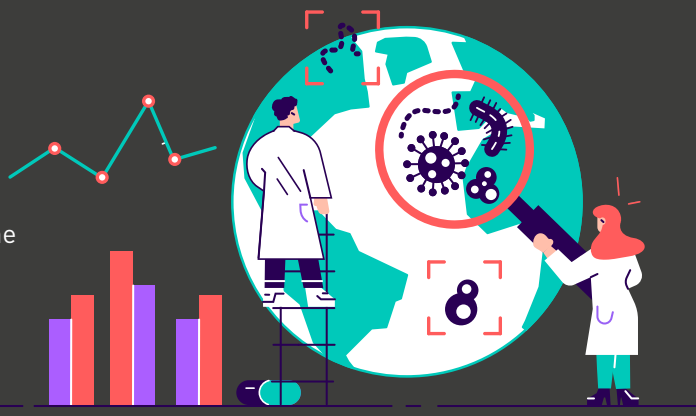
# COVID-19 RESEARCH STUDIES FACT SHEET

ACADEMY OF SCIENCES MALAYSIA (ASM)

ASM is a statutory body of eminent Malaysian scientists elected for their contributions to science. At this period of unprecedented uncertainty due to the Covid-19 pandemic, ASM has established a Special Interest Group (SIG) on COVID-19 comprising Fellows of the Academy, Young Scientists Network (YSN-ASM) and Top Research Scientists Malaysia (TRSM) who are the expert network of ASM to review key research findings around the world and issue fact sheets to help the public understand the implications (and limitations) of the research studies. This factsheet briefly discusses the epidemiology of Covid-19 in Malaysia based on data available as of 4 May 2020. It then highlights the outbreak control measures employed in several other countries as well as how and why the outbreak progress is monitored prior to decisions to lift a lockdown could be approved."



## COVID-19 EPIDEMIOLOGY: KNOW WHEN THE OUTBREAK IS UNDER CONTROL

### COVID-19 Epidemic and Pandemic

Epidemic and pandemic both refer to the sudden occurrence of a disease that affects a large number of people at the same time. The difference between the two terms lies on how widespread the disease is.

#### EPIDEMIC

If the disease occurs in a large region (such as a city or even a country), it is referred to as an **epidemic.**


#### PANDEMIC

If the disease has spread over many countries and continents, it is called a **pandemic.** In fact, the World Health Organization (WHO) defines a pandemic as "the worldwide spread of a new disease"[1].

COVID-19 was first reported in Wuhan, China in late December 2019. At the beginning of the COVID-19 outbreak, the disease was called an **epidemic** because it occurred almost exclusively in Wuhan, China, and a few other countries such as South Korea, Japan, and Italy[2]. However, on 11 March 2020, the WHO declared COVID-19 a **pandemic** when the infection has spread to over 100 countries across all continents with no sign of slowing down[3].


### COVID-19 Epidemic in Malaysia

Confirmed cases of COVID-19 in Malaysia were first reported on 25 January 2020. There were 22 cases during the first wave (January 25 until February 15), involving majority imported cases and non-Malaysians. February 27 marked the second wave of infection which involved majority local transmission among Malaysians. By March 16, confirmed cases were reported from all states and the federal territories in Malaysia. In response to the nationwide spread of infection, a movement control order (MCO) was issued by the government from March 18 to March 31. During the first phase of MCO, the number of total cases continue to increase exponentially as seen in Figure 1, which leads to an extension of longer MCO period[4].

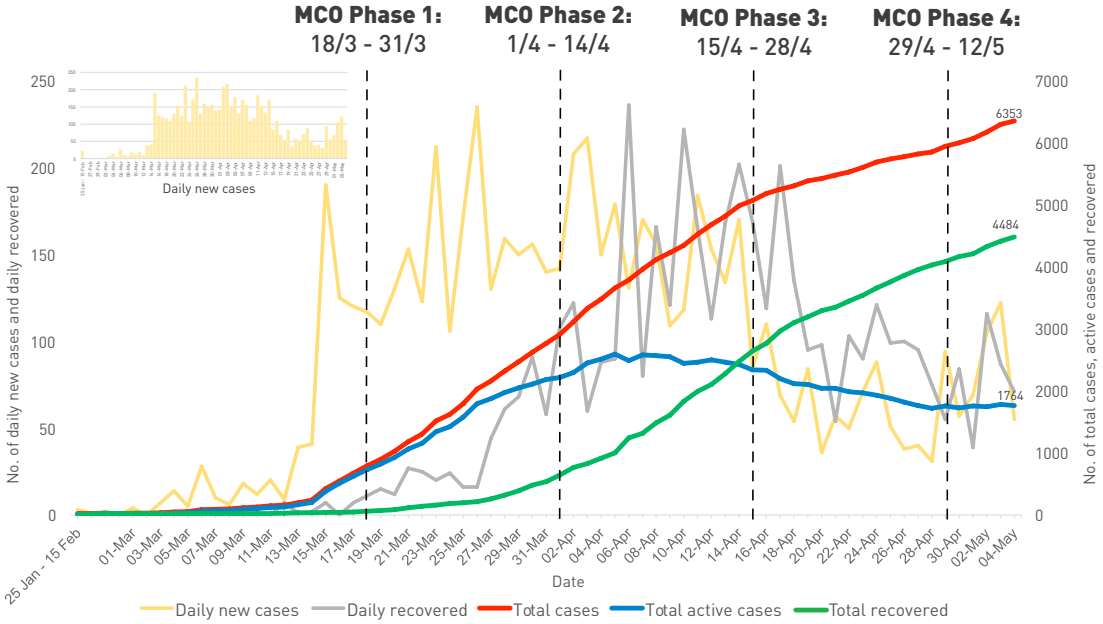



**Figure 1:** Epidemic Curve for COVID-19 in Malaysia, as of 4 May 2020

## Controlling the Outbreak

In response to the COVID-19 outbreak in Wuhan, China banned travel to and from Wuhan city on 23 January and implemented a national emergency response. In addition to the Wuhan lockdown, suspending intra-city public transport, closing entertainment venues and banning public gatherings appears to have reduced new cases and limited the size of COVID-19 epidemic in China, resulting in significant reduction in the number of new cases by 19 February (day 50 of the epidemic)[5].

Community mitigation, which refers to a set of actions that persons and communities can take to help slow the spread of virus infections, is especially important before a vaccine is available[6]. According to a commentary article published in The Lancet[7], the effect of COVID-19 response in China has shown that quarantine, social distancing, and isolation of infected populations can contain the epidemic. Singapore and Hong Kong have also been managing COVID-19 well by early government action to identify cases, isolate infected individuals, contact tracing, and through social distancing measures taken by individuals.

Restriction of mass gatherings and events such as religious gatherings, cultural celebrations, and conferences also helps to reduce the spread of infection.

## Monitoring the Progress of Outbreak

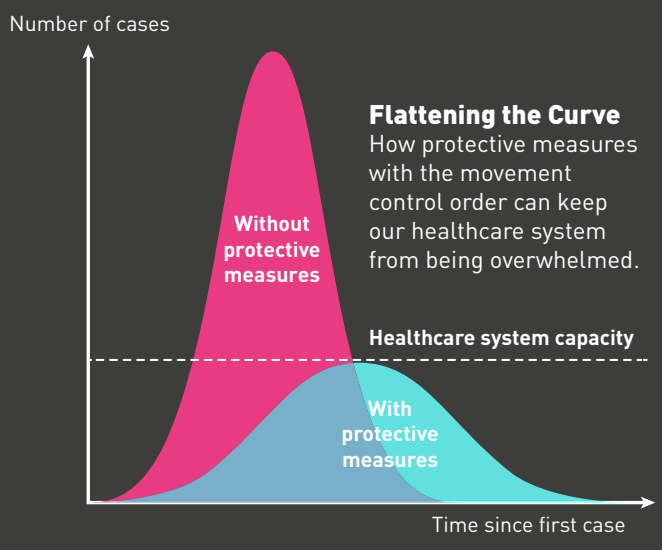



**Figure 2:** The Illustration of "Flattening the Curve".
Image source: Lam, 2020 (9).

When there is a new infectious outbreak in the human population which have no vaccine and effective medications, an exponential rise in the cases that will exceed the healthcare capacity can be observed in a short period of time. Eventually, the epidemic curve will decline when the outbreak has subsided in the population or when measures implemented to control the outbreak. However, in a situation where the outbreak exceeded the healthcare capacity, this will place huge strains on the healthcare resources (shortages of medical equipment, supplies, and staff) and result in unnecessary deaths. To avoid this situation, it is important to slow the spread of infection with control measures such as physical distancing[8].

The term, "flattening the curve" is an idea to prevent a sharp peak of cases (Figure 2) and slowing the spread of infection over a longer period of time to avoid overloading the healthcare system[9].

Over time, when the number of new infections in the population reduces, the exponential rise of new cases as seen in Figure 1 will peak and decline. In addition, when the number of daily new cases is significantly lower than the number of patients being discharged from hospital and recovered from the infection, this will indicate that the outbreak is under control[8].

On the other hand, if the MCO is lifted too early before the outbreak is under control, there is a possibility of another surge of infection in the community as forecasted by statistical modelling[10].

After 76-days of lockdown, China lifted the lockdown in Wuhan city in early April when the outbreak is finally under control with significantly low number of new daily cases and higher number of patients leaving the hospital than admission of new cases[11]. The successful control of COVID-19 outbreak in Wuhan was associated with a series of public health interventions as shown in Figure 3[12]. However, after the travel restriction in China was lifted, a resurgence of new cases were reported comprising mostly imported cases involving individuals entering China from other countries[13].

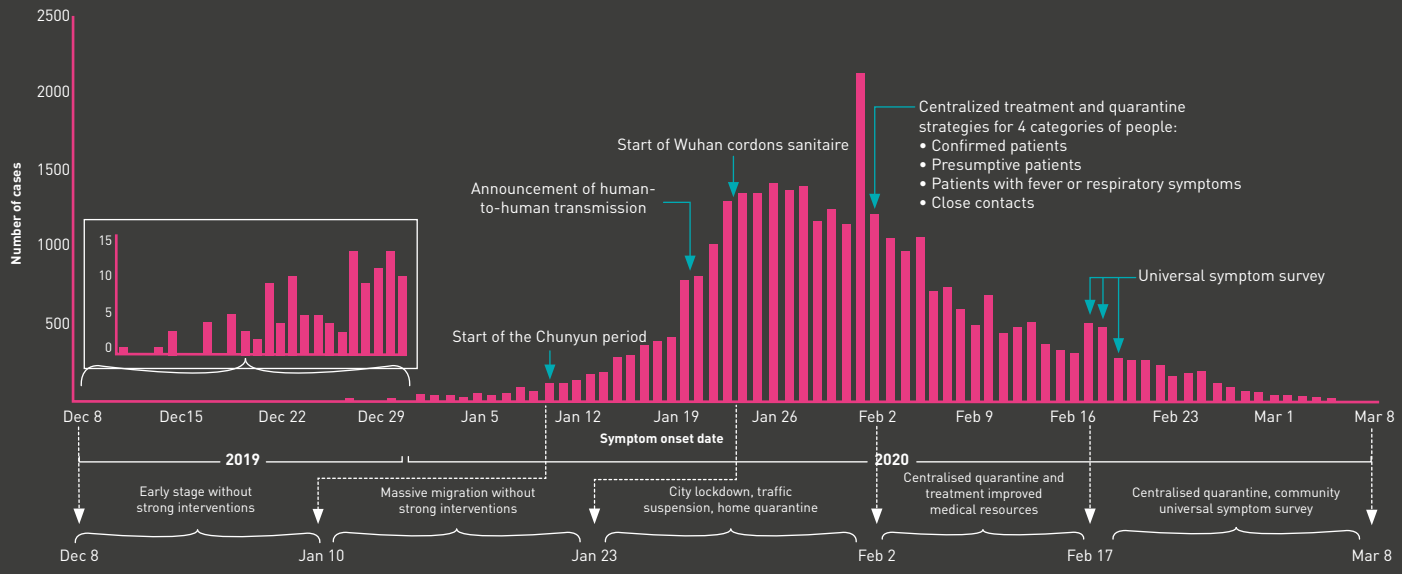



**Figure 3:** Epidemic Curve for COVID-19 Outbreak in Wuhan, China with Key Events and Public Health Interventions. Image Source: Pan *et al.*, 2020 (12).

## Deciding to Lift a Lockdown

- The following are six criteria listed by the WHO for countries to consider when deciding to lift lockdown restrictions[14]:

1. Transmission is controlled
2. Health system capacities are in place to detect, test, isolate and treat every case and trace every contact
3. Outbreak risks are minimised in special settings like health facilities and nursing homes
4. Preventive measures are in place in workplaces, schools and other places where it is essential for people to go
5. Importation risks can be managed
6. Communities are fully educated, engaged, and empowered to adjust to the 'new norm'

## Important Takeaway Messages

- Following the MCO strictly is important to break the chain of virus transmission in the community and to flatten the curve.
- Our actions will determine the course of COVID-19 outbreak in Malaysia.
- The outbreak will be under control when a significantly low number of new daily cases is observed in the epidemic curve.
- Lifting the MCO too early could lead to a third wave of community infection.

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