


Navigating the health system in responding to health workforce challenges of the COVID-19 pandemic: the case of Maldives (short case)

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Abstract

Being a small island and low-middle income country (LMIC) heavily dependent on global markets for sustaining its basic needs and health system, Maldives faced specific challenges during the COVID-19 pandemic. This was reinforced through tensions between the heavily centralized healthcare delivery and a partially decentralized public health system. Using the pillars of pandemic response proposed by the World Health Organisation, this article explores the planning assumptions, resource estimations and strategies adopted to equip the health system with resources for the pandemic response. The resource need estimates based on projections for COVID-19 identified a shortfall of medical professionals to care for patients while maintaining 55% of the workforce for regular healthcare across the atolls. The findings show that while the policy of lockdown bought time to increase hospital beds and devices, the country was unable to increase the healthcare workforce. Furthermore, as the lockdown eased, the exponential increase of cases took Maldives to the global one per capita incidence. Despite this, with cautious planning and use of resources, the country has so far managed to maintain low mortality from COVID-19. The lessons from this experience are paramount in future pandemic response planning, not only for Maldives, but other small island LMICs.

KEYWORDS

COVID-19, health workforce, LMIC, Maldives, pandemic response

1 | INTRODUCTION

Maldives not only face the challenges of a low-middle income country (LMIC), but are more vulnerable, given the smallness in terms of geography and population, the narrow revenue base highly reliant on tourism and external markets for its sustenance.¹ Similar to other LMICs, the growing industries are coupled with influx of a large number of foreign migrant population adding to the existing inequalities. Furthermore, the country has moved rapidly towards a modern democracy and its associated social tensions. The COVID-19 pandemic exposed the economic and social vulnerabilities taking the country to the tipping point.

The resident population of Maldives is estimated to be 557,426 people in 2020.² Malé, the capital city accounts for 38% of the population with the remaining 62% scattered over 20 Atolls, with an average island population of 1837. In the atolls only three islands have a population over 5000. The health care system is centralised with some decentralisation across the Atolls of the archipelago. Similar to the health systems in other LMICs, challenges relating to the sufficiency of trained and motivated health care workers, the availability of commodities and decision-making processes remain.³

The declaration of a global public health emergency was a significant blow given that the country is heavily reliant on global markets for all resources needed for the health system ranging from medicines, equipment and even human resources. Professional trainings in nursing and paramedical sciences have been established in the country; however, medical education only commenced one year ago. As such, there is a lack of local doctors and the health system is relying on expatriates, comprising 72% of the health workforce (66% doctors and 44% nurses).⁴ Further challenges for health workforce planning to respond to the pandemic are caused by the limited decentralisation of the public health system.

Based on the pillars of the pandemic response proposed by the World Health Organisation,⁵ this article explores the planning assumptions, resource estimations and strategies adopted to equip the health system with resources, particularly, human resources, to respond to the pandemic.

2 | METHODS

The planning for the pandemic response can be described as an agile process, categorised into three phases (Figure 1 and Figure 2). Mathematical modelling was used to forecast the spread of COVID-19 in Maldives,⁶ and nowcasted as the pandemic spread particularly in the extremely densely populated Malé area.⁷ The WHO surge planning support tool made available for the country at its development stage was used to estimate the number of hospital beds required and the detailed human resources for medical care.⁸

3 | RESULTS

3.1 | Phase one: anticipation

First, the focus of planning was on the emergence phase of the pandemic in anticipation and early detection of COVID-19 in the country. This decision was largely driven by the economic implications of the pandemic. The public health risk assessment conducted by the Health Protection Agency (HPA) established Maldives as 'high risk'⁹;

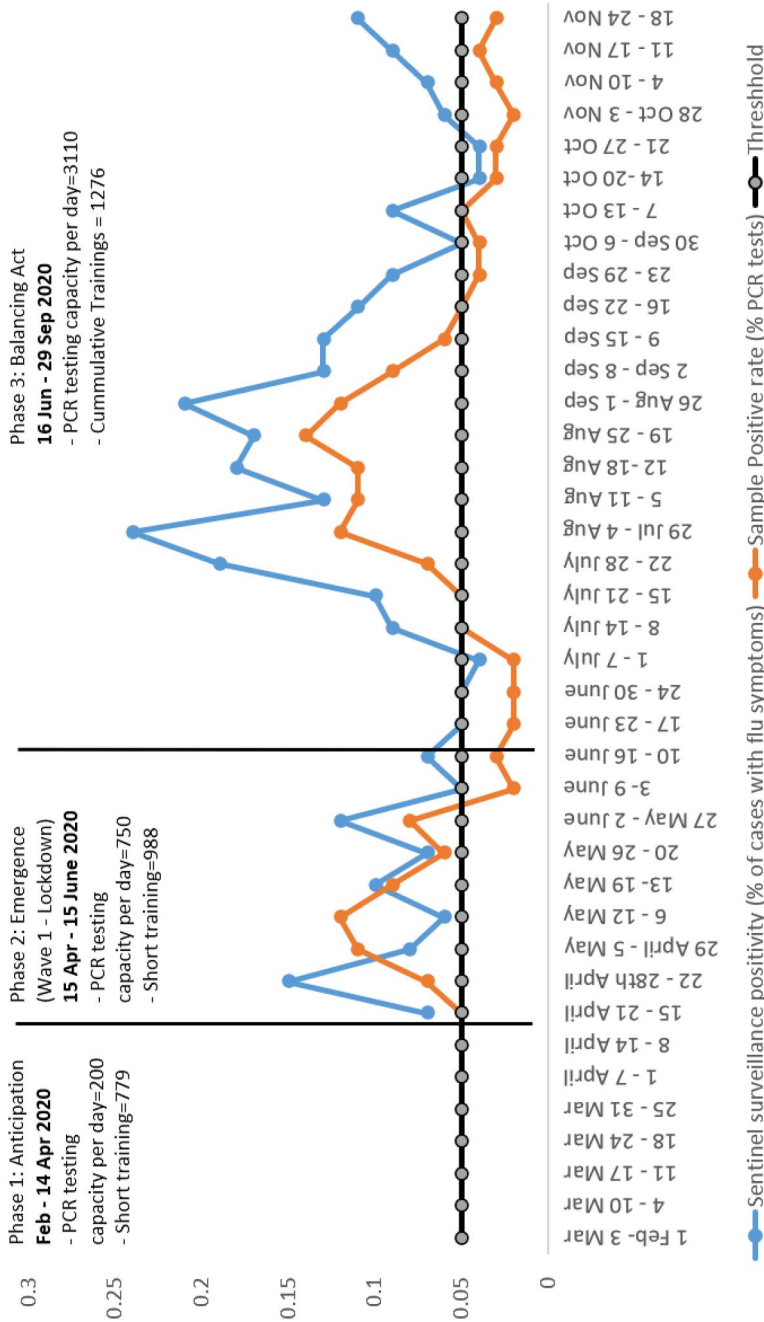


FIGURE 1 PCR testing and development/training of human resources in three-phases of COVID-19 pandemic in Maldives. Author compilation from data released for the case study from Health Protection Agency, Maldives. PCR, polymerase chain reaction

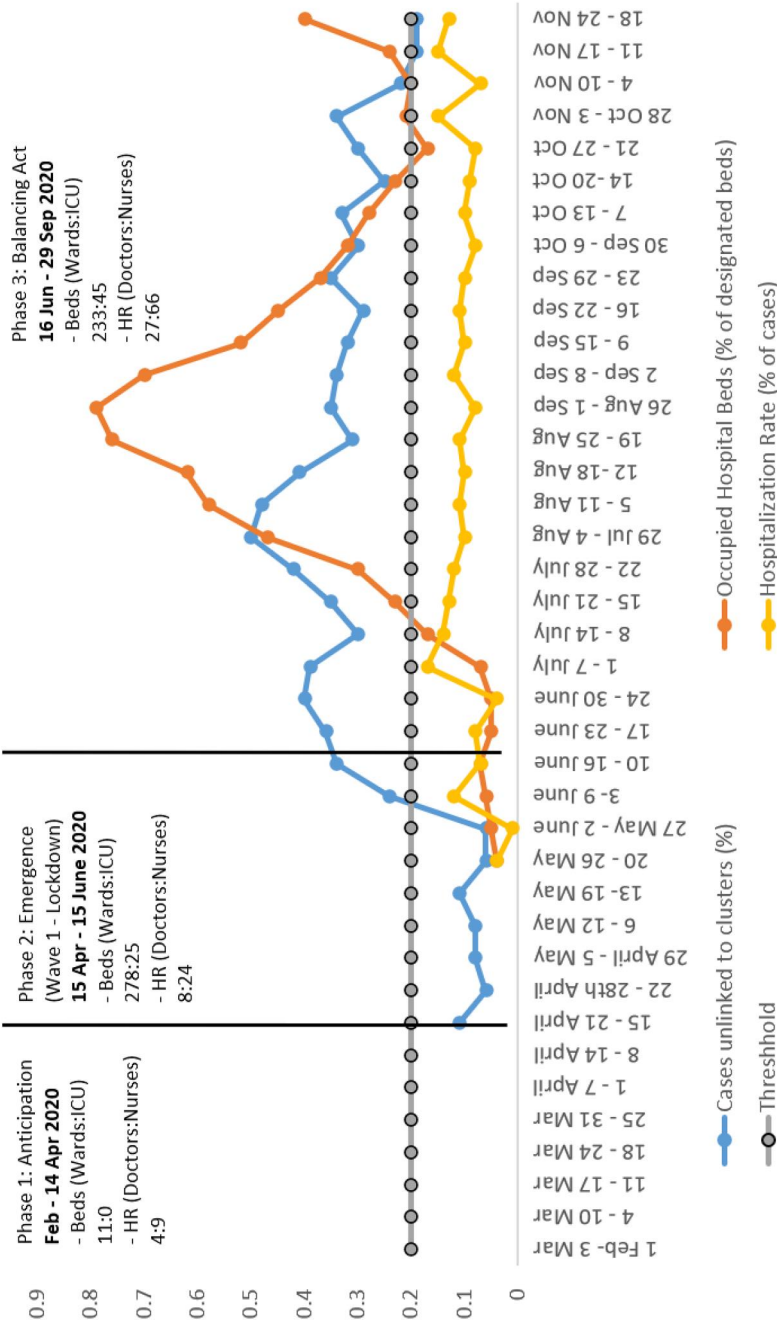


FIGURE 2 Increase in bed numbers and doctor-nurse ratios in three phases of pandemic in Maldives. Author compilation from data released for the case study from Health Protection Agency, Maldives

technical planning was initiated at the Ministry of Health and the Health Emergency Operation Centre was established in January 2020. The threats to the Maldivian economy were very high given that tourism accounts for 66% of the country's gross domestic product.¹ Since the health services in most parts of the country are limited, there was little confidence in the health system to be able to provide appropriate medical care to tourists who may get infected. Considering these factors and the threats, prior to the emergence of the epidemic in the country, a multi-sectoral National Emergency Operations Centre (NEOC) was activated on 1 March 2020.¹⁰ The country reported its first case of COVID-19 from a tourist resort on 7 March,¹¹ and soon after, Maldives declared a Public Health Emergency on 12 March, in tandem with the declaration of the pandemic by the WHO.

The response strategies adopted at this early stage were to conduct screening at ports of entry, risk communication and flu surveillance at tourist establishments by training in-house doctors and healthcare providers in adjacent islands, and preparing for testing, quarantine, and isolation of suspected cases. At the heart of rolling out these strategies were estimating the epidemic growth and the resource requirements followed by sourcing resources, particularly human resources for health. While sourcing material and medical equipment was proving challenging given the global demand, sourcing healthcare workers was not feasible. Furthermore, given the panic across the world in the early months of 2020, several expatriate medical personnel were leaving for their home country.

In view of this, two critical policy decisions were made: (1) to facilitate the return of Maldivian students studying in other countries, particularly medical students who received the necessary short-term training to work under the guidance of a licensed health care worker; and (2) to downsize normal health care services to allow the release of existing healthcare workers to the COVID-19 response. Demand for an additional 1911 health care workers (618 doctors and 1293 nurses) dedicated for COVID-19 care was identified. Even with downsizing the healthcare services to 55% of the regular capacity, a shortfall of 368 medical professionals and 608 nurses was estimated.

3.2 | Phase two: emergence

The detection of a local case of COVID-19 on 15 April 2020 redirected the planning to the second stage, where the focus was to increase operation capacity, particularly to test, trace, quarantine, isolate, treat and support essential services and relief. The decision to lockdown was largely driven by the fact, that the required response capacity for what was estimated in the epidemic modelling was not built and a need to buy time to for system readiness.¹² Despite the lockdown, Maldives experienced its first wave of COVID-19 in Malé city, largely affecting the foreign migrant population. This stage required a focus on the human resources, not only the professional health workforce, but also volunteers for logistics and isolation of the cases in the first wave. Other sectors facilitated essential services and the provision of relief for the vulnerable groups that required social support and assistance.¹³ Students in the paraclinical health care fields and volunteers were mobilised into rapid response teams, case investigation, contract tracing and psycho-social support.

A large effort was put into developing the information management system and measures for infection prevention and control (IPC). Short-term IPC training in the areas of health response and in the provision of essential services, particularly waste management, as well as burial process were conducted. At this stage, 988 healthcare workers were given short intensive training with 568 workers directly involved in the response, while a similar number of people were indirectly involved in supporting the build-up of temporary isolation facilities and providing social services and relief. With the lockdown, cases gradually decreased, and the response capacity increased in terms of facilities, equipment, and training of responders in case investigation, surveillance and IPC and case management across the country. By the end of May, 2092 quarantine beds, 962 isolation beds, 353 hospital beds and 60 ICU beds were established, and the testing capacity increased to 750 tests per day.

3.3 | Phase three: balancing act

The third stage was driven by the economic hardship, social tensions and psychological stress created by the restrictions of mobility. The country planned for ease in phases, the evidential basis of which was comprised of certain epidemiological and health system indicators.¹⁴ Yet, travel quarantine was strictly enforced for domestic travel from the Male' area to other islands and from abroad. However, economic difficulties forced the ease of restrictions that resulted in an ease of containment measures much earlier than planned, increasing the risk of a second wave of the pandemic. Maldives started observing an increase in cases within three weeks of the full ease of lock down and Malé city experienced its second wave of the pandemic during August-September 2020. The planning assumptions at this stage were based on epidemic modelling estimates and evidence from the epidemiological and health system indicators, targeted at maintaining a balance of societal functioning at a level the health system could respond to. Weekly monitoring of the indicators was used to track and adjust public health interventions to enable an efficient health response without overloading the health system.¹⁵

4 | DISCUSSION

The core issue lies in the health system and the narrow economic base of the country. Maldives lost critical time in preparing the health system for infectious disease management, as the hospitals were not designed for an infectious disease pathway, and the facilities in the Atolls lacked equipment and tools to provide critical care. As such, new facilities had to be established for the COVID-19 case management, but the utility and sustainability of this model is questionable given the shortage of human resources for the provision of healthcare in general. With the lockdown of Male' area, the referrals to specialist care for other health conditions were compromised and had to be diverted to regional hospitals which had much lower resources and expertise.

There is a need to rethink the preparedness of the health system for pandemic response in a way that integrates a contingency for the Atolls in scaling services and resources. Particularly, emphasis needs to be placed on increasing the number of local doctors, public health workers and paraclinical healthcare workers equipped with necessary skills and motivation to serve the Atoll population. Further, it is important that health services have a dual-tract pathway that enable adjusting services along with contingency referral capacity away from the cities. Small island countries have a unique geographic advantage in the face of pandemics, which, in normal circumstances, is a hindrance to the access to services. Despite the epidemic escalation in Malé city, Maldives managed to contain the spread of the pandemic to the Atolls with strict enforcement of travel quarantine of 14 days and testing.

The high reliance on tourism and the dense population of Malé city continues to threaten the containment of the pandemic. Finding the right balance between societal functioning and pandemic control requires reliance on real-time evidence of disease progression, which in turn depends on the health system's capacity for early detection and surveillance information systems. The investments in laboratory and the testing strategy with emphasis on sentinel and community-based surveillance, and that of contacts at release from quarantine provided the opportunity for early detection of the disease and respond accordingly. The development of the real-time information system is one of the tools that enabled analysis and evidence-based decision making, proving to be a key element in the successful management of the pandemic without a lockdown in the second wave. This also allowed to maintain the focus of interventions and reach to neglected populations such as foreign migrant workers. While the pandemic escalated, and even reached global number one per capita, it was the calculated and cautious information-driven decisions that enabled the management of the cases, within the available health workforce in the country, without a second lockdown.

5 | CONCLUSION

The preparedness and response of the health system in Maldives focused on contextual enablers and constraints proposed by Top and colleagues³ by drawing on the organizational characteristics of health services, increasing health care worker preparedness with short term training and supervision, peer support mechanism, facilitation of logistics, and community preparedness and policy support to implement localised operational procedures. The case of Maldives shows that lockdown is not always an option for LMICs to contain the pandemic, and highlights that countries need to invest in early detection and timely analysis of the information for evidence-based decisions for balancing societal functioning and health system capacity.

Two major policy recommendations can be drawn from this case study. Firstly, small LMICs should pay greater attention to health workforce capabilities in planning a pandemic response. Secondly, the health workforce debate needs a global approach to understand the diverse contexts and the specific needs of small LMICs for health workforce policy and management.

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CONFLICT OF INTEREST STATEMENT

SKU (Assistant Director at the Ministry of Health, Maldives), ASA (Deputy Director General at the Ministry of Health, Maldives) and SM (Consultant at the Maldives National University) declares no financial or non-financial conflict of interest.

ETHICS STATEMENT

The manuscript is the original work of the authors and reflects the analysis in a truthful and complete manner. All authors have contributed substantially to the manuscript and take full responsibility for its content. The material has not been previously published elsewhere and all sources are disclosed and referenced.

DATA AVAILABILITY STATEMENT

Data available on request from the authors.

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