

Country Case Study: Malaysia

Knowledge Generation and Exchange Related to Preparedness and Response to the COVID-19 Outbreak

by Shalini Selvarajah, Awatef Amer Nordin,
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On the cover: A dragon sculpture on a Chinese temple rooftop in Kuala Lumpur, Malaysia.

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ABBREVIATIONS

ABBREVIATION	FORMAL TITLE
APSED	Asia Pacific Strategy for Emerging Diseases and Public Health Emergencies
ATM	Angkatan Tentera Malaysia (Malaysian Armed Forces)
CAC	COVID-19 Assessment Centre
CITF	COVID-19 Immunisation Special Task Force
CMCO	Conditional Movement Control Order
COVAX	COVID-19 Vaccines Global Access
COVID-19	Coronavirus disease 2019
CPRC	Crisis Preparedness and Response Centre
DOCE	Disaster, Outbreak, Crisis, and Emergencies
DPT	Diphtheria-Pertussis-Tetanus
DRRP	District Risk Reduction Programs
EBS	Event-Based Surveillance
EIS	Events Information Site
EMCO	Enhanced Movement Control Order
EPF	Employees Provident Fund
GAVI	The Vaccine Alliance
GDP	Gross domestic product
GKV STF	Greater Klang Valley Special Task Force
GLOW	Global Online Workforce
HADR	Humanitarian Assistance and Disaster Relief
HAT	Health Assessment Tool
Hib	Hemophilus influenzae
HPV	Human papillomavirus
HSO	Home Surveillance Order
ICT	Information and communications technology
ICU	Intensive care unit
IEC	Information, education, and communication
IHBR	Institute for Health Behavioural Research
IHR	International Health Regulations
IHSR	Institute for Health Systems Research

ABBREVIATIONS

ABBREVIATION	FORMAL TITLE
ILI	Influenza-like illness
IMF	International Monetary Fund
IPC	Infection prevention and control
JAKOA	Jabatan Kemajuan Orang Asli (Department of Indigenous Development)
KLIA	Kuala Lumpur International Airport
MAEPS	Malaysia Agro Exposition Park Serdang
MAMPU	Malaysian Administrative Modernisation and Management Planning Unit
MCO	Movement Control Order
MERS-CoV	Middle East Respiratory Syndrome Coronavirus
MHPSS	Mental Health and Psychosocial Support Services
MOH	Ministry of Health
RM (or MYR)	Malaysian ringgit
SARI	Severe acute respiratory infection
MITI	Ministry of International Trade and Industry
MySED	Malaysia Strategy for Emerging Diseases and Public Health Emergencies
NADMA	National Disaster Management Agency
NGO	Nongovernmental organization
NPI	Nonpharmacological intervention
NSC	National Security Council
OOP	Out-of-pocket
PCR	Polymerase chain reaction
PICK	Program Imunisasi COVID-19 Kebangsaan (National COVID-19 Immunisation Programme)
PIKAS	Program Imunisasi Industri Covid-19 Kerjasama Awam-Swasta (Public-Private Partnership COVID-19 Industry Immunisation Programme)
PKRC	Pusat Kuarantin dan Rawatan COVID-19 (COVID-19 Quarantine and Low-Risk Treatment Centre)
POE	Point of entry
PPE	Personal protective equipment
PPP	Public-private partnership
PPV	Pusat Pemberian Vaksin (Vaccine Administration Centre)
ProtectHealth	ProtectHealth Corporation Sendirian Berhad

ABBREVIATION	FORMAL TITLE
PUI	Persons under investigation
RMCO	Recovery Movement Control Order
SARS	Severe Acute Respiratory Syndrome
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus 2
SMS	Short messaging system
SOP	Standard operating procedures
TEH	Total expenditure on health
UHC	Universal Health Coverage
UKM	Universiti Kebangsaan Malaysia
UNICEF	United Nations Children's Fund
USD	United States dollar
VHA	Virtual Health Advisory
WEO	World Economic Outlook
WHO	World Health Organization

Kuala Lumpur, Malaysia city skyline



EXECUTIVE SUMMARY

Malaysia has experienced four coronavirus disease 2019 (COVID-19) waves since the start of the pandemic in early 2020 and has recorded a total of 4,566,055 confirmed cases as of June 30, 2022, with a case fatality rate of 0.78 percent. Malaysia, like other countries, initially relied on the utility and effectiveness of nonpharmacological interventions (NPIs) such as physical distancing, mask-wearing, and the enforcement of movement control orders to control transmission. Once COVID-19 vaccines became available and the first supplies arrived in February 2021, the country rapidly implemented the National COVID-19 Immunisation Program. As of June 30, 2022, approximately 71.4 million doses have been administered throughout the country. The existence of the Prevention and Control of Infectious Disease Act 1988 (Act 342), as well as the implementation of the Emergency (Essential Powers) Ordinance 2021 (P.U.(A) 12/2021) enabled actions to be taken decisively by the government to safeguard public safety. In the health care system, strategies that were less developed prior to the pandemic saw rapid uptake and implementation, such as public-

private partnerships, telemedicine, online medical appointment platforms, virtual medical consultations, and harnessing of information and communications technology (ICT) for population risk assessments. The strengthening of public-private partnerships during this pandemic improved the country's capabilities to respond adequately and quickly to situational needs. For example, collaborations with and extensive involvement of the private health care sector helped accelerate the accessibility of these strategies to the population and contribute to the success of the country's National COVID-19 Immunisation Programme. This enabled key milestones to be achieved ahead of schedule, including providing boosters to the high-risk population. MySejahtera, a mobile application developed by the government of Malaysia, has been widely accepted. This has enhanced community education and empowerment, real-time COVID-19 risk assessment, and community and business safety using check-in and check-out features that have also helped public health authorities in rapid cluster investigation and contact tracing throughout the pandemic.

BACKGROUND OF THE REPORT

The objective of this report is to provide a concise summary of the preparedness and response activities of Malaysia, in relation to the COVID-19 pandemic, with a cut-off date of June 30, 2022. The report is presented in several sections, beginning with the

epidemiology of COVID-19 in Malaysia. Next, features on preparedness for disasters (including disease outbreaks) are presented, followed by responses to various aspects of containing the pandemic and moving toward national recovery.



Painted Arches 3, George Town, Penang, Malaysia

1. INTRODUCTION

Epidemiology of COVID-19 in Malaysia

Malaysia recorded its first confirmed case of COVID-19 on January 25, 2020, approximately two weeks after the first confirmed case outside of China was reported in Thailand (Chinnayah 2022). Malaysia has since named three waves, Wave 1 (January 25, 2020 to February 26, 2020), Wave 2 (February 27, 2020 to September 19, 2020), and Wave 3 (September 20, 2020 to December 31, 2021); a Delta-peak with a maximum of 24,599 cases a day was recorded between August and September 2021, and an Omicron peak with a maximum of 33,406 cases a day was recorded between February and March 2022 (Chinnayah 2022). As of June 30, 2022, Malaysia has recorded 4,566,055 confirmed cases and 35,765 deaths, resulting in an overall case fatality rate of 0.78 percent.¹¹

Malaysia experienced its first wave of COVID-19 transmission in mid-January 2020, during which 22 cases were confirmed, with two of the cases being local transmissions (Ghazali, Singh, and Zulkifli 2022). By this time, thermal scanners had already been placed at major international points of entry (POE) to Malaysia either via air, land, or sea, in response to prior international warnings. In the first wave, four cases were detected through POE screening, while

the remaining were detected by contact tracing or passive screening.²² Despite its usefulness, screening at POE also presents several limitations, such as with asymptomatic cases or infected persons in the incubation period of the disease. Two cases during the first wave remained asymptomatic throughout and were only detected due to the requirement of screening of persons-under-investigation (PUI) upon their arrival in Malaysia (Ghazali, Singh, and Zulkifli 2022). The first wave of cases also demonstrated the importance of early isolation, particularly of symptomatic individuals, and contact tracing. Nevertheless, this is also in view of the small number of cases in this initial wave of the outbreak in Malaysia, where a total of 343 close contacts were screened.

As the first few cases were detected on Malaysian soil, the placement of thermal scanners and health screening protocols was subsequently expanded to include other POE throughout the country. At this time, the public was also given advice on postponing travel plans, especially to areas that had been noted to report outbreaks, such as China, the Republic of Korea, Japan, Italy, and the Islamic Republic of Iran (MOH 2020a). These measures were initially helpful in containing the spread, but on February 27, 2020, a religious mass gathering involving over 16,000 attendees, of whom approximately 1,500 attendees

11 Ministry of Health Malaysia, cases_malaysia.csv (website, accessed December 13, 2022), https://github.com/MoH-Malaysia/covid19-public/blob/main/epidemic/cases_malaysia.csv

22 Ministry of Health Malaysia, KKM Malaysia on Twitter: “2 kluster ditamatkan hari ini menjadikan jumlah kluster ditamatkan meningkat kepada 227. Kluster Benteng LD merupakan kluster yang dikesan sebelum gelombang ketiga berlaku dan ia merupakan kluster terbesar di Sabah,” <https://t.co/2kh1oPEis4>, Twitter (accessed November 1, 2022), <https://twitter.com/KKMPutrajaya/status/1338450289897078786>

INTRODUCTION

were foreigners, sparked the beginning of a second wave (Institute for Health Systems Research 2020). The mass gathering triggered Malaysia's largest cluster-linked local transmission, resulting in 3,375 confirmed cases, with the first reported on March 11, 2020, and included 34 deaths before being declared ended on July 8, 2020 (MOH 2020b). This period marked the first time Malaysia recorded over 100 confirmed cases per day, as recorded beginning in mid-March 2020.³ The surge prompted the federal government to institute a nationwide Movement Control Order (MCO) on March 18, 2020, to minimize public movement and to contain transmission (MOH 2020c). The MCO was implemented in full, restricting international, between-state, and within-state travel except for essential services that must be carried out. Government agencies, private businesses, and educational institutions immediately ceased on-site functioning and transitioned to the remote form of working. Although the initial MCO was announced for a period of two weeks (March 18 to March 31, 2020), it was subsequently extended over several phases to flatten the curve in view of the high number of cases in the second wave (Institute for Health Systems Research 2020, 2022). Additionally, an enhanced MCO (EMCO) was implemented at times in specific locations facing the brunt of the outbreak and was eventually relaxed when the number of active cases per day began to decrease, offering signs of relief to the health care system. Recovery MCO (RMCO) commenced beginning June 10, 2020, where with the easing of restrictions, efforts to contain the spread of COVID-19 placed more emphasis on community solidarity and preventive measures (MOH 2020d). July 1, 2020, marked the lowest number of cases recorded since the second wave began, with zero locally transmitted cases (MOH 2020e).

However, two subsequent cluster-linked outbreaks in September 2020 precipitated the onset of a third wave. The Benteng cluster (September 1, 2020) in the state of Sabah followed the detainment of illegal immigrants in Lahad Datu and subsequently spread to Tawau prison (Institute for Health Systems Research 2021a). The Benteng cluster lasted for approximately four months, with a total of 1,146 cases, and ended on December 14, 2020.³ Another cluster-linked outbreak associated with the third wave resulted from local elections in the state of Sabah, which caused inevitable population movement in response to mass gatherings from political campaigning (Institute for Health Systems Research 2021b). At the time, a

death with COVID-19 was reported, involving the Alor Setar prison in Kedah, a state in Peninsular Malaysia (September 30, 2020); close contacts of this index case were subsequently found to be positive, leading to subsequent testing among inmates and other prison staff—which marked the onset of a second, active cluster in the country associated with the third wave (Institute for Health Systems Research 2022, 2021b). The number of cases in this cluster increased rapidly; for instance, on October 5, 2020, 224 new cases were reported, and, consequently, a targeted EMCO was implemented on October 6, 2020 (Institute for Health Systems Research 2021b).

The third wave persisted, lasting more than one year, with a Delta peak and an Omicron peak recording a high number of cases. This wave also saw the waning of restrictions, loose adherence to standard operating procedures (SOPs), and the emergence of new variants (Institute for Health Systems Research 2021b). Consequently, the third wave presented many challenges, despite careful balancing of efforts between known nonpharmacological interventions (mask-wearing, distancing, movement control, business closures with phased reopening) and the rollout of the National COVID-19 Immunisation Programme in February 2021 after vaccines became available. The third wave was complicated by the emergence of the Delta variant, which not only demonstrated greater virus transmissibility but was also associated with markedly increased disease severity (MOH 2021a). Following the implementation of PICK (Program Imunisasi COVID-19 Kebangsaan—National COVID-19 Immunisation Programme), and with the health system's ability to manage the burden of cases, Malaysia entered the transition phase to endemicity on April 1, 2022 (MOH 2022a).

By this time, the government intended to encourage solidarity among its citizens, urging a consistent, community-driven desire and willingness to self-regulate through known measures used for regulation by the government, in order to reduce case transmission; and by enhancing booster vaccination uptake and testing plus triage services within COVID-19 Assessment Centres (CACs) throughout the country. The community was encouraged to self-manage mild COVID-19 symptoms, to minimize the burden on the health system. The transition phase to endemicity was initiated then, allowing international travel with less restriction and the reopening of

3 Ministry of Health Malaysia, cases_malaysia.csv (website, accessed December 13, 2022), https://github.com/MoH-Malaysia/covid19-public/blob/main/epidemic/cases_malaysia.csv

most businesses and schools.⁴ However, not long after this, a large rise in cases was seen, leading to the peak of Omicron, the variant that was already severely impacting many other countries and that began to affect Malaysians, resulting in another surge of cases (WHO 2022). Although the Omicron peak was associated with a significant rise in the number of confirmed cases (Figure 1), it was not accompanied by as high a peak in death rates as was seen earlier

during the third wave (Anis and Carvalho 2022). This observation has been attributed to several factors, including the likelihood that the Omicron variant may contribute to less severe illness, but also to the full vaccination of a greater proportion of individuals. Malaysia’s experience with the undulating nature of COVID-19 surges and troughs is similar to that of other countries.

Figure 1a: Number of Daily COVID-19 Confirmed Cases

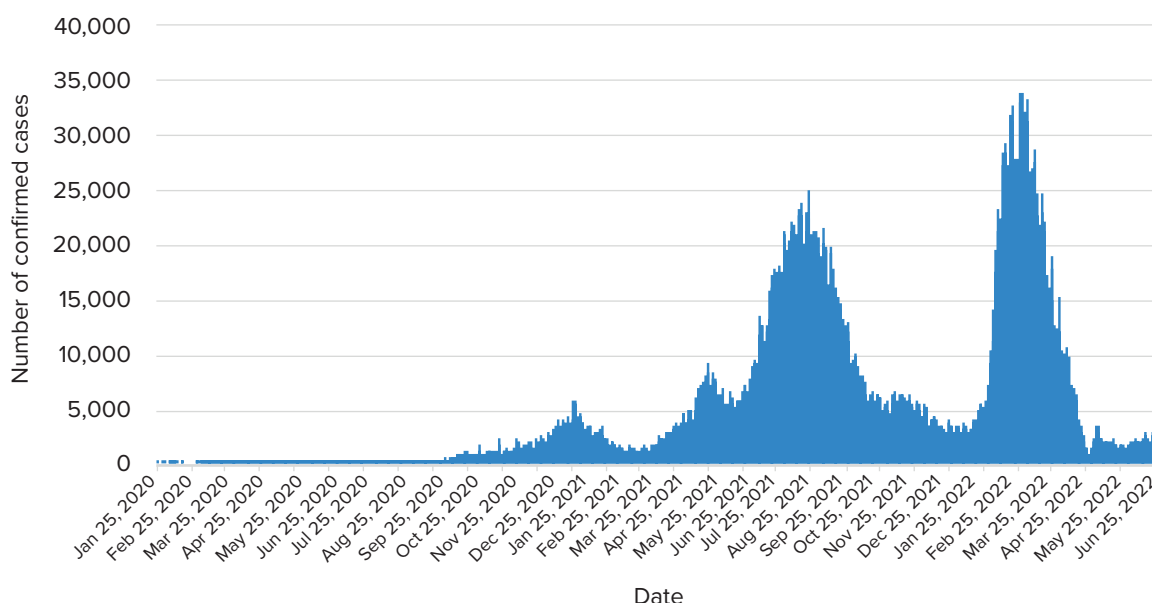
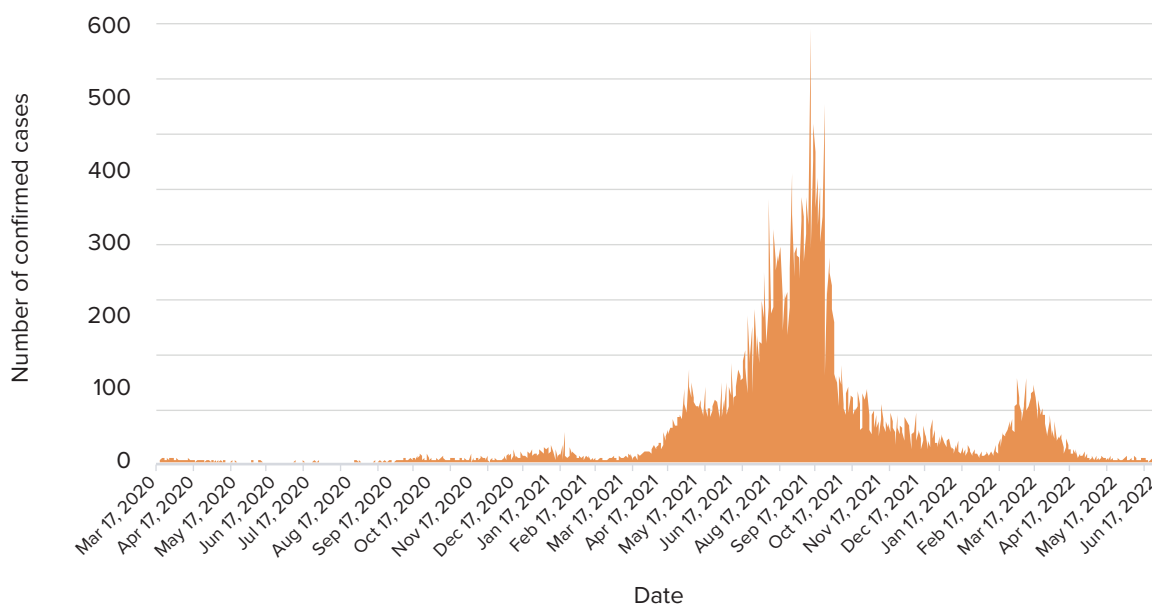


Figure 1b: Number of COVID-19 Deaths by Date of Death



Source: Ministry of Health Malaysia Github (<https://github.com/MoH-Malaysia/covid19-public>, accessed December 13, 2022)

4 Ministry of Health Malaysia, 2022, “Reopening Safely: Perkara Yang anda Perlu Ketahui Bermula 1 April 2022/COVID-19 Malaysia” (webpage, accessed November 1, 2022), <https://covid-19.moh.gov.my/reopeningsafely/semasa/2022/04/reopeningsafely-perkara-yang-anda-perlu-ketahui-bermula-1-april-2022>

Among key measures implemented were fiscal injections to ease cash constraints, including Bantuan Prihatin Nasional cash transfers; financial assistance such as loan moratoriums; and measures to encourage consumption and investment....

Socioeconomic Impact of COVID-19

Like many other countries, COVID-19 has affected Malaysia's economy at national, systemic, and individual levels (IMF 2021). Prior to the pandemic starting in January 2020, the country saw consistent increases in real gross domestic product (GDP) and per capita GDP since 2016, as reported by the International Monetary Fund (IMF) (*Table 1*) (IMF 2022). There was, however, a dip in the GDP observed in 2020, with the Malaysian economy contracting by 5.6 percent in 2020, causing the lowest GDP since 1998 (Bank Negara Malaysia 2020). This dip aligned with the onset of the pandemic and consequent economic slowdown due to trade closures caused by an MCO to help mitigate the spread of COVID-19. On closer look, adverse external effects coupled with stringent local measures at the peak of the COVID-19 pandemic resulted in broad-based weaknesses in exports, production, and domestic demand. The largest impact was felt in the second quarter of 2020, with GDP contracting by 17 percent (Bank Negara Malaysia 2020). The unemployment rate rose to 4.5 percent of the labor force in the year 2020, the highest in the past 30 years (*Table 1*).⁵ This possibly contributes to additional stressors for low-income and vulnerable groups of the population. Weak domestic economic activities led to a deterioration in labor market conditions and income losses, thereby impacting consumer spending. Furthermore, public health measures such as the closure of offices,

restaurants, hotels, schools, colleges, and educational institutions, as well as international borders; the imposition of complete international and domestic travel bans; and the ban on public gatherings led to a reduction in social society participation and threatened the livelihood of the population at the peak of the pandemic.

The monetary policy responses and economic stimulus measures announced by the government in the first half of 2020 provided additional support to economic growth. A series of stimulus packages amounting to 305 billion Malaysian ringgit (RM) (20 percent of GDP) was introduced to support the country's economy (Bank Negara Malaysia 2020). Among key measures implemented were fiscal injections to ease cash constraints, including Bantuan Prihatin Nasional cash transfers; financial assistance such as loan moratoriums; and measures to encourage consumption and investment such as withdrawals from the Employees Provident Fund (EPF) (Bank Negara Malaysia 2020). In October 2020, the Temporary Measures for Government Financing (COVID-19) Act 2020 was enacted to facilitate hardships faced by firms and individuals in fulfilling certain contractual obligations (Bank Negara Malaysia 2020). In addition, measures such as extension of wage subsidies were taken, aimed at preventing widespread business closures in the near and medium terms. Additional subsidies and stimulus packages in 2021, including loosening

5 Department of Statistics Malaysia, 2021, Key Statistics of Labour Force in Malaysia, June 2021 (Office Portal, accessed November 1, 2022). https://www.dosm.gov.my/v1/index.php?f=columnc/themeByCat&cat=124&bul_id=SkFRMTJ0d1RIR3BrdG1aUTBsUmw2Zz09&menu_id=Tm8zcnRjdVRNWWlpWjRlbnRlDk1UT09

of unemployment benefits eligibility criteria and provision of greater assistance to vulnerable populations, have all offered some degree of financial relief and encouraged citizens to continue to remain safe and comply with new norms while they engage in continued trading with local businesses.

Economic activity improved moderately in 2021, and, with continued policy support, domestic demand gradually improved (Ministry of Finance Malaysia 2022a, 2022b). The recovery was further supported by robust export performance amid favorable external

demand. The labor market also rebounded, as the unemployment rate fell from 4.9 percent in January 2021 to 4.5 percent in May 2021.⁶ In the second quarter of 2022, the unemployment rate was at 3.9 percent, as the country entered the endemic phase (Department of Statistics Malaysia 2022). According to current projections, this improvement is expected to persist until 2027. Additionally, as shown in Table 1, all other economic indicators, including unemployment rates, are projected to continue and consistently improve over time.

Table 1: Macroeconomic Indicators (Malaysia), 2016–2026

Economic indicators by year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Population size (millions)	31.6	32.0	32.4	32.5	32.9	33.4	33.8	34.2	34.6	35.0	35.4	35.4
Unemployment rate (%)	3.5	3.4	3.3	3.3	4.5	4.7	4.5	4.3	4.2	4.2	4.2	4.2
GDP, current prices (RM, billions)	1250	1372	1448	1513	1417	1544	1696	1834	1965	2108	2256	2407
GDP, current prices (USD, billions)	302	319	359	365	337	373	439	482	518	556	594	634
Per capita GDP (RM)	39505	42854	44708	46526	43475	47223	51207	54687	57898	61397	64986	68586
Per capita GDP (USD)	9544	9969	11086	11235	10351	11399	13268	14376	15257	16200	17122	18054

RM, Malaysian Ringgit; USD, United States dollar; GDP, Gross Domestic Product

Source: World Economic Outlook (WEO) Database, World Economic and Financial Surveys; International Monetary Fund (IMF); April 2022 (IMF 2022). Estimates for GDP are projected from 2022 onwards. Estimates for other economic indicators listed are projected from 2021 onwards. (<https://www.imf.org/en/Publications/WEO/weo-database/2022/April>)

6 Department of Statistics Malaysia, 2021, Key Statistics of Labour Force in Malaysia, June 2021 (Office Portal, accessed November 1, 2022). https://www.dosm.gov.my/v1/index.php?r=column/cthemebByCat&cat=124&bul_id=SkFRMTJ0d1RIR3BrdG1aUTBsUmw2Zz09&menu_id=Tm8zcnRjdVRNWWJpWjRlbtlaDk1UT09

Miri Waterfront, Sarawak, Malaysia



2. METHODOLOGY/APPROACH TO CASE STUDY

The objective of this report is to describe preparedness and response activities taken in Malaysia to address the COVID-19 pandemic, together with lessons learned. The time frame for included events goes from January 1, 2020, to June 30, 2022. The initial evaluation used the framework of the WHO Strategic Preparedness and Response Plan, referring to the 10 pillars encompassing best practices for preparedness and response to COVID-19 (WHO 2021a). These 10 pillars are:

- Pillar 1.** Coordination, planning, financing, and monitoring;
- Pillar 2.** Risk communication, community engagement, and infodemic management;
- Pillar 3.** Surveillance, epidemiological investigation, contact tracing, and adjustment of public health and social measures;
- Pillar 4.** Points of entry, international travel and transport, and mass gatherings;
- Pillar 5.** Laboratories and diagnostics;
- Pillar 6.** Infection prevention and control, and protection of the health workforce;
- Pillar 7.** Case management, clinical operations, and therapeutics;
- Pillar 8.** Operational support and logistics, and supply chains;
- Pillar 9.** Maintaining essential health services and systems; and
- Pillar 10.** (Pillar 10) Vaccination.

Methods of Data Acquisition

Sources of data were grey literature, with a particular focus on publicly available portals of various Malaysian government agencies, not limited to the Ministry of Health (MOH). Further, at the time of the development of this case report, the Institute for Health Systems Research (IHSR), at the National Institutes of Health (NIH), MOH, had published several books and reports on health systems preparedness and response to COVID-19. These references served as the main sources for the data acquisition. Thus, data acquisition was accomplished primarily through the search and review of these reports, as well as of archival reports, circulars, and other published documents related to COVID-19 activities. Subsequently, additional supplementary information was obtained from local news releases and MOH social media. Next, epidemiological data was sourced from open-source databases, including COVIDNOW (<https://covidnow.moh.gov.my>), a partnership between the MOH and the open data community that has now expanded to KKMNOW (<https://data.moh.gov.my>) and Github MOH-Malaysia (<https://github.com/MoH-Malaysia/covid19-public>). The contents of the report were clarified and verified with stakeholders, and further input was incorporated.



Frontline worker performing tasks during the COVID-19 pandemic while wearing full PPE

Types of Data Used

Aggregated epidemiological data on cumulative and daily counts was obtained from the available open-source databases as mentioned above, for an understanding of the incidence and patterns of confirmed cases of COVID-19 and deaths over time. In September 2021, the MOH highlighted the reporting of two categories of deaths. GitHub MOH-Malaysia reported daily death rates based on the official documented date of death *due to* COVID-19, rather than using the previous approach, which calculated deaths *with* COVID-19 (that is, with the patient noted to be infected with COVID-19 at time of death, although the virus might not have been the actual cause of death) (*New Straits Times* 2021). The previous approach was potentially more

likely to misrepresent deaths occurring on a specific date because of the lag in data reporting. This was a critical switch in the metric calculation, aimed at improving the accuracy of attribution in relation to the interval between COVID-19 cases being confirmed positive and the actual date of death. The databases also enabled extraction of information related to health care service usage and vaccination, such as vaccination rates stratified by age groups, including the relative proportion of the types of vaccine used to inoculate the Malaysian population.

Macroeconomic indicators, such as real GDP, per capita GDP, and unemployment rates from 2016 to 2027 were obtained from the World Economic Outlook (WEO) database, which provided projections starting in 2022 for real GDP and starting in 2021 for all other economic indicators. In addition, Bank Negara Malaysia published Economic and Monetary Reviews for 2020 and 2021, which provided further information on financial and social protection initiatives during the course of the pandemic (Bank Negara Malaysia 2020, 2021).

At the time of development of this report, Malaysia's National Health Accounts presented estimates for health expenditure up to the year 2020, which included estimates for COVID-19 expenditure (MOH 2021b). The estimates were related to metrics such as the country's total expenditure on health (TEH), the proportion of TEH contributed by public or private sources of financing, health expenditure as a percentage of GDP, out-of-pocket (OOP) expenditure as a percentage of TEH, and per capita expenditure on health.

In addition, legal, event, and milestone documentation through formal MOH and non-MOH agency-wide reports was used to understand the events and actions that took place. Finally, available publications of community surveys conducted by the MOH and non-MOH counterparts for an understanding of the impact of COVID-19 on individuals and families were also summarized.

3. FINDINGS

PART A. PREPAREDNESS

Policy Governance for Disease Surveillance and Preparedness

In general, management of disasters at the national level in Malaysia is under the purview of the National Disaster Management Agency (NADMA), based at the Prime Minister's Department. Established in 2015, this national agency coordinates disaster planning and implementation of actions to address any potential disaster—for example, environmental, health, and so forth—and consequently activates national, state, and district Disaster Management Committees.⁷ The National Security Council (NSC) provides overall direction and plans of implementation for events with potential threat to national security. This is because via the National Security Council Act 2016 (Act 776), the NSC assumes greater jurisdiction to command and mobilize government and nongovernmental entities to control the pandemic on a wider national scale.⁸ As of March 16, 2020, the NSC was mandated by the prime minister to lead the containment of the pandemic on matters of policy formulation, implementation, and coordination in view of the rising numbers of cases (Institute for Health Systems Research 2020). As the disaster was related to

disease, the MOH provided technical advice and recommendations to facilitate decision-making at the country level, while the council was chaired by the prime minister.

Within the MOH, there are established mechanisms for activities in response to disaster management. A key player for overall policies and activities is the Diseases Control Division, Public Health Programme. The National Crisis Preparedness and Response Centre (CPRC), located within the Diseases Control Division, is the command and coordination center for disaster, outbreak, crisis, and emergencies (DOCE) at the national level (MOH 2014). A signatory of the International Health Regulations (IHR) 2005, Malaysia communicates closely with WHO contact points via an IHR Focal Point, which is a role assigned to the Deputy Director-General of Health of the Public Health Programme (Institute for Health Systems Research, 2020). In relation to the IHR, correspondence and activities are coordinated also via the National CPRC. The Director-General of Health chairs the Executive Committee for Disaster Management, which forms the central decision-making committee related to technical issues, with subsequent flow of command to a national technical

7 National Disaster Management Agency, 2021, Official NADMA Portal—History of Establishment (website, accessed November 1, 2022), <https://www.nadma.gov.my/en/corporate/history-establishment-nadma>

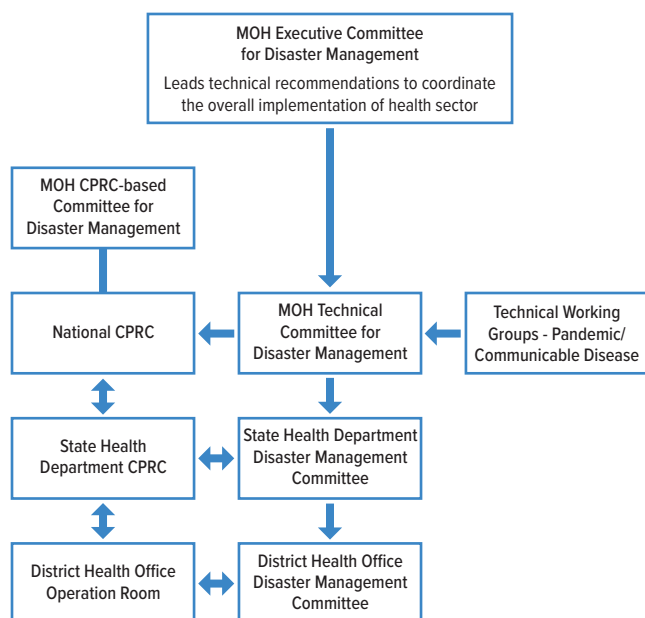
8 National Security Council, Sejarah—Laman Web MKN—Emergency Proclamation 2021 (website, accessed November 1, 2022), <https://www.mkn.gov.my/web/ms/sejarah-mkn>

FINDINGS

committee, the National CPRC, and operations rooms at state as well as district levels (*Figure 2*) (MOH 2015).

The National CPRC was established as part of the 9th Malaysia Plan (2005–2010), in May 2007, approximately four years after the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003 (MOH 2014, 2017a). Initially it focused on infectious diseases only, and in 2013, its scope expanded to cover all hazards. It has since demonstrated consistent improvements in its capacity to handle infectious disease outbreaks, including the Middle East Respiratory Syndrome Coronavirus (MERS-CoV) and Zika outbreaks. The COVID-19 pandemic also saw the establishment of CPRC Hospital Services at the Medical Development Program, which played a key role in planning, strategizing, and coordinating activities in relation to clinical care and management, as well as in hospitals' initiatives (Institute for Health Systems Research 2020).

Figure 2: MOH Disaster Management Committee for Response to COVID-19



Source: Adapted from Ministry of Health Disaster Management Plan.

Legal Framework

The National Security Council Act of 2016 (Act 776) was enacted to provide for the establishment of the National Security Council (NSC), which was intended to strengthen the government's ability to address rising threats to national security.⁹ A unique feature of the Act is that it enables the government to mobilize special forces and establish security zones, within which authorities have special powers such for conducting arrests, including search and seizures without a warrant.¹⁰ The Act was intentionally drafted to be broad, to avoid limiting its use to only certain kinds of threats to national security, and it allows the formulation of "policies and strategic measures on national security, including sovereignty, territorial integrity, defense, socio-political instability, economic stability, strategic resources, national unity and other interests related to national security." As part of the overarching mandate to uphold national security, the NSC is also enabled to establish any committee it considers necessary or expedient to assist in the optimal performance of its functions. The Act became particularly helpful for Malaysia's COVID-19 response once the outbreak was declared by the WHO in January 2020 to be a Public Health Emergency of International Concern and, later, a full-blown pandemic in March 2020. It enabled the mobilization of resources and the implementation of coordinated strategies at a grand scale, as was necessary to combat COVID-19. As intended by the Act, the NSC was immediately activated according to the Act's prespecified regulations, and since then it has enabled the creation of task forces and committees, including the mobilization of relevant resources such as security forces to man checkpoints during MCO to combat COVID-19 nationally (Institute for Health Systems Research 2020).¹¹

Following the declaration of Malaysia as an infected local area under subsection 11(1) of Act 342, a regulation was drafted to prohibit certain activities that could promote or worsen disease transmission, implementing controls on gatherings or imposition of MCO. The standard operation procedures (SOPs) were also formulated, to guide communities in carrying out activities outside their homes. The impetus for these revisions stemmed from the need to force compliance with public health measures.

⁹ Government of Malaysia, National Security Council Act of 2016 (Act 776); Final Rule. Fed Regist. 2016

¹⁰ Government of Malaysia, National Security Council Act of 2016 (Act 776); Final Rule. Fed Regist. 2016

¹¹ Government of Malaysia, National Security Council Act of 2016 (Act 776); Final Rule. Fed Regist. 2016

A sudden increase in the number of COVID-19 cases in the fourth quarter (Q4) 2020, which lasted until January 2021, together with reimposition of the Movement Control Order on five states and three federal territories, led to issuance of the Proclamation of Emergency by the Ruler (Yang di-Pertuan Agong) under article 150 (1) of the Federal Constitution. During this emergency period, the Ruler (Yang di-Pertuan Agong) could declare any ordinance necessary where immediate action was deemed required. To further curb the COVID-19 pandemic and focusing on economic recovery while preserving and protecting public safety and security, seven Emergency Ordinances were promulgated (Institute for Health Systems Research 2021a.). The Ordinances include:

1. The Emergency (Essential Powers) Ordinance 2021.
2. The Emergency (Prevention and Control of Infectious Diseases) (Amendment) Ordinance 2021.
3. The Emergency (Employees' Minimum Standards of Housing, Accommodations, and Amenities) (Amendment) Ordinance 2021.
4. The Emergency (Essential Powers) (No. 2) Ordinance 2021.
5. The Emergency (Essential Powers) (Amendment) Ordinance 2021.
6. The Emergency (Offenders' Compulsory Attendance) (Amendment) Ordinance 2021.
7. The Emergency (National Trust Fund) (Amendment) Ordinance 2021.

Another important legal document that has come into play during the COVID-19 pandemic is the Prevention and Control of Infectious Diseases Act 1988 (Act 342).¹² It provides a strategic framework to prevent the transmission of infectious diseases in Malaysia. The use of this Act in congruence with the International Health Regulations (IHR) of 2005 provides the MOH with authority to establish outbreak and infection control measures, such as placing suspected cases under quarantine and confirmed cases in isolation, and it requires health care providers to notify the authorities should there be a suspicion of possible cases in the area. Under Act 342 subsection 11(1), within the Declaration of an Infected Local Area, the health minister is permitted to prescribe measures to control and prevent the spread of any infectious disease within or from an

infected local area. During the Declaration's given time period, any authorized officer can direct any persons living in an infected local area to receive treatment or immunization, isolate, or quarantine; and can use force to ensure compliance if necessary. For those who continue to refuse, any authorized officer can consider the act an offense punishable by law, which could include imprisonment or a fine. Under the Emergency (Prevention and Control of Infectious Diseases) (Amendment) Ordinance 2021, a major amendment to sections 24, 25, and 31 was included in the Ordinance, to increase fines associated with noncompliance and duration of imprisonment. Under Act 342, a maximum fine of RM 1,000 could be issued to any individual or company found to have violated the SOP. However, under the Ordinance, the fine was increased to RM 10,000 for individuals and RM 50,000 for companies, and the imprisonment period was increased from two years to seven years (Institute for Health Systems Research 2021a). The Ordinance Act and its regulations remained in effect until October 25, 2021, when the Emergency Ordinances were annulled. This means the fines and imprisonment terms reverted to the related sections under Act 342.

The Employees' Minimum Standards of Housing, Accommodations and Amenities Act of 1990 (Act 446) is among the significant legislation that has been applied during the pandemic, whereby starting September 1, 2020, both in Peninsular and East Malaysia, the Act requires employers to improve workers' living conditions, basic housing facilities, and safety and hygiene at workers' accommodations.¹³ If an employer failed to comply, they could be fined RM 200,000 or imprisoned for up to three years, or both. This was particularly important given the surge of COVID-19 clusters among workers due to workers' hostels or housing quarters that were uncondusive to good health. Enforcement personnel performed spot checks, and employers maintaining unsavory living conditions were fined.

Although the media may be a vital avenue for reaching out to the public and encouraging its participation in mitigation measures, the spreading of misinformation could undermine public health initiatives. In order to counter rumor, Emergency (Essential Powers) (No.2) Ordinance 2021, also called the Fake News Ordinance, was passed in March 2021.¹⁴ Enactment of this ordinance allowed courts to order the removal of any publication they

¹² Government of Malaysia, Act 342 Prevention and Control of Infectious Diseases Act, 1988

¹³ Government of Malaysia, Employees' Minimum Standards of Housing, Accommodations and Amenities Act 1990 (Act 446); Final Rule, 1990

¹⁴ Government of Malaysia, Emergency (Essential Powers) (No.2) Ordinance 2021; Final Rule. Fed Regist. 2021

deem to contain fake information. This would be associated with a fine not exceeding RM 100,000 or imprisonment for no more than three (3) years, or both, for persons or companies that create, publish, or disseminate fake news about COVID-19 or make any statement on the emergency proclamation that could cause fear or panic among the public.

Infectious Disease Outbreak Management and Control

Malaysia has witnessed and been a part of prior internationally known infectious disease outbreaks. This includes the experience with the Nipah virus in 1999, SARS in 2003–2004, H1N1 Influenza in 2009, MERS-CoV in 2014, and Zika in 2016 (MOH 2003, 2016a). Although there were documented cases of SARS in Malaysia, the country successfully kept the transmission low and eliminated the spread relatively quickly. Only five probable cases were identified, two of whom died and were immediately reported to the WHO (MOH 2003). Close contacts, including medical personnel who treated the five individuals, were immediately subjected to isolation and surveillance. No cases of local transmission were detected. The successful containment was attributed to the rapid response in mobilizing key personnel and resources for testing, contact tracing, quarantine, and isolation (MOH 2003). The SARS outbreak also highlighted the importance of regional and international solidarity. Malaysia was also able to keep Zika case counts low when it emerged in 2016, with a total of eight confirmed cases, and MERS-CoV cases low, with only two cases reported—in 2014 and 2016, respectively.

As a signatory of the International Health Regulations (2005), a legally binding instrument that requires existing minimum capacity to detect, assess, report, and respond to any potential international public health emergency and event, Malaysia is committed to the continual strengthening of related capacities. In a 2019 Joint External Evaluation Exercise (JEE) by a multidisciplinary team of local and international experts, the WHO credited Malaysia for having made tremendous strides, demonstrating good preparedness for encountering outbreaks (WHO 2019). Findings of the JEE included a key commitment consistently exhibited by the Malaysian government throughout previous infectious disease outbreaks and continuous simulation exercises and after-action reviews, such as round-table reflections on each experience. These activities and valuable lessons learned from each experience facilitated the improvement of preparedness and response in

managing infectious diseases. The use of data-driven policies and advocacy based on surveillance, risk assessment, and response, together with constant communication with the WHO, have been successfully implemented. Nevertheless, recommendations were also made to strengthen engagement with the private sector in preparedness and response activities, as well as coordination, stewardship, and accountability of all relevant sectors across Malaysia, including between the human and animal sectors.

Related to the IHR, the Asia Pacific Strategy for Emerging Diseases and Public Health Emergencies (APSED III) and its earlier iterations have been used as a common strategic framework for action to guide member states in the Western Pacific Region (MOH 2017b). In line with APSED III, just prior to the COVID-19 pandemic, Malaysia published a revised Strategy for Emerging Diseases and Public Health Emergencies (MySED) II, a workplan for the years 2017–2021, that provides a common framework for implementation of related actions. The plan had six objectives:

1. Strengthen effective preparedness for emerging diseases and public health emergencies.
2. Reduce the risk of emerging diseases and public health emergencies.
3. Strengthen early detection and assessment of outbreaks and public health emergencies.
4. Strengthen rapid and appropriate response to and recovery from emerging diseases and public health emergencies.
5. Build strategic partnerships and sustainable financing for public health preparedness and response.
6. Strengthen prevention through health care.

The plan had eight focus areas, including:

1. Public health emergency preparedness.
2. Surveillance, risk assessment, and response.
3. Laboratories.
4. Zoonoses.
5. Prevention through health care.
6. Risk communication.
7. Regional preparedness, alert, and response.
8. Monitoring and evaluation.

These objectives and focus areas have been tested during the COVID-19 pandemic; they will be further described in the upcoming sections in PART B. RESPONSE ACTIVITIES TO ADDRESS COVID-19.

Health System: Health Financing

Malaysia is an upper middle-income nation that spends approximately 4.7 percent of its GDP on health (2019–2020), with a 54.6 to 45.4 percent split between public and private sector health expenditure and a relatively high out-of-pocket expenditure of 34.5 percent (MOH 2022b). Approximately 20.5 percent of the population has voluntary health insurance, primarily obtained through self-election, and another 18.0 percent has it from employment (Balqis-Ali, Anis-Syakira, Fun, et al. 2021). The most significant contribution to the country's high OOP expenditure comes from the increasing demand for private health care, especially among the population that can afford to pay private health care bills.

Malaysia's health care system, which is primarily managed and regulated by the government, is well complemented by the private sector. Overall, Malaysia's public health care sector is financed through the general taxation of income of its working citizens, using an annual global budget allocation system. In 2021, RM 32.4 million was allocated to the MOH, amounting to 10.4 percent of the total national budget for the year (MOH 2022c). Approximately 86.5 percent of the global budget allocated to the MOH was for existing operations, and the remaining 13.5 percent, or RM 4.4 million, was for development (MOH 2022c). The outcomes-based global budget system used in Malaysia enables the government to offer heavily subsidized and affordable health care to all its citizens. This public health care infrastructure fulfills at least one key component in assessing whether a country has achieved Universal Health Coverage (UHC), by deriving laws and policies that entitle the entire population to access health care services of sufficient quality to be effective. Despite the increasing demand for private health care among well-off individuals, the overall proportion of households affected by catastrophic health care expenditures is very low when a threshold of no more than 10 percent of total household consumption is used as a marker.¹⁵

Health System: Health Service Delivery, Physical Infrastructure, and Workforce Capacity

Malaysia has a dichotomous health care system consisting of a government (public) managed sector and a private health care sector. As described earlier, the government sector is funded through public taxes and allocated a global budget annually for its operations. As such, essential health care services are accessible to all Malaysians for a nominal fee. The country's main gatekeeping approach to providing affordable, universal health care is via its primary care clinics. As of December 2021, there are 2,892 health clinics, including 86 standalone clinics offering maternal and child health services, 255 community clinics, and 1,749 rural clinics in the public sector (MOH 2022c). Nationally, there are 146 public hospitals and specialized medical institutions offering up to 44,849 beds, five (5) army hospitals and seven (7) university hospitals cumulatively offering up to 4,932 beds, and 209 private hospitals offering over 17,628 beds. Overall, there is a 1:420 doctor-to-population ratio, including both the public and private health care sectors, with 50,381 doctors in the MOH (including house officers), 5,537 non-MOH doctors (university or military), and 16,196 doctors in the private sector (MOH 2022c). The nurse-to-population ratio is 1:283, and there is a significantly larger gap among pharmacists, at 1:1,758 for the pharmacist-to-population ratio in 2021 (MOH 2022c).

All Malaysian citizens have access to health care services at an affordable fee at government health care facilities that provide comprehensive coverage of services ranging from preventive care services and maternal and child health care to continuous monitoring and treatment for common noncommunicable diseases such as diabetes, hypertension, and dyslipidemia. Non-Malaysian citizens can access private health care services on demand, but they can also access public health care services by paying a nominal fee slightly higher than that paid by Malaysian citizens. Despite the affordable fees, wait times before seeing a doctor at public health care services have been a source of customer dissatisfaction, as delays in obtaining care are common (MOH 2016b). However, the gatekeeping process carried out by primary care physicians and the widespread network of facilities across geographical locations allow for referrals and transfers.

15 WHO, The Global Health Observatory—Malaysia (webpage, accessed November 1, 2022), <https://www.who.int/data/gho/data/countries/country-details/GHO/malaysia?countryProfileId=56662d20-4890-4511-a55b-77132f6dd227>

The existing health care infrastructure and trained workforce in Malaysia have dealt with disease outbreaks. They have been exposed to a myriad of infectious disease outbreaks in the past and formed a strong baseline of services and capacity that was ready to respond to future outbreaks before COVID-19 arrived. Even though there was experience in managing outbreaks, COVID-19 posed massive challenges due to its large scale of cases, its novelty, and the expansive activities that were required to be implemented.

PART B. RESPONSE ACTIVITIES TO ADDRESS COVID-19

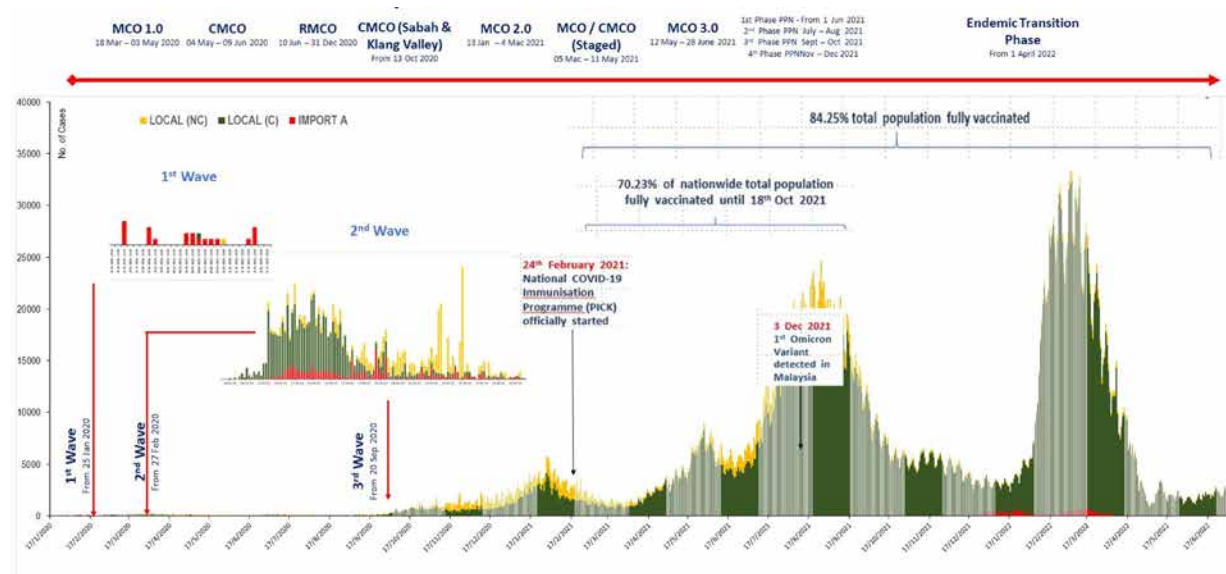
Governmental Response to Contain COVID-19

Following the first report from China on mysterious cases of pneumonia in Wuhan—on December 31, 2019—and the isolation of the novel SARS-CoV-2, Malaysia took early and decisive actions to verify the accuracy of this information with the WHO on January 2, 2020. Malaysia has an Infectious Disease Surveillance System that includes an event-based surveillance (EBS) system, which captures sources such as rumor surveillance and outbreak records (Institute for Health Systems Research 2020). The EBS confirmed unusual activity regarding the reports of clusters of pneumonia with unknown origin in Wuhan, putting the National CPRC on alert in December 2019, prior to the official reporting of the first case in Wuhan by the WHO on January 5, 2020 (Institute for Health Systems Research 2020). Subsequently, risk assessment was conducted and several preparedness activities were initiated, including border control, requirements for potential case notification to the CPRC, and strengthening existing surveillance systems for influenza-like illness (ILI) and severe acute respiratory infection (SARI). State and district health offices were notified so they could prepare and strengthen their capacity to respond to a possible outbreak (MOH 2020f). By January 17, 2020, interim guidance was provided on the novel coronavirus, with emphasis on notifying the CPRC on all confirmed or suspected cases (Institute for Health Systems Research 2020). The Operations Room for COVID-19 at the National CPRC was fully

activated on January 23, 2020, seven days before the WHO officially declared COVID-19 a Public Health Emergency of International Concern (Institute for Health Systems Research 2020). The operations room was responsible for central command, control, and coordination of all COVID-19 health sector initiatives at the national level. State-level and hospital-level CPRCs were subsequently triggered to enhance preparedness and coordination of response. On January 25, 2020, the first COVID-19 wave in Malaysia began, with the report of four imported cases (MOH 2020g). The first wave concluded with 22 cases and 11 consecutive days of zero new cases.

The rising number of cases in the second wave, which saw more than 100 cases reported daily by March 15, 2020, signified an increasing risk to national safety (Institute for Health Systems Research 2020). On March 16, 2020, the prime minister mandated the NSC to lead the containment of the pandemic with policy formulation, coordination, and implementation, as it has greater jurisdiction over mobilization of resources from multiple sectors. Throughout the pandemic, technical input and advice were provided by the MOH, with the National CPRC heading the flow of command for central policies to be conveyed to states and districts. As the IHR Focal Point and the CPRC are both within the Public Health Programme of the MOH, linkages with the WHO and focal points from other countries are facilitated, for correspondence and updates, while central coordination of response activities is more feasible (Institute for Health Systems Research 2020). Further, the National CPRC also communicates closely with the MOH Committees for Disaster Management.

Like other countries, while awaiting the emergence of new effective vaccines and therapies, Malaysia began implementing nonpharmacological interventions (NPIs). These included expanding and enhancing laboratory capacities, expansion of hospital capacities, strengthening infection prevention and control (IPC), improving the use of personal protective equipment (PPE), and mobilization of human resources, among other measures. Importantly, many actions taken to address the COVID-19 pandemic were applications of Malaysia's Prevention and Control of Infectious Diseases Act (Act 342).

Figure 3: The Overall Public Health Response Toward the COVID-19 Pandemic in Malaysia (Up to June 30, 2022)

Source: National CPRC, Ministry of Health Malaysia

a) Border Surveillance and Movement Control Order

Starting in January 2020, the government heightened border surveillance at entry and exit points throughout the country, to prevent the introduction of the disease into the local setting. It was essential for the government to enforce surveillance rules early in the outbreak to ensure that any possible imported case would be identified during screening or quarantine, to prevent the potential of local community spread. In the second wave, Act 342 was applied to declare all states in Malaysia to be affected areas, with consequent implementation of strict travel restrictions for the country (Institute of Health Systems Research 2020). The Act was also applied for the Movement Control Order, which commenced on March 18, 2020. The MCO allowed only operations of essential services and prohibited movement in and out of the country as well as within state borders; Malaysians returning from overseas were required to have a health assessment done upon arrival and to self-quarantine for 14 days (Prime Minister's Office 2022). In this early phase of MCO, the NADMA's coordination of the Humanitarian Assistance and Disaster Relief (HADR) missions brought Malaysian citizens and their families who were stranded abroad home (Institute of Health Systems Research 2020).

The MCO was implemented over varying lengths and intensities. This included the MCO (March 18, 2020 to May 3, 2020), the CMCO (May 4, 2020 to June 9, 2020), the RMCO (June 10, 2020 to January

1, 2021), and the EMCO (Institute for Health Systems Research 2022). The MCO was implemented in phases, and with improvements in the number of cases and capacities of the health system, restrictions were relaxed in phases. At its inception, the MCO consisted of six (6) critical measures that were applied uniformly throughout the country:

1. A complete prohibition of movement by the public and prohibition of large gatherings.
2. Complete restriction on all overseas travel by Malaysians. Returning Malaysians can enter the country but must be subjected to a 14-day quarantine period enforced by the authorities.
3. Complete restriction on all tourists and foreigners entering the country.
4. Closure of schools.
5. Closure of higher education institutions and skills training institutions.
6. Closure of all government and private premises except those that provide essential services.

Throughout variations of this MCO, frontline workers, including health care personnel, police, armed forces, civil defense forces, paramilitary civil volunteer corps, and the fire brigade, were exempt from MCO restrictions, enabling them to be mobilized accordingly to assist with COVID-19 response. During the CMCO, a reopening of sectors was allowed, but with strict SOPs; some activities remained prohibited, such as social and community events that involved

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large gatherings and interstate traveling. During the RMCO, almost all sectors could resume operations with SOPs, and schools were reopened in phases.

As part of the introduction of the MCO into its armamentarium, Malaysia identified three zoning systems to identify localities by risk status based on the total number of positive cases. Districts were categorized into red (> 40 positive cases), yellow (1 to 40 positive cases), and green (no positive cases) zones to aid with District Risk Reduction Programs (DRRPs), to ensure that green zones remain green and yellow zones have strategies implemented quickly to bring case numbers down to the green zone level over the next 14 days (Institute for Health Systems Research 2020). Although the strategy is spearheaded nationally, the success of its implementation within municipalities was reliant on community empowerment; for example, in green zone areas, the community would have to practice vigilance in terms of monitoring family members' health status and other infection prevention measures. Recognition of a red zone triggered the imposition of an EMCO, a strategy employed by specific localities that were identified as hot spots and were encountering case surges. EMCOs typically lasted a minimum of two (2) weeks at a time, during which:

- Security forces cordoned off all roads into the area.
- All residents, including citizens and foreign nationals, within the jurisdiction of the EMCO borders were forbidden from leaving their homes.
- All residents were tested for COVID-19 free of charge.
- Unauthorized visitors to the area were forbidden to enter the EMCO area.
- All shops and offices within the area were required to be closed.
- Basic food and necessities were provided for free to all residents, regardless of nationality, coordinated by the Social Welfare Department.
- The MOH established a medical base to provide medical services whenever necessary.

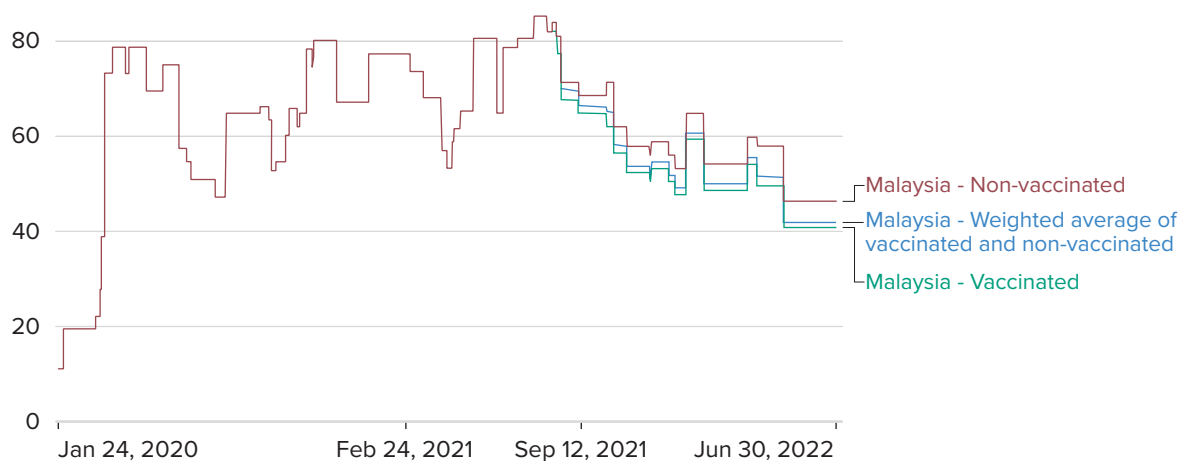
During a CMCO, which is a marker of improvement compared to a regular MCO, most economic sectors could reopen under strict regulations that continued to prohibit large gatherings and crowds. For sectors that were allowed to reopen during a CMCO, employers were typically required to offer flexible work hours to alleviate congestion on public transit systems and within workspaces. With the implementation of the MCO, the reproductive number of the virus, or R_{naught} , was seen to be below 1.0 since November 2020. Other factors were also considered in the phases of the MCO. Nevertheless, an increase in cases was seen in January 2021, with 44 percent of ICU patients with COVID-19 requiring ventilation support (Institute for Health Systems Research 2021a). This brought into play a state of emergency, which was declared for January 1, 2021 to August 1, 2021, and a reinstatement of the MCO. The MCO persisted until mid-2021. On June 15, 2021, the National Recovery Plan was announced as a four-phase plan with three indicators: average daily new COVID-19 cases, ICU bed usage, and percentage of population that had completed two doses of the COVID-19 vaccination (Institute for Health Systems Research 2021a). Among the initiatives taken following the plan's announcement, a pilot project—the Langkawi Travel Bubble—was launched to revive the tourism sector in September 2021.¹⁶

The Oxford COVID-19 Stringency Index portrays how strict government policies have been throughout the pandemic in nine key areas—namely, workplace closures, school closures, travel bans, cancellation of public events, restrictions on public gatherings, closure of public transport, stay-at-home requirements, public information campaigns, and restrictions on internal movement for Malaysia (see *Figure 4*). The stringency index, which drastically increased at the beginning of the pandemic, gradually and consistently eased once the population began getting vaccinated.

16 National Security Council, 2021, Domestic Travel Bubble (PowerPoint presentation), September 16, 2021 (accessed August 1, 2022), https://covid-19.moh.gov.my/faqsop/pelan-pemulihan-negara-sop-fasa-empat/SOP-MOTAC_Gelembung-Pelancongan-Domestik_Berkuatkuasa-16-September-2021-Dikemaskini-15-September-2021.pdf

Figure 4: Malaysia's COVID-19 Oxford Stringency Index Tracker (January 2020 to June 2022)

The stringency index is a composite measure based on nine response indicators including school closures, workplace closures, and travel bans, rescaled to a value from 0 to 100 (100 = strictest).



Source: Hale, T., N. Angrist, R. Goldszmidt, et al. 2021. "A Global Panel Database of Pandemic Policies (Oxford COVID-19 Government Response Tracker)." *Nature Human Behaviour* 5: 529–538. <https://doi.org/10.1038/s41562-021-01079-8>

b) Testing, Contact Tracing, and Isolation

A structured test, trace, and isolate protocol, which has been refined over the years after many experiences countering infectious disease outbreaks, was also applied for COVID-19 in Malaysia. Upon an alert of a COVID-19 case, the related District Health Office (DHO) would mobilize teams to obtain a detailed history from the cases as well as their close contacts, ascertain risk factors, and determine potential of transmission to others (Institute for Health Systems Research 2020). Case investigation was a key activity for identifying all potential cases as early as possible and initiating treatment when needed, to be followed by mandatory quarantine to ensure the disease is not transmitted to others. Contact tracing was another key activity for preventing transmission of the infection into the community, as all close contacts of a positive COVID-19 would be traced, the risk of further transmission assessed, and mandatory quarantine also required. Unlike other countries that employed a universal screening approach, Malaysia adopted a targeted screening approach from the beginning, using resources carefully and strategically. Malaysia has continued to use a targeted screening approach throughout the pandemic.

Targeted screening meant that screening protocols were initiated when a case was identified that tested positive and had epidemiological links to other cases or a cluster of cases within an area, so aggressive contact tracing ensued. Depending on the active cases investigated, targeted groups for screening could vary from one state to another. For instance,

in the early phase, attendees of any mass religious gathering and their close contacts were traced, and the MOH issued an announcement for the attendees and close contacts to come for screening at the nearest health care facilities. Screening is accompanied by contact tracing, which was initiated by personnel at district health offices. MySJ Trace was introduced in December 2021, when it was incorporated in the MySejahtera Application, through which individuals noted to be close contacts would receive notifications on status as a close contact (Arumugam 2021). The approval of rapid test kits, to be made available in the country on July 21, 2021, promoted individual empowerment to self-test in settings of suspected close contact or development of symptoms (MOH 2021c). Results of the self-tests were to be sent to the government via the MySejahtera App.

Initially, Malaysia admitted all symptomatic and asymptomatic confirmed cases to the hospital for isolation regardless of nationality. The government pre-identified hospitals as full COVID-19 hospitals whose responsibility was to strictly address all COVID-19 cases that were referred, or as hybrid hospitals that had the capacity to continue providing non-COVID-19-related care while cordoning off a section for COVID-19-related care. At the onset of the outbreak in 2020, all persons under investigation (PUI)—or those suspected of having an infection—awaiting test results were required to be in quarantine until confirmatory results via polymerase chain reaction (PCR) testing were available. With



Shopper wearing a mask and having a temperature scan before entry into retail shops

the subsequent rise in cases, quarantine centers were opened nationwide, with suitable facilities first identified by the NADMA (Institute for Health Systems Research 2020). These quarantine stations also included hotels, which catered to Malaysians coming back from overseas. Eventually, once case numbers started rising, as seen during the second wave, additional facilities were opened or designated as low-risk treatment and quarantine centers—for example, MAEPS Serdang. Subsequently, with further increase in cases, COVID-19 Assessment Centres (CAC) were designated beginning January 25, 2021 (MOH 2021d). CACs were opened in every state, with functions of identifying, assessing, monitoring, and managing individuals who were discovered to be positive COVID-19 cases. Stable asymptomatic patients could be allowed home isolation and issued a Home Surveillance Order (HSO), and other patients with symptoms or risk factors were referred for hospital attention. To increase the capacities of quarantine centers, multisector collaborative efforts included partners such as hotels, school dormitories, and higher education training institutes; CACs were opened in collaboration with local agencies, using facilities with large spaces such as stadiums and community halls. With allowance of home quarantine, CAC services were then expanded to private practitioners and, subsequently, to virtual CAC via the MySejahtera mobile application (MOH 2021e, 2022e). As of June 30, 2022, virtual CAC continued to be used for monitoring asymptomatic or mildly symptomatic individuals. Allowing asymptomatic cases and persons with minor symptoms to be quarantined at home, with close follow-up from the contact tracing and primary care team, helped conserve space in specialized

treatment and quarantine centers for patients unable to self-quarantine safely, so they could be carefully looked after and separated from others to reduce transmission. The expansion to virtual monitoring was a feasible approach to managing high numbers of close contacts during high numbers of cases. Importantly, virtual CAC incorporates a Health Assessment Tool (HAT) and automated voice recordings (robocalls) that alert users of possible warning signs indicating they should attend a physical CAC and obtain further care.

The refinements to the management of cases and close contacts were dynamic following new developments and vaccination status. At inception, persons subjected to home isolation/quarantine were also issued colored bands, allowing concerned citizens to help with community policing when individuals were not complying with home isolation/quarantine orders and were seen in public spaces. With the rollout of the national vaccination program, further refinements were made. As of March 2022, for example, an individual with COVID-19 was required to quarantine for seven days if he or she had received a booster dose or completed vaccination, and for 10 days if unvaccinated (MOH 2022f). Upon declaration of a transition phase to an endemic, self-testing was further encouraged, and digital Home Surveillance Orders were sent via the MySejahtera App; close contacts were not required to quarantine unless they were symptomatic (MOH 2022e).

c) Risk Communication and Information Disclosure

Malaysia established Strategic and Risk Communication Teams by engaging with a wide variety of stakeholders, both internally (within the MOH) and externally (external agencies). At the National CPRC, the Joint Information Center—comprising representatives from the CPRC, the Health Education and Communication Center, and the MOH’s Corporate Communication Unit—responded swiftly upon receiving information from various sources, preparing strategic messages for the general public centered on health knowledge, behavior, and warnings (Institute for Health Systems Research 2020). An organized approach was used to create the communication materials based on several principles, including having a single source, credible and frequently updated (MOH 2020h). Messages were tailored according to phases and target audiences. For example, in the early containment phase, messages were focused on the latest updates and developments, in contrast to the recovery phase, when messages focused more on the role of community members as frontliners and on monitoring COVID-19 via the MySejahtera App.

Experience with SARS had shown that risk communication and information materials were important in managing public perception and allaying possible anxieties. A lesson learned was that in a situation with rapidly changing information, disseminating the latest updates by print material confuses the public due to swiftly changing information and the delay in producing printed materials. At the time, confusion and frustration were noted with receipt of noncurrent information, in addition to wastage of the printed material; hence, updates via press conferences or press releases were determined to be more effective (MOH 2003). Malaysia adopted digitalization very early in the COVID-19 pandemic for risk communications, with messages sent via MySejahtera, websites, and social media (for example, Facebook and Telegram). Daily press conferences were conducted, with information shared on a consistent platform, with the director-general of health at the helm. Communication materials were produced in various languages and dialects to cater to the multi-ethnic and multicultural diversity of the country. Using social media, the MOH and the director-general of health have streamlined communication to keep the public informed and made information accessible. Town halls, online dialogue

sessions, call centers, and hotlines were additionally set up and organized to disclose information to the public. To comprehend and resolve community concerns, such as those about new norms and vaccine acceptance, public perception surveys were also undertaken.¹⁷ Understanding public sentiments toward the country’s response has also been a cornerstone in the evolution of communication strategies throughout the pandemic.

Awareness of the magnitude of the cases and the important role of community understanding and involvement enabled collaboration across sectors and agencies in numerous activities, such as dissemination of information on digital displays in shopping malls, highways, and airports (MOH 2020h). Throughout the COVID-19 pandemic, the country has remained committed to using press conferences and press releases to provide updates, although the frequency of these tactics tapered accordingly as the country moved into an endemic phase. Some

messages, such as the promotion of hand hygiene, physical distancing, and mask-wearing, have persisted as of June 30, 2022 and will continue to be the main strategy for mitigating the spread of COVID-19.

d) Greater Klang Valley Special Task Force; National COVID-19 Rapid Response Task Force

An increase in COVID-19 cases in Malaysia was noted starting in June 2021. Upon analysis, the majority of cases were from the state of Selangor, the Federal Territory of Kuala Lumpur, and Negeri Sembilan. In July, these three (3) states accounted for 70 percent of the total positive COVID-19 cases reported daily in Malaysia. Given that further increment of COVID-19 cases could paralyze the health care system to a point of no return, the COVID-19 Greater Klang Valley Special Task Force (GKV STF) was formed on July 12, 2021, involving the above states.¹⁸ The Deputy Director general (Public Health) was appointed to lead this task force and report to the secretary-general of MOH Malaysia. The strategic command consisted of the special adviser to the Prime Minister (Public Health Matters), the director general of NADMA, the Malaysian Armed Forces Health Services Director General, state secretaries, and the Expert Advisory Group Plus (EAG+). The operational command structure was headed by the Joint Department Task Force commander (Ministry of Health Malaysia-

¹⁷ Health Education Division, MOH, “Tinjauan & Sentimen Media Sosial Mengenai Vaksin COVID-19” (Official Portal of the Institute for Health Behavioural Research [IPTK], accessed November 1, 2022), <https://iptk.moh.gov.my/>

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Malaysian Armed Forces) consisting of seven technical teams and an independent compliance monitoring team. Members were from government agencies, universities, private sectors, Expert Advisory Groups (EAG), and nongovernmental organizations (NGOs).

On the day of the task force formation, the capacity of hospital COVID-19 beds was 5,935 with an 88 percent occupation rate, whereas the capacity of hospital ICU beds was 549 with 145 percent patient occupancy.¹⁸ During the height of cases, bed capacity was increased to meet the demand surge in COVID-19 cases. In PKRC (Pusat Kuarantin dan Rawatan COVID-19 [COVID-19 Quarantine and Low-Risk Treatment Centres]), bed capacity was 5,668 and 54 percent of them were being used.¹⁸ The task force was responsible for planning and executing strategies and activities to reduce the impact on the health care system following a sudden surge in COVID-19 cases, specifically in the area of bed sufficiency, manpower needs, oxygen, and related medical equipment, as well as in budget requirements. Tasks included identifying places for conversion to COVID-19 wards, placement of cases, “step up, step down” care, and building an online dashboard to monitor the situation above.

After six (6) weeks of aggressive execution of strategies, positive cases reported by states under the Greater Klang Valley reduced dramatically—cases were about 15 percent of the total reported in Malaysia. The number of beds in hospitals was 5,231, with 46 percent of them occupied; there were 504 ICU beds with 69 percent of them filled; and there were 3,992 PKRC beds with 51 percent filled.¹⁸ Hence, the GKV STF was dissolved on September 21, 2021. Subsequently, the management and control of activities were passed back to the respective programs and states.

Health System Response

a) Primary Care Response

Primary care service was one of the vital elements in the health sector response to the COVID-19 pandemic, as it was often the gateway for access to health care services by the community. Infrastructure and resource management modifications were made to facilitate the smooth implementation of response activities. Physical separation of consultation spaces was made, with triage booths set up for assessing patients presenting with COVID-19 symptoms and their separation from other clinic attendees. Other

approaches implemented at primary care level were screening activities before and upon entry into health facilities and drive-through sampling. Primary care clinics played a crucial role in helping with health promotion and education activities, through use of Facebook Live or webinar sessions conducted by health care providers.

Outpatient appointments were rescheduled to cater to those in need and to minimize the number of visitors. Crucial strategies employed to reduce the time patients spent in the clinic included staggering appointment times and instituting a policy for prescheduling laboratory tests, preferably for the same day just before the clinic appointment. This was accomplished by allowing patients to arrive up to 30 minutes before an appointment and discouraging walk-ins. Although these are essential strategies for promoting physical distancing, they may be inconvenient for certain segments of the population, especially the elderly, who may not have adequate digital literacy and have to rely on walk-in services. Teleconsultation and drive-through or postage for drugs were among the remedial actions implemented to overcome these challenges. Other strategies to reduce congestion and long waiting time in clinics included teleconsultation and Value-Added Services (VAS) in pharmacies. The VAS are Medicine by Post, Locker4U, the Integrated Drug Distribution System, drive-through pharmacies, and pharmacy appointment systems such as Take-N-Go or SMS Take-N-Go (Pharmacy Programme 2020). These measures ensured that patients had sufficient medications and the supply was not disrupted during the pandemic. In addition, patients with stable chronic disease were prescribed medications for a longer duration. The health care system also encouraged low-risk individuals such as family members or caretakers of at-risk patients to collect medication on their behalf.

To optimize resources during COVID-19, community clinics with low attendance were temporarily closed or had reduced operating hours (Institute for Health Systems Research 2020). This strategy was also employed to minimize movement and congestion in the small clinics that lacked adequate ventilation or floor space. Additionally, these closings allowed the staff to be mobilized to COVID-19 screening, testing, and treatment centers in view of the increasing number of cases. Diverting resources away from these clinics helped support other critical areas where more immediate assistance was needed to

¹⁸ Personal communication, Datuk Dr. Chong Chee Kheong, 2023

The Crisis Preparedness and Response Centre (CPRC) for Hospital Services was activated in March 2020. It complemented the National CPRC by strengthening hospital service preparedness during the COVID-19 pandemic.

tackle the surging trend of COVID-19 cases. Allied health services such as dietetics, physiotherapy, and occupational therapy services were temporarily suspended.

Sentinel public health clinic sites for COVID-19 were quickly established throughout the country. In addition, the collaboration with NGOs and the private sector allowed for the opening of screening and testing centers in public spaces to allow easier access to these services. The COVID-19 Assessment Centres (CAC) were then established throughout the country to conduct risk assessment and triaging of COVID-19 patients. Category 1 (asymptomatic) and Category 2 (mildly symptomatic) cases were identified for suitability for home quarantine under the Home Surveillance Order (HSO); in December 2020, it was reported that 89 percent of COVID-19 patients in Malaysia were placed under this category (Zack 2020). This helped to reduce congestion in hospitals and PKRCs.

b) Hospital Response

The Crisis Preparedness and Response Centre (CPRC) for Hospital Services was activated in March 2020. It complemented the National CPRC by strengthening hospital service preparedness during the COVID-19 pandemic. It served as the main communication platform for directives and feedback between top management at the ministry and the state level and facility level. It also provided clinical guidelines for the management of COVID-19 cases, ensuring the continuity of other services at all MOH hospitals, while ensuring the safety and welfare of health care personnel.

To ensure that every state has a designated hospital available for COVID-19 cases without neglecting other services for non-COVID cases, the designated COVID-19 hospital had to fulfill the following criteria: a low bed occupancy rate (less than 70 percent maximum capacity); inclusion of ICU and isolation wards; and easy access to state hospitals with an infectious disease specialist in case urgent referrals or consultations were warranted. Hospitals were mainly grouped into three (3) types based on functions; namely, full COVID-19 hospital, hybrid hospital, and non-COVID-19 hospital. Only full COVID-19 and hybrid hospitals functioned as COVID-19 treatment hospitals, while all three (3) served as screening hospitals. During the second wave, seven full-fledged COVID-19 hospitals, 33 hybrid hospitals, and 108 non-COVID-19 hospitals were designated (Institute for Health Systems Research 2020). This designation was instrumental in ensuring that resource allocation specific to COVID-19 treatment could be planned.

Hospital and laboratory preparedness were monitored by collecting and analyzing daily clinical data from all facilities. Bed capacity in COVID-19 hospitals was monitored through a red-yellow-green system to indicate bed usage rates. In order to increase bed capacity during COVID-19, unused spaces in these facilities, hallways, neonatal ICUs, and pediatric ICUs were upgraded and repurposed to accommodate COVID-19 patients (Institute for Health Systems Research 2020). In order to conserve and reassign resources based on needs, elective procedures were deferred while emergency cases such as trauma and cardiac cases were referred to nearby health care facilities that were less affected. The public-private partnership enabled non-COVID-19



Medical workers in Kuala Lumpur wearing personal protective equipment before conducting COVID-19 tests, April 2020.

cases to be decanted to identified private facilities (Institute for Health Systems Research 2021a).

To expand the capacity of COVID-19 hospitals to accommodate new cases, designated step-down centers were identified for management of stable and asymptomatic COVID-19 patients while they waited for the completion of the quarantine period. Existing public health and nonhealth facilities were strategically identified and repurposed to COVID-19 Low-Risk Quarantine and Treatment Centres (PKRC) for treatment and isolation of low-risk Category 1 (asymptomatic) and Category 2 (mildly symptomatic) patients, allowing for a reservation of hospitals to continue managing other, more serious health conditions. Most notable is the Malaysia Agro Exposition Park Serdang (MAEPS), the largest agro park in Asia, which was converted into a PKRC and activated twice throughout the pandemic due to the surge in the number of cases (Institute for Health Systems Research 2021a). Services for non-COVID-19 cases were also outsourced to other government facilities (non-COVID-19 hospitals, army hospitals) and private hospitals.

In addition to the above measures, the MOH, in strategic collaboration with the Malaysian Armed Forces (ATM), the NADMA, local authorities, and other agencies including NGOs such as the Malaysian Medical Relief Society (MERCY), established field hospitals in states with the highest recorded number of COVID-19 cases. A field hospital is a temporary hospital usually set up in an area affected by disaster

or that requires health facilities to accommodate a large number of patients. Besides alleviating the burden in treating COVID-19 cases, field hospitals also increase the health services provision capacity, thus allowing local hospitals to continue providing health service delivery as usual for non-COVID cases. An example is the Makeshift Treatment Centre for Pokok Sena prison, set up in collaboration with the ATM between October and December of 2020, to treat patients in Category 1 (1 being asymptomatic) through Category 4.¹⁹ Throughout this pandemic, a total of 18 field hospitals have been instituted in several states via this multi-agency cooperation initiative; namely, Sarawak (4 facilities), Pulau Pinang (3 facilities), Sabah (2 facilities), WP Labuan (2 facilities), Selangor (2 facilities), Johor (2 facilities), Kedah (1 facility), WP Kuala Lumpur (1 facility), and Melaka (1 facility).²⁰ This initiative effectively has managed to increase the bed capacity to 1,505 during the pandemic.²¹

As part of the establishment of the Emergency Ordinances in response to COVID-19, the government was also able to expedite public-private partnerships by enlisting support from the private sector to mobilize necessary assets and resources to alleviate the strain placed on the public health care system. Among efforts made was the temporary acquisition of the Universiti Kebangsaan Malaysia (UKM) Specialist Children's Hospital (a university hospital) to be used as a COVID-19 hospital following the sharp increase in COVID-19 Category 4 and 5 cases by the end of May 2021 (Institute for Health Systems Research 2021a). The hospital is a new teaching facility with a 243-bed

¹⁹ Personal communication, Medical Development Division, Ministry of Health Malaysia, 2023

²⁰ Personal communication, Medical Development Division, Ministry of Health Malaysia, 2023

²¹ Personal communication, Medical Development Division, Ministry of Health Malaysia, 2023

capacity and has 28 critical care adult-sized beds. The acquisition allowed for a significant increase in COVID-19 treatment capacity in the Klang Valley area, which was inundated by a surge during that time.

c) Human Resources for Health

The National CPRC, through its MOH COVID-19 Mobilization Support Unit, coordinated the deployment of relevant human resources and medical countermeasures to areas with a high caseload (Institute for Health Systems Research 2020, 2021a). A regular needs assessment has been conducted at all levels to assess and optimize human resource capacity. To do this, the national and state-level CPRC assessed surge capacity by projecting the number of cases and contacts; tracking the RO value; discerning variations in laboratory turnaround time; and assessing daily data reporting time, data quality, and staff health and absenteeism. The initial surge response was compounded by the sudden increase in case numbers during the middle of the second wave, the exposure or infection of health care workers and their need to be quarantined, and the opening of many low-risk COVID-19 treatment and quarantine centers to handle milder COVID-19 cases. This initially led to insufficient staffing in bigger, more populous hospitals. However, mobilization through volunteers and partnership with the private sector helped alleviate the initial shortage, although there were periods of intense stress among health care staff and administrators.

More than 1,500 health care personnel were mobilized to respond to the surging COVID-19 caseload during the second wave in 2020. In July 2021, when the third wave peaked, the MOH deployed 3,133 personnel to the Greater Klang Valley area and recruited more than 5,000 contract personnel to address the burden imposed by the surging caseload (Muzamir 2021). Health care personnel were also recruited from the private sector, including retirees and volunteers from NGOs and the public, to serve in various clinical (if licensed) and nonclinical roles according to their training.

The safety of health care personnel remained an important concern throughout response activities. Risk assessment initiatives were implemented by facilities to weigh the risk and benefits of ensuring continuous availability of health workforce and patient safety. Safety guidelines were also provided

by the Occupational Safety and Health (OSH) Units of respective facilities. Health care personnel were grouped into teams, and the teams worked on rotation schedules as part of the mitigation measures to ensure services were not interrupted when there was a positive case among personnel.

d) Ensuring Access to Essential Health Services

With a system designed to provide UHC before the pandemic, the commitment to continue providing access to health care during the pandemic was maintained despite adjustments to the normal care processes. The alterations were motivated primarily by the need to balance the importance of reducing exposure and subsequent transmission of COVID-19 and the need to provide continuity of care to those triaged and most in need.

Maternal and child health care and school health services continued to be provided throughout the pandemic with some adjustments. Home visits were prioritized, and immunization services were provided, as parents were requested to comply with the Immunization Schedule.

Data from 2020 suggests that childhood immunization coverage rates for the year were 95.7 percent for completing two doses of the human papillomavirus (HPV) vaccine for 13-year-old girls, and 97.7 percent for both the completion of the third dose of the polio vaccine and diphtheria-tetanus-pertussis (DTaP)-hemophilus influenza (Hib) vaccine, respectively, showing a decrease from the previous year (MOH 2021f). Child immunization continued to be promoted, and parents were urged to bring their children to health clinics, as public primary clinics continued to provide these services throughout the pandemic.²²

A study on access to primary care services showed an initial decline in infant immunization as the pandemic hit. Uptake of the first dose of the MMR (measles, mumps, and rubella) vaccine declined by 7.5 percent, and that for the DTaP (diphtheria, tetanus, and pertussis) booster declined by 14.0 percent, when April 2020 data was compared with that for April 2019 (Izzatur Rahmi, Nur Wahida, and Samsiah 2021). The implementation of strict measures to counter the spread of a virulent pathogen such as COVID-19 resulted in a decline in the performance of other health activities. Nevertheless, with catch-up

22 Immunise4Life, "Patuhi Temu Janji Imunisasi Anak Anda Semasa Norma Baharu Immunise4Life" (website, accessed November 1, 2022), <https://immunise4life.my/ms/patuhi-temu-janji-imunisasi-anak-anda-semasa-norma-baharu/>

VC is a method that ensures continuous access to health services. However, patients who live in more remote areas or who may not have internet access or smartphones may not be able to access these services.

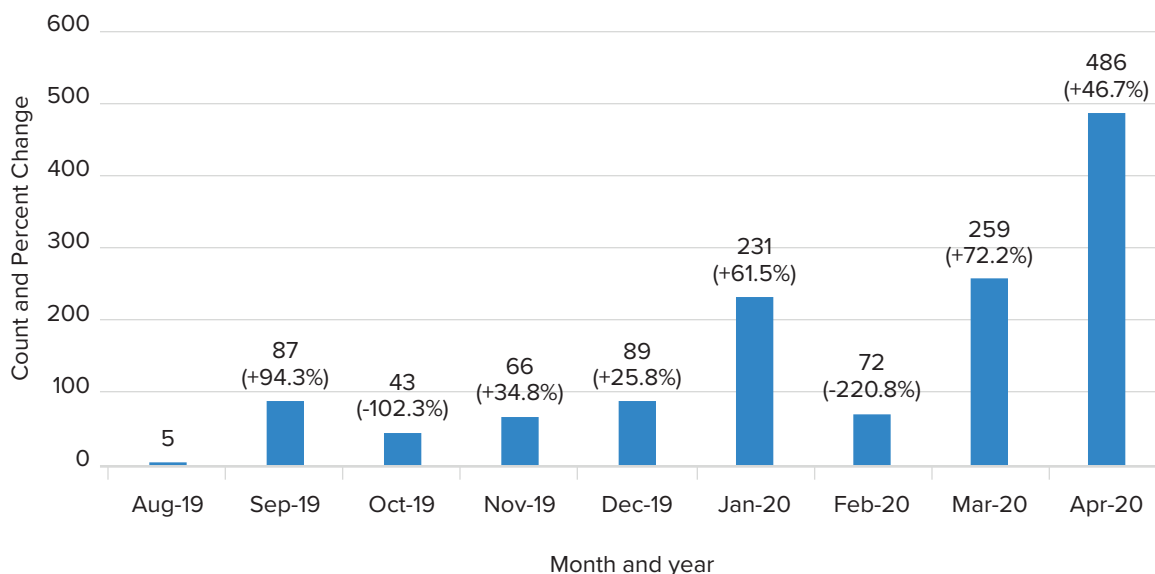
services, the overall decline in uptake of the MMR and DTaP booster vaccines was halted; assessment of overall change between January to December 2020, compared to January to December 2019, was an increase of 3.0 percent and 0.7 percent for the vaccines, respectively.

In February 2020, a Virtual Health Advisory was established via a collaboration with software and web-based developers who helped customize virtual health advisory portals so the public could access accurate information on COVID-19. Within the first month of use, the number of inquiries regarding COVID-19 increased from 42 to 1,482 (Institute for Health Systems Research 2020). Malaysia established virtual clinics (VC) in a few health clinics before the pandemic in 2018. VC is a live and interactive mode of delivering health services without the patient's physical presence in the facility. During the COVID-19

pandemic, VC was expanded to other health clinics with the aim of increasing access to health care and reducing congestion in the clinic. The services are provided for chronic diseases, physiotherapy, occupational therapy, dietetics, and medications. The number of health facilities providing VC services increased from 40 in 2021 to 270 in 2022.

VC is a method that ensures continuous access to health services. However, patients who live in more remote areas or who may not have internet access or smartphones may not be able to access these services. The usage trend for telemedicine consultation, currently provided for August 2019 to April 2020, has shown a significant increase in use since the pandemic started (Institute for Health Systems Research 2020) (Figure 5).

Figure 5: Number of Primary Care Telemedicine Encounters



Source: Malaysia Health Sector Response (2020)



Floor sticker to promote social distancing during COVID-19.

A cross-sectional survey of Malaysian high-volume primary care clinics in the government sector was conducted from November 6, 2020 to December 10, 2020, to ascertain the extent of adoption of telehealth services during the first year of the COVID-19 pandemic. Prior to this study, it was reported that approximately 35 public sector primary care clinics had implemented teleconsultation services. With a response rate of 97.6 percent, the study reported that 114 public primary care clinics provided teleconsultation by the end of the first year of the pandemic. Most of the clinics (60.5 percent) provided telephone consultation only, 14.9 percent offered video consultation only, and the remaining 24.6 percent of the clinics surveyed provided both video and telephone consultations (Ng, Hwong, Husin, et al. 2022).

Certain primary care clinics offered a modified patient registration system that allowed patients to make an appointment on their own, contrary to the system prior to COVID-19, which required patients to either obtain referrals or obtain appointments in person. Providing essential non-COVID-19 health care services in a COVID-19 era meant that clinics had to monitor and control the number of patients they accepted daily to avoid congestion. To promote equitable access while maintaining a safe distance and keeping exposure risk at a minimum, primary clinics provided longer intervals for re-appointments to stable patients or encouraged these patients to use telehealth services fully. Patients with poorly controlled chronic conditions continued to be given priority for more frequent visits and face-to-face consultations.

e) Mental Health

The COVID-19 pandemic undoubtedly had a great impact on mental health, directly or indirectly through various factors including the financial crisis, retrenchment, unemployment, losing loved ones, family conflicts, and social isolation due to COVID-19 following enforcement of the MCO. The MOH took several measures to address mental health problems during the COVID-19 pandemic in Malaysia through the Mental Health and Psychosocial Support Services (MHPSS). Programs under the MHPSS included the Psychosocial Support Helpline, which was initiated on March 25, 2020. This initiative involved a strategic cooperation between governmental agencies such as the Department of Islamic Development Malaysia (JAKIM), the Ministry of Women, Family and Community Development (KPWKM), and NGOs such as MERCY Malaysia. From March 25, 2020, to December 15, 2022, the Psychosocial Support Helpline received a total of 308,343 calls, which were predominantly related to psychological issues (74.1 percent of issues).²³ During the surge of COVID-19 cases in Klang Valley, a Frontliner Social Support System (FSSS) cluster was established within the Greater Klang Valley (GKV) taskforce that included interagency collaboration to provide holistic mental health support services to the community.²⁴

The MOH also provided Psychological First Aid (PFA) services for COVID-19 patients admitted to hospitals, quarantine stations, and CAC facilities; health care workers and frontliners of other agencies tasked with dealing with the COVID-19 pandemic at the national, state, and district levels; and individuals

²³ Personal communication, National Centre of Excellence for Mental Health, Ministry of Health Malaysia, 2023

²⁴ Personal communication, National Centre of Excellence for Mental Health, Ministry of Health Malaysia, 2023

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who had lost their family members due to death from COVID-19. Pre- and post-deployment briefings as well as Mental Health Alert Cards were also distributed to the frontliners prior to their mobilization to the field. In addition, mental health and COVID-19 IEC (information, education, and communication) materials were regularly disseminated through social media platforms and media broadcasts.

Public's Response

a) Social Distancing, Personal Hygiene, and Social Norms

Face mask use, physical distancing, and hand hygiene were NPIs encouraged from the beginning of the outbreak. By applying Act 342, the Malaysian government made face masks mandatory in August 2020. This regulation was subsequently relaxed in May 2022. Similarly, since the announcement of the pandemic and especially since the occurrence of the second wave associated with a large cluster, Malaysia has depended on the public's compliance with physical distancing rules and with the enforcement of Act 342 subsection 11(1) instructing individuals to avoid large gatherings. Noncompliance from some members of the public, even during 2021's surge associated with the third wave, led to the amendment of Act 342 subsections 23–25 in accordance with the corresponding declaration of a national state of emergency. This amendment resulted in the enforcement of heftier fines and prison terms for those found to be noncompliant.

b) Vaccine Acceptance

A Special Meeting of the Muzakarah Committee of the 10th National Council for Islamic Religious Affairs Malaysia was held in Malaysia, a country with a majority Muslim population, in order to address concerns about the vaccine's permissible use and obligation status within religious groups, prior to the implementation of the countrywide vaccination program (Institute for Health Systems Research 2021a). This and the development of educational outreach activities, including the production of promotional materials such as infographics in different languages besides Malay, Mandarin, and Tamil, were instrumental in addressing any vaccine hesitancy that may have prevailed for many reasons, including those based on religious and moral grounds. To

assess the public's sentiment regarding vaccines, the Institute for Health Behavioural Research (IHBR), a component of the Malaysian National Institutes of Health, summarized findings from four online surveys conducted between April 2020 and January 2021. The Malaysian public generally accepted the vaccine, with an acceptance range of 67 to 94 percent. For those who expressed hesitation, reasons ranged from safety concerns (most common) to effectiveness and suspicion of the vaccine's contents. In April 2021, three months after the vaccine rollout, another survey was conducted. This time, out of a total of 14,693 respondents, a higher percentage expressed that the vaccine was acceptable to them (up to 98.5 percent), with the main reason being "to protect myself and others," "to create herd immunity," and "to return to normal life."²⁵

c) Trust in Government and Social Institutions

The emergence of COVID-19 led to anxiety and presented massive challenges for Malaysians and the authorities, as it has done in other countries. With a novel virus spreading as rampantly as COVID-19 has, it was not unusual for there to be skepticism among the public, which has no other way to obtain more certainty than passively waiting for the country's leadership to send it updated information on the evolution of the outbreak and the country's response plan. The government anticipated nervousness and some level of skepticism that could quickly turn into distrust if any mishap occurred in the transparent conveyance of information, or if the public picked up misunderstandings or misinformation or misapplied government instructions surrounding its response plan. As such, it was critical for the IHBR to conduct periodic public sentiment analyses, which it did since the start of the pandemic.

Analysis of public sentiments from between January to April 2020 showed changing trends: during the MCO, 19 percent of the sentiments were negative and 21 percent were positive, with the majority being neutral (Institute for Health Behavioural Research 2022). Further, on the extension of the MCO, the majority (56 percent) of the sentiments were positive, and 18 percent were negative. The analysis also showed substantial negative sentiments on new norms (31 percent for social distancing, 27 percent for no mass gatherings or events), although the majority were positive (Institute for Health Behavioural

25 Health Education Division, MOH, "Tinjauan & Sentimen Media Sosial Mengenai Vaksin COVID-19" (Official Portal of the Institute for Health Behavioural Research [IPTK], accessed November 1, 2022), <https://iptk.moh.gov.my/>

Issues raised by the public included uncertainties about job stability and disrupted income, plus the difficulty in accessing food due to supply chain disruption and hoarding by fellow citizens.

Research 2022). Issues raised by the public included uncertainties about job stability and disrupted income, plus the difficulty in accessing food due to supply chain disruption and hoarding by fellow citizens.

The government learned about the public's struggles and committed to alleviating the tensions. Some strategies included alerting the Ministry of Domestic Trade and Consumer Affairs to monitor food supply and daily demand closely. In addition, the government pledged to provide financial assistance to Malaysians affected by the MCO. Several stimulus packages have since been launched, including the PRIHATIN Rakyat economic stimulus package, estimated to total RM 305 billion, equivalent to more than 20 percent of Malaysia's GDP (Ministry of Finance Malaysia 2021). Other forms of financial aid include utility bill discounts and moratoriums offered by banks on existing loans. Several other government agencies have used similar tools to reach the public and to understand its needs, and the public availability of their findings has also enabled the private sector and NGOs. They have partnered closely with the Malaysian government in this fight against COVID-19 in volunteering to alleviate tension and public needs.

Vaccination

In recognizing that vaccinating the population was central to the country's recovery and reopening, Malaysia established the National COVID-19 Immunisation Programme (PICK), governed by the COVID-19 Vaccine Supply Assurance Special Committee and the COVID-19 Immunisation Special Task Force (CITF) (Institute for Health Systems Research 2021a). Both entities exist to ensure prompt access to and effective distribution of COVID-19 vaccines throughout the country via a close partnership between the public and private

health care sectors. In December 2020, the central government committed to acquiring vaccine doses from COVAX (the COVID-19 Vaccine Allocation Plan), a partnership between the WHO, the Coalition for Epidemic Preparedness Innovations, the Vaccine Alliance (GAVI), the United Nations Children's Fund (UNICEF), and Pfizer, SinoVac, and CanSino, which were projected to cover up to 80 percent of the eligible population by February 2022 with an estimated procurement cost of RM 2.05 billion (Institute for Health Systems Research 2021a).

During the initial rollout, the government announced that it had established vaccine storage centers and vaccine administration centers (Pusat Pemberian Vaksin, or PPV), throughout the country (Ministry of Science, Technology, and Innovation 2021). Implementation of the PICK on a large scale was made possible with successful public-private partnership between ProtectHealth Corporation and the MOH, as well as collaborations with other ministries such as the Malaysian Armed Forces (ATM), which played an important role in the logistics, distribution, and transfer of vaccines during the immunization program. In addition to this, drive-through vaccination administration centers were also opened. Private health facilities were involved in PICK beginning in April 2021. As of June 30, 2022, 2,624 facilities had been appointed as PPV, and these included general practitioner clinics, specialist clinics, hospitals, and ambulatory care centers (ProtectHealth Corp. 2022.). To cater to the growing number of registrants, mega PPVs were subsequently established in Phase III of PICK to cater for thousands of appointments per day, using, for example, a national stadium that could handle up to 10,000 doses per day (Institute for Health Systems Research 2021a). As of July 2021, there were forty-one mega PPV (later called PPV Integrasi) primarily located in the Klang Valley, where the highest COVID-19 case density was recorded, to accelerate achieving at

FINDINGS

least first-dose administration to the adult population (Institute for Health Behavioural Research 2022). By June 30, 2022, mega PPVs had been closed and vaccination administration was continued in the other settings (Institute for Health Behavioural Research 2022). In addition, private PPVs were also established specifically for the industrial workforce throughout Malaysia, via PIKAS (Public-Private Partnership COVID-19 Industry Immunisation Programme/Program Imunisasi COVID-19 Kerjasama Awam Swasta), with collaborations between the Ministry of International Trade and Industry (MITI), the industrial sector, and ProtectHealth (Institute for Health Systems Research 2021a, Institute for Health Behavioural Research 2022).

When the program was first launched in February 2021, the plan was to administer vaccines in three (3) phases (Institute for Health Systems Research 2021a):

- 1.** Phase 1: Frontline workers in and outside the health care sector, estimated to total 500,000 individuals, from February to April 2021.
- 2.** Phase 2: Vulnerable groups such as older persons, defined as individuals ages 60 years and over; high-risk individuals with chronic diseases such as heart disease, obesity, diabetes, and high blood pressure; and individuals with disabilities—estimated to include 9.4 million individuals, from April to August 2021.
- 3.** Phase 3: General adult population ages 18 years and over (citizens and noncitizens), estimated to total 13.7 million individuals, from August 2021 to February 2022.

By September 2021, Malaysia had reached its target of achieving immunization of 80 percent of the adult population with two doses (Radhi 2021). Subsequently, the Adolescents PICK programme began, with appointment scheduling conducted by the district education offices and involving 156 PPVs (MOH 2021g). COVID-19 vaccination for adolescents commenced on September 20, 2021, targeting those ages 12 to 17 years. There were more than 156 PPVs for adolescents. These 156 PPVs previously provided adult vaccination and have been approved by the MOH to continue providing vaccination for adolescents. Certain districts worked closely with state education departments and identified schools as the PPVs. To facilitate vaccination, the district education office, school, and district health office offer school base appointments for vaccination. By December 2021, the 80 percent target for adolescents who have received two doses of vaccination was achieved (MOH 2021h). Approximately one month after achieving vaccination

of 80 percent of the adult population, Malaysia commenced the PICK Booster on October 13, 2021 (MOH 2022g). Studies in the local setting had shown a decrease in immunity of as high as 48 percent (depending on vaccine brand) in the 3 to 5 months after completion of two doses. Hence, to prevent the increase in cases that could burden the health care system, as well as to increase immunity and protect against new variants, booster dosing was highly encouraged, particularly among the priority groups and high-risk individuals such as older persons, the immunocompromised, and frontliners (MOH 2022h). In January 2022, the Malaysian Drug Authority approved Comirnaty pediatric formulary for children ages five to 11 years. On February 3, 2022, the PICK program for children was launched, having extended its reach, via the PICK Kids program; parents could participate voluntarily and set appointments via the MySejahtera App (MOH Malaysia 2022i).

Overall, individuals wishing to participate in the immunization program have a few options for registration. The COVID-19 vaccination drives were facilitated by appointment and bookings through the MySejahtera Application and telephone and toward the end of third phase, walk-ins were allowed to ensure access to COVID-19 vaccination. The MOH provided outreach vaccination services to remote areas, prison inmates, and correctional institutions, as well as vaccination through home and institutional visits to bedridden individuals. The initiatives encouraged vaccination among the noncitizens and refugees through collaboration with NGOs and international agencies. Several other manual registration options are available to allow those with no smartphones to gain access to COVID-19 vaccines. These options include providing a hotline number that interested individuals can call via the public primary care clinics, as well as setting up village community centers in rural areas as vaccine registration sites. In addition, drive-through services have been established and mobile teams have been deployed to increase access to vaccines for older adults who may not be able to access transportation to vaccination centers. Focus was also given to other priority groups, such as sight- and hearing-impaired individuals and pregnant mothers, for whom specific programs were conducted.

To ensure adequate supply of COVID-19 vaccines during the peak of the COVID-19 pandemic, Malaysia secured vaccines from both the COVAX facility and directly from the manufacturer. Hence, Comirnaty (Pfizer-BioNTech), Coronavac (Sinovac), AstraZeneca, and Condevesia was used in the National COVID-19 Immunisation Programme. Despite early procurement

planning, Malaysia relied mainly on the Comirnaty vaccine, followed by the Coronavac vaccine, between April to September 2021. As a cautionary strategy, the Malaysian government started by offering AstraZeneca's vaccine through an opt-in, volunteer-based system rather than through its immunization program; however, the fixed number of vaccine doses that were offered were taken up by the public in record time, with additional individuals having to go on a waitlist. This positive response from the public signaled the presence of public confidence in the vaccine; thus, the AstraZeneca vaccine was eventually added to the PICK program. In June

2021, the Drug Control Authority also approved the one-dose CanSino vaccine to ramp up the capacity to immunize an increasing population (Institute for Health Systems Research 2021a).

As of June 30, 2022, approximately 71.4 million doses of the COVID-19 vaccine had been administered.²⁶ *Table 2* below shows the cumulative percentage of the population vaccinated to date, stratified by age group. Additionally, as of June 2022, the majority of vaccine doses that have been administered were produced by Pfizer (82.7 percent) (*Figure 6*).²⁷

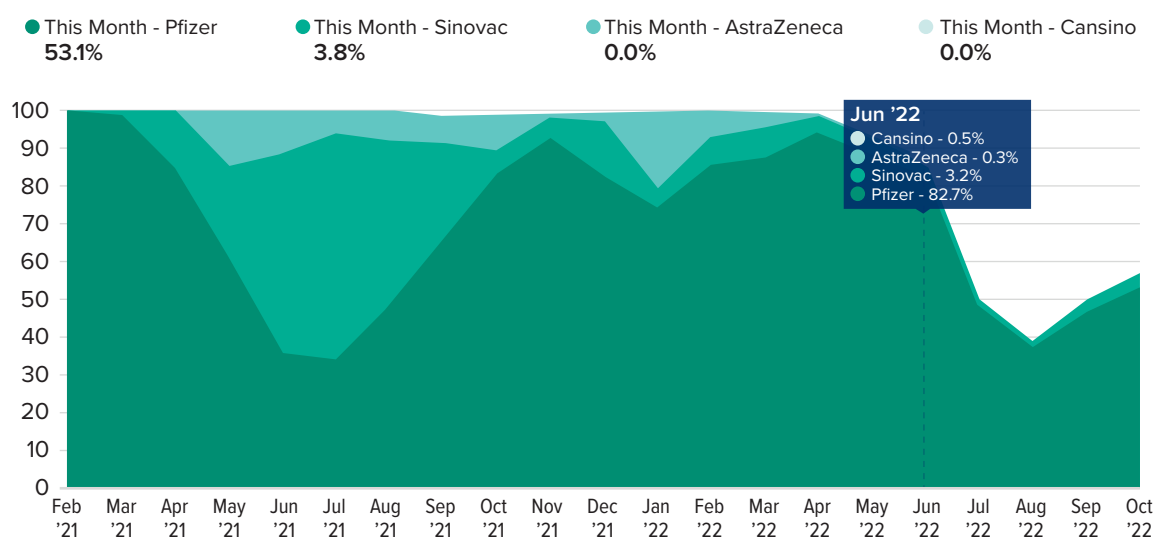
Table 2: Cumulative Percentage of the Population Vaccinated, by Number of Doses Administered (as of June 30, 2022)

Proportion vaccinated by age group	At least one dose administered	Two doses administered	At least one booster dose administered
Total Population	86.0%	83.6%	49.5%
Adults (18+)	99.4%	98.2%	68.5%
Adolescents	94.1%	91.5%	1.3%
Children	49.2%	38.0%	-

Source: MOH Malaysia Github (<https://github.com/MoH-Malaysia/covid19-public>, accessed December 13, 2022)

Figure 6: Distribution of Vaccines Administered as of June 2022

Vaccine Brands by Month Data for Malaysia



26 Ministry of Health Malaysia, covid19-public/vax_malaysia.csv at main MoH-Malaysia/covid19-public, GitHub (website, accessed December 13, 2022). https://github.com/MoH-Malaysia/covid19-public/blob/main/vaccination/vax_malaysia.csv

27 Ministry of Health Malaysia, Vaccinations in Malaysia—COVIDNOW (website, accessed August 1, 2022), <https://covidnow.moh.gov.my/vaccinations/>

Source: MOH, Malaysia (<https://covidnow.moh.gov.my/vaccinations>)

Protecting Vulnerable People

Older persons ages 60 years or older, those with chronic illnesses such as diabetes and heart disease, the immunocompromised, children, and pregnant women were identified as high-risk populations, as they are vulnerable to contract a more severe form of the disease with a higher mortality rate. The elderly were placed in the Phase 2 of the National COVID-19 Immunisation Programme and were prioritized to receive the COVID-19 vaccine early on. In addition, when the country began administering boosters, priority was first given to the elderly and individuals with high-risk comorbidities. In order to protect children, schools remained closed and virtual learning was implemented wherever possible. SOPs were refined as Malaysia transitioned towards recovery and endemicity phase. Students were allowed to physically attend schools initially on a rotational basis, for example, half the class on alternate weeks while their counterparts attended virtual learning. By April 2022, full time physical attendances to schools resumed. In addition, because many younger children still cannot have access to the vaccine, all nonpharmacological intervention measures continued to be observed by fully vaccinated adults and older children to protect them. Nevertheless, the commencement PICK KIDS, in February 2022, conferred protection to five to twelve year olds as well. In addition, there were many initiatives for the indigenous population, such as immunization. For example, multisectoral partnerships between the Department of Indigenous (Orang Asli) Development (Jabatan Kemajuan Orang Asli [JAKOA]), the state health department and other counterparts facilitated efforts by the Gua Musang Health Department, in the state of Kelantan, where 10,066 (75 percent) of the adult members of indigenous tribes were vaccinated by the end of October 2021. Initiatives were also taken to disseminate correct information about COVID-19 and vaccination to the community members, such as by engaging with tribe members working with the local forest department, who could then relay the information to family and friends. (WHO 2021b). As of September 21, 2021, 82.73 percent of the Orang Asli adult population in the state of Selangor had gotten at least one dosage of the vaccine (JAKOA 2021).

Successful governance during a pandemic requires the entire population to be accounted for, regardless of socioeconomic status and citizenship. Other groups of vulnerable populations identified

were the poor, the homeless, migrant workers, and refugees. Malaysia has more than two million documented migrant workers, between two to four million undocumented migrant workers, and 160,000 refugees. These vulnerable groups of individuals live within the community and face challenges in accessing health care due to language barriers and health care financed through OOP. Positive cases among this population, therefore, risk spreading quickly. Contact tracing within these vulnerable populations is challenging, as many are mobile or do not have a registered permanent address. Fear of detention and deportation makes these individuals unlikely to come forward for testing. COVID-19-related services such as testing, isolation, treatment, and vaccination were provided for free to all populations, including these marginalized groups.

Many of these individuals depend on employer-provided housing. As such, the enactment of the Employees' Minimum Standards of Housing, Accommodations and Amenities Act 1990 (Act 446), which went into effect on September 1, 2020, was primarily aimed at protecting this segment of the population.²⁸

Many of these vulnerable communities, especially the refugees and the homeless, rely on social enterprises and NGOs for aid during regular times. Given their ongoing relationship with NGOs, the government worked closely with NGOs and civil society organizations to identify at-risk groups and to encourage access to screening, testing, quarantine, vaccination, and treatment of COVID-19 when necessary.

Innovation Through Leapfrogging

Information and Communication Technologies (ICTs)

Malaysia capitalized on its thriving digital environment by quickly adopting and promoting digital innovations for COVID-19 education and monitoring purposes.

The Malaysian government's MySejahtera App, developed via intersectoral collaboration between the MOH, the Malaysian Administrative Modernisation and Management Planning Unit (MAMPU), the National Security Council, and others, went live in April 2020 (Institute for Health Systems Research, 2020, 2021b). Its goal was to assist in monitoring the outbreak in Malaysia, to be a quick point of resource for the public about the risks, and to provide information to

²⁸ Government of Malaysia, Employees' Minimum Standards of Housing, Accommodations and Amenities Act 1990 (Act 446); Final Rule, 1990

the MOH to assist with prompt planning and execution of effective countermeasures such as contact tracing. The application to date has enhanced functionalities that allow willing citizens to conduct COVID-19 self-assessments; allow for early detection of cases; and enable health care providers to monitor patients' symptoms remotely, thereby reducing unnecessary visits to health care facilities. The app also contains a hotspot tracker alerting users to which locations to avoid.²⁹ In addition, the application allows users to register for vaccination appointments and locate testing, treatment, and vaccination sites. Users of the MySejahtera Application also receive updates about vaccination appointments once a date, time, and location are determined for each person. Once they are vaccinated, the app also houses a vaccination certificate that users can display at locations requiring proof of vaccination. The MySejahtera App also has a check-in and check-out feature, which indicates users' current COVID-19 risk status and vaccination status as they enter or exit a business establishment such as a grocery store.

The MySejahtera App hotspot tracker originated from another digital platform called MyTrace, which uses Bluetooth technology to promote a community-driven approach to sharing proximity information, allowing people to know which areas have positive cases and whether they have come into contact with someone who has tested positive (MOH 2021i). Multiple useful applications with varying and nonoverlapping functionalities could have been inconvenient to the public. Combining various features in one app was an instrumental move, as the Malaysian government encouraged the application's use as a way for the community to concurrently participate in national efforts to curb COVID-19's spread. Further, by requiring the use of only one application, the government was better able to coordinate rollout of activities via the app. The app was lauded as one of the highest-ranking apps of 2021 (Yeoh 2022); however, as the country entered its endemic phase, during which check-ins and check-outs were no longer required, the app's functionality would need to be explored for implementation beyond COVID-19-related activities (MOH 2022j). In order to increase population reach, various social media platforms such as Telegram and Twitter were used for risk communications (MOH 2020h).

Besides the overwhelming use and reliance on MySejahtera, a Virtual Health Advisory (VHA) platform was also developed to address public panic and misconceptions during the pandemic (MOH 2020i).

VHA was a top-down tool enabling family medicine specialists to use a virtual platform to communicate and spread educational content to their patients and the public. The pandemic also saw the strengthening of telehealth. The rollout of virtual, public primary care clinics increased the number to 35, from the initial 5 that existed prior to the pandemic. Guidelines for conduct of telemedicine were also released by the Malaysian Medical Council (MMC n.d.).

Another key achievement is the establishment of an open data platform called COVIDNOW. It was rolled out as a collaboration between the MOH and the open data community to enhance the use of the massive amounts of COVID-19-related data generated throughout the pandemic and to facilitate transparency (MOH 2021j).

Apart from the above, the CPRC Hospital Services—Medical Program and Operational Efficiency tool is an online reporting tool intended to monitor the state of preparedness by collecting real-time data using a cloud framework—as opposed to the previous method of relying on manual monitoring and reporting of daily bed use or ventilators in the hospital (MOH 2020j). The online reporting tool centralizes data collection and produces output via an interactive dashboard. The system provides daily aggregates to enable faster decisions on the use or mobilization of these resources. The tool was touted in a report by the Asian Development Bank in October 2020 as “a program that could be easily implemented in other countries to upgrade hospitals' operational efficiency.”

Figure 7: MySejahtera Application's Awards and Recognition



²⁹ Ministry of Health Malaysia, MySejahtera (website of MySejahtera Unit, accessed November 1, 2022), <https://covid-19.moh.gov.my/faqsop/mysejahtera>

Source: *Chronicles of COVID-19 in Malaysia—Navigating the Storm* (<http://library.nih.gov.my/e-doc/flipbook/the-covid19-chronicles-of-malaysia-navigating-the-storm/index.html>)

Measures to Contain COVID-19 With a Human Capital Perspective

a) Education

By prioritizing mitigation strategies and employing MCOs, schools and educational institutions have been instructed by the Malaysian government to be closed for a considerable period since March 18, 2020 (Prime Minister's Office 2020). The lockdowns in response to COVID-19 have interrupted conventional schooling with nationwide school closures. Guidelines were developed to assist schools in conducting lessons with new norms during the movement control order phases, as well as to facilitate the reopening of schools (Ministry of Education Malaysia 2020a).

Based on the regional COVID-19 burden, certain educational institutions reopened temporarily in early 2021, but as the third wave peaked, schools reverted to remote learning entirely again. The disruption to the education sector was felt by everyone in the system, including educators, students, and parents, who all had to adjust to the new way of learning. Taking into consideration that 95.5 percent and 99.6 percent of Malaysia's households have access to the internet and mobile phones (Department of Statistics Malaysia 2022), the Ministry of Education took the initiative by using technology to continue lesson delivery remotely via online platforms, to overcome school disruption (Ministry of Education Malaysia 2020b). Other educational tools used include television programs, specialized online programs, mobile devices, and take-home packages. The mixture of modalities was necessary to cater to the diverse needs of the population, some of whom may not have had the necessary access to proper IT infrastructure, such as possession of gadgets and internet access for online learning. Since the country reopened, the National Recovery Plan has been providing guidance on a phased approach to permitting activities related to education and childcare based on the percentage of the population that has been vaccinated, the number of daily new cases, and the ICU usage rate³⁰ (Table 3). As of June 30, 2022, schools have been opened in phases with advocacy of new norms.

Lack of internet access was identified as one of the barriers during this period, especially for those living

in rural areas, as the need for high-speed data access impacted the whole online learning experience. Besides that, virtual education is a complex task requiring strong community support from teachers, parents, guardians, and school administrators, along with student motivation, and involves tracking the continuance of students' learning and progress in reaching optimum results or results comparable to those of physical classrooms (N. and Quick 2016).

b) Social Protection and Jobs

Throughout the pandemic, the government has consistently provided aid for economic and social protection, as described in earlier sections of this report. In addition, aid in the form of cash assistance and noncash assistance, such as loan moratoriums, utility bill discounts, or food basket provisions, has been provided. To encourage income generation, as part of the Pemulihan stimulus package, a program called the Global Online Workforce (GLOW) program trained 10 to 200 job seekers interested in the digital economy, particularly those impacted by job loss or salary reductions of more than 50 percent (MDEC 2021). In addition, a job search allowance totaling RM 300 is given to unemployed persons, including new graduates and informal sector workers, to help them find job opportunities (Chan and Harun 2021). With an unemployment rate of 5.3 percent recorded in May 2020, the highest since 1989, several job retention and job generation initiatives have also been introduced. Outcomes of these initiatives include 289,444 job placements as of June 2021, out of a target of 500,000 for the whole of 2021 (Ministry of Education Malaysia 2020a). In addition, 659,066 jobs received RM 1.4 billion in support from the government so employers could retain their workers as of June 2021 (Institute of Education Malaysia 2020a). Table 3 below provides a summary of the criteria used to assist with the phased approach to reopening businesses and highlights aspects of the National Recovery Plan report, for more details on the effort to steer the country toward a safe, sustainable, and successful recovery from COVID-19. Each state in Malaysia experienced its own transition of phase based on improvements of indicators in their respective settings. As an example, Klang Valley entered Phase 2 by September 2021, whereas a neighboring state, Negeri Sembilan entered Phase 3. By January 2022, all states in Malaysia had entered Phase 4 of the National Recovery Plan.

³⁰ Government of Malaysia, National Recovery Plan—Malaysia's Roadmap to Safely Exit the COVID-19 Pandemic, 2021

Table 3: Measures to Contain COVID-19 and Criteria for Careful Reopening

Phases	Phase 1	Phase 2	Phase 3	Phase 4
Qualifiers/ indicators		<ol style="list-style-type: none"> 1. Percentage of adult population fully vaccinated 10%. 2. Daily new cases < 4,000. 3. ICU usage rate moderate. 	<ol style="list-style-type: none"> 1. Percentage of adult population fully vaccinated 40%. 2. Daily new cases < 2,000. 3. ICU usage rate adequate. 	<ol style="list-style-type: none"> 1. Percentage of adult population fully vaccinated 60%. 2. Daily new cases 500. 3. ICU usage rate adequate.
Education and care	<ol style="list-style-type: none"> 1. Nurseries and kindergartens for offspring of frontliners and those in essential services. 2. International exams and face-to-face learning for cohorts taking the examinations in international schools. 3. Selected activities in higher learning institutions, including face-to-face instruction for international exams and professional body activities, subject to SOPs. 4. Residential care and rehabilitation centers, subject to SOPs. 5. All other schools closed, and other activities not permitted. 	<ol style="list-style-type: none"> 1. National exams and face-to-face learning for cohorts taking the examinations in all schools. 	<ol style="list-style-type: none"> 1. Nurseries and kindergartens open to children of all parents. 2. Face-to-face learning in private schools, public schools, and higher education institutions starts to resume in stages, subject to the school calendar and meeting certain criteria. 	
Business	<ol style="list-style-type: none"> 1. Essential services only, with no capacity limit for agriculture and commodities, 60% for other private sector, and 40% for public sector. 2. Take-out service from restaurants. 3. Interviews and newscasting. 4. Daily markets with limited operating hours. 5. All other businesses closed or under work-from-home rules. 	<ol style="list-style-type: none"> 1. Expanded list of sectors permitted to operate, with no capacity limit for agriculture and commodities, 60% for other private sector, and 40% for public sector. 	<ol style="list-style-type: none"> 1. All sectors can operate except those with high risk of transmission (for example, spas, pedicure and manicure providers, pubs at night clubs), subject to capacity limits and SOPs. 2. Dine-in service at restaurants with a limit on number of persons per table 3. Live performances and events without an audience. 4. Night and weekly markets, with SOPs. 	<ol style="list-style-type: none"> 1. All sectors can operate at full capacity subject to social distancing and SOP compliance. 2. Dine-in service at restaurants, with social distancing and SOP compliance. 3. Live performances and events with restricted audience capacity.

Source: National Recovery Plan (Ministry of Education Malaysia 2020a)

Tea Valley in Cameron Highland, Malaysia



4. LESSONS LEARNED: BEST PRACTICES AND CHALLENGES

1. Consistently strong leadership and continued teamwork was essential to manage the spread of COVID-19 during this pandemic. Close coordination across multiple sectors, including public and private health care agencies and NGOs, required consistent and frequent messaging to implement strategic responses promptly and smoothly.
2. Legislation and governance are important components for a successful response. The enactment of emergency ordinances using existing laws and regulations allowed for faster engagements with private and nongovernmental organizations in responding to the pandemic collectively.
3. Effective communication and consistent public engagement to build and maintain public trust were a critical priority. The Director- General of Health provided open channels of communication with the public through social media, and the MOH conducted periodic public sentiment analyses to enable the government to respond swiftly to any misunderstandings. This approach also allowed the MOH to tailor responses based on needs voiced by the public.
4. The government harnessed the power of ICT to serve multiple goals. The development of virtual health advisories and the widely used MySejahtera Application, in particular, have been vital in helping to improve public participation in essential public health activities aimed at containing the spread of the virus.
5. Although harnessing ICT for outbreak monitoring and movement control was helpful, it posed high data security and system safety concerns. The decision to invest significantly in data safety and security checks to promote the responsible use of ICT and stakeholder accountability, and to allay public anxiety, was decided upon early on in the pandemic, because of the belief that ICT could be leveraged for a quicker and more uniform national response—an urgent requirement in the case of COVID-19.
6. Prompt and proper human resource mobilization required that the MOH and its overseeing agencies be prepared to screen and verify the competencies and credentials of volunteer health care personnel. Given that a system was not in place prior to the pandemic, a new system had to be built from the bottom up to initiate recruitment. Hence, during the initial phase of the pandemic, recruitment and mobilization of human resources to needier areas were relatively slow and marred with panic. As the pandemic progressed, with its undulating course, the country was better able to mobilize human resources during subsequent surges because of the rapid establishment of this system during the initial part of the outbreak.
7. To promote continuity of care and provision of essential health services, the MOH developed COVID-19 Assessment Centres for managing patients as much as possible at the primary care level before diverting cases to inpatient services, including critical care units, so already scarce hospital resources could be allocated carefully.
8. Although the digital health care solution was not widely adopted before the pandemic, the country quickly responded by offering tools and resources to help interested clinicians set up telehealth services. Thus, essential health services that can be safely provided remotely can be implemented to further support movement control and distancing efforts. The telehealth initiative was slow to gain traction prior to the pandemic, but interest in it accelerated greatly during COVID-19.

Mosque on water in Malacca, Malaysia



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