of public services due to general lack of digitalisation across governmental services. - Strains on food security among vulnerable households during the strict lockdown. 17 % of Mauritian households have skipped a meal, 27% of the household have reduced their food consumption and 21% reported being unable to buy basic food items since the lockdown. - Maintaining essential food supplies since Mauritius is greatly dependent on importation of essential food products and the risks of interrupted food supply chains. - Adverse economic impacts with an economy heavily reliant on tourism, trade and manufacturing and financial sectors and border closures and reduced economic activities globally. - Difficult living and financial situations for stranded Mauritians. - Lockdown highlighted domestic violence.
Recommended actions	
<p>a. For immediate implementation:</p> <ul style="list-style-type: none"> - Update the social registrar to include households who have found themselves in financial difficulties and might have reached the poverty line so that they have access to social protection services. - Find long-term socio-economic measures to mitigate financial hardships and ensure a more sustainable social protection. <p>b. For mid to long term to improve response to next waves of COVID-19 outbreak:</p> <ul style="list-style-type: none"> - Further increase social protection measures during strict sanitary curfew to increase food security of vulnerable households. - Increase resilience of Mauritian economy with further diversification of the economy and reconversion of skills. - Increase investment in food self-sufficiency. - Accelerate efforts in the digitalisation of government services for optimum functioning during lockdown. 	

2. Background

On 31 December 2019, WHO was alerted to a cluster of pneumonia patients in Wuhan City, Hubei Province of China. One week later, on 7 January 2020, Chinese authorities confirmed the identification of a novel coronavirus as the cause of the pneumonia. On 30 January 2020 the Emergency Committee on the novel coronavirus (2019-nCoV) under the International Health Regulations (2005) was reconvened. Upon the recommendations of the Emergency Committee the WHO Director General declared the outbreak to be a public health emergency of international concern. In January 2020, surveillance of passengers at the points of entry (port and airport) in Mauritius was heightened to the maximum level. The global situation of COVID-19 has evolved rapidly since and on 11 March 2020 WHO characterised the outbreak as a pandemic based on alarming levels of spread and severity, as well as disquieting levels of inaction.

Mauritius detected its first three confirmed cases of COVID-19 on 18 March 2020, all of which were imported cases (one from the UK and the two others are crew members of a cruise ship). On 19 March 2020 four locally transmitted cases were confirmed through contract tracing and total border closure was announced. A national lockdown was effective as from as from 20 March 2020 for an initial period of least two weeks and curfew order was enforced from 23 March to 2 April 2020 and subsequently extended twice till 31 May 2020.

The epidemiological situation of COVID-19 outbreak evolved rapidly shifting from a scenario of *Sporadic cases* to *Clusters of cases* on 9 April 2020. On 21 April 2020, the outbreak in Mauritius was categorised as community transmission confirmed with the escalating number of cases linked to local chains of transmission and several positive cases detected via the flu/fever clinics in the regional hospitals. Owing to extensive contact tracing and testing exercises and the systematic isolation and treatment of all COVID-19 cases, Mauritius did not register any locally transmitted cases since 26 April 2020. Figure 1 shows the evolution of the epidemic in Mauritius.

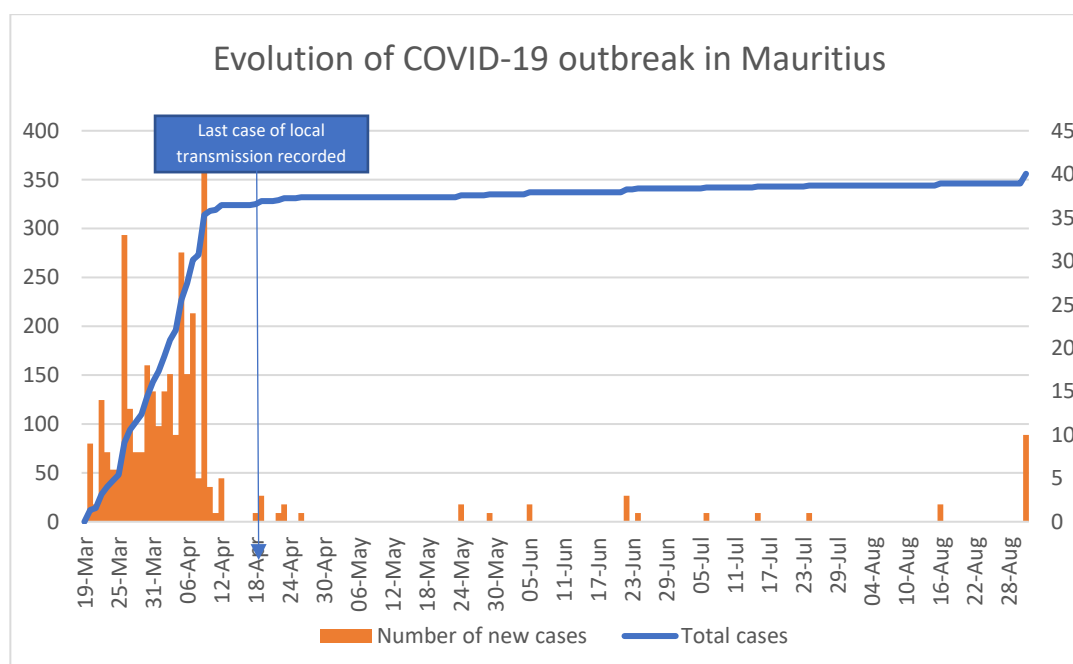


Figure 1: Evolution of COVID-19 outbreak in Mauritius

As at 31 August 2020, Mauritius registered 356 cases of COVID-19, out of which 241 were local cases and 115 imported cases in detected in quarantine centres. The country counts 10 deaths and 335 recovered patients. With 180 tests per 1 000 people and a total of 229 492 tests (69 177 PCR tests and 160 315 rapid tests), Mauritius has one of the highest testing rate in the world. The success of Mauritius in containing the spread of COVID-19 within the short period of 39 days has been cited in many fora^{1,2,3}. The timeline of the outbreak in Mauritius including key measures is outlined in figure 2.

It is to be noted that Mauritius has a welfare system and offers free health coverage including advanced medicine such as surgery. Quarantine, testing and treatment for COVID-19 within the public health system were all free of charge. The country is equipped with 134 geographically well distributed primary health centres, five regional hospitals and two district hospitals as well as six specialised hospitals with a total bed capacity of 3 864⁴. The public health workforce comprises of 3 907 qualified nurses and midwives, and 1 525 doctors.

¹ <https://www.edbmauritius.org/media/3284/mauritius-dps-editorial.pdf>

² https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3584361

³ <https://www.sciencedirect.com/science/article/pii/S2666535220300227?via%3Dihub>

⁴ <https://health.govmu.org/Documents/Statistics/Health/Mauritius/Documents/HEALTH%20STATS%20REPORT%202018.pdf>

Timeline of the National Response to COVID-19

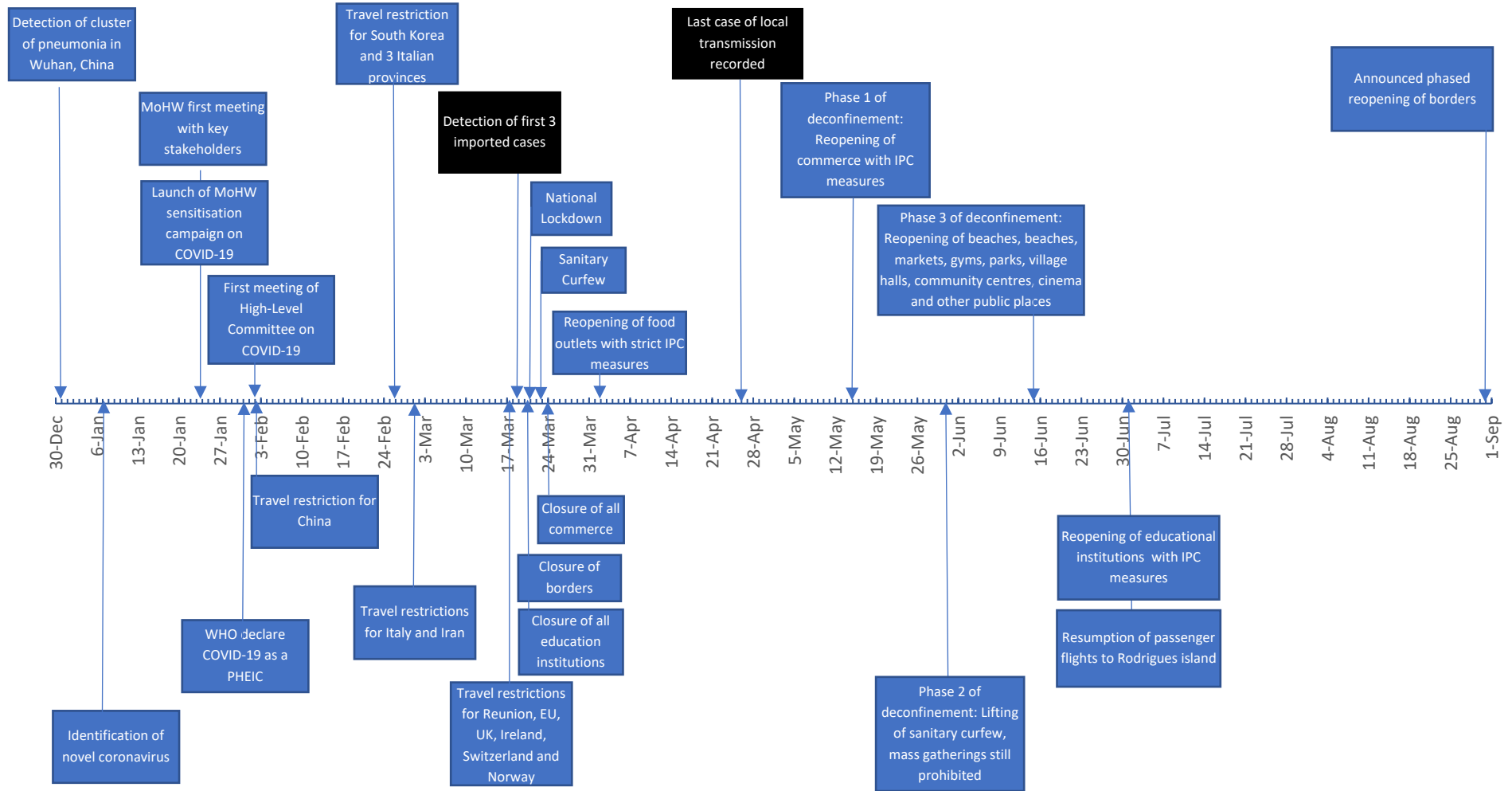


Figure 2: Timeline of COVID-19 outbreak in Mauritius

2. Scope and Objectives of review

Scope

This After Action Review of the COVID-19 outbreak in Mauritius will thoroughly analyse the following nine pillars delineated in the WHO COVID-19 Strategic Preparedness and Response Plan:

- Pillar 1: Country-level coordination, planning and monitoring;
- Pillar 2: Risk communication and community engagement;
- Pillar 3: Surveillance, rapid-response teams, and case investigation;
- Pillar 4: Points of entry, international travel and transport;
- Pillar 5: National laboratories;
- Pillar 6: Infection prevention and control;
- Pillar 7: Case management;
- Pillar 8: Operational support and logistics;
- Pillar 9: Maintaining essential health services and systems.

The review covers the period of 31 December 2019 following the WHO's report of a cluster of pneumonia cases in Wuhan City, Hubei province of China to the 31 August 2020.

Objectives

The overall aim of this review is to assess the national functional capacity of public health and emergency response systems and to identify critical areas for immediate remediation or sustained improvement of the outbreak response. More specifically, the three-pronged approach objectives to this review are as follows:

1. provide an opportunity to document, analyse and share the experience of ongoing in-country COVID-19 response;
2. facilitate consensus building on general lessons learned amongst the various response stakeholders to enhance and leverage the current response by sustaining best practices and preventing recurrent errors;
3. document and implement lessons learned from the response efforts to date especially focusing on health systems strengthening.

3. Methods

For the purpose of this review, a wide range of stakeholders were interviewed to ensure a diversity of opinions which is of essence for such exercise. Between the 30. June and 6 August 2020, 15 in-depth semi-structured interviews were carried out among key stakeholders who have been identified across the 9 main pillars of the COVID-19 Strategic Preparedness and Response Plan. Interview guidelines consisting of generic trigger questions were developed for each COVID-19 response pillar and customised to each interviewees' specific context as and when required. Other key stakeholders were contacted for additional strategic information. A complete list of informants can be found in Annex 1.

A review of background materials such as government's communiques, media reports and grey literature was done. The data was used to triangulate the data collected via the semi-structured interviews and provide complimentary information. Findings are analysed and synthesised by the strategic pillars of the

response and best practices, challenges and main recommendations were identified. During this process a 10th pillar categorised as 'Responses beyond' was identified for Mauritius' national response to COVID-19 and reported accordingly.

4. Findings

4.1. Pillar 1: Country-level coordination, planning, and monitoring

Assessing capacities and strengthening preparedness for health emergency

In 2018, Mauritius voluntarily conducted a State Party self-assessment and a Joint External Evaluation (JEE) to assess its core capacities under the International Health Regulations (IHR) 2005. The JEE report highlighted the substantial progress made in fully implementing the IHR (2005) with the modification of Quarantine and Public Health Regulations; the formulation of action plans to respond to public health emergency; the setting up of an intersectoral committee to deal with IHR related matters; and the signing of an international protocol and a response plan in the advent of a chemical event. The country is committed to continue improving its capacities in health emergency.

After the declaration of the public health emergency of international concern related to the coronavirus outbreak in China, Mauritius was identified as a Priority 1 country for readiness by the WHO Regional Office for Africa (WHO AFRO) COVID-19 Incident Management Support Team due to its tight links with China, high volume of international travel and high population density. Two WHO missions were deployed from WHO AFRO to support Mauritius' readiness efforts.

From 4 to 8 February 2020, an Emergency Needs Assessment of Mauritius' preparedness to COVID-19 was conducted. Level of preparedness at the infection, prevention and control; case management and points of entry were reviewed. With the collaboration of the WHO Country Office and the MoHW, a half day briefing was delivered by the mission to 26 key staff from MoHW and the airport and hospital health personnel (doctors, nurses, psychologists and rapid response teams) on infection, prevention and control; case management and points of entry using WHO Guidelines.

The second mission comprising of WHO AFRO and Pasteur Institute of Madagascar experts carried out a joint comprehensive evaluation of the influenza and COVID-19 surveillance and laboratory system from 10 to 14 February 2020. It aimed at strengthening the surveillance for influenza-like illness and/or severe acute respiratory infection, as well as COVID-19 using WHO standards in the context of the Integrated Disease Surveillance and Response strategy for a timely and appropriate response to seasonal, zoonotic and pandemic influenza.

The recommendations made based on gaps identified during both missions are as shown in the table below:

Table 1: Recommendations following Rapid Capacity Assessments of Mauritius' capacity to respond to COVID-19

Pillar 1: Country-level coordination, planning, and monitoring	<ul style="list-style-type: none">• Finalise the COVID-19 operational preparedness and response costed plan for quick implementation.• Elaborate a clear algorithm if a suspected case is identified for the following scenario at healthcare facility, Point of Entries, in the community and widely disseminate hard copy where it should be used.• Train and update health workers at the both public and private sectors on IPC, case management, surveillance and specimen
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	collection as disseminating the latest information and necessary tools (e.g. case definitions and logbook) to facilities
Pillar 2: Risk communication and community engagement	<ul style="list-style-type: none"> • Intensify communication to the public and adequate stock of leaflets and posters at health facilities. • Put in place mechanism to combat misinformation.
Pillar 3: Surveillance, rapid response teams, and case investigation	<ul style="list-style-type: none"> • CDCU to initiate development of COVID-19 data base including all variables from surveillance, laboratory and early investigation studies. • Conduct table-top exercise as well as the drills at healthcare facilities to familiarize staff with the immediate actions to take when applicable.
Pillar 4: Points of entry	<ul style="list-style-type: none"> • Dedicated staff with dedicated ambulances is needed to transport suspected cases of COVID-19 from points of entry.
Pillar 5: National laboratories	<ul style="list-style-type: none"> • Send sample tested negative to regional reference laboratory to confirm the results
Pillar 6: IPC & Pillar7: Case management	<ul style="list-style-type: none"> • Provide adequate types and amounts of PPE to all levels of healthcare systems (including laboratories and points of entry) to avoid infection of healthcare workers. • Triage all symptomatic patients at the health facility entrance with the latest case definitions.

With a view to leverage support to countries WHO conducted a preliminary categorisation of countries based on countries' readiness capacities through the International Health Regulations (2005) State Parties Annual Reporting tool as well as a continuum of response scenarios: preparedness, high-risk of imported cases, imported cases, localised transmission, and community transmission. The latest Country Preparedness and Response Status for COVID-19 as of 9 June 2020 categorised Mauritius at Level 4 and with Level 5 being the highest achievable level for preparedness.

Clear leadership and political engagement with the institution of the High- level Committee on COVID-19

A high level committee on COVID-19 chaired by the Prime Minister was instituted on 22 January 2020 to monitor both local and international epidemiological situations and for rapidly sharing of key information among the different ministries. The committee was composed of the Minister of Health and Wellness, the Minister of Foreign Affairs, the Minister of Finance, Minister of Tourism, WHO Representative and the secretary to Cabinet. The whole-of-government approach enabled a timely and informed decision making for a coordinated and scaled up national response.

With the confirmation of three positive cases of COVID-19 on the 18 March 2020, the committee convened daily. The composition of the committee also evolved throughout the outbreak with the inclusion of Minister of Commerce and Consumer Protection; Minister of Information Technology, Communication and Innovation; Attorney General; Commissioner of Police; two additional advisors to the Prime Minister's Office covering communications and health aspects respectively; Senior Chief Executive, the Director of Health Services, Director of the Health Laboratory Service of MoHW and lead technician responsible for logistics and procurement. The inclusion of health technicians and other concerned Ministries further facilitated rapid sharing of information and needs for resources among the stakeholders across the

different pillars of the national response. It also resulted in prompt decision making, resource mobilisation and implementation of the measures.

With no reported locally transmitted cases since 26 April 2020, the high level committee on COVID-19 changed their meeting schedules from daily to weekly in June. However, in case of a resurgence of local transmitted cases of COVID-19 and if need be, daily meetings may be scheduled again.

Early activation of the Incident Management Centre and creation of an inter-sectoral committee within MOHW

The Directorate of Public Health Services of the MoHW is on an alert and response mode since the first week of January 2020 following the WHO's report of a cluster of pneumonia cases in Wuhan, China and the identification of a novel virus. The Communicable Diseases Control Unit (CDCU) was activated as the Incident Management Centre within the MoHW. An incident management committee was established and led by the Incident Manager who was the Director of Public Health Services and head of CDCU. Daily monitoring of the global situation regarding the then unidentified COVID-19 was conducted.

CDCU was responsible for analysing and collecting data pertaining to COVID-19 both locally and internationally, sensitisation campaign, surveillance at the points of entries, managing the rapid response teams together with the Regional Public Health Superintendents, facilitating the transfers of passengers to be quarantine or suspected cases or contacts to respective locations, coordinating case management and contact tracing and liaising with the private health sector in sharing of information, guidelines and appropriate actions.

An inter-sectoral committee was established at the level of the MoHW in line with the Operational Plan for COVID-19 preparedness and response. This committee reviewed the situation, monitored the daily activities related to the operational plan and elaborated guidelines and SOPs as and when needed. The composition of the inter-sectoral committee and the incident management committee can be found in Annex 2.



Intersectoral committee at MoHW
Source: MoHW

Evolving COVID-19 preparedness and response plans

In January 2020, MoHW promptly devised an Operational Plan for COVID-19 preparedness and response to guide the intervention of all stakeholders with regards to COVID-19. The plan which comprises of five strategic directions: (1) preparedness, planning and coordination, (2) situation monitoring and assessment, (3) prevention and containment, (4) health service response, and (5) communications. Topics related to coordination, human resources, a costed plan for resource mobilization and a collection of protocols were also included. This key document was elaborated under the guidance of the WHO Country Office in Mauritius and shared during a meeting on 23 January 2020 with all relevant stakeholders such as other Ministries and state entities.

Following the two WHO missions to support Mauritius readiness efforts, a COVID-19 Preparedness and Response Plan was devised with the assistance of WHO Country Office based on the WHO's strategic preparedness and response plan for COVID-19. This latest guideline consisted of a list of priority steps,

actions, and costed activities by the then 8 strategic pillars of response preconised by the WHO. Timelines as well as responsible parties for actions are also included. Being developed after the incidence of COVID-19 in Mauritius, this plan took into consideration lessons learnt and ways in which the response of the health system could be improved and scaled up.

WHO's pivotal support in the national response to COVID-19

WHO Country Office in Mauritius helped the MoHW since the beginning of the discovery of the novel coronavirus by sharing of key information and guidelines as and when they were developed and updated. Technical assistance was provided to assess preparedness and strengthen the capacities of country responding to a health emergence via the two missions from WHO AFRO. Moreover, the WHO Representative provided technical advice during early meetings held by MoHW and consequently during the High Level Committee on COVID-19 of the Prime Minister's Office.

The WHO Country Office incident management team was activated soon after the announcement of first cases of COVID-19 and each staff were reminded of their roles and responsibility. The WHO Country Office staff compiled key statistics and information on the national response to produce daily situational reports. More comprehensive reports were prepared weekly to be shared with WHO AFRO.

To further increase the response capacity of the WHO, a local consultant was recruited as from 23 March to provide direct support to the MoHW during its response to COVID-19 during the outbreak. The local consultant contributed to the elaboration of protocols to guide the different aspect of the response, provided advice during key meetings and supported the MoHW in several measures and tasks.

Projections of the progress of the COVID-19 epidemic were done using the WHO-OLS COVID-19 Essential Supplies Forecasting Tool (COVID-ESFT) and COVID-19 Simulation Model for the WHO African Region. This exercise guided the projection of resources and surge capacities of services to increase preparedness.

WHO Country Office sought the expertise of WHO AFRO and WHO Headquarters for the infrastructural design of the testing centres for COVID-19. The design was adapted from the WHO model of Severe Acute Respiratory Infections Treatment Centres and WHO Country Office funded the construction of one of the flu/fever clinic at Jawaharlal Nehru Hospital in Rose Belle. WHO Country Office also contributed financially to the COVID-19 national response as shown in the table below:

Table 2: Financial support of WHO Country Office in the COVID-19 response

Description of support	Amount in USD
Laboratory Diagnostics	121 493
PPE	27 245
Testing Centre	118 281
Human resources	22 900
Total	289 920

As part of the United Nations (UN) Country Team and the Development Partners Group (include UN Agencies and other bilateral and multilateral agencies), the WHO Country Office in Mauritius acted as the liaison to relay information from the High Level Committee on COVID-19. The daily situation reports were also shared with these two entities. The WHO Representative shared the needs of the national response and the key decisions taken by the committee which facilitated participation of the UN Country Team and the Development Partners Group in the response.

WHO Country Office attended virtual meetings organized by WHO AFRO COVID-19 Incident Management Support Team to strengthen COVID-19 surveillance, including alert management system, contact tracing, reporting and data analysis. WHO Representative participated in a meeting with his counterparts of the Indian Ocean region to share key information and advice and learnt from each context.

Strong engagement of Bilateral and Multilateral agencies

In preparation to COVID-19, United Nation Agencies of both Mauritius and Seychelles held a meeting on COVID-19 on 11 February 2020 chaired by UN Resident Coordinator for Mauritius and Seychelles. The WHO Representative presented the latest information on the outbreak to the staff and answered their questions. Two briefing sessions were held by the WHO Representative for the Development Partners Group on 12 February 2020 and 13 March 2020. An ad hoc Security Management Team meeting was held too on the 9 March 2020.

The UN Country Team and the Development Partners Group held regular meetings during the outbreak to coordinate actions between the agencies and with the Government, owing to the input of the WHO Representative. The Government of Mauritius via the Ministry of Foreign Affairs Ministry of Foreign Affairs, Regional Integration & International Trade solicited the support of the bilateral and multilateral agencies as well as friendly country and international partners.

WHO Representative presenting the latest information on COVID-19 during UN agencies meeting on 11 February 2020
Source: WCO



United Nations Development Programme (UNDP) contributed to the health system immediate response by supporting the National Health Laboratory of the MoHW to procure LIMS. This information system allowed for a faster tracking and analysing of testing results and processes. UNDP also invested in the procurement of medical supplies and fully funded the construction of the COVID-19 testing centres at the Victoria Hospital in Quatre Bornes. USD 800 000 were donated to the COVID-19 solidarity fund for essential food supplies, women and children shelters, and health system support to the frontline workers. UNDP is also taking the lead on assisting the Government with the socio-economic recovery of the country following the outbreak.

International Organisation on Migration (IOM)'s response was guided by the IOM Southern Africa Regional Strategic Preparedness and Response Plan Coronavirus Disease 2019 for February - December 2020. IOM supported the border management frameworks with enhanced health security. During the COVID-19 outbreak, IOM developed a *Guidance for Employers and Businesses on the Protection of Migrant Workers*. Multi-lingual COVID-19 sensitisation posters were shared to ensure accessibility of health information to migrants. IOM advocated for migrants' health needs and protection to be taken into consideration by the authorities. With closure of the borders, IOM supported the national authorities with stranded migrants.

United Nations Population Fund (NFPA) announced the provision of USD 30,000 for the procurement of PPE for the health workers through the WHO Country Office. Resources have been mobilized to support gender-based violence survivors. Moreover, UNFPA developed targeted communication to promote maternal health and youth engagement in the fight against COVID-19.

United Nations Educational, Scientific and Cultural Organization (UNESCO) assisted the Ministry of Education, Tertiary Education, Science and Technology with the e-learning programme put in place to ensure the continuity of educational programmes for primary and secondary education. IT solutions, guidelines and resources for distance learning, Media Information Literacy to fight disinformation and

discrimination linked to the pandemic, open science, access to information were provided. Youth were mobilised to participate in the Sports Challenge against COVID-19 in Africa. UNESCO supported the participation of Mauritians in global social media campaigns and webinars to strengthen bonds of shared humanity during these challenging times.

International Atomic Energy Agency and United Nations Office on Drugs and Crime contributed with the purchase of COVID-19 diagnostic kits, biosafety/biosecurity equipment, including PPE and extractor equipment. United Nations Economic Commission for Africa is supporting the socio-economic analysis of the impact caused by COVID-19 and various studies related to its trends in Africa. Through its labour guidelines, International Labour Organization advocated for safety at work and the sustainability of business and jobs. Office of the United Nations High Commissioner for Human Rights also provided guidelines on ways to continue the respect of human rights across all segments of the population for a successful public health response while protecting people's social, economic and civic rights. World Tourism Organization is supporting the impact assessment for the tourism sector together by providing recommendations to encourage the sustainability of companies and job.

Mauritius benefitted from the expertise of the regional platforms such as the African Union, South African Developing Countries, Common Market for Eastern and Southern Africa on health protocols, logistics and procurement of goods. The Centre of Disease Control of the African Union has donated two million masks as well as PPE such as goggles and gloves for the healthcare workers. A Mauritian Delegation led by the Minister of Foreign Affairs, Regional Integration and International Trade and the Minister of Health and Wellness attended the Emergency Meeting of the SADC Council held through video conference on 6 April 2020⁵.

Through its *Surveillance Epidémiologique et de Gestion des Alertes* (SEGA) One-Health network, a regional mechanism for the surveillance and response against epidemics in the Indian Ocean, the Indian Ocean Commission devised its first emergency plan of 477,150 euros and funded by the *Agence Française de Développement* for the strengthening of national surveillance teams and to implement measures to contain COVID-19. A second emergency plan amounting to 4 million euros was elaborated for the purchase of equipment and medicine. The SEGA One-Health network also enabled the sharing of regional and international health information as well as regular exchanges between health experts in order to anticipate and be proactive in managing the COVID-19 health crisis.

The delegation of the European Union in Mauritius contributed 250,000 euros to the COVID-19 Solidarity fund via *Decentralised Cooperation Programme* for social development. The fund will go towards helping the most vulnerable populations to cope with the sanitary and economic crisis associated with the outbreak.

In the context of the *Security and Growth for All in the Region mission*, a first stock of 13 tonnes of medications including 500 000 tablets of hydroxychloroquine were donated by India followed by 10 tones of ayurvedic medicines. Mauritius also benefitted from the expertise of an Indian medical team consisting of a specialist in community health, a pneumologist and anaesthetist who trained the health personnel of the MoHW.

The Chinese government aided Mauritius with medical supplies and equipment to fight against the COVID-19 epidemic. More medical supplies comprising of medical protection gears, face masks and body temperature scanning devices were subsequently received from China following a regional request by the Organization of African First Ladies for Development.

⁵http://pmo.govmu.org/English/Documents/Cabinet%20Decisions%202020/Cabinet_Decisions_taken_on_29_May_2020.pdf

The Government of Japan provided a grant of 300 million Japanese Yen to Mauritius, under the Japan's Grant Aid "Economic and Social Development Programme", for the procurement of medical equipment and to strengthen the health system. The United Arab Emirates donated 2.9 tones of medical and protective equipment through the *United Arab Emirates Aid COVID-19 Global Response Programme*.

The Australian Government contributed 5 million Mauritian rupees to the COVID-19 Solidarity Fund. The U.S. Embassy in Mauritius through the U.S. Agency for International Development provided 500,000 USD to the International Federation of Red Cross (IFRC) and Red Crescent Societies to implement COVID-19 support. Mauritius received medical equipment through a donation by the Jack Ma foundation to Africa countries.

Strong and proactive involvement of the private sector

The private sector in Mauritius has been proactive in the national response to COVID-19. Business Mauritius which represents over 1200 local businesses and Mauritius Chamber of Commerce coordinated actions with the Government. The Mauritius Chamber of Commerce facilitated the making of food packs distributed by the Ministry of Social Security to the families on the Social Registrar of Mauritius, ensured food supply chain continuity and contributed to devising the Work Access Permit and the alphabetically order strategy for shopping during the lockdown.

For an optimum response to the social and economic impact of COVID-19, Business Mauritius structured itself in six COVID-19 response committees dedicated to health; economic recovery; cross border logistics; food necessary supplies and energy; human resources; communication and solidarity; respectively. The objective of its health committee was to build the capacity of the private healthcare sector by ensuring that they were adequately equipped to optimally partner with public health sector in its response. It looked into the possibilities of conducting private testing and of proposing additional bed facilities in case public health facilities could no longer meet demand. The health committee also considered medical supplies, proactive onboarding and deployment of medical staff and sourcing of PPE. Part of its function was to ensure business continuity of private health services too.

The solidarity committee helped to optimise the operation of the NGOs network and to coordinate actions with the relevant authorities. The committee coordinated the NGOs' distribution of food packs to vulnerable families, including those not on the Social Registrar of Mauritius. They aim to conduct a survey which will be implemented by NGOs to collect data from the vulnerable families to understand their needs and impact of the health crisis.

Inclusion of COVID-19 Responses in Health Sector Strategic Plan 2020-2024

The elaboration of the [Health Sector Strategic Plan 2020-2024](#) which was in its finalisation stage when the outbreak occurred was adapted to include the response to COVID-19. For Mauritius island, 'Strengthen the active surveillance and management of COVID-19' was defined as the Strategic Objective 8.1 of the Strategic Goal 8 – 'Sustain strong surveillance and response for emerging and re-emerging vector-borne and communicable diseases, including the new coronavirus disease and eliminate the Hepatitis C Virus'. The strategic actions for are:

- Sustain the implementation of the COVID-19 Policy.
- Sustain the implementation of the COVID-19 Action Plan with focus on the 9 pillars: Country-led Coordination, Planning and Monitoring, Risk Communication and Community Engagement, Surveillance, Rapid Response and Case Investigation, Points of Entry, National Laboratory, IPC, Case Management, Operation Support and Logistics and Maintaining Essential Services during an outbreak.

- Setting up of Flu Clinics adapted from the WHO model of Severe Acute Respiratory Infections Treatment Centres.
- Extending Rapid Testing among the population.
- Consolidating laboratory services for the timely detection of COVID-19 cases.
- Review of protocols and guidelines for the screening of suspected COVID-19 cases and management of positive cases.
- Review new legislation on COVID-19, as and when required, to protect the health of the population.
- Develop a quality assurance mechanism for point-of-care testing for COVID-19, including quality indicators.
- Strengthen surveillance system to track COVID-19 cases.
- Strengthen intensive care unit facilities to accommodate patients.
- Consolidate nationwide sensitisation and health promotion campaigns.

The Health Sector Strategic Plan 2020-2024 also includes bolstering the surveillance and testing capacities in Rodrigues Island and surveillance in Agalega Island.

Way forward

Continued monitoring of global and local situation

The High Level Committee on COVID-19 continues with meetings on a weekly basis for a continuous monitoring of the global and local situation and important decision making in strengthening the capacity of the country, especially with regards to National Laboratories in preparation for the re-opening of borders.

Strengthening of the Health System

The Budget 2020-2021 titled as the “Our New Normal: the economy of life” announced an envelope of around 12 billion Mauritian Rupees for the health sector with the following key projects to strengthen the response of the Health System to health emergencies and emerging infectious diseases:

- construction of a New National Health Laboratory Services Centre for accurate and timely diagnosis, treatment, and follow-up on diseases;
- construction of a modern warehouse in line with international standards for the storage of essential drugs, medical consumables, non-medical products and medical equipment;
- setting up of a National Centre for Disease Control and Prevention to effectively control infectious diseases⁶.

The *Agence Française de Développement* Director together with the European Union will be investing 9.4 million euros in the strengthening of the capacities of the Indian Ocean Commission and of its Member States in risk management of epidemics and zoonotics⁷.

Challenges

Novelty of the COVID-19 and unprecedented health emergency crisis

⁶ <http://www.govmu.org/English/News/Pages/An-envelope-of-Rs-12-billion-earmarked-for-Health-sector.aspx>

⁷ <http://www.govmu.org/English/News/Pages/Covid-19-pandemic-IOC-donates-medical-equipment-to-Mauritius.aspx>

Despite the having a relatively good performance for the Joint Evaluation of the level of preparedness according to the International Health Regulations (2005), the novelty of the COVID-19 and its high contagiousness remained an unprecedented health emergency crisis for Mauritius as it continues to be for the rest of the world. Actions were taken based on guidelines from WHO and other agencies and adapting measures taken in other countries to the local context. A lot of actions were also taken on an ad-hoc basis.

Gaps in the implementation of the recommendations from the WHO missions

Several of the recommendations to increase Mauritius' preparedness and response to COVID-19 resulting from the two WHO missions were implemented namely the finalisation of COVID-19 operational preparedness and response costed plan, intensification of communication, setting up of mechanism to address misinformation, the setting up of the rapid response teams, sending samples tested negative to regional reference laboratory for validation, provision of PPE and triage of symptomatic patients. However, the training of health workers in both public and private sectors needs to be strengthened as well as the conductions of table-top exercise and drills in health care facilities to improve the preparedness of the staff. Algorithms for the scenario at healthcare facility, points of entry, in the community have been devised but the extent to which it has been disseminated is unclear. The development of COVID-19 data base including all variables from surveillance, laboratory and early investigation studies remains to be implemented.

4.2. Pillar 2: Risk communication and community engagement

Best practices

Early intense sensitisation campaign on COVID-19

As from the 23 January 2020 MoHW started a national sensitization campaign through the different media (radio, television and written press) and visuals (posters, pamphlets, banners and billboards), explaining the occurrence of the novel coronavirus, its mode of transmission, signs and symptoms and preventive measures to be taken to avoid the infection. In these early communications, the focus was on physical distancing and cough etiquette and the hotline 8924 was shared for further information or suspected cases.

MoHW convened several meetings with key stakeholders such as the Ministry of Education, Tertiary Education, Science and Technology; Local Government Representatives; Social Security Representatives and Social Welfare Division; Representatives from Public Transport Service, Representative from Banks; Business Mauritius; Central water Authority and Central Electricity Board to sensitize them about precautionary measures to be taken such as physical distancing, wearing of masks, personal hygiene (washing of hand, use of hand sanitisers and coughing etiquettes).

Pamphlets were distributed at the port and airport, in educational institutions, community halls and centres at the level of town municipalities and village and district councils and in all health facilities. Posters, banners and billboards were also placed at those above-mentioned strategic places as well as in public transports (buses and metro). The Central water Authority and Central Electricity Board included a short message on the novel coronavirus and the hotline information in their bills. One of the top selling daily newspaper, *L'Express*, offered a free two-page coverage on the novel coronavirus to CDCU for a week. Representatives of CDCU as well as the WHO Representative attended the primetime news bulletin "Journal Télévisé" of the national television channel as well as private and national radios for regular live interviews.

Following the outbreak, the new communication materials elaborated were adapted to the needs for information identified among the population via the feedback mechanism put in place. Several short videos were developed on correct wearing of masks, physical distancing, hand hygiene practices and respecting the sanitary curfew. Influencers were also identified and join the national campaign by promoting the protective measures to be adopted to stop the transmission of COVID-19. The High-Level Committee on COVID-19, National Communication Committee on COVID-19, Government Information System and Mauritius Film Development Corporation worked jointly on the content and visual creation of the short videos which were broadcasted regularly and more intensely during primetime on the Mauritius Broadcasting Corporation's channels (national television).



MASKE NAPA DEMASKE

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Kan ou pe sorti napa bliye met ou mask



Protez ou

COVID-19 CORONAVIRUS

Symptômes

 Fièvre	 Fatigue	 Toux sèche	 Nez bouché
 Gorge irritée	 Douleurs	 Diarrhée	 Respiration très difficile

La personne à côté de vous peut porter le virus sans être malade. Continuez de garder la bonne distance!

Queues aux banques supermarchés ATMs et autres

FAITES ATTENTION



Series of visuals of the sensitisation campaign of MoHW
Source: MoHW

COVID-19 CORONAVIRUS

Précautions pour éviter la propagation

 Toujours couvrir la toux ou l'éternuement	 Ne pas toucher les objets publics	 Porter un masque si on a des symptômes respiratoires	 Rester à distance d'au moins 1 mètre
 Ne pas se toucher les yeux, le nez et la bouche	 Rester à la maison quand on est malade	 Bien se laver les mains	

Establishment of hotline for COVID-19

On the 3 February, the free 8924 hotline of MoHW was dedicated to COVID-19. The general public was encouraged to call on the hotline for further information regarding COVID-19 and if they showed any signs or symptoms. The hotline was available from 09 00 to 16 00 with alternative hotlines for after 16 00.

During the sanitary curfew, the hotline 8924 became the unique hotline and was made available 24/7. Its capacity was increased to 20 lines to reduce the waiting times of callers and team of health care assistants and doctors were posted at the Jeetoo Hospital in Port Louis to answer the queries of the Mauritius. All the 20 lines operational during daytime with up to 12 health care assistants for call triage and 10 doctors attending the calls while 10 lines operated at night. A total of 100 704 calls were received from 21 March to the 2 July 2020, 13 325 of which were attended by a doctor and were directed as shown in the figure below:



Poster for the Hotline for COVID-19
Source: MoHW

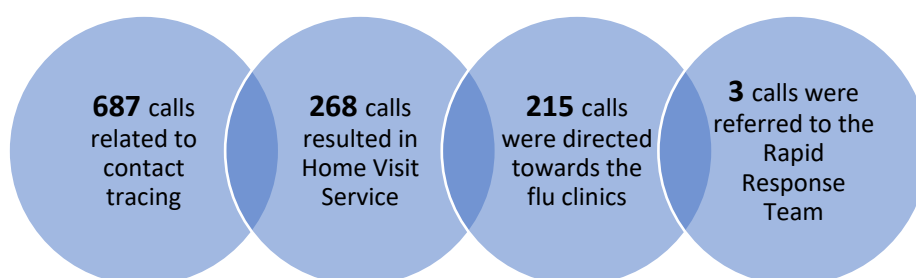


Figure 3: Outcome of calls attended by doctors on the free Hotline for COVID-19

Setting up of the National Communication Committee on COVID-19 for a centralised line of communication

On 18 March 2020, following the detection of the first three cases of COVID-19 in Mauritius, the High-Level Committee on COVID-19 created the National Communication Committee on COVID-19 to have a central mechanism of communication. The committee was chaired by the Prime Minister, consisted of several concerned Ministers, advisors to the Prime Minister, and high-level staff from the MoHW and had a designated spokesperson. The National Communication Committee on COVID-19 was supported by the Communication Unit at the Prime Minister's Office (PMO), the Government Information Services and by the press officers of different Ministries.

During the outbreak, there was a day to day coordination between the High-Level Committee on COVID-19 and the National Communication Committee on COVID-19 to transmit decisions taken from the High-Level Committee on COVID-19 to the Mauritian population and to address the important subjects during the daily press briefing. Other than the daily press conferences, members of the National Communication Committee on COVID-19 also participated in special live television programmes on COVID-19 on the national television channels where more details were provided on the different response measures and questions from the general public were answered.

Daily press briefing for information sharing and community engagement

With the rapid closure of borders and instatement of the national lockdown, the High-Level Committee took note of a growing sense of panic and acute the need for correct information among the Mauritian population. As from the 20 March 2020 daily press conferences were held by National Communication Committee on COVID-19 and broadcasted live in the national television and the radio and media channels to **ensure an accurate, transparent and trustworthy stream of communication** directly from the decision makers to the general public and reassure the population. The daily press conference was led by the spokesperson of National Communication Committee on COVID-19 accompanied by other members depending on the subjects addressed.

Information about the local and global progress of pandemic and new measured were disseminated. The rationales behind the various public health measures imposed were explained to encourage the required behaviours changes to break the chain of transmission of COVID-19. The different speakers were regularly urging the population to respect the sanitary precautions and abide to the curfew orders. Vulnerable persons especially elderlies and those suffering from chronic illnesses were advised to remain indoors. National Communication Committee on COVID-19 consistently called for the individual responsibility and solidarity of all the citizens to help flatten to curve of COVID-19 in Mauritius.

Throughout the sanitary curfew, the daily press briefings was the only official communication emanating from the Government of Mauritius. With limited movement allowed, journalists could not attend the press conference live. Alternatively, a WhatsApp group was created with all the journalists representing the various media groups in Mauritius through which they were invited to share their questions to the National Communication Committee on COVID-19. At the end of each daily press conference, the members of the National Communication Committee on COVID-19 responded to these questions.

Establishment of community feedback mechanisms to understand public perception

Several feedback mechanisms were put in place to understand public perception on COVID-19; including their beliefs, fears and concerns; and monitor behaviours of the population in respect to the different measures imposed.

The technicians from MoHW and the Police Force relayed daily feedback from the field to the High-Level Committee on COVID-19 about progress of the outbreak and the respect of the public health measures by the population. Measures monitored were the sanitary curfew, physical distancing, wearing of masks and the designated days for shopping as per alphabetical order.

A dedicated team constituting of the Director and members of the communication unit at the PMO and the Government Information services conducted media monitoring of social media platforms and live radio shows to understand the fears and concerns of the population as well as identifying misinformation, rumours and fake news that were circulating. Upward stream of information concerning the fears and concerns of Mauritians were also transmitted to the National Communication Committee on COVID-19 through questions received from the journalists.

These feedback mechanisms allowed for a tailored communication and informed on-going sensitization campaigns and other measures. As the outbreak progressed in Mauritius, the National Communication Committee on COVID-19 indeed observed that the population were more adherent to the precautionary measures such as physical distancing and wearing of masks while shopping and more respectful of the sanitary curfew in general.

Addressing risky behaviours, misinformation, rumours and fake news

During the daily press conferences, the National Communication Committee on COVID-19 addressed the risky behaviours which were observed in the community via the feedback mechanisms. Further information was given about the risks of being infected with COVID-19 associated to these behaviours and the general public were encouraged to adhere to the sanitary measures enforced.

The National Communication Committee on COVID-19 also addressed the rumours, misinformation and fake news with clear and correct clarifications and to stop their propagation. The committee also condemned the spreading of fake news on social media, characterized the behaviour as anti-patriotic and highlighted their negative impact such as installing a climate of fear, panic and anxiety. Common rumours, misinformation and fake news circulating were about the prevalence of COVID-19 cases in Mauritius, the reliability of the tests and treatment, the number of deaths, re-closure of supermarkets.

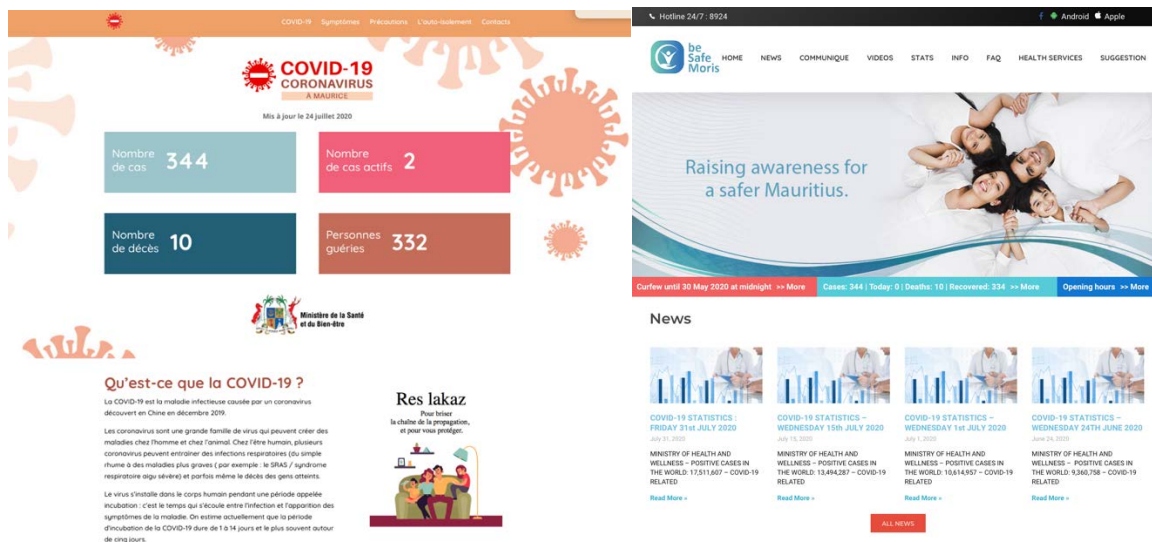
Sensitisation campaign and legal sanctions against ‘fake news’

During the daily press conference, high-level police officers and members of the Cybercrime Unit of the Police Force reminded the population that the spreading of fake news is a legal offence which could lead to legal sanctions of a maximum prison sentence of 10 years and a fine of up to Rs 1 million for each false news broadcasted. The Minister of Information Technology, Communication and Innovation also intervened about the matter and a press communiqué was also released by the Computer Emergency Response Team of Mauritius (CERT-MU) of the concerned Ministry on 20 March 2020. Citizens were informed that fake news and information related to the COVID-19 were being shared on social media platforms and reminded that these are offences under the Section 46 of the amended Information and Communication Technology Act 2001. Advice was also offered to the population on how to stop the spreading of false news and information and ensure their cyber safety and privacy. A short sensitizing video of the Minister of Information Technology, Communication and Innovation was also frequently broadcasted on the national television channel during prime time.

Creation of different media platforms for wider dissemination of information

In order to expand the dissemination of information on COVID-19 and achieve a maximum reach, several media platforms were created. A website, www.COVID19.mu provided essential information on the virus, symptoms, precautionary measures, self-isolation, main contacts and the link to an interactive map on the progress of the pandemic worldwide. A Facebook page ‘*Coronavirus Moris*’ dedicated to COVID-19 in Mauritius as well the Facebook page of MoHW were disseminating information on public health measures and health tips and key updates on health services and national measures. Short informative video clips were posted on the Facebook pages too.

A mobile application, *beSafeMoris* and a related [website](#) were developed jointly by the Ministry of Information Technology, Communication and Innovation, MoHW and Mauritius Telecom (national telecommunication service provider) was launched on 26 March 2020. It could be downloaded for free from IOS and Play Store and had sections on ‘New and Communiqués’, ‘Healthy tips’, ‘Map and Directory of health centre’, ‘Quick Access to Hotline numbers’, ‘Push notification’ and ‘FAQ’. The contents were regularly updated to provide for real time information. A new weblink was also enabled on these platforms for the online application of the Work Access Permit during the first phase of deconfinement.



Two websites dedicated to COVID-19: www.COVID19.mu (left) and <https://besafemoris.mu> (right)

Other response measures

Training of stakeholders to promote community engagement in the fight against COVID-19

A half training of trainers on COVID-19 was conducted on 16 July 2020 by the MoHW targeting stakeholders who work in direct contact with the public. The objective of the training is for the stakeholders to acquire the knowledge and training required to sensitise the general public about COVID-19 and consisted of four main themes, namely: overview of coronavirus in Mauritius and challenges ahead; control measures and prevention of coronavirus; transmission of coronavirus; and the role of officers in the prevention programme and social mobilisation⁸. A similar exercise was also done early in March in preparation for the national response⁹.

Risk communication during festivals and public holidays

The National Communication Committee on COVID-19 collaborated with key community and socio-cultural leaders during confinement to communicate about the celebration of public holidays and festivals such as Easter, Eid, Ugadi and Cavadee and Ramadan. No public celebrations were organised and the public was advised not to gather for celebrations and keep the celebrations among their family units. Alternatively, some religious ceremonies were broadcasted live on national television or on social media.

Regular press conferences and Communiqués

Before the first cases of COVID-19 in Mauritius, press conferences were held after each key meeting at the MoHW and each meeting of the High-Level Committee on COVID-19 to announce the outcomes of the discussion and decisions taken. A corresponding “Government Communiqué” was also issued. Regular communiques were also issued by the Government Information Services throughout the outbreak following the daily meetings by the High-Level Committee on COVID-19.

⁸ <http://www.govmu.org/English/News/Pages/Covid-19-Training-for-trainers-to-inform-the-public-more-efficiently.aspx>

⁹ <http://www.govmu.org/English/Events/Pages/Covid-19-Training-for-trainers.aspx>

Way forward

As a way forward, the National Communication Committee on COVID-19 is working on the working on the protocols for the re-opening of borders and related communication materials to be shared with the general public and the different stakeholders in the tourism and aviation sectors.

Challenges and Gaps

Rumours and 'fake news'

The main challenges with regards to risk communication in Mauritius was rumours and 'fake news' which were spreading very fast and being easily accepted by the population.

Striking the right balance in information sharing

The National Communication Committee on COVID-19 had to strike the right balance when sharing accurate and reliable information and encouraging the respect of public health measures without creating fear and panic among the population. This was mainly achieved by offering rational information on the virus and precautionary measures as well as determining when it was important to emphasise on specific public health measures which were not been respected.

Diffusion of personal information on patients

Upon detection of the first three cases; private information of the first patient, including his name, address and details about his private life were leaked into the media and circulated on social media platforms. This was addressed by the National Communication Committee on COVID-19 during the daily press conferences. Moreover, a press release was emitted by Computer Emergency Response Team of the Minister of Information Technology, Communication and Innovation to sensitise the general public that such practices are criminal offenses and punishable by laws.

4.3. Pillar 3: Surveillance, rapid-response teams, and case investigation

Best practices

Early increased surveillance at the Port and Airport

Mauritius has a long history of strong surveillance at the port and airport specially for vector-borne diseases. Surveillance structures and systems such as the Public Health Desks and the Health Declaration Forms at the airport have existed for decades. The Public Health Desks are equipped with thermal cameras and the rapid response teams exist for more than a decade. The Health Declaration Form which is provided on flight and filled by every passengers before disembarkation; collects information on their address in Mauritius, home address, contact number, history of travel and contains a checklist for common signs and symptoms of infectious diseases.

The form is titled 'Health Declaration Form to be filled by incoming passengers'. It contains the following sections:

- Flight Information:** Flight Number, Date of arrival (DD, MM, YJ).
- Personal Information:** Surname/Ms/Mrs/Miss, Other Name, Permanent Address, Nationality, Address in Mauritius, Telephone No. in Mauritius, Port of original embarkation, Proposed length of stay in Mauritius.
- Travel History:** Which country have you visited during the last six months? (Specify country & length of stay).
- Symptoms Checklist:**

	Yes	No
Fever / Fièvre	<input type="checkbox"/>	<input type="checkbox"/>
Cough / Toux	<input type="checkbox"/>	<input type="checkbox"/>
Sore Throat / Mal de Gorge	<input type="checkbox"/>	<input type="checkbox"/>
Respiratory Distress / Problème Respiratoire	<input type="checkbox"/>	<input type="checkbox"/>
Joint Pain / Douleur articulaire	<input type="checkbox"/>	<input type="checkbox"/>
Rash / Eruption Cutanée	<input type="checkbox"/>	<input type="checkbox"/>
- Declaration:** I declare that the information I have given is true and complete. I understand that I shall commit an offence if I fail to fill in the card or knowingly give false information.
- Signature and Date:** Signature: _____ Date: _____
- For office use:** _____

Health Declaration form to be filled by incoming passengers

The public health inspectors at the port and airport had a training in early January about the novel coronavirus and for a more stringent screening of passengers from China. Health declaration forms were thoroughly checked and passengers were encouraged to provide for a valid address and contact number for follow-up. Incoming passengers were inquired about their health status. By the third week of January, a special pathway corridor was created for all flights from China to prevent the passengers from mixing with others as an IPC measure. Passengers' body temperature was double checked with a manual body temperature check at the entrance of the corridor before proceeding to the Public Health Desk for thermal camera and Health Declaration Form check. After the stoppage of all flights from China and with the spread of the COVID-19 world-wide, double check of body temperature was applied to all passengers, both incoming and outgoing as well as the rigid checks for travel history and symptoms. Additional human resources were deployed to fasten the process.

Suspected cases of COVID-19 was defined as having body temperature of more than 37.8 degree Celsius with cough and a history of travel or transit to any high-risk countries (China, South Korea, Italy, Iran, Malaysia, Singapore). A dedicated and fully equipped ambulance service was on stand-by at the airport on a 24-hour basis to transport the suspected cases to New Souillac Hospital which was both a quarantine and isolation centre before the outbreak in Mauritius.

At the port, all passengers and crew members from cruise ships, private yachts, cargo ships including fishing vessels were similarly subjected to double temperature checks upon arrival and departure. Any

suspected cases were transferred by the rapid response team from the port to the Jeetoo Hospital in Port Louis for isolation.

Rapid activation of community surveillance for incoming passengers

Passengers who did not present any symptoms but came from high-risk countries namely China, South Korea, Iran and Italy were subject to community surveillance. This was later extended to all passengers as the pandemic was spreading rapidly on the global level. The list of passengers to be followed-up were geographically distributed daily across 13 public health peripheric centres around the island. Public health inspectors visited the individuals every 4 days for body temperature checks and called them every day the next 13 days to check on any occurrence of COVID-19 symptoms. Passengers were encouraged to call the public health inspectors in case they showed any symptoms, following which, the rapid response team would intervene for the transfer to New Souillac Hospital for isolation. Public health inspectors have strong experience in surveillance and undergo continuous professional development. Many benefitted from their experience in community surveillance for the plague outbreak in Madagascar which required similar 14-day follow-up.

Scaling-up of the Rapid Response Teams

Each rapid response teams consisted of one doctor, two nursing officers (male and female), one attendant and a driver and each was under the supervision of the Regional Superintendent of each Regional Hospital. The 6 rapid response teams were trained in safe 'from throat to lab' specimen collection, storage and transportation by a microbiologist and a specialist virology technician from the Central Health Laboratory to ensure the validity of the results. Full personal protection equipment was provided to all member of the team including the driver.

Pilgrims coming back from the Hajj (annual Islamic pilgrimage) are controlled yearly for MERS-CoV since 2012. The public health teams built on their experience in MERS-CoV surveillance, specimen collection using nasopharyngeal/oropharyngeal swabs and safe storage and transportation of specimen for laboratory testing to respond to COVID-19.

At the beginning of the response, the rapid response teams were responsible for the transfer of suspected cases from the airport to the New Souillac Hospital for quarantine or isolation or suspected cases detected through community surveillance. With the closure of borders, the teams transported Mauritians who presented symptoms from the quarantine centre to the isolation centre of the respective regional hospitals for isolation and testing. Calls received on the 8924 hotline concerning suspected cases of COVID-19 were also referred to the rapid response team for testing and transfer to New Souillac Hospital or New Ear-Nose-Throat (ENT) Hospital.

Multiple surveillance systems

Hospital and laboratory surveillance

WHO case definition for COVID-19 was shared with all regional hospitals and peripheric health centres and disseminated to health professionals during staff meetings and continuous professional development trainings. The case definition was also shared with private clinics and the association of private doctors during the intersectoral meeting in January 2020. At the outset of the response in January 2020, diagnosis was done clinically and specimens sent to South Africa and Germany for testing. As from the 2nd week of February testing started locally by the central health laboratory and doctors could prescribe a COVID-19 test for suspected cases. Private health services are required to refer any suspected cases to CDCU. The first patient suffering from COVID-19 was detected by his visit to a regional hospital.

System of Sentinel Surveillance for influenza-like illness and Severe Acute Respiratory Infection

Mauritius has an existing sentinel surveillance system for influenza-like illness and Severe Acute Respiratory Infection at the regional hospitals. CDCU was receiving regular feedback from the regional hospitals about the presence of any cluster of respiratory problems, but none were detected.

Efficient case investigation, contact tracing and isolation of contacts

Case investigation and contact tracing was initiated by CDCU upon the detection of the three imported cases of COVID-19. By end of each day, CDCU contacted every person tested positive for case investigation following their transfer to the respective treatment centres. Key information about as how long they had been sick, the people they stayed with, the people they had been in contact with and whether their contacts are sick, places they visited; are collected. A list of all the contacts of the patients were elaborated and each of them were contacted, asked for symptoms and instructed to self-isolate themselves while waiting to be visited by the contact tracing team.

The team at CDCU classified the list of contacts in order of priority and by region. The close contact and those experiencing symptoms were visited the next day by the contact tracing team while remote contacts with no symptoms could be visited up to 3 days later. For a faster response, the contact tracing teams were scaled up from 2 to 6. Each contact tracing team composed of a doctor, a nursing officer and a driver reported daily to the Incident Management Centre at CDCU in Port Louis to pick up their list for the day before proceeding for the specimen collection from the contacts and dropping the specimens to the Central Health Laboratory. The contacts received their results the next day. Those who were positive were transferred to the treatment centre by the rapid response team, contacted for case investigation and contact tracing by CDCU and the process was repeated again. It is to be noted that the individuals who travelled through the same flight as the first three imported cases were also asked to contact CDCU, the flight details were disseminated.

The contact tracing teams were fully equipped with complete PPE and materials for specimen collection namely swabs, tubes with viral transport media and a cool box. An average of 150 contacting tracing was done daily with a total of more than 1000 contacts. 155 contacts were tested positive from 23 positive cases, enabling for the detection of 46% of COVID-19 cases in Mauritius. The small size of the island favoured a swift organisation and coordination of the contact tracing exercise and quick transport of specimen collected for testing.

Mass testing of frontliners

On 27 April 2020, a mass rapid testing campaign for COVID-19 targeting frontliners was initiated by the MoHW. By 7 July 2020, 154 916 tests were carried out among health personnel from both public and private institutions, members of the Police Force, prison detainees, expatriates living in dormitories, pharmacies' personnel, scavenging and cleaning services, supermarkets personnel, personnel working for port and airport authorities, private sector staff, staff from various ministries, members of religious and socio-cultural organisations, public transport workers, athletes; amongst others. This campaign was designed to ensure that there was no cases of COVID-19 in Mauritius in preparation for the phased deconfinement. No positive cases were subsequently found and the testing campaign was stopped.



Mass COVID-19 rapid testing campaign

Source: MoHW

Other response measures

Use of geographic information system to increase community surveillance

Epidemiological data was entered in a geographic information system programme for better analysis of detected cases owing to the visual map. Community surveillance were consequently reinforced in areas where clustered cases occurred. Public health officers visited the neighbourhood - health centres, hotels and individuals inquiring about any cases of fever.

Conduction of a fever survey

A phone survey was conducted by the Noncommunicable Diseases, Health Promotion and Research Unit among 1042 households from 1 to 7 April 2020. The aim was to identify any suspected case of COVID-19 through self-reported fever and subsequently identify surges and drops of fever cases to help in projection of Covid-19 if the survey was to be repeated regularly. Only one participant reported with fever and no significant difference was noticed when comparing the attendance of flu/fever clinics for the period under investigation compared to previous years. The study concluded that the COVID-19 outbreak in Mauritius was moving towards containment.

Dissemination of epidemiological data

Epidemiological data was shared daily with the High Level COVID-19 committee for evidence based decision making. Epidemiological data was also compiled through the daily Situational Report produced by the WHO Country Office and shared with WHO AFRO.

Challenges

Urgency of the contact tracing exercise

From 18 to the 26 March 2020, Mauritius observed an escalation of positive cases from 3 to 81 and the contact tracing exercise had to be accelerated to prevent further infections. The contact tracing team had to act fast especially before the reopening of supermarkets and food stores. The number of teams was consequently increased from 2 to 6.

Difficulty in locating contacts

The contact tracing team faced obstacles which slowed down their task of locating the contacts of the positive cases. Despite having their contact details, some addresses were inaccurate or incorrect, phones were out of orders and the team often got lost while trying to locate the contacts. It is to be noted that addresses in Mauritius do not always consist of a house number and is usually composed of only street and town names.

Uncertainty and resistance around self-isolation for contacts

Some contacts who were asymptomatic were resistant to self-isolate till they received their test results notwithstanding the explanations from CDCU team. Moreover, there was no guarantee that the contacts were abiding to the instruction of self-isolation. Some also faced the challenge of being care-takers for other members of the family, making it difficult for them to respect the measure.

Prioritizing for contact tracing

Due to the high volume of contact tracing to be done, the contacts were prioritised according to their proximity and duration of exposure to the confirmed cases of COVID-19 and presence of symptoms, as mentioned above. Though done in a rationale way, this exercise was challenging as many contacts were worried about their health and wanted to be tested as soon as possible.

Positive contacts opposing transfer to treatment centres

Some positively tested contacts, especially asymptomatic ones, were unwilling to shift to the treatment centres for isolation and follow-up. This was dealt with offering clear information about the reasons for it.

Responding to dengue outbreak

Mauritius experienced a localised dengue outbreak in the midst of the COVID-19 response and CDCU had to redistribute its resources¹⁰. Public health inspectors intervened in the affected region to raise awareness of inhabitants and conduct blood sample collection for testing. Fogging, larviciding and cleaning campaigns has to be organized during the lockdown for mosquito control and reduce the risks of dengue transmission.

Imposters posing as officers of the MoHW

The MoHW was reported cases of ill-intentioned people posing as public health inspectors to get access to residences. The Ministry reacted with a press release offering clarifications and stressing that no such exercises were taking place and contact tracing visits for COVID-19 are notified beforehand. The public was advised that all public health inspectors had to present their identification cards.

¹⁰ <http://www.govmu.org/English/News/Pages/Fake-news-on-Covid-19-Health-Minister-severely-condemns-anti-patriotic-behaviour.aspx>

Risks of concealed symptoms during community surveillance

A large part of community surveillance for incoming passengers relied on the self-reporting of symptoms and there is a risk of passengers responding inaccurately. The first detected case of COVID-19 was an imported case under community surveillance who did not reveal his symptoms to the public health inspectors.

4.4. Pillar 4: Points of entry

Best practices

Early quarantining of incoming passengers with high-risk characteristics

As early as January 2020, passengers from Wuhan were systematically quarantined while those from the rest of Hubei Province were quarantined if they showed symptoms of COVID-19. Quarantine also extended to passengers coming from whole of China and other high-risk countries such as Iran, South Korea and 3 key affected provinces in Italy, as the situation evolved. Parallely, any passengers who landed with fever and other symptoms and had visited or transited through any high-risk countries during the past 14 days were also quarantined.

With the increasing number of passengers to be quarantined, notably Mauritians coming from the high-risk countries; youth centres, recreation centres for senior citizens and a tsunami refuge centre were used as quarantine centres. The Regional Public Health Superintendents were in charge of these quarantine centre. One doctor, two nursing officers (male and female) and two attendants (male and female) were posted in each centre. The precautionary measures taken were physical distancing and compulsory wearing of masks for all staff and passengers. Masks and hand sanitisers were provided and body temperature were regularly monitored. The Regional Health Director and administration of the regional hospital were responsible for providing food, clean linens, waste bags and transport of waste. Meals for break, lunch and dinner were prepared by the attached regional hospital.

Each quarantine centre accommodated a single batch of incoming passengers who entered the quarantine at the same time and a COVID-19 test was done at the end of 14 days. Any confirmed cases were transported by the rapid response team to New Souillac Hospital for treatment and the rest had to stay for an additional 7 days in quarantine before an exit COVID-19 test was repeated. It is to be noted that all quarantine centres and PCR COVID-19 testing within quarantine were free of charge.

Imposing travel restrictions for high-risk countries

On 31 January 2020, the High Level Committee imposed a travel restriction for foreign nationals coming and transiting through China in the last 14 days. Air Mauritius, the national carrier, suspended all its flights to and from Shanghai and Hong Kong on the 31 January and 4 February 2020, respectively. Travel restrictions was extended to South Korea, and three provinces in Italy (Lombardy, Veneto and Emilia Romangna) on 24 February and on 28 February 2020 to all of Italy and Iran. Additional travel restrictions were announced on 16 March for Reunion Island, European Union, United Kingdom, Ireland, Switzerland and Norway as the situation worsened worldwide.

The High Level Committee on COVID-19 also declared on 16 March 2020 that all cruise ships entry to the port would be studied on a case to case basis provided that all complete details of the itinerary, crew member (and their respective itinerary) and passengers are provided to the Mauritian authorities. Cruise ships who had passengers coming from the countries facing travel restrictions had to remain at sea for 14 days before berthing at the port.

Rapid closure of borders upon detection of first cases of COVID-19

Government reacted without delay upon the detection of the first three important cases of COVID-19 by closing the borders. Border closures was announced on 19 March 2020 through a legal Order by the Minister of Health and Wellness under the Regulation 5 of The Quarantine (Quarantinable Diseases) Regulations 2020¹¹: “No passengers will be allowed entry or transit in the Republic of Mauritius” and “Crew members will be allowed entry in the Republic of Mauritius; however, they shall be confined to their hotel rooms”¹². All flights to and from Rodrigues island were suspended on the 22^{March}. Ships to Agalega Island were also suspended. All shipping vessels had to spend at least 14 days at sea before entering the port. Cargo flights and passenger flights to Rodrigues eventually resumed on 1 May 2020 and 1 July respectively but borders remain closed for international travels.

Free compulsory quarantine for all returning Mauritian citizens

With the closure of borders and the high volume of Mauritians being repatriated, the number of quarantine centres had to be expanded. Leveraging on the strong partnership with the different stakeholders in the tourism sector, notably with the *Association des Hôteliers et Restaurateurs de l’île Maurice*, the decision of renting unoccupied hotels to the MoHW as makeshift quarantine centres was taken. The maximum number of quarantine centres operational simultaneously were 15.

The healthcare workers present at each given institution depended on its room capacity. There was one doctor, two nursing officers (male and female) and two paramedical nursing officers (male and female) and 2-3 attendants for each 75 person in quarantine. The teams were under the supervision of the respective Regional Public Health Superintendents who reported to Director of Public Health services. The doctors were in charge of the quarantine centre while the nursing officers carried out the follow-up of every passengers twice a day including body temperature checks. The delivery of food and beverage to the room of each passenger, cleaning of the common premises and provision of fresh linens were done by the attendants. Provision of meals were outsourced to caterers. Passengers were strictly restricted to their rooms. They were responsible for the cleaning of their rooms and their own laundry and provided with cleaning materials, cleaning products, soaps, hand sanitisers and face masks.

All quarantine centres were declared as restricted areas as per the Prevention and Mitigation of Infectious Disease (Coronavirus) Regulations 200 under section 79 of the Public Health Act and under put the supervision of the Police Force. Polices officers were posted at the entrance and around the premises of the centres to ensure no breach to the law, which could result to a fine of up to 5000 Mauritian rupees.

Evolution of the quarantine protocol to include regular COVID-19 testing within the 14 days

With the considerable number of passengers detected with SARS-CoV-2 upon the 14 days, CDCU amended the testing strategies for quarantine based on this lesson learnt. The incoming passengers are currently tested on Day 0 (on arrival), Day 7 and Day 14. This allows for early detection and isolation of COVID-19 cases and reduced risks of transmission. Since the positive cases were mostly detected at Day 0 and Day 7, this strategy lowers the chances of an extended quarantine (if positive cases are revealed at Day 14) and reduces the costs of quarantine (rent of premise, human resources, food and beverages and cleaning and hygiene products).

Obligatory testing before repatriation for Mauritian Nationals

As from 29 April 2020, Mauritian nationals were required to provide evidence of a negative PCR test for COVID-19 dating less than 5 days at check-in to board the repatriation flights. Prospective passengers also

¹¹ http://www.govmu.org/English/Documents/28_Extra_Ord_190320.pdf

¹² <https://www.airmauritius.com/news/additional-travel-restrictions-issued-by-the-authorities-in-mauritius>

had to sign an undertaking in that respect and also in regards to respecting quarantine conditions imposed by the Government upon disembarkation¹³.

Other response measures

Early stakeholders' coordination by the MoHW

The Minister of Health and Wellness chaired two meetings on the 28 January 2020. One was held in the presence of the Minister of Foreign Affairs, Regional Integration and International Trade in the presence of WHO Representative, the Ambassador of the People's Republic of China to Mauritius and the Chief Executive Officer of Air Mauritius. The second was an intersectoral meeting to review the situation with stakeholders from the port, airport and tourism sectors namely; Air Mauritius, Airports of Mauritius Ltd, Airport Terminal Operations Ltd, Passport and Immigration Office, Mauritius Tourism Promotion Authority, Mauritius Police Force, Mauritius Ports Authority, Association des Hôteliers et Restaurateurs de l'Île Maurice, and Emirates Airlines. Precautionary and surveillance measures at the points of entry were discussed, agreed and implemented.

Sensitising tour operators

In the first weeks of January 2020, the MoHW requested tour operators to not accept passengers from Wuhan and reduce promotion campaigns for tourists from China.

Nonrenewal of work permits

On 29 January 2020; the Ministry of Labour, Human Resource, Development and Training announced that general that no new work permit for workers travelling from China would be issued until further notice. Renewal of work permit would be considered if work permit holder did not travel to China during the previous 15 days and has been medically cleared by health authorities. This decision was taken following the travel restrictions imposed to and from China.

Way forward

Preparation for the phased re-opening of borders

An Inter-Ministerial Committee chaired by the Prime Minister was set up to prepare for the re-opening of borders¹⁴. This committee is working on the development of post-curfew strategies to prevent the re-introduction and spread of the COVID-19 in Mauritius. In parallel, a technical committee was set up to strengthen existing IPC protocols at the points of entry and elaborate the required preparedness plans. Strategies to increase the number of quarantine centres are been devised too.

On 31 August 2020, the Prime Minister announced the phased opening of the borders while moving towards complete re-opening^{15,16}. This cautious strategy has been adopted by considering the current uncertain evolution of the pandemic with second waves being observed in many countries and the absence

¹³ <http://foreign.govmu.org/English/Documents/2020/communiqué/Communiqué%20-%20Return%20of%20Mauritian%20Nationals%2029.04.20.pdf>

¹⁴ <http://mauritiusassembly.govmu.org/English/hansard/Documents/2020/hansard302020.pdf>

¹⁵ <http://www.govmu.org/English/News/Pages/PM-talks-about-the-reopening-of-borders.-MV-Wakashio-and-People's-March.aspx>

¹⁶ <https://gis.govmu.org/Communiqué/Communiqué.Frontieres%20docx.pdf>

of a vaccine. With the current repatriation of stranded Mauritians described as Phase 1, Phase 2 will start in October of 2020 with scheduled flights opened to all those who are willing to enter paid quarantine in an authorised hotel makeshift quarantine centres. Special measures are being considered for the implementation of this Phase 2 to ensure the safety of the different personnel and relevant protocols are being devised. Phase 3 will be the final stage of complete reopening and will be announced in due course following satisfactory implementation of Phase 2. The Inter-Ministerial Committee is observing and learning from the strategies put in place by other major touristic countries in preparation for Phase 3.

Setting up of health laboratory at the airport

Upon the suggestion of the technical committee mentioned above, the Inter-Ministerial Committee endorsed the decision to establish of a COVID-19 laboratory at the airport. This new structure will conduct COVID-19 PCR testing for all passengers. The setting up and recruitment of laboratory technicians and assistants have been initiated.

Challenges

Initial lack of preparedness for unprecedented and immediate border closure

The prompt decision to shut down borders upon the first imported cases of COVID-19 were challenging for the concerned authorities since there was lack of preparedness for this exceptional and unprecedented sanitary measure. The authorities had to rapidly seek and decide on the consequent measures to be taken to scale-up quarantine capacity and IPC measures while welcoming the high volume of incoming Mauritian citizens in the last flights.

Economic toll of closed borders

Mauritius has long and extensive links with Europe and Asia and is heavily reliant on both tourism and import and export services. Closed borders equals to heavy negative impacts on the Mauritian economy.

Disturbance in quarantine centre

At the start of the response, there was some disturbance caused by people in quarantine in one centre, contesting the restriction in spite of lengthy and repeated sensitisation. There are also 3 reported cases of individuals who have breached the quarantine by either going out or running away from the centre^{17,18}. CDCU had to resort to the intervention of the police to address these cases.

¹⁷ <https://www.lexpress.mu/article/379274/fuite-en-quarantaine-quadrenaire-place-en-detention>

¹⁸ <https://www.lexpress.mu/article/372946/passagers-qui-avaient-fui-quarantaine-retrouves>

4.5. Pillar 5: National laboratories

Best practices

Creation of an internal committee within the National Health Laboratory Services for early preparedness and coordination

In preparation to respond to COVID-19, an internal committee was created at the level of the National Health Laboratory Services of the MoHW. This committee comprising of the Director of Laboratory Services and his deputy, a consultant microbiologist, a specialist microbiologist, a chief medical laboratory technologist, the head of biochemistry services and molecular biology technologists were meeting regularly before the outbreak in Mauritius and daily during the outbreak. Its role was to document and discuss various topics pertaining to COVID-19 testing and remain updated to the evolving testing guidelines of WHO and Centres for Disease Control Prevention; so that the National Health Laboratory Services could respond adequately and in a timely manner.

At this nascent stage of the response, specimens collected for testing were sent to Germany and South Africa. In mid-January, the National Health Laboratory Services started the preparations to conduct PCR testing by considering relevant protocols with the help of the WHO Country Office. By later January, the primers and probes were purchased from a supplier in South Africa recognised by WHO and the National Health Laboratory Services validated the test according to WHO protocol. On 2 February 2020, the 4 molecular biological technologists started PCR testing for COVID-19 on passengers coming from the identified high-risk countries which extended to prescribed testing from doctors in the regional hospitals.

Expansion of the testing capacities of the Central Health Laboratory

About 8 technologists were recruited and trained in PCR testing to increase the testing capacity of the Central Health Laboratory to up to 1 000 tests per day. The Central Health Laboratory was functioning 24/7 amid the outbreak with 3 work shifts: 9 00 to 16 00, 16 00 to 22 00 and 22 00 to 9 00. The turnaround time for COVID-19 PCR test was less than 24 hours and no backlog was incurred.

The National Health Laboratory Services already had a molecular biology laboratory in existence for the past 10 years and a strong team of technicians and experts. Past experiences of chikungunya and dengue outbreaks as well as preparedness for Ebola, Zika, SARS-CoV and MERS-CoV epidemics; were pivotal in the delivery of the response for COVID-19. Moreover, the Central Health Laboratory is a national influenza centre recognised by the WHO as part of the Global Influenza Surveillance and Response System and has been participating in FluNet, the global web-based tool for influenza virological surveillance.

The Central Health Laboratory benefitted from an automatic RNA extraction machine which increased the efficiency and capacities for PCR tests. Additional equipment such as safety cabinets and PCR machines were borrowed from other local governmental laboratories. Later the National Health Laboratory Services expanded COVID-19 test repertoire with the introduction of rapid antigen tests, Rapid IgM/IgG antibody serological tests for post-outbreak period and rapid PCR tests using CEPHEID Gene Expert Platform. The first batch of specimen samples were also sent to the National Institute for Communicable Diseases of South Africa for validation and results revealed a 100% correlation with the test results of the Central Health Laboratory.

Large scale testing strategy led to prompt detection of positive cases

Mauritius has adopted a large scale testing strategy by including the testing of asymptomatic contacts of positive cases, frontliners, repatriated Mauritians and vulnerable groups such as expatriates living in dormitories and homeless people. Mauritius has one of the highest testing rate for COVID-19 in the world with 180 tests done per 1 000 persons and a total of 229 492 tests (69 177 PCR tests and 160 315 rapid tests) as at 31 August 2020.

Joining the High-Level Committee fast-tracked the strengthening of laboratory services

With the WHO's emphasis on the 'test, test, test' approach, the Director of Health Laboratory Services was invited to join the High-Level Committee on COVID-19 on 20 March 2020. The National Health Laboratory Services garnered the strong political commitment of the government to strengthen their services. The needs and challenges of the National Health Laboratory Services were shared and the High-Level Committee as well as the others related stakeholders responded promptly. The presence of the Director on the committee activated and fast-tracked partnerships with the Ministry of Information Technology, Communication and Innovation, UNPD and Mauritius Telecom for the implementation of LIMS as well as with WHO, International Atomic Energy Agency, European Union, Indian Ocean Commission, and the Japanese Embassy for the procurement of laboratory materials. Daily direct reporting of the Director of Laboratory Services also meant that the High-Level Committee on COVID-19 was equipped with the latest statistics which guided evidence based decision-making.

Introduction of LIMS for COVID-19

The increasing volume of COVID-19 tests requests during the outbreak called for the development of new laboratory capacities for more efficient processes. As part of their agenda to support digital transformation, the UNDP Country office assisted the National Health Laboratory Services in adopting LIMS for COVID-19. This system aimed to effectively manage laboratory samples and related data throughout the testing, reporting and archiving procedures with the use of a barcoding system.

The UNDP Country Office sought the expertise of the UNDP Global Centre for Technology, Innovation and Sustainable Development in Singapore which made the OpenELIS software available to MoHW. The software prototype was customised by the Central Health Laboratory team and the Central Informatics Bureau from the Ministry of Information Technology, Communication and Innovation to adapt it to the local COVID-19 context. The UNDP Country Office also contracted the University of Washington to help with the implementation of the system and purchased the hardware (computers and barcode scanners) needed which were sourced locally. Mauritius Telecom and the Ministry of Information Technology, Communication and Innovation ensured the internet connection and the cloud storage, respectively.



COVID-19 LIMS access point in a COVID-19 testing centre
Source: WCO

The Central Health Laboratory also had two decades of experience in computerisation projects and the team in particular the microbiologist and data entry clerks were dedicated to implement LIMS despite the increased workload. The officers of the Central Informatics Bureau were motivated to implement the LIMS during the lockdown. More than 25 000 files were transferred from their original excel format to the COVID-19 LIMS within 3 weeks. The UNDP Country Office invested about 80 000 USD and the COVID-19 LIMS was connected to the COVID-19 testing centres of the five regional hospital. The system offered increased accessibility to data and allowed for faster complex data analysis and presentation.

Introduction of COVID-19 PCR testing in a private hospital laboratory

Private health laboratories were also interested in conducting tests for COVID-19 and in early April, a private health laboratory, C-Care laboratory at Welkin Hospital (private health institution) was licensed by the MoHW to perform PCR test for COVID-19. The facilities had to meet the criteria and standards set by the ministry. The National Health Laboratory Services advised the private laboratory and the same platform was bought so that tests could be compared. According to the protocol established, for any positive test at the private laboratory, the sample had to be sent to the Central Health Laboratory by a dedicated ambulance for verification. All positive tests of COVID-19 were centralised at the Central Health Laboratory for official communication and statistical recording.

The molecular laboratory was quickly set-up within 10 days and operational as from end of March 2020 to respond to the surge in COVID-19 cases at the beginning of the outbreak. Having about 3 laboratory technicians, C-Care laboratory performed a maximum of 80 tests per day with a maximum daily testing capacity of 100 tests. The team was supported by a pathologist and a microbiologist, working full time. All patients at Welkin Hospital were isolated in dedicated wards while waiting for their results.

This private laboratory was also identified as a backup support whereby the MoHW could contract out for their services, if the Central Health Laboratory was faced with an overload or an incident. C-Care of Welkin Hospital has also procured rapid antigen tests in preparation for a second wave. The rapid antigen tests will allow for less waiting times for results, faster transfer of specimens to the Central Health Laboratory for confirmation and a prompt decision making for the transfer of the positive cases.

Successful mitigation of biosafety risks

All the staff of the laboratory were fully trained in and equipped with full PPE. In order to reinforce biosafety, the Central Health Laboratory procured additional bio-safety cabinets and also borrowed additional bio-safety cabinets from other governmental institutions such as the University of Mauritius and the Mauritius Sugarcane Industry Research Institute. The Central Health Laboratory acquired biohazard specimen bags to safely keep swabs and paper request forms. No untoward incident/accident jeopardizing biosafety standards has been reported to date.

Other response measures

Training of other health departments on the testing process

As mentioned in Pillar 3 section, the microbiology team of the Central Health Laboratory trained the teams from CDCU in sample collection, storage and transportation to the laboratory for accurate PCR testing. The CDCU teams were already acquainted with the oropharyngeal swabbing technique for specimen collection. The rapid antigen tests were done by the health personnel of the Noncommunicable, Health Promotion and Research Unit of the MoHW who required a more extensive training in nasopharyngeal specimen collection.

Dissemination of test results and epidemiological data

Upon a positive PCR test, the Central Health Laboratory contacts the CDCU who in turns contacts the person or concerned authorities where the person is isolated, namely either the regional hospital or quarantine centre. The Rapid Response Team then intervenes to transfer the person test positive to COVID-19 to a treatment centre. The updated statistics are also shared in timely manner with the other public health authorities and the High-Level Committee on COVID-19 to inform data monitoring and decision making.

Sharing the laboratory experience

The Director of Laboratory Services presented the response of the National Health Laboratory Services in several webinars on the WHO AFRO platform. Other countries have shown an interest in implementing the LIMS model based on the Mauritian one.

Way forward

Expanding LIMS to national level

With the success of the COVID-19 LIMS, the government plans to scale it up to a national LIMS by extending it to all tests and connecting it to all the regional hospitals as well as the community and areas health centres to strengthen the health system. This project will be implemented over the next 2 years with a joint collaboration between the MoHW and UNDP Country Office.

Setting up of an Airport Health Laboratory

In preparation for the re-opening of the borders, the government is investing in the setting up of an Airport Health Laboratory for on-site COVID-19 PCR testing of passengers. This joint endeavour between the MoHW and the Airport Terminal Operations Limited, aims to have a maximum testing capacity of 2000 tests with 20 staff and a turnaround time of 6 hours for the test results. The testing capacity will be reinforced as the country proceeds to the different phases of the border re-opening. A corresponding LIMS for the passengers will be developed as part of the existing system with the help of the Central Informatics Bureau. This would allow for the collection, storage and management of key passenger's information such as the flight and seat number, address in Mauritius and contact details.

Building of a new National Health Laboratory Services Centre

The government is investing in a National Health Laboratory Services Centre with international standards which will also be a reference laboratory for the region. About 900 million Mauritian rupees will be invested in the project and the design of the centre has already being planned¹⁹.

Towards External Quality Assessment

The National Health Laboratory Services plan to enrol in external quality assessment scheme for COVID-19 testing.

Challenges and Gaps

Management of resources to ensure continuity of other tests

The challenge was to manage all the resources including time, materials and man-power without compromising the quality standards for testing for other pathologies and biological/clinical tests while facing an increased demand for COVID-19 testing during the outbreak.

¹⁹ <http://mauritiusassembly.govmu.org/English/hansard/Documents/2020/hansard162020.pdf>

Slow dissemination of negative COVID-19

At the beginning of the outbreak there was a bigger focus on the dissemination of the positive results to quickly initiate the succeeding steps such as isolation, case investigation and contact tracing. There was a time lag in reporting negative cases which had some adverse impacts such as rising concerns of tested person as well as prolonged quarantine for both repatriated Mauritius and health personnel resulting in increased costs of quarantine. This was attributed to the reduced working capacities of the records officers at the regional hospitals due to the national lockdown and addressed with the introduction of the LIMS.

Shortage of consumables and reagents for testing

At the start the outbreak, the National Health Laboratory Services were faced with a shortage of consumables including swabs and reagents due because of the escalation of cases and testing of contacts. Diplomatic ties with friendly countries as well as bilateral and multilateral agencies were activated for the rapid procurement of these materials during the lockdown and closure of borders in various countries.

Risks regarding the laboratory staff

The Central Health Laboratory being only the only entity performing PCR tests for COVID-19 carried a lot of risks such as the risk of laboratory staff being infected and the whole team going into isolation. Since the staff were working 7 days a week on 3 shifts, risks of exhaustion and burn-out were present too. Consequently, the introduction of PCR testing for COVID-19 in the private sector offered a backup to the Central Health Laboratory.

Delayed delivery of equipment

Some equipment and materials ordered arrived after the lockdown due to the closure of borders and lockdown in importing countries.

Difficulty in purchasing materials

Due to the high global demand and competition for the purchase of consumables and reagents, Mauritius had some challenges in acquiring them.

4.6. Pillar 6: Infection prevention and control

Best practices

Setting up of isolation wards for suspected cases in public regional hospitals

At the early stage of the response, isolation wards were set up in all regional hospitals to admit anyone coming with symptoms of COVID-19 and having a history of travel from high-risk countries or contact with an infected person. Any person in quarantine feeling unwell, was also transferred to the isolation ward of the attached regional hospital where he/she would be subject to a COVID-19 PCR test and remain in the ward till the result was available.

Establishing Flu/Fever clinics and COVID-19 testing centres for triage of symptomatic patients

Each regional hospital had a dedicated pathway for flu and fever at the beginning of the response as a form of triage to curb the risks of transmission from suspected cases. The medical teams concerned were trained on the pathway and a protocol were established for it. To respond to the growing number of confirmed cases and strengthen IPC, a detached fever/flu clinic for COVID-19, referred to as COVID-19 testing centre was built in each regional hospital. The WHO Country Office liaised with WHO AFRO and WHO Headquarters to developed the design of the infrastructure which was based on WHO model of Severe Acute Respiratory Infections Treatment Centres. The construction was ensured by the Ministry of National Infrastructure and Community Development with the funding from the Government, WHO Country Office, UNDP and private sector. Between the 24 March and 9 August 2020, the flu/fever clinic and the COVID-19 testing centres welcomed 23 352 patients and was key in preventing the propagation of COVID-19 from suspected cases to the health personnel and other patients.



A COVID-19 testing centre (left) and an isolation room in the centre (right)

Source: WCO

Implementation of strict IPC measures for health workers working in the response

A lot of focus was placed on ensuring the safety of the health workers working directly in the COVID-19 response to avoid the spread of SARS-CoV-2 to their contacts and the community at large if they were infected while on duty. Adequate PPE were provided according to the protocols and regular training on COVID-19 were carried. Staff working at the treatment centres were on 7-day on-site duty with shifts and were provided with accommodation within the treatment centres to rest and stay when they were not on their shifts. At the end of their 7-day shift, they went into quarantine and were subjected to an exit COVID-

19 testing before returning home. Given their exposure to suspected cases of COVID-19, contact tracing team were offered accommodation in quarantine centres where they could stay to avoid going back home or where they could have a shower and safely disinfect their belongings before heading home. In order to reduce any risks of transmission of COVID-19 into the community, the **staff working at the quarantine centres** were also restricted to the quarantine premises throughout the 14 days and had to do an exit COVID-19 test. With 16 medical staff working at the treatment centres being tested positive, these measures have been effective in breaking the chains of transmission from health staff directly working in the response to the community.

Strong IPC measures taken in private health sector resulted in zero cross contamination

Welkin Hospital, the leading private hospital, devised an internal IPC protocol based on the WHO's and the Centers for Disease Control and Prevention's protocols and the amount of PPE available. Staff were retrained on hand hygiene practices and proper use of PPE. IPC measures to be taken within the institutions were cascaded to all staff of every department via their respective leadership champions who were responsible for further training of their colleagues. An infection control team led by an infection control officer and a quality and safety team were doing rounds in the hospital to verify that IPC measures were respected and conduct a retrospective monitoring of whether protocols were respected.

All staff, visitors and suppliers underwent a screening for symptoms including body temperature checks and a separate pathway was created for suspected cases leading them to a dedicated infrastructure, equipped with a scanner, outside of the hospital. A chest scan and COVID-19 PCR test was done according to their established protocol and the suspected cases were isolated and treated for their symptoms and underlying condition while waiting for the results. Welkin Hospital dedicated a whole floor of their establishment for the isolation of suspected cases in individual rooms. It was a restricted area and visitors' policy were revised accordingly. A special task force consisting of a respiratory and an internal medicine physician, a paediatrician (anticipating paediatrics cases), junior doctors and a team of nurses were on duty 24/7. Clinical waste from suspected cases were segregated at source and disposed following the internal protocols.

The sample of any positive tests were sent by a dedicated ambulance to the Central Health Laboratory for confirmation and the patient was transferred to a treatment centre by the rapid response team if the test was confirmed as positive. The hospital has an internal contact tracing system whereby all staff who were in contact with the positive patient were checked for the risks of exposure. If the risks were mild to moderate and above, the staff would be isolated either at the hospital itself or at home if they have the available infrastructure according to the hospital's guidelines. They were subjected to daily body temperature checks and a test was done on Day-7 and if negative with no symptoms, the staff could resume work. With these different IPC measures in place, Welkin Hospital registered no cross infection of staff despite detecting 6 positive COVID-19 cases.

The hospital were liaising closely with the MoHW to share the IPC measures, guidelines and protocols they were implementing and received feedback. The different departments of Welkin Hospital were in contact with their corresponding counterparts in the MoHW for the activation of responses such as validation of tests and transfer of positive cases.

Instating an immediate and strict national lockdown

The Ministry of Education, Tertiary Education, Science and Technology closed all pre-primary, primary, secondary and tertiary educational and technical institutions 19 March 2020 till further notice upon the detection of the first cases. An urgent Cabinet meeting led to the decision of imposing a sanitary confinement from 20 March 2020 for two weeks to refrain the spread of COVID-19 given its highly

contagious nature. Employees were advised not to go to work except those working in essential services like the Police Force, medical services, and fire and rescue services, food supply chains, gas filling stations, and banks to name a few. A certain number of indispensable economic activities were allowed to operate. Public transport services were reduced in frequency and operating times. As from 22 March 2020, all vegetable markets were closed and planters were advised to organise the sale of their harvested vegetables in their regions to avoid extended movement.

Subsequently, a curfew order under regulation 14(1) of the Prevention and Mitigation of Infectious Disease (Coronavirus) Regulations 2020 of the Public Health Act was issued on the 22 March 2020 and took effect on 23 March at 20 00 for stricter respect of the national lockdown. With closed borders with Rodrigues and Agalega islands and no registered cases of COVID-19, the lockdown in the two islands ended on 15 April 2020, except for the education sector.

Creating a legal framework for adherence to the IPC measures

Various legislations and acts were made and amended in the wake of the COVID-19 outbreak in Mauritius to produce a legal framework for IPC measures. The Prevention and Mitigation of Infectious Disease (Coronavirus) Regulations 2020 was created by the MoHW in March 2020 by virtue of section 79 of the Public Health Act and amended several times since its creation to adapt to the fast-changing measures. The regulations provide for several measures such as isolation and quarantining of infected and suspected cases, curfew order, closing and restricted activities of trade premises, restricted areas, unlawful exposure to coronavirus; amongst others²⁰.

On 15 May 2020, the COVID-19 (Miscellaneous Provisions) Act 2020²¹ and the Quarantine Act 2020²² were passed by the National Assembly and assented to by the President of the Republic and consequently published in the Government Gazette on 16 May 2020. The COVID-19 (Miscellaneous Provisions) Act 2020 Act amended 56 legislations within the context of the COVID-19 pandemic to reduce the risks of the spread of the virus and its adverse impact on the economy and ensure social protection. Amends pertained legislation regarding to the Public Health Act, consumer protection, corporate matters, employment law, taxation, insolvency, banking, consumer protection, finance and audit, Landlord and Tenant Act, criminal law, data protection, gambling; to name a few. The Quarantine Act 2020 repealed the 1954 Quarantine Act and provides an updated legal framework for quarantine which is better adapted to our modern time. It includes legislative provision for the declarations of a quarantine period in the context of an epidemic, quarantine facilities and prohibitions to enter Mauritian territories.

Under the section 79 of the Public Health Act, the Minister of Health and Wellness also made the Prevention of Resurgence and Further Spread of Epidemic Disease (COVID-19) Regulations 2020 which came into effect on 17 May 2020²³. These regulations cater for the sanitary measures needed to prevent a resurgence and further spread of COVID-19.

Introduction of the work access permit to monitor the movement of the population

The regulation 14(2) of the Prevention and Mitigation of Infectious Disease (Coronavirus) Regulations 2020 of the Public Health Act allows the Commissioner of Police to issue a permit to a person to be outdoors for the sole purpose of leaving his place of residence to his place of work, and leaving his place of work to

²⁰

[http://gpd.pmo.govmu.org/English//DOCUMENTS/104_THE%20PREVENTION%20AND%20MITIGATION%20OF%20INFECTIOUS%20DISEASE%20\(CORONAVIRUS\)%20\(AMD%20NO.%205\)%20REG%20C2%A02020.PDF](http://gpd.pmo.govmu.org/English//DOCUMENTS/104_THE%20PREVENTION%20AND%20MITIGATION%20OF%20INFECTIOUS%20DISEASE%20(CORONAVIRUS)%20(AMD%20NO.%205)%20REG%20C2%A02020.PDF)

²¹ <http://mauritiusassembly.govmu.org/English/acts/Documents/2020/act012020.pdf>

²² <http://mauritiusassembly.govmu.org/English/acts/Documents/2020/act022020.pdf>

²³

http://gpd.pmo.govmu.org/English//DOCUMENTS/92_THE%20PREVENTION%20OF%20RESURGENCE%20AND%20FURTHER%20SPREAD%20OF%20EPIDEMIC%20DISEASE%20COVID-19%20REG%202020.PDF

his place of residence. The work access permit was applicable to employees of the essential services of the public sector and employees of the private sector providing essential services. The rest of the population were strongly instructed to not remain outdoors unless they needed urgent medical treatment, essential supplies, foodstuff, medicine or any other item essential for their subsistence or livelihood. Any breaches of these conditions or the misuse of the work access permit were considered as an offense and subject to a fine not exceeding Rs 500 and to an imprisonment term of not exceeding six months. This innovative measure led to a more controlled implementation of the sanitary curfew by allowing the Police Force to easily verify the reasons behind the circulation of individuals during the curfew.

Role of Police Force in the enforcement of legislations related to IPC measures

The Police Force has been heavily solicited during the outbreak of COVID-19 to ensure that IPC measures were respected and to support the Mauritian population in doing so. Police officers were posted at the entrance and around quarantine centres to control the access and prevent any unauthorized person from entering or exiting the centres. Upon the reopening of supermarkets with new precautionary measures, police officers were deployed to make sure that the public were abiding to the markings for physical distancing, wearing their protective masks and respecting their allocated shopping days while shopping in discipline. Multiple patrols were conducted with several road blocks to verify that the sanitary curfew was respected and that the people circulating had a work access permit.

The Police Force have also safeguarded the distribution of food and essentials supplies to the households on the Social Registrar of Mauritius, the door to door anti-influenza vaccination campaign for elderlies and the home delivery of the pensions for those who do not have their pensions credited directly into their bank accounts. The Police Force's role during these activities was to safeguard the implementation of sanitary precautions by guiding the population to respect the measures.

Adoption of stringent IPC measures for food and essential supply shopping

The sudden lockdown caused a lot of panic among the Mauritians. The prevalent fear of disrupted food and essential goods supply created a rush towards markets and supermarkets. These behaviours counteractive behaviours were increasing risk of COVID-19 transmission. By 24 March 2020, Mauritius incurred a sharp rise in the number of COVID-19 cases and many cases of non-respect of the sanitary curfew were observed island-wide. The Government took the bold decision to close all commerce namely all supermarkets, shops and bakeries till 31 March 2020. The High Level Committee on COVID-19 worked in collaboration with the Mauritius Chamber of Commerce and the Association of Retailers to devise the IPC measures to be implemented during food and essential supply shopping. All supermarkets and corner shops eventually reopened on 2 April 2020 with a series of deviceful measures to prevent overcrowding of the premises and prevent the spread of COVID-19.

Supermarkets were reopened 6 days a week and Mauritians were only allowed to shop twice a week in alphabetical order of family names: A to F on Mondays and Thursdays, G to N on Tuesdays and Fridays, and O to Z on Wednesdays and Saturdays. One person per household was allowed to shop for 30 minutes and the wearing of protective masks was compulsory. Customers had to bring an identification document which was verified at the entrance of the supermarkets. Elderly were dissuaded from shopping encouraging younger adults of the family to do so. A special morning slot from 9 00 to 10 00 was created for elderly person who had to shop for themselves.

Physical distancing was key and all supermarkets and shops placed markings on the ground to indicate the recommended 1 m of physical distancing throughout shopping. Protective barriers were installed at the checkout tills to protect both the staff and the customers. Staff also wore gloves, protective visors and masks at all time. Shoppers could only use trolleys which were sanitized by supermarkets staff after each

use. Hand sanitisers were offered upon entry in the premises and shoppers were advised to avoid touching surfaces and products that they were not buying. Mauritians were only allowed to acquire essential foodstuffs in specific aisles. Special one-way pathways were designed in the shopping premises to avoid excessive movement and facilitate the respect of the 1 m precautionary distance between shoppers. These very strict and novel measures contributed help the population to shop safely while avoiding the transmission of the virus.

Phased deconfinement

The Government decided on a phased deconfinement to cautiously monitor the evolution of the epidemic before a complete lifting of the lockdown and movement restrictions. The first phase was from 15 May till 1 June 2020 with the reopening of several economic activities including public sector, carers, baby-sitters, planters, fishermen and the self-employed and all persons involved had to have a valid work access permit. The application and delivery of the work access permit were digitalised to facilitate quicken the process. General public could only access these opened services as per alphabetical order, similar to food shopping. Employers who implemented the work from home practice were encouraged maintain this practice while planning a phased return to working at the office.

Sanitary curfew was eased on 31 May 2020, the public was allowed to go out and all commerce could operate without the alphabetical order rule. The work access permit was not needed anymore. People under 18 years old were allowed to go out and elderlies and people with vulnerable health were advised not to go out in rush hour. Wearing of protective masks and respect of physical distancing still applied. Restaurants, coffee shops, food courts, shops and shopping malls were allowed to reopen with the provision of hand sanitisers and body temperature checks at the entrance. Food markets resumed operations too. Beaches, markets, gyms, parks, fairs, cinemas and nightclubs remained closed and collective sporting activities, socio-cultural gatherings, sporting and cultural events were not authorised until 15 June 2020.

Implementation of IPC measures across all sectors upon resumption of activities

The Prevention of Resurgence and Further Spread of Epidemic Disease (COVID-19) Regulations 2020 paved the way for the different precautionary measures taken for the resumption of activities. They include the mandatory wearing of protective mask for every one above 5 years old outside of their normal place of residence and regular disinfection of hands using an alcohol-based hand sanitiser at normal place of residence, in public places, in the workplace and any other premises. According to these regulations, every employer should provide hygiene products (include soap, hand sanitisers and tissue paper) and rubbish bins for the disposal of waste. Employer should also ensure that the waste is regularly disposed of and the place of work is regularly cleaned and disinfected. Failure to wear a protection mask and failure to maintain social distancing is liable to a fine not exceeding Rs 50,000 and to imprisonment not exceeding two years.

Different private sector authorities and associations such as Business Mauritius, Mauritius Chamber of Commerce and Industry, *l'Association des Hôteliers et Restaurateurs de l'île Maurice*, Association of Mauritian Manufacturers, Mauritius Exports Association worked together to suggest a reopening plan for their relevant sectors which was aligned with the Prevention of Resurgence and Further Spread of Epidemic Disease (COVID-19) Regulations 2020²⁴.

Other response measures

²⁴ https://www.businessmauritius.org/wp-content/uploads/2020/05/9mai20_we_pg-14.pdf

Training of the health personnel on COVID-19 and IPC measures

All staff from the medical services received training on COVID-19 to various degrees. Video training on COVID-19 of about one hour was produced. It contained essential information such as its mode of transmission, use of PPE, case definition, diagnostic, prognostic and specimen collection and addressed common queries held by the health personnel. The video was broadcasted in the five regional hospitals and was mandatory for medical staff to view. A group of doctors who were interested in answering questions after the projection was identified and *Questions and Answers* sessions was done on two occasions. This approach had a moderate success and subsequently the group of doctors were trained to do in-person trainings of the health personnel which had a better outcome.

IPC measures for inpatients

Inpatients in hospitals had to respect the precautionary measures put in place such as physical distancing, wearing of masks where possible, hand sanitisers were provided and no mixing were allowed. There was also a one visitor per inpatient policy put in place, preferably the same visitor throughout the inpatient's stay.

Cleaning and disinfection of health service premises

Health service premises are cleaned with soap water and sodium hydrochloride as per the usual existing protocols. Disinfection were done more regularly in the treatment centres, especially where COVID-19 patients have been or passed away. Quarantine centres are similarly cleaned within hours after the departure of the incoming passengers. The public health department is responsible for disinfecting the whole premises even when there are no positive cases. This is followed by a regular cleaning done by the cleaning team from hospital or hotel management.

Safe disposal of waste

All medical wastes were disposed safely according to the existing protocols.

Safe management of dead bodies

A protocol for management of dead bodies and funerals was developed by adhering to the WHO guidelines. The dead body was disinfected; all tubes were removed, disinfected and disposed safely; put in double plastic zip bag; covered in cloth and put in a sealed coffin. Once sealed and delivered to the family for the funeral rituals, the opening of the coffin was not authorised. Only 10 individuals were allowed to attend the funeral while respecting the precautionary measure.

Initial precautionary measures taken in the travel sector before border closure

As early as January 2020, the national aviation company, Air Mauritius, abided to the guidelines of WHO, MoHW and other concerned authorities to respect the sanitary precautions needed to avoid COVID-19 transmission²⁵. Staff operating on flights to and from Shanghai, Hong Kong, Kuala Lumpur and Singapore were provided with PPE. An awareness campaign and regular training sessions about COVID-19 were conducted among staff. Communiqués regarding precautionary measures to be taken by passengers were also disseminated. Precautionary measures were later increased as follows²⁶:

- All aircraft were equipped with Universal Protective Kits

²⁵ https://www.airmauriti.us/docs/default-source/airmauriti.us_news/communique-de-presse--27-janvier-2020---coronavirus.pdf?sfvrsn=80492243_2

²⁶ https://www.airmauriti.us/docs/default-source/airmauriti.us_news/covid-19-questions-and-answers--05-march-2020.pdf?sfvrsn=5d7b9fd3_2

- Messages to encourage higher standards of hygiene are being reinforced for all customer facing as well as back-office personnel.
- Hand sanitisers were provided for all inflight personnel, ground staff and have now been extended to all back-offices.
- All aircraft were thoroughly cleaned with proper disinfecting agents while aircraft arriving from sensitive countries undergo a deep cleaning procedure with a special product approved by health authorities.
- Air in all Airbus aircraft is completely changed every three minutes and go through fine filters that eliminate clusters of virus and bacteria.

IPC measures during repatriation flights

Following the outbreak, the borders were closed and repatriation of Mauritians were subject to certification of a negative COVID-19 tested within 5 days of the flight and showing no signs and symptoms of COVID-19. Wearing of protective masks were compulsory during flights and physical distancing must be respected. Passengers are encouraged to travel with a hand sanitiser in quantities of 100ml or less and have a sealable bag to dispose their used masks and not to leave used masks anywhere in the aircraft²⁷.

Adoption of the Safe Travel Certification in preparation for the resumption of tourism activities

In preparation for the re-opening of borders, the Tourism Authority developed sanitary measures for the resumption of activities in the Tourism Sector, endorsed by the World Travel and Tourism Council. All operators falling the Tourism Authority Act are required to comply to the measures to be able to resume operations. In this matter, a [web application](#) was created in partnership with the Mauritius Telecom through which operators can perform a self-evaluation assessment of the measures adopted within their institution. A 'Safe Travel Certificate' is generated upon the respect of all criteria and needs to be fixed in a clearly visible place. Moreover, the sanitary precautions put in place by the Tourism Authority and the Beach Authority for the resumption of activities has been globally recognised and awarded the Global Safety Stamp by the World Travel and Tourism Council; making Mauritius one of the first destinations to receive this award²⁸.

Resumption of education sector's activities with strict sanitary measures

Following the national lockdown, day care centres and pre-primary schools re-opened on the 2 and 22 June 2020 respectively while the other institutions including primary, secondary and tertiary institutions resumed activities on 1 July 2020. Several measures were taken such as the mass testing of stakeholders in the education sector including educational and non-educational staff as well as staff of school buses and canteens²⁹. All educational institutions are equipped with hand sanitisers and liquid soaps and the wearing of protective face masks is mandatory except for children under 5 years old. Regular cleaning and disinfection of the classrooms are done. Body temperature checks are systematically done for every student, staff and visitor before entering the premises of the institutions and parents are advised not to send their children to school if they are suffering from fever. Isolation rooms have also been identified in each institution for the admittance of anyone with symptoms. Recess, morning assembly and release have also been reorganised in a staggered manner to avoid crowding of students.

IPC measures taken in the transport sector during the outbreak

²⁷ <https://www.airmauritius.com/covid-19-update/travel-information/prepare-for-your-travel>

²⁸ http://pmo.govmu.org/English/Documents/Cabinet%20Decisions%202020/Cabinet_Decisions_taken_on_29_May_2020.pdf

²⁹ <http://www.govmu.org/English/News/Pages/New-school-calendar-for-academic-year-2020-revealed.aspx>

During the outbreak, numerous measures were applied to the transport sector. Buses and metro services were operating with restricted capacities with new sitting arrangements to abide to the physical distancing measures. Taxis were allowed a maximum of three passengers and motorcyclists were only allowed to carry a member of their own family. Workers in the public transports were equipped with gloves and masks and hand sanitisers were made available for passengers.

Launch of e-commerce for food shopping to reduce spread of COVID-19 during the outbreak

The Minister of Commerce and Consumer Protection encouraged companies, distributors and supermarkets willing to provide online shopping services to minimise physical interactions. As from Friday 27 March 2020, several online shops namely theshop.mu, priceguru.mu, shopwise.mu, ordermanze.mu, and dreamprice.mu were operational and proposed essential goods such as food, beverages, health and sanitary products, and toiletries. All the distributors were required to have a work access permit and follow the sanitary precautions throughout the process of handling and distribution of items.

Regulation of prices and removal of taxes for face masks, hand sanitisers and respirators

The Ministry of Commerce and Consumer Protection amended the Consumer Protection (Price and Supplies Control) Act 1998 and the Consumer Protection Regulations 1998 with effect from 20 March 2020 to control the price of face masks, hand sanitisers and respirators³⁰. Importers of face masks, hand sanitisers and respirators are required to submit to return of costs for the above name products to the concerned Ministry. Value Added Tax was removed on hand sanitisers, protective masks and others breathing appliances and gas masks³¹ to make them more affordable to the population.

Other general IPC measures

- The High Level Committee on COVID-19 installed a temporary ban on the importation of animals including fish from China on the 10 February 2020³².
- Water and internet provisions were uninterrupted during confinement to ensure running water for hygiene measure and ensure that students could participate in online classes.

Challenges

Initial challenges to implement IPC measures in healthcare settings

There were initial challenges in implementing IPC measures in healthcare settings with limited availability of PPE and health personnel poorly adopting the new sanitary measures.

Infection rate among health personnel

Despite the extensive and continuous training provided to the health personnel working in the COVID-19 response, occurrences of inconsistent or relaxed implementation of the IPC measures were observed especially during interactions between colleagues at breaktimes. 36 health sector workers (10% of reported cases) were reported to have been infected with COVID-19 of which 16 medical staff at the treatment centres, 10 general workers at the MoHW, 7 staff of the regional hospitals, and 3 medical staff from the private health sector.

³⁰ <http://commerce.govmu.org/English/Legislations/Pages/Acts-and-Regulations.aspx>

³¹ <http://www.govmu.org/English/Documents/NOTE%20REMOVAL%20OF%20VAT%20ON%20HAND%20SANITIZER%20MASK.pdf>

³² <http://www.govmu.org/English/News/Pages/Coronavirus-Temporary-ban-on-import-of-live-animals-only-including-fish-from-China.aspx>

Initial counteractive effect of the rapid lockdown due to panic buying

The almost immediate lockdown in Mauritius following the detection of the first cases created a lot of fears at the beginning of the outbreak which resulted in panic buying. These behaviours increased agglomerations in commerce premises which were counteractive to the implementation of the lockdown.

Challenges in applying IPC measures in some specific contexts

Some sectors faced challenges in implementing IPC measures. Manufacturing and construction sectors employing expatriates could not apply certain measures such as physical distancing due to the high residential density of their dormitories during lockdown. Other measures had to be sought such as the mass testing and close surveillance of their health. The implementation of physical distancing upon the resumption of activities was also challenging in certain manufacturing industries and alternative measures had to be devised.

4.7. Pillar 7: Case management

Best practices

Isolation and free treatment of all confirmed COVID-19 cases

All confirmed cases of COVID-19 were transferred by the rapid response teams to a dedicated treatment facilities for isolation and treatment, upon receiving positive PCR test results. Self – isolation of mild and asymptomatic were considered but not implemented. Local authorities deemed that the associated risks of infecting family members and non-respect self-isolation were high and wanted to eliminate any risks of further infection. The strategy adopted for treatment was **maximised and optimised response for efficacy**. The strict decision to isolate all person infected with SARS-CoV-2 was one of the prime measures that contributed to the rapid containment of the epidemic. This measure reduced the risk of further transmission to the close entourage of the infected person and subsequently to the general public at large. Mauritius counts 335 recovered patients and 10 deaths.

Strategic sorting of patients for optimum care

Patients were classified by their age, risk factors including existing co-morbidity and severity of symptoms. Moderate to severe COVID-19 cases were isolated and treated in the New Souillac Hospital and New ENT Hospital while mild and asymptomatic COVID-19 case and young adults were isolated and follow-up in two makeshift treatment centres (a recreational centre and a hotel). This **strategic sorting of patients** ensured that hospital resources were used efficiently for an optimum case management of patients with moderate to severe symptoms. Moreover, the very stringent surveillance and IPC measures implemented resulted in fewer cases than projected, a smaller number of patients requiring intensive care and no overwhelmed health care system due to COVID-19. Hence, patients were able to receive the higher quality treatment and care.

Guided by the WHO protocols, hydroxychloroquine therapy in combination with azithromycin were used to treat patients who fitted in the protocols established by local authorities. Given the potential side effects of hydroxychloroquine, a strict protocol was implemented. For example, very elderly persons and those with heart complications were not administered the treatment and electrocardiograms were performed before administrating hydroxychloroquine therapy. Some patients were offered nutritional supplements and those in intensive care unit were provided with the adequate nutrition support as per protocol. Patients in intensive care unit were closely monitored with electrocardiograms, computer tomography scans and laboratory examination of fluids. A separated intensive care unit was also set up in New ENT Hospital for patients who recovered from COVID-19 with zero viral load and suffered from complications linked to immunity responses. Patients in the non-medical treatment centres were isolated and monitored by a doctor one per day and had regular body temperature checks by nurses. A team of medical staff was present 24/7 at these treatment centres.

New Souillac Hospital was initially identified as the treatment centre due to its previous use as an isolation and treatment centre for infectious diseases such a malaria, chikungunya and plague. As the epidemic in Mauritius evolved, the New ENT Hospital became the main hospital dedicated to COVID-19 treatment 2020³³. Having been recently renovated, the ENT Hospital is equipped with the latest modern equipment and technology which was an ideal facility for the treatment of COVID-19³⁴. It has advanced facilities in

³³ <http://www.govmu.org/English/Documents/280320%20communiqu%20de%20presse%20ent%20.pdf>

³⁴ <http://www.govmu.org/English/News/Pages/New-ENT-Hospital-Quality-healthcare-at-the-core-of-Government's-agenda.aspx>

intensive care unit, computer tomography and oxygen outlets. New ENT Hospital had one intensive care unit which could accommodate several patients compared to New Souillac Hospital which had individual rooms. Thus, treating staff were able to intervene quickly on patients in cases of emergencies since they did not have to change PPE. New ENT's central location facilitated the rapid transfer of patients and its proximity to the central national health laboratory facilitated specimen transfer for biological examination. In addition, Mauritius has a pool of well-trained doctors who have expertise in handling last-generation medical products as well as performing complex procedures and manoeuvres.

Continuous training and support for treating staff

Health personnel who were involved in treatment of COVID-19 patients received more continuous training and support to be able to deliver high quality services. A trained head nurse and advisor of the MoHW were present daily during the rotation of teams at the New ENT hospital, especially when the number of cases on the rise, to remind the health staff of the good practices and precautionary measures and respond to their fears, concerns and challenges. The medical staff were reassured by highlighting the low risk of being infected if all precautionary measures were respected and the relatively low risk of mortality from COVID-19. Regular meetings were convened with the medical specialists to discuss the cases, ensure that all the protocols were respected and follow-ups were done correctly.

Knowledge exchange with international experts

Mauritius made the most of the expertise available worldwide to have the latest updates about testing and treatment about COVID-19 and offer the best treatment and care. A teleconference mechanism was set up with the collaborative efforts of the MoHW; the Ministry of Technology, Communication and Innovation and Huawei to allow for exchange of information and advice between Mauritian medical practitioners and their counterparts from a specialised hospital in China. Mauritian healthcare professionals also participated in several online seminars on COVID-19 hosted by institutions such as WHO and the Indian Technical and Economic Cooperation Programme of the Government of India. Working sessions between local and Reunionese anaesthetists were held for the sharing of experiences, knowledge and practices. The MoHW was in contact with specialists from the *Centre National de Référence des virus des infections respiratoires* in France and *Centre Hospitalier Universitaire* of Reunion island for latest updates on treatment. Mauritius also benefitted from the expertise of 14-member Indian Medical Assistance Team comprising of a community medicine specialist, a pulmonologist and an anaesthesiologist amongst others who arrived onboard of the INS Kesari and held training sessions with local medical teams³⁵.

Other response measures

Creation of protocols for case management

Numerous protocols were devised for the different processes for case management including transfer to intensive care unit, oxygenation, ventilation, discharge of recovered patients, taking charge of family members of patients. Some of the protocols were WHO protocols while others were WHO protocols which were adapted to the local context taking into consideration the capacities of the Mauritian health care system. Many protocols were modified several times to adapt to the changes in resources and epidemiological context and integrate the lessons learnt.

³⁵ <http://www.govmu.org/english/news/pages/mauritius-receives-second-shipment-of-medicine-supplies-from-india.aspx>

Follow-up of recovered patient

Recovered COVID-19 patients were followed-up for up to 2 months after their discharge from the treatment centres. 674 follow-up calls were made by the trained team from the 8924 hotline to check for any late effects such as neuropsychic, pulmonological or cardiac conditions among the recovered patients. No recovered patients were identified with any major COVID-19 late effects.

Initiation of therapeutic plasma exchange

Therapeutic plasma exchange was first initiated on 8 April 2020 and 3 critically ill patients who were in intensive care unit benefitted from it. 231 recovered patients were contacted and sensitised about donating their blood and 186 accepted to volunteer for it. However, there has been no demand for it since the epidemic was controlled and less severe cases were occurring by that time.

Psychological support

The recovered patients, family members of patients as well as the health personnel were referred to the psychological services by phone established by *Société des Professionnels en Psychologie* and *Association des Praticiens de l'Approche Centrée sur la Personne* in collaboration with *MauriDoc* (a medical online platform). This free phone service was also available to the general public and especially created in the COVID-19 context.

Way forward

Construction of a National Centre for Disease Control and Prevention

As part of the Budget 2020-2021, the Government announced the construction of a National Centre for Disease Control and Prevention with the latest technologies.

Challenges and Gaps

High prevalence of noncommunicable diseases in Mauritius increased the risk of mortality

Compared to the other Indian ocean islands, Mauritius has registered a relatively high mortality rate due to COVID-19 of 2.9%, as shown in the figure below³⁶. Research has shown that patients with cardiovascular diseases and hypertension were 4.4 and 3.7 times more like to develop very severe form of COVID-19 that required admission in intensive care units, respectively, compared to patients without any comorbidity³⁷. Indeed, the COVID-19 epidemic in Mauritius has highlighted the underlying burden of cardiovascular diseases with 8 out of 10 deaths were associated with comorbid cardiovascular diseases and related conditions. Thus, there is an urgent need to accelerate and step up the efforts to address the high prevalence of noncommunicable diseases in Mauritius³⁸.

³⁶ https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200831-weekly-epi-update-3.pdf?sfvrsn=d7032a2a_4

³⁷ <https://link.springer.com/content/pdf/10.1007/s00038-020-01390-7.pdf>

³⁸ <https://health.govmu.org/English/Statistics/Documents/Mauritius%20NCD%20Survey%202015%20Report.pdf>

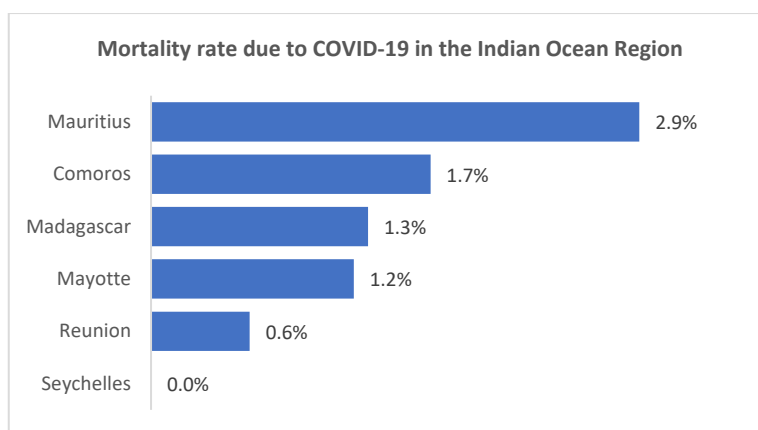


Figure 4: Mortality rate from COVID-19 among the Indian Ocean Countries
Source: WHO³⁹

Lack of existing specialised and modern health facility for infectious diseases

Mauritius has a lack of specialised treatment centres for infectious diseases equipped with modern medical technologies and with a high-bed capacity. The Poudre D'Or Hospital dedicated to the treatment of infectious diseases, especially chest infections is not equipped with modern facilities, has a low bed capacity and remote location. New Souillac Hospital and New ENT Hospital both offering specialised care and the non-medical facilities were alternatively used as treatment facility.

Fears and concerns of the health personnel

One of the biggest challenges reported was the fears and concerns of the health staff in treatment centres which were about getting infected, dying because of COVID-19 and infecting their family. To avoid any negative impact on the care delivery, this was addressed with the continuous training and support provided daily at the shift rotation by the head nurse whose role was specifically to motivate the teams and respond to their queries.

Initial reluctance of nearby inhabitants on the use of New Souillac Hospital

Inhabitants of the Souillac village were concerned by the use of the New Souillac Hospital as a quarantine and isolation centre at start of the COVID-19 response with fears of being infected. The Minister of Health and Wellness intervened to reassure them that there is no associated risks for them and highlight the precautionary measures taken to ensure no spread of COVID-19 from the suspected cases to the community.

Organising for the care taking of dependents of infected persons

Being highly infectious, several members of a family were often infected and ensuring the care taking of dependents such as young children was a challenge. Extended members of the families were either elderlies and therefore more vulnerable or feared, for their own health.

³⁹ <https://covid19.who.int>

4.8. Pillar 8: Operations support and logistics

Best practices

Mapping of stocks and forecast of materials needed for COVID-19 response

At the beginning of the outbreak, a mapping of stocks for different materials needed in the response was done⁴⁰. Based on the projections of the epidemic in Mauritius done by WHO predicting 87,424 mild infections, slightly over 1000 with severe infection, over 22,000 hospital admissions and 837 deaths; the volume of materials needed were forecasted to inform the mobilisation of resources and the procurement of essential materials such as ventilators, laboratory reagents, swabs, medications, PPE. For example, by projecting a worst case scenario of 100 people needing ventilator support, 50 ventilators were ordered with the help of UNDP to add to the 50 already available ones. On 23 March 2020 at the start of the sanitary curfew; 651 000 surgical masks, 33 750 specialised masks including N95/FFP2, 12 300 gowns, 500 face shields and 1399 goggles were available to the healthcare personnel⁴¹.

Activation of the emergency procurement

As at 19 March 2020, public institutions were allowed to have recourse to emergency procurement as provided for under section 21 of the Public Procurement Act and borne out by Directive 44 from the Procurement Policy Office^{42,43} to speed up the urgent purchase of materials needed for an optimum response to COVID-19. From 11 March to 15 June 2020, pharmaceutical products, worth about 93 million Mauritian rupees, has been purchased by way of emergency procurement⁴⁴.

Centralised storage of medicals materials for COVID-19 response

To have better control and monitoring of the medical resources, all materials purchased and donated were recorded and stored at the Central Supply Division of the MoHW in Plaine Lauzun. The different health institutions/departments/units had to send their official request justifying the demands for a planned delivery of materials and better control of stocks⁴⁵.

Multisectoral collaboration for efficient delivery of medical materials

The MoHW; Ministry of Foreign Affairs, Regional Integration & International Trade; Ministry of Commerce and Consumer Protection; Air Mauritius, Airports Terminal Operations Limited; Mauritius Chamber of Commerce; Business Mauritius and other stakeholders worked jointly to guarantee the prompt, efficient and safe delivery of medical materials procured and avoid any shortage locally. A series of flights were organised from China. Importers of drugs and medical equipment from China⁴⁶ and whose stocks were ready were advised to contact the Ministry of Foreign Affairs, Regional Integration and International Trade and with the Embassy of Mauritius in Beijing to facilitate the delivery to Mauritius⁴⁷. Authorities were

⁴⁰ <http://www.govmu.org/English/News/Pages/Due-to-extreme-urgency-to-procure-our-needs-recourse-to-emergency-procurement-was-the-only-alternative.-underlines-PM.aspx>

⁴¹ <http://www.govmu.org/English/News/Pages/Personal-protective-equipment-available-to-healthcare-personnel-since-first-day-of-curfew-.aspx>

⁴² <https://ppo.govmu.org/English/Directives/Documents/Directive%2044%20for%20COVID-19.pdf>

⁴³ <http://www.govmu.org/English/News/Pages/Due-to-extreme-urgency-to-procure-our-needs-recourse-to-emergency-procurement-was-the-only-alternative.-underlines-PM.aspx>

⁴⁴ <http://www.govmu.org/English/News/Pages/PNQ-Pharmaceutical-products-to-the-tune-of-Rs-93-million-procured-since-March-this-year-indicates-Health-Minister.aspx>

⁴⁵ <http://www.govmu.org/English/News/Pages/PNQ-Pharmaceutical-products-to-the-tune-of-Rs-93-million-procured-since-March-this-year-indicates-Health-Minister.aspx>

⁴⁶ <http://www.govmu.org/English/News/Pages/Covid-19-Mauritius-to-repatriate-stranded-citizens-from-France-India-and-South-Africa.aspx>

⁴⁷ <https://www.mcci.org/en/media-news-events/business-updates/importation-de-medicaments-et-de-materiels-medicaux-de-chine-communique-du-ministere-du-commerce-et-de-la-protection-des-consommateurs/>

ensured that the flights capacity were strategically optimised so that the maximum amount of medical materials could be efficiently deployed to the island. More than 1 000 tonnes of main medical supplies consisting mainly of protective masks, hand sanitisers, thermometers, rapid testing kits, tablets of chloroquine; were airlifted from Beijing, Guangzhou and Hong Kong and South Korea⁴⁸.

Local production of protective masks and hydro-alcoholic gel

Mauritius faced a temporary lack of masks supply on the local market in March at the beginning of the outbreak. In response, the High-Level committee on COVID-19 supported by the Mauritius Chambers of Commerce and Industry encouraged the private manufacturing sector notably through the Mauritius Export Association to locally produce fabric-based masks for local distribution⁴⁹. The private sectors favourably responded by producing fabric-based masks as per international norms, many of which were sent to France for certification by the *Direction Générale de L'Armenet*^{50,51}. Pharmacies and other distributors were also sought to ensure that there were sufficient stocks readily available on the local market⁵². Companies involved in the local sugarcane production turned towards the production of hydro-alcoholic gel by using ethanol. The locally produced hydro-alcoholic gel were donated to essential services including hospitals⁵³.

Optimum use of resources from other governmental institutions

Since most of the government services were halted during the national lockdown, the resources of various ministries were repurposed for use the national response to COVID-19 for example many of the 14-seater vehicles of other Ministries were put at the service of the MoHW⁵⁴ and press officers of other Ministries joined in to help with communications.

Mobilisation of support from the bilateral and multilateral agencies

The Ministry of Foreign Affairs, Regional Integration & International Trade sought the support of bilateral and multilateral agencies as well as of friendly countries to assist Mauritius in fighting against COVID-19. Canada, China, India, Japan, United Arab Emirates and United States of America as well as regional and international organisations such as, European Union, *Agence Française de Développement*, Indian Ocean Commission, UNDP, WHO, United Nations Office on Drugs and Crime, International Agency for Atomic Energy, African Centers for Disease Control and Prevention donated medical equipment and supplies such as test kits, reagents, masks, thermometers, swabs, footwear covers, surgical gloves, goggles, PPE, extractors, and ventilators. Mauritius also received PPE from Jack Ma Foundation and medicines comprising mainly tablets of hydroxychloroquine and Ayurveda products from India. Contributions were also made to the COVID-19 Solidarity Fund⁵⁵.

Other response measures

Early preparation and budgeting

Additional funds were allocated to the MoHW to acquire necessary medical goods to respond to the COVID-19. In this regards, several measures were taken such as reduction of expenditures on overseas mission

⁴⁸ <http://www.govmu.org/English/News/Pages/COVID-19-Citizen-Government-collaboration-essential-in-defeating-this-pandemic.aspx>

⁴⁹ <https://www.mcci.org/en/media-news-events/business-updates/sale-of-face-masks-communicue-from-mexa/>

⁵⁰ <http://www.govmu.org/English/News/Pages/Covid-19-Mauritius-rolls-out-mass-testing-.aspx>

⁵¹ https://fh.boutique/index.php?id_cms=9&controller=cms

⁵² <http://www.govmu.org/English/News/Pages/Covid-19-Post-confinement-will-be-phase-wise-says-PM.aspx>

⁵³ <http://omnicane.com/news-media/omnicane-fait-don-de-solution-hydro-alcoolique>

⁵⁴ <http://www.govmu.org/English/News/Pages/Mauritius-steps-up-protective-plan-to-fight-Covid--19.aspx>

⁵⁵ https://pmo.govmu.org/CabinetDecision/2020/Cabinet_Decisions_taken_on_12_June_2020.pdf

and significant reduction of expenditures for Independence Day celebrations from 12 million to 2 million Mauritian rupees⁵⁶. Ministries and Public Sector Bodies are also expected to achieve efficiency gains of at least 10 % on their recurrent expenditure⁵⁷.

Preparing to scale-up medical personnel capacity

The MoHW adopted a 7-day and 14-day onsite working strategy for health personnel involved in case management and quarantine, respectively, followed by rest days. This strategy carried the risk of shortage of medical personnel if the number of COVID-19 cases escalated. Upon the advice of WHO Country Office, the government sought the assistance of friendly countries such as China, Cuba and India for the deployment of health staff to Mauritius. With the rapid containment of the virus in Mauritius this request was no longer relevant. However, in the meantime a medical Indian team was deployed to Mauritius and they instead provided training and sharing of expertise with the local health team.

Fast-tracking innovative projects to counter the impacts of COVID-19

On the 9 April 2020, the Mauritius Research and Innovation Council, launched a special call for proposals to encourage entrepreneurs, academics, researchers, enterprises and start-ups to implement short and medium term projects which could improve and accelerate the Government's response to COVID-19 and address the impacts of the outbreak. 19 projects in the technology-based products and service category and 5 projects in the social and policy measures category were funded in the following main areas: food security, e-learning, protective equipment, medical services related, impact assessment, improved and targeted support to vulnerable groups as well as products and solutions for reducing and containing the virus⁵⁸.

Way forward

Construction of a new warehouse

As part of the Budget 2020-2021, the construction a modern warehouse with international standards for the storage of essential drugs, medical consumables, non-medical products and medical equipment was announced. This new warehouse will address the limitations of the current Central Supply Division store at Plaine Lauzun and will have a controlled temperature for optimum storage⁵⁹. 700 million Mauritian rupees has been allocated to its construction.

Challenges

Difficulties in procurement and prompt delivery of essential materials

As a small island developing state with a relatively small population, one of the main challenges of the national response to COVID-19 was the procurement and prompt delivery of essential materials. With increased competition between countries for procurement of these commodities and limited supply globally, Mauritius was greatly disadvantaged because of the small quantities been purchased. Compared to bigger countries, Mauritius was not the supplier's priority for delivery despite settled contracts for

⁵⁶ <http://www.govmu.org/English/News/Pages/COVID-19-All-necessary-measures-taken-to-strengthen-the-level-of-preparedness-says-Prime-Minister.aspx>

⁵⁷ https://www.cabri-sbo.org/uploads/bia/Mauritius_2020_Formulation_Internal_BudgetCallCircular_MinFin_COMESA_English.pdf

⁵⁸ <http://www.mric.mu/English/Pages/Special-Call-for-Proposals---Fast-track-innovative-projects-to-counter-the-impacts-of-COVID-19.aspx>

⁵⁹ <http://mauritiusassembly.govmu.org/English/hansard/Documents/2020/hansard162020.pdf>

purchase and particularly vulnerable to tarmac buying⁶⁰. For example, the 50 ventilators orders in February by UNDP only arrived in July.

Rising costs of the health system

Being highly dependent on the importation of medical materials, Mauritius is threatened by the rise in prices both due to the increase in competition between countries and the depreciation of the Mauritian rupees. This could have adverse consequences on the costs of health system in Mauritius in the long run.

⁶⁰ <http://www.govmu.org/English/News/Pages/Due-to-extreme-urgency-to-procure-our-needs-recourse-to-emergency-procurement-was-the-only-alternative-underlines-PM.aspx>

4.9. Pillar 9: Maintaining essential health services

Best practices

Maintained essential health services in public facilities with IPC measures

All public health structures including regional hospitals, specialised hospitals and community and area health centres remained open during the COVID-19 outbreak in Mauritius. Emergency and ambulance services maintain their usual function as well as sick child services and detection of outbreak (other than COVID-19). HIV treatment and methadone substitution programme were maintained.

Inpatient services remained unchanged with increase IPC measures applied such as the wearing of protective masks where possible and patients were advised not to move around. A one visitor per day policy was implemented for inpatients. All WHO Protocols were respected regarding precautionary services to be taken at the health services such as wearing of protective masks, physical distancing and temperature checks.

Maintained and scaled-up of the anti-influenza vaccination campaign

The high-level COVID-19 committee took the decision to maintain the annual anti-influenza vaccination campaign targeting elderly (60+ years old) and people with vulnerable health. This campaign which is usually carried out by the Ministry of Social Integration, Social Security and National Solidarity in social centres was re-strategised. A door to door campaign was alternatively led the Noncommunicable Diseases, Health Promotion and Research Unit of the MoHW since this unit had the expertise in conducting community outreach health services. A total of 27 caravan team, were mobilised with 3 caravans covering each of the 9 districts on Mauritius island. Each caravan team was led by a health promotion nurse and comprised of 6-8 staff including doctors, nurses and healthcare assistance. Doctors from the Ministry of Social Integration, Social Security and National Solidarity and the help of the Police Force were sought to support the team. The campaign was extensively communicated via the media and the announcements were made in each localities a few days before. From 6 April to 12 May 2020, 324 localities were covered and 132 768 vaccines were done which was well beyond the 40 000 done during the previous years. This was attributed to the door-to-door strategy and the campaign had to be done in two phases since an additional 70 000 vaccines were reorders to meet the greater demand. The sanitary precautionary measures such as physical distancing and wearing of PPE were respected.



Door-to-door anti-influenza vaccination campaign

Ensured availability of essential drugs

During the national lockdown and with the border closure, the MoHW mapped a list of essential drugs for diseases and life course conditions other than COVID-19 and inventories were carried out to evaluate the available stocks. Consequently, essential drugs were ordered and special flights were organised for the delivery. As at 15 June 2020, the MoHW held a stock of 766 drugs used in the treatment and care of patients with different pathologies based on the WHO's essential list of medicines for the treatment and management of various categories of diseases⁶¹.

Maintaining essential services and introduction of teleconsultation in the private health sector

Welkin Hospital, the private hospital with the largest capacities and services, maintained its services including emergency services and some services operated at a reduced capacity. Scheduled surgical procedures were maintained but rescheduled in a staggered manner to allow more time to implement the IPC measures. Vaccination for infants and children continued on appointment on specific days and in a specific area of the hospital to avoid overcrowding and reduce risks of infections. Pharmacy services also remained opened and was also appointment based.

Outdoor patient department services were reduced from 2 to 5 bases and patients were advised not to attend the hospital for non-urgent matter. Alternatively, a teleconsultation was set-up by the information technology team within a short period following the lockdown to establish communication with patients and address their concerns. A doctor attended the call by screening the cases for its urgency and signs and symptoms and redirected the calls to specialised consultants if needed. From there, the patients were advised on whether they needed to attend the services. This service worked well, receiving a lot of queries, and was well-appreciated by patients and the public at large. The hospital also communicated extensively on their Facebook page with Facebook lives where specialists were sharing the do's and don'ts for chronic patients. Patients were able to share their questions and have them addressed by the doctors via this platform.

MauriDoc, an online platform for medical appointments, offered free teleconsultation services to support those who needed medical advice⁶². A list of generalists and specialists including paediatricians, gynaecologists, psychiatrist, dentists, cardiologist, oncologist, endocrinologist, rheumatologist and naturopath was shared including their contact details and availability. They could be reached by regular phone calls and by WhatsApp too. During the lockdown, Abler Digital Health, FinTech consulting company, also launched their telemedicine platform with video consultation to bridge the gap between patients and medical practitioners and offer a 24/7 service⁶³.

Involvement of nongovernmental organisations in maintaining health services

Different nongovernmental organisation working in the health sector were motivated to support the continuity of health services to their beneficiaries or the public at large during the outbreak. Upon obtaining the work access permit for their staff, many NGOs reorganised their services to better adapt them to the unprecedented circumstances of the COVID-19 outbreak.

The Blood Donors Association constantly encouraged community organisations to organise blood donations during the lockdown to ensure that blood banks had the adequate supplies needed. Several blood

⁶¹ <http://www.govmu.org/English/News/Pages/PNQ-Pharmaceutical-products-to-the-tune-of-Rs-93-million-procured-since-March-this-year-indicates-Health-Minister.aspx>

⁶² <https://defisante.defimedia.info/maladies/mauridoc-un-service-de-teleconsultation-gratuite-mis-en-place/>

⁶³ <https://www.ablerdigital.com>

donation campaigns were organised island wide during lockdown, especially around the supermarkets' premises.

Since the beginning of the lockdown, the *Société des Professionnels en Psychologie* and *Association des Praticiens de l'Approche Centrée sur la Personne* in partnership with MauriDoc (a platform for medical appointments) have set-up a free phone psychological support for the general public. Befrienders, an NGO working towards suicide prevention also proposed counselling services by phone to the public. *Kinouété* which works towards the rehabilitation and reintegration of detainees also offered psychological support via phone or Skype to their beneficiaries and beneficiaries' family. Main concerns of the detainees were around the vulnerable conditions in which their family are finding themselves owing to the lockdown. Following an advocacy done by *Autisme Maurice*, an NGO specialised in autism, children suffering from autism were allowed to go for a walk with their guardian within a 500m radius around their residences for one hour to ease their anxiety of staying indoors. This was permitted towards the end of the lockdown.

With the authorisation of the MoHW, two NGOs working towards the reduction of HIV in Mauritius, *Prévention Information et Lutte contre le sida* (PILS) and *Aides Infos Liberté Espoir et Solidarité* (AILES), ensured the renewal of prescriptions for antiretrovirals for people living with HIV as well as their collection from the National Day Care Centre for Immuno-suppressed upon presentation of prescriptions to be delivered to patients' homes. AILES collected and delivered the methadone dose of bedridden people who were on the treatment. PILS contacted its beneficiaries to check on their health and extended its free hotline service to their beneficiaries to contact them for assistance. Supported by the ambulance services of L'Ordre de Malte, PILS also conducted home visits to their beneficiaries who needed medical assistance. Homeless people who live with HIV also benefitted from this service.

Collectif Urgence Toxida (CUT) which provides harm reduction services to people who inject drugs resumed their services on 15 April 2020 by focusing on backpack strategies for the national needle syringe programme. During the lockdown, 20 fieldworkers covered 5 main regions and 6 fixed national needle syringe sites. Owing to their limited services and the lack of materials due to the inability to obtain materials from MoHW, CUT reached about only 25% of their beneficiaries. The NGO also distributed sanitary packs consisting of protective masks and hand sanitisers to those in need at the methadone distribution sites.

The services of NGO *Solidarité Rodrigues'* which supports Rodriguan migrants in Mauritius was sought by the Regional Assembly of Rodrigues to assist the Rodriguan patients who are undergoing treatment in Mauritius. The hospitalised Rodriguans were visited by the members of the NGO who also took charge of their transfers from the hospitals to their guest house upon their discharge.

Maintained private health services

Way forward

Investing in strengthening the public health services

Several measures to increase the resilience of the health system was announced in the Budget 2020-2021. The construction of 4 community health centres, 4 area health centres and 6 mediclinics is planned to reduce the workload in the regional hospitals and further decentralise medical services⁶⁴. Several specialised healthcare facilities such as a cancer hospital, a new eye hospital, a new renal transplant unit are in the pipeline.

⁶⁴ <http://mauritiusassembly.govmu.org/English/hansard/Documents/2020/hansard162020.pdf>

Challenges and Gaps

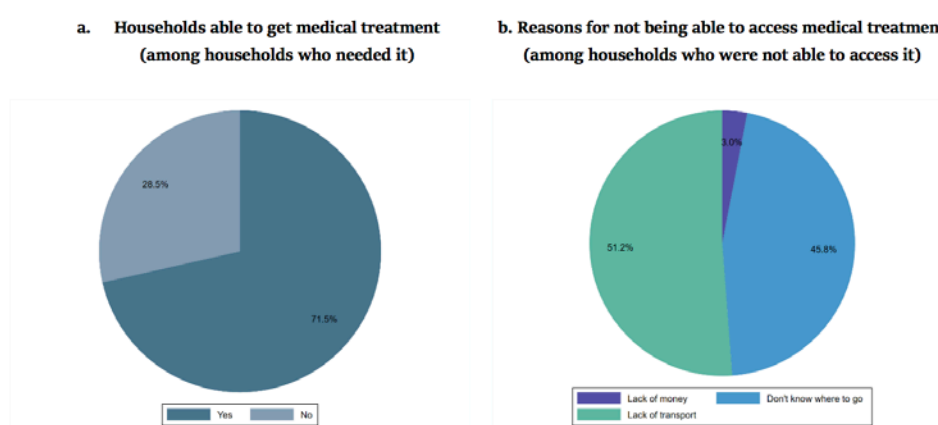
Reduced and suspended public health services

Outdoor Patient Department were open with reduced services and patients were advised to avoid attending services if they are feeling well and have their prescription drugs. Patients who were running out of prescription drugs could collect their prescription drugs from the hospital pharmacies or have them collected by a family member, while patients who are unwell were advised to attend the emergency services. Patients who wanted to maintain their appointments could also do so. A dedicated telephone service was put in place to communicate re-scheduling of appointments and delivery of drugs⁶⁵. Services such as family planning, antenatal care, tuberculosis case detection, noncommunicable diagnosis and treatment, treatment for mental health disorders, cancer diagnosis and treatment, rehabilitation services were partially disrupted due to COVID-19 outbreak. During the outbreak, all routine surgeries and mobile clinic services were suspended. Routine immunisation services for infants, children and adolescents usually held at community/area health centres and schools were temporarily halted. Dental services and palliative care services were completely disrupted. Health personnel have also been deployed in the COVID-19 response.

Significant decrease in hospital attendance during lockdown

The MoHW noticed a considerable decrease in attendance in hospital services registering an estimated 10-15% of their usual attendance. This was associated to the reduced or cancelled elective care as well as reduced public transport services and unwillingness of patients to breach the sanitary curfew to seek healthcare. The missing hospital attendance were identified as patients who usually attend services for minor health issues such as headache and body aches and who instead might have resorted to self-medication or area health centres and community health centres.

A post-lockdown household survey indeed revealed that 16% of Mauritian household have required health care during the lockdown and 71% of them have able to access it. Main reported reasons for not having had access to health care were lack of transport and not knowing where to go⁶⁶.



Source: Based on data from the Rapid Continuous Multi-Purpose Household Survey, Statistics Mauritius and World Bank.

Figure 5: Ability to access medical treatment during lockdown

⁶⁵ <http://m.govmu.org/English/News/pages/NewsDetails.aspx?ItemId=6353>

⁶⁶ http://statsmauritius.govmu.org/English/StatsbySubj/Documents/Labour/RCMPHS_May20.pdf

The MoHW reported that no observed increase in mortality for that period that could indicate the impact of delayed health seeking and not receiving timeline adequate treatment was noticed. However, since health expands well beyond absence of death and encompasses the well-being of individuals too, there is a need for deeper understanding of the impact of reduced elective care on the physical, mental and emotional state of being of ill individuals.

Backlog and increased attendance upon resumption of all public health services

Public health services in Mauritius resumed their usual services as from 15 May 2020 and an appointment system was put in place to avoid overcrowding in hospital⁶⁷. The public was advised of the strict sanitary measures in place such as the compulsory wearing of mask, physical distancing, and hygiene standards. Vaccination programme for new born babies and children resumed on 11 May 2020 in 158 vaccination clinics around the island and was carried out with allocated slots to prevent crowding of health facilities⁶⁸. The health services registered a significant increase in attendance upon the resumption of services on 15 May. Within the first week, about 16 500 patients attended casualty departments while 25 000 patients attended peripheral health centres and 2 500 admissions have been recorded in regional hospitals and 550 operations carried out⁶⁹.

The public health system is currently facing a backlog regarding routine surgery and outdoor patient departments and the authorities are planning to catch up within the next three months. More record officers are in service help to check the health status of patients and triage patients according to priorities for the rescheduling of surgery and outdoor patient departments. Task shifting and role delegation strategies have been adopted to remedy the situation.

Transferred services of New Souillac Hospital and new ENT Hospital

New Souillac Hospital and new ENT Hospital both provide specialised care during their normal use. Eye surgery are usually performed at the New Souillac Hospital and as the hospital started to accommodate the suspected cases of COVID-19, the surgeries were stopped. Before the outbreak, two alternative structures namely Arya Samaj Centre (religious group) in Souillac and Social Security Service Building in Surinam, were used for the noncommunicable disease routine checks (mainly ophthalmology) and offered basic health services. New ENT Hospital services were transferred to the nearest regional hospital where, however, the facilities and expertise do not necessarily exist for the adequate care and follow-up. This might exacerbate the issue of overburdening of regional hospitals following the resumption of services and backlog of elective care.

Difficulties in organising treatment abroad for patients necessitating specialised surgery

The closure of borders and the lockdown on other countries have delayed the transfer of patients who required treatment abroad. Media reports stated that due to closed borders in India, a young patient requiring urgent heart surgery had to alternatively opt for a costlier treatment in France⁷⁰.

Difficulties in detecting the scale of the on-going dengue outbreak

The extent of the on-going dengue outbreak in Mauritius could difficultly be determined since less people sought health care services during the lockdown and might have instead opted for home remedies or self-medication as treatment.

⁶⁷ <http://www.govmu.org/English/News/Pages/Covid-19-Bill-will-provide-necessary-legal-impetus-to-enforce-post-lockdown-measures.aspx>

⁶⁸ <http://mauritiusassembly.govmu.org/English/hansard/Documents/2020/hansard162020.pdf>

⁶⁹ <http://www.govmu.org/English/News/Pages/Covid-19-Some-8-of-population-screened-as-Mauritius-hits-100-00-tests.aspx>

⁷⁰ <https://www.lexpress.mu/article/379081/leden-ukhoy-age-dun-mois-pourra-faire-operer-en-france>

Risk of increase in Hepatitis C and HIV incidence

The disruption of the mobile services for needle and syringe programme during lockdown have resulted in a decrease in availability of sterile injecting materials. An increase in high risk behaviours such as sharing of injecting materials and the use of used injecting materials have been observed by NGOs. This could result in a surge of hepatitis C and HIV.

Interrupted immunisation vaccination campaigns for infants, children and adolescents

Immunisation campaigns for are considered a priority services to be maintained. Halting these services during lockdown in Mauritius present a risk of reversing the past achievements of other communicable diseases in Mauritius⁷¹.

Disrupted public health services in Rodrigues island despite no registered cases of COVID-19

During the national lockdown, Queen Elizabeth Hospital in Rodrigues was reportedly converted in a treatment centre for COVID-19 in preparation for an outbreak in Rodrigues. Its services were consequently redirected to community health centres and non-urgent medical services were halted⁷². The public health system was disrupted without any detected cases of COVID-19 on the island.

⁷¹ <https://www.who.int/news-room/detail/15-07-2020-who-and-unicef-warn-of-a-decline-in-vaccinations-during-covid-19>

⁷² <http://www.actogether.mu/fr/actus/2020/la-solidarite-s-organise-ong-et-acteurs-sociaux-en-mode-confinement>

4.10. Pillar 10: Responses beyond health

Best practices

Whole-of-government approach in the national response to COVID-19

The Government of Mauritius demonstrated a rapid understanding of the impact of the pandemic on livelihoods and vulnerable populations and the national response to COVID-19 in Mauritius extended beyond health. The impact of the strict lockdown especially on the most vulnerable segments of the population and on the private sector were considered to guarantee that no one was left behind. This additional response pillar titled 'Responses beyond health' highlights the key measures taken by the authorities to ensure social and financial protection. These multisectoral initiatives responses were enabled by the High-Level Committee on COVID-19 and the strong engagement of the bilateral and multilateral agencies as well as the private sector and NGOs. Many of these measures favoured the adherence to the strict public health measures and social peace during this time of crisis since vulnerable populations did not have to involve in risk taking behaviours to meet their basic needs.

Distribution of food and essential hygienic products to vulnerable households

The Government initiated a food assistance plan for families who are enlisted on the Social Registrar of Mauritius as well as persons with disabilities, receiving the Carers' Allowance and residents of Homes during the closure of the food outlets. 35 000 packs consisting of essential food and hygienic products were prepared and distributed with the joint efforts of the Ministry of Social Integration, Social Security and National Solidarity; Ministry of Gender Equality and Family Welfare and the Ministry of Commerce and Consumer Protection together with the Mauritius Chamber of Commerce. The support of retailers and producers were mobilised to donate food essential food and hygienic supplies.

Business Mauritius together with several NGOs such as Caritas, FoodWise and LoveBridge also joined forces to provide essential food and hygiene packs to their beneficiaries and as well as to families which found themselves in financial difficulties following the lockdown who were not previously registered on the Social Register of Mauritius.

Price control over basic food commodities

The Ministry of Commerce and Consumer Protection ensured a price control over basic commodities to prevent the practice of price abuse by retailers. As from 26 April 2020, the list of basic commodities with controlled prices was extended with the addition of rice, cereals, butter, cheese, pasta products, and grains as well as sanitary products such as baby and adult diapers, sanitary towels, and washing products⁷³.

From 6 April to 16 July, 8,507 commercial premises were visited by the inspectors of the ministry in question to ensure that the prices range proposed were respected. 2753 fines were established during the same period for selling at prices higher than prescribed or non-affixing of price labelling. Non-respect of those measures on repetitive occasions could lead to the suspension of trading permits. The public was also encouraged to denounce any illegal practice of prices to the ministry's Hotline 185.

Ensuring the supply of essential food products and investing in local production

⁷³ <http://www.govmu.org/English/News/Pages/Commerce-Minister-announces-price-control-on-additional-basic-goods-amid-Covid-19-pandemic.aspx>

In order to ensure a good supply of food products on the local market during lockdown, retail outlets of the Agricultural Marketing Board, Central Slaughter House of the Mauritius Meat Authority and Livestock and Veterinary Services were operational as from 23 March 2020 as part of listed essential services during the sanitary curfew. As from March 2020, the Ministry of Agro-Industry and Food Security ensured that basic vegetables were available on the market. The Agricultural Marketing Board proactively increased their stock of potatoes, onions and garlic for up to 8 weeks compared to the usual 2 weeks and retail prices were controlled. The Ministry of Agro-Industry and Food Security encouraged the local production of food products and 500 arpents of land have been identified for this endeavour⁷⁴.

Creation of the COVID-19 Solidarity Fund

With the announcement of the confinement, the COVID-19 Solidarity Fund was established under the Finance and Audit Regulations 2020 to finance projects, programmes and schemes related to the COVID-19 and other related public health issues. National and international organisations, public enterprises and statutory bodies, private sector and individuals were encouraged to donate to it. Citizens who contributed to the COVID-19 Solidarity Fund will be allowed to claim the deduction in their income tax returns. As at 3 August 2020 about 183 million Mauritian rupees were raised by means of the fund.

Creation and implementation of financial support measures

In order to mitigate financial hardship that might be faced by vulnerable populations and by the private sector due to the pandemic, the Ministry of Finance, Economic Planning and Development devised and promptly implemented the following financial measures:

- Wage Assistance Support Scheme - Government contributes 50% of the first basic salary for employees in the private sector earning Rs 25 000 up to Rs 50 000 to ensure that they received their monthly basic salary.
- Setting up of a Self-employed Assistance Scheme of Rs 5,100 per month to support all those who could not work during the confinement.
- Households having contracted a housing loan at any Commercial Bank are entitled to a moratorium of six months to pay the capital of their loans.
- Write-off of interest for housing loans for persons earning up to Rs 50 000 from 1st April to 30th June 2020.
- A '*Plan de Soutiens aux Activites Economiques*' with a range of financial support was devised for economic operators, across all sectors including small and medium enterprises.
- Special loans schemes put in place by the Development Bank of Mauritius including for Micro Small Medium enterprises and individuals.
- Waiving of the fees for markets stall during the confinement period.
- Introduction of a Special Foreign Currency USD Line of Credit by the Bank of Mauritius targeting operators having foreign currency earnings to be made available through commercial banks.
- Launch of the manufacturing company freight rebate scheme.
- Waiving of fees for exports.
- Specific incentives for the tourism industry such as the possibility to convert hotels into service apartments which can be sold individually, a waiver of rental of State land for one year, a two year waiver of license fees for Tourism and Beach Authority operators and the increase in the rebate scheme for renovation to 100% until 2022.
- To support most vulnerable during the confinement, 65 000 households benefitted from a 20% reduction on their electricity bills and small enterprises whose electricity consumption do not exceed 125 kilowatts also received a reduction of 10%.

⁷⁴ <http://agriculture.govmu.org/English/Media-Library/Pages/default.aspx>

Door to door delivery of pensions during the lockdown

During the lockdown a home delivery payment system of pension for some 58 000 beneficiaries consisting of the elderly, people with disabilities and the vulnerable was implemented. The Ministry of Social Integration, Social Security and National Solidarity, the Police Force and the Mauritian Post collaborated to ensure the safe delivery of pensions while respecting the all the sanitary measures.

Repatriation of Mauritians

An intersectoral committee consisting of the Ministry of Foreign Affairs, Regional Integration and International Trade; Ministry of Tourism; MoHW; Air Mauritius (national carrier) and Airport Terminal Operations Limited was set-up to coordinate the repatriation and quarantining of stranded Mauritians. All Mauritians who wished to return to the country following the closure of borders were advised to register themselves in the closest embassy or to contact the Ministry of Foreign Affairs, Regional Integration and International Trade. Since the beginning of the process till the end of August more than 8 000 Mauritians were repatriated from more than 65 countries. In an effort to complete the repatriation process by end of September before moving to the Phase 2 of the opening of borders, the government has accelerated the repatriation process with increased flights. Moreover, the State of Bank of Mauritius has put in place a loan scheme of 50 000 Mauritian rupees for Mauritians stranded abroad at a 3% interest rate for those finding themselves in financial difficulties.

Ensuring continuity of educational classes via distance learning strategies

During lockdown, students benefitted from home-based education in the form of online classes with their teachers via different internet platforms and classes via television and online programmes which resulted from a collaborative venture between the Ministry of Education, Tertiary Education, Science and Technology, the Mauritius Broadcasting Corporation and the Open University of Mauritius. About 85% of the Mauritian households with children in school age reported having access to home based education during the closure of education institutions⁷⁵. The Ministry of Social Integration, Social Security and National Solidarity made provision for the distributions of around 2500 tablets to children whose families were on the Social Register of Mauritius⁷⁶. The school and examinations calendars updated with new schedules to allow for students to catch up on lessons.

Way forward

Towards a socio-economic recovery

The Government of Mauritius has earmarked a budget of about 35 billion Mauritius rupees to support salary payment and ease financial constraints in the private sector. A Recovery Plan is being developed by the Ministry of Finance, Economic Planning and Development in collaboration with several stakeholders

⁷⁵ http://statsmauritius.govmu.org/English/StatsbySubj/Documents/Labour/RCMPHS_May20.pdf

⁷⁶ <http://mauritiusassembly.govmu.org/English/hansard/Documents/2020/hansard262020.pdf>

including the UN Country Team for a more resilient economic model which is less reliant on the tourism sector and more focused on generating income within the country.

At the request of the Government of Mauritius and based on the UN Strategic Partnership Framework 2019-2023, the UN Country Team has developed a phased COVID-19 Socioeconomic Recovery Plan. The plan aims to assist the Government in preparing and protecting people from the pandemic and its impacts in the immediate term, to respond during the outbreak, and plan for and implement recovery from socio-economic impact on the medium to long term. With a budget of Rs 135 188 572, this plan consists of five critical pillars (as shown in Figure 6) and is to be implemented by June 2021.

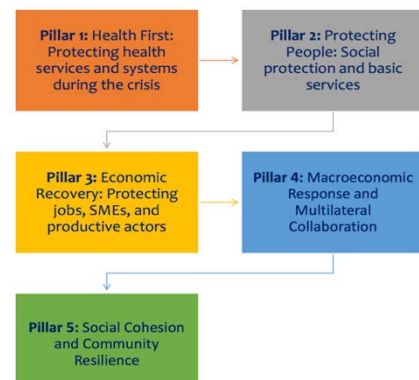


Figure 6: Five Pillar of the UN Social and Economic Response and Recovery Plan

A Socio-economic Impact Assessment of COVID-19 Crisis will be conducted in the various sectors including tourism, economy and culture to strategically inform the sectoral recovery planning. Policy Monitoring and Impact assessment of economic stimulus is on the agenda as well as the Digital Transformation of Public Services for enhanced service delivery and business continuity. Re-skilling of workers in the sectors affected by the health crisis and development of policy options for domestic resource mobilisation and a regional markets business intelligence dashboard are in the pipe line. Tracking surveys investigating the impact of COVID-19 on small and medium enterprises will be conducted.

United National Country Team is looking to increase the engagement with NGOs and civil society by the setting up of a forum. The aim is to enable a feedback from the communities to decision makers and donors since NGOs and civil society representatives are closer to the population. This forum will favour coordination of activities and the sharing of information about resources available from Development Partners Group to the NGOs and civil society.

In parallel, UNDP is working in collaboration with the Government of Australia to address the pressing issue of domestic and gender-based violence with (1) a review of legislations on the protection of women and protection of gender issues inform government policy, (2) supporting the implementation of the Government's perpetrators rehabilitation programme and (3) supporting a gender observatory at the Ministry of Gender Equality and Family Welfare to monitor the statistics on gender violence in Mauritius.

The European Union agreed on a service contract⁷⁷ of Rs 90 million dedicated to improve the business and investment climate in Mauritius, stimulate the job creation and foster a sustainable and inclusive growth. It consists of the mobilizing of international technical expertise to assist the Ministry of Finance, Economic Planning and Development and the Economic Development Board for a duration of 3 years.

The British High Commission is supporting projects dealing with the impact of COVID-19 in Mauritius from civil society, commercial organisations, academic institutions and government entities and which have a focus on (1) Economic recovery and response, including around climate, health and business; (2) Support to vulnerable groups within Mauritius; and (3) Impact on green and sustainable policies and/or activities.

Challenges

⁷⁷ <https://www.edbmauritius.org/media/3287/eu-press-release-epa-07072020-final.pdf>

Strains on food security among vulnerable households during the strict lockdown

More than 70% of Mauritian households reported being affected by one or more household shocks due the stringent lockdown measures, with the most common one being a reduction income and increase in prices⁷⁸. There was a considerable toll on food consumption with about 1 in 5 households mentioned not been able to buy basic food items between the start of the lockdown and the month of May. Since the lockdown, 17 % of Mauritian households have skipped a meal, 27% have reduced their food consumption and 21% reported being unable to buy basic food items stating financial issues (35.5%) as the main reason. At least one member has once skipped all the meals of a day in 3% of the households.

Limited continuity of public services

Despite the work-from-home scheme applying to some public sector officers, especially high-level officers⁷⁹, the large majority of public services were frozen during lockdown. A general lack of digitalisation across governmental services, limited access to resources such as paper files and laptops and absence of an existing work from home policies for the public sector made it challenging to maintain the continuity of public services.

Maintaining essential food supplies

Mauritius relies considerably on the other countries for its staple food products such as rice, flour and many vegetables and fruits as well. With the pandemic, Mauritius faced the challenges of reduced foreign productions of these food items and the risk of interrupted food supply chains.

Adverse economic impacts

With an economic heavily reliant on tourism, trade and manufacturing and financial sectors, the Mauritian economy is suffering from the impacts of border closures and reduced economic activities globally.

Difficult living and financial situation for stranded Mauritians

The closure of borders had resulted in many stranded Mauritians facing difficult sanitary and financial situations abroad. Many are having to incur additional costs for quarantine or living costs in foreign countries, many of which have also instated lockdowns.

Lockdown highlighted domestic violence

During the sanitary curfew, many victims of domestic violence were stuck with their perpetrators without their usual support system or services they rely on. 349 cases of domestic violence against women and 463 cases of violence against children were reported to the Ministry of Gender Equality and Family Welfare, between 20th March and 13th May 2020 and the Ministry together with the Police Force intervened to offer the necessary support and protected needed by the victims⁸⁰.

⁷⁸ http://statsmauritius.govmu.org/English/StatsbySubj/Documents/Labour/RCMPHS_May20.pdf

⁷⁹ <https://civilservice.govmu.org/Documents/circulars%202020/circular%2032%20final.pdf>

⁸⁰ <http://www.govmu.org/English/News/Pages/Covid-19-Mauritius-embarks-on-first-phase-of-easing-its-lockdown-protocol.aspx>

5. Recommended actions

Pillars	Recommended actions
<p>Pillar 1: Country-level coordination, planning and monitoring</p>	<p>a. For immediate implementation:</p> <p>Continuously update the preparedness plan for COVID-19 Preparedness plans, protocols and SOPs should be updated across the 9 strategic pillars as the pandemic and the WHO guidelines evolve for an optimum response. The current plan should be updated to include the recently added Pillar 9 – <i>Maintaining Essential Health Services</i>.</p> <p>Consolidate preparedness and response for Rodrigues and Agalega Despite being spared from the pandemic, Rodrigues and Agalega need be on maximum preparedness and standard operation standards should be developed for the 9 strategic pillars for these two islands.</p> <p>b. For mid to long term to improve response to next waves of COVID-19 outbreak:</p> <p>Elaborate of a whole-of-government health emergency response plan Mauritius successfully contained COVID-19 with its whole-of-government approach and an ad-hoc decision-making strategy. Building on this experience of this response, a whole-of-government health emergency response plan could be devised to allow for a rapid and harmonised activation of strategic responses across all sectors and governmental and non-governmental entities with different level of preparedness in preparation for a second wave.</p> <p>Explore new funding avenues due to high-income country status With its accession to a high -income country status, Mauritius has restricted access to financial and development assistance and there is a need to explore some new and non-traditional funding mechanism.</p>
<p>Pillar 2: Risk communication and community engagement</p>	<p>a. For immediate implementation:</p> <p>Maintain continuous and intense sensitisation campaigns Sensitisation campaigns should be maintained to sustain the knowledge and precautionary measures among the population since Mauritius is COVID safe and not COVID free.</p> <p>Scale-up the stakeholders’ training of trainers for increased community engagement Training of trainers of key stakeholders who work directly with the general public should be scaled up to increased sensitisation of the population on COVID-19 and community engagement.</p> <p>b. For mid to long term to improve response to next waves of COVID-19 outbreak:</p> <p>Maintain the feedback mechanism system to monitor The different measures and strategies put in place detecting and addressing rumours have proven to be successful and should be maintained.</p>

<p>Pillar 3: Surveillance, rapid-response teams, and case investigation</p>	<p>a. For immediate implementation: Capitalise on the existing strong surveillance system The robust surveillance system and contact tracing system in Mauritius has proven to be effective. With strong experience and existing structures, the government needs to continue to capitalise on its strengths.</p> <p>Elaborate a scaling-up plan for contact tracing Elaborate a scaling-up plan for contact tracing to activate the rapid deployment of additional contract tracing teams during periods of high rates of local transmission.</p> <p>b. For mid to long term to improve response to next waves of COVID-19 outbreak: Develop standard operating procedures to strengthen efficacy of contact tracing Developing SOPs for contact tracing and include the monitoring of compliance on self-isolation through regular messaging, calls and house visits.</p> <p>Introduce the use of technology to facilitate contact tracing The use of simple Global Positioning System such as Google maps can be considered to facilitate the location of contacts during the contact tracing.</p>
<p>Pillar 4: Points of entry, international travel and transport</p>	<p>a. For immediate implementation: Build-up on the best practices to guide the reopening of borders The obligatory and strict quarantine measures for all returning citizens has proved to be an efficient measure for the early detection of COVID-19 and disruption of the transmission chain to avoid local transmissions. Authorities should build-on this proven strategy to inform the next steps in the reopening of borders.</p> <p>b. For mid to long term to improve response to next waves of COVID-19 outbreak: Development of a health emergency contingency plan for port and airport In order to increase preparedness and response at points of entry in Mauritius, the development of a health emergency contingency plan is key. Corresponding SOPs and guidelines need be elaborated and widely disseminated and regular simulation exercises conducted.</p>
<p>Pillar 5: National laboratories</p>	<p>a. For immediate implementation: Leverage on the experience acquired in LIMS Capitalise on the experience in building LIMS for COVID-19 for creating the new system dedicated to passengers.</p> <p>b. For mid to long term to improve response to next waves of COVID-19 outbreak:</p>

	<p>Capacity building of private laboratories</p> <p>Capacity building of private laboratories to scale-up the testing capacities for COVID-19 beyond the public sector.</p> <p>Pre-stocking of laboratory materials</p> <p>Ensuring the pre-stocking of consumables and reagents in the advent of a second wave of COVID-19 outbreak.</p>
<p>Pillar 6: Infection prevention and control</p>	<p>a. For immediate implementation:</p> <p>Assess and improve the training and implementation of IPC measures among health personnel</p> <p>In order to reduce the number of infection rate among health personnel; the implementation of precautionary measures need to be re-assessed to find improved measures and IPC training should be strengthened. As recommended by the two WHO missions table-top exercises and the drills should be conducted at healthcare facilities to familiarize staff with the IPC necessary actions to taken.</p>
<p>Pillar 7: Case management</p>	<p>a. For immediate implementation:</p> <p>Find immediate strategies for scaling up of treatment centres</p> <p>Immediate strategies for the scaling up of treatment centres need to be found to prepare for the expected rise in imported cases due to the partial re-opening of the borders without adding pressure on the already overloaded health facilities. Alternative options could to be considered such as the conversion and upgrading of district hospitals into treatment centres.</p> <p>Boost morale and support offered to health personnel at treatment centre</p> <p>Health personnel at the treatment centres are one of the few links which could result in new local transmissions. Hence, boosting their morale and confidence and addressing their fears and concerns while consistently adhering to instructions and protocols for IPC is key.</p> <p>b. For mid to long term to improve response to next waves of COVID-19 outbreak:</p> <p>Accelerate efforts in reducing noncommunicable disease</p> <p>The relatively elevated mortality rate due to COVID-19 registered in Mauritius compared to the neighbouring Indian Ocean Islands has highlighted the burden of noncommunicable diseases and accelerated efforts are needed to reduce noncommunicable diseases in particular cardiovascular diseases and related conditions such as hypertension.</p>

Pillar 8: Operational support and logistics

a. For immediate implementation:

- Pre-stock medical materials for the response.
- Conduct a mapping of regional suppliers of essential medical materials.

b. For mid to long term to improve response to next waves of COVID-19 outbreak:

- Advocate for an accelerated implementation of the pooled procurement initiative for essential medicines among the small island developing state in the African region.
- Invest in local production of medical materials.
- Explore the possibilities of pre-positioning of medical materials.

Pillar 9: Maintaining essential health services and systems

a. For immediate implementation:

Develop an operation plan for the continuity of health services

A comprehensive operation plan for the continuity of health services during an outbreak including a mapping and prioritising of all health services and a plan for their restoration should be developed. Coordination mechanisms for finance and communication should be considered together with devising corresponding protocols and SOPs.

Evaluate the impact of lockdown on health for better response

A rapid assessment of the impact of the national lockdown and reduced public health services on health seeking behaviour across all diseases and life course states should be conducted to inform efficient post lockdown responses such as catch-up campaigns, introduction of new services or adaptation of existing services.

b. For mid to long term to improve response to next waves of COVID-19 outbreak:

Implement a phased reduction of health services during outbreak

Considering a phased reduction of services would allow for a more balance decision making after considering the prevalence and transmission rate of COVID-19, the burden of diseases among the population and changing contexts and needs. Phased reduction of services can be subsequently implemented based on the prioritisation of health services.

Elaborate of a strategy for the optimisation of workforce during outbreak

Elaborating a strategy to optimise a workforce capacity is key to be able to maintain essential health services during COVID-19 outbreak. A rapid assessment of the availability, capacity and distribution of the health workforce would help to guide scaling-up strategies and/or re-distribution strategies such as re-assignment and task sharing coupled with rapid training mechanisms.

Set-up of alternative strategies for service delivery in the public health sector

Alternative strategies for public health service delivery should be explored to ensure the continuity of essential health services such as the use of digital platforms for teleconsultation services or outreach mechanism to ensure delivery of health services.

a. For immediate implementation:

Update the social registrar

As an aftermath of the lockdown and closing of borders, more households have found themselves in financial difficulties and might have reached the poverty line. It is important to update the social registrar to make sure that they have access to social protection services.

Find long-term solutions to mitigate financial hardships due the pandemic

The several socio-economic measures taken by the Government has provide a short-term relief to the private sector and individuals, however, long-term solutions need to looked into to ensure a more sustainable social protection.

b. For mid to long term to improve response to next waves of COVID-19 outbreak:

Further increase food safety during strict sanitary curfew

The strict sanitary curfew imposed in Mauritius as a measure of IPC infection had adverse effects on food security and social protection measures to ensure food security of vulnerable households during sanitary curfews need to be increased.

Increase resilience of Mauritian economy

The COVID-19 pandemic has highlighted the weakness of the Mauritian economy and there is a need to increase the resilience of the currently fragile economy. Further diversification of the economy and reconversion of skills are to be considered.

Increase investment in food self-sufficiency of Mauritius

The government needs to scale up the investment in the local production of essential food products to increase the country's self-sufficiency.

Accelerate efforts in the digitalisation of government services

In order for government services to continue to function optimally in adverse situations, there is a need to accelerate the efforts in implementing the Digital Government Transformation Strategy 2018 – 2022⁸¹ and the Digital Mauritius 2030 Strategic Plan.

⁸¹ <https://cib.govmu.org/Pages/DGTS.aspx>

6. Next steps

The conduction of this AAR for the COVID-19 outbreak was endorsed by the High-Level Committee on COVID-19 chaired by the Prime Minister which facilitate the implementation of the recommended actions. The best practices and recommended actions will inform the development of MoHW's response plan in preparation for a second wave of COVID-19 across the 9 strategic pillars of the response.

7. Conclusions

Within less than two months, Mauritius moved from sporadic cases to clusters to local transmission to eventually reach the containment of COVID-19 with its whole-of-government and whole-of-society approach. The country had the combination of capacities, resources, strong political commitment and community engagement to halt the local transmission of COVID-19. Robust experience in surveillance and contact tracing and the systematic quarantining of repatriated Mauritians as well as the massive scaling-up of testing were vital to this success. The relatively low prevalence of COVID-19 in the country has reduced the burden of case management from the public health system which does not necessarily have the capacity to manage a high prevalence. Using its strong diplomatic ties and rallying all concerned stakeholders, Mauritius has mitigated the threat of disrupted supply chains for medical products. Reduced health services during the outbreak have resulted in a backlog of elective care, increase post-lockdown hospital attendance and risks of rising incidents rates of HIV and Hepatitis C. Hence, the need to work towards a contingency plan for the continuity of essential health services in case of a second wave. With a comprehensive understanding of the impact of the pandemic on livelihoods and vulnerable populations, the government had promptly implemented several socio-economic measures to reduce financial hardship and ensure food security. More sustainable solutions are now needed to ensure the socio-economic recovery of the country. In the wake of the phased reopening of borders, the country should capitalise on its lessons learnt to bolster its success in containing COVID-19.

Annex 1: List of key informants

List of interviewees for one-to-one semi-structured interviews

The Hon Maneesh Gobin	Attorney General, Minister of Agro-Industry
The Hon Yogida Sawmynaden	Minister of Commerce and Consumer Protection
Mr Ken Arian	Senior Advisor to Prime Minister
Dr Zouberr Joomaye	Senior Advisor to Prime Minister
Dr Catherine Gaud	Senior Advisor to Prime Minister
Dr Vasant Rao Gujadhur	Director Health Services, MoHW
Dr Bhusan Ori	Director Health Services, MoHW
Dr Shyam Manraj	Director Health Laboratory Services, MoHW
Dr Suddhir Kowlessur	Noncommunicable, Health Promotion and Research Coordinator; MoHW
Mrs Christine Umutoni	UN Resident Coordinator for Mauritius and Seychelles
Ms. Amanda Serumaga	UNDP Resident Representative
Dr Laurent Musango	WHO Representative
Dr Deepak Singh	Medical Director, Welkin Hospital
Mr Yousouf Ismael	Secretary General, Mauritius Chamber of Commerce and Industry
Mr Nicolas Ritter	Director of Prévention Information et Lutte contre le SIDA

List of other key informants

Dr Ismat Nawoor	Regional Health Director, MoHW
Dr Issany Khodabux	Community Physician, MoHW
Mr Jean-François Cossigny	Adviser on Information Matters, Ministry of Commerce and Consumer Protection
Mr Shatyam Issur	Program Manager, CUT

Annex 2: Composition of the intersectoral and the management committee of the MoHW

Table 3: Respective composition of the intersectoral and the management committee of the MoHW

Inter-sectoral committee	Management committee
<ul style="list-style-type: none"> • Hon. Minister of Health & Wellness-Chairperson • Senior Chief Executive • Permanent Secretary • Director General Health Services • Five Director Health Services • Five Regional Health Director • Rodrigues Health Director • Chief Hospital Administrator • Director of Pharmaceutical Services • Director of Nursing • Director of Public Health and Food Safety • Deputy Permanent Secretary, Public Health • Assistant Permanent Secretary, Public Health • Manager, Financial Operations (Finance) • Consultant Pathology/Virology • Regional Public Health Superintendent, CDCU • Five Regional Public Health Superintendent • Statistician CDCU • Manager Operating Services • Chief Health Information Education Communication Officer • Director Environmental Health Engineering Unit • Commissioner of Mauritius Police Force • Director of Civil Aviation (Department Under the aegis of the Prime Minister's Office External Communication Division) • Director General of Mauritius Port Authority • President of Private Clinics' Association • Chief Executive Officer, Airports of Mauritius Ltd • Director of Airport Terminal Operations Ltd • Director of Mauritius Tourism Authority • Principal Public Health and Food Safety Inspector of Airport • Principal Public Health and Food Safety Inspector of Port • Manager of Financial Operations • Director of SAMU • Commanding Officer of Special Mobile Force • World Health Organization, Country Representative 	<ul style="list-style-type: none"> • Director Health Services of Public Health • Director of Pharmaceutical Services • Director of Public Health and Food Safety • Director of Nursing • Regional Public health superintendent, CDCU • Chief HIEC Officer • Deputy Permanent Secretary, Public Health • Assistant Permanent Secretary, Public Health • Manager of Financial Operations (Finance) • Community Physicians, CDCU • Epidemiologist, CDCU • Statistician, CDCU