

Chapter 2

The impact of the COVID-19 outbreak on Asia-Pacific health systems

This chapter provides an overview of the impact of the COVID-19 pandemic on Asia-Pacific health systems, and of government responses to the challenges posed by the COVID-19 crisis. It then discusses the vulnerability of health systems to the COVID-19 shock, in terms of workforce, intensive care unit beds, different sources of health care financing, and testing and contact tracing systems. It also looks at delayed and foregone care for non-communicable diseases, HIV, tuberculosis and malaria as well as rising health needs for mental health due to COVID-19.

COVID-19 has had major effects on countries and territories' economies and health systems. Much remains unknown as to how COVID-19 will affect health spending and the different sources of health financing across Asia-Pacific countries and territories. However, it is critical to ensure that economic pressures - either during or after the pandemic has ended - do not divert already limited resources away from essential health services in low- and middle-income countries.

Introduction

The COVID-19¹ pandemic is the most serious global threat to public health in a century. The first reports of a cluster of novel coronavirus came in December 2019 in the Wuhan city of Hubei Province in China. The World Health Organization (WHO) declared COVID-19 a pandemic on 11 March 2020. Due to the proximity and various links to China, COVID-19 has badly hit Asia early on, along with several Pacific islands countries. As of 5 October 2020, cumulative cases in the region have reached over 8.3 million, and deaths have reached over 140 000 (ADB, 2020[1]). However, countries and territories in this report experienced very different impacts, from extensive deaths in India to a limited number of losses in New Zealand and the Republic of Korea.

The direct health impacts – deaths, hospitalisations and long-term complications – from COVID-19 are compounded by the indirect impacts in terms of foregone and delayed care for other health conditions. Prevention and treatment services for non-communicable diseases as well as for HIV, tuberculosis and malaria have been severely disrupted since the COVID-19 pandemic began. This could lead to a substantial number of additional deaths and years of life lost, in particular in low- and middle-income Asia-Pacific countries. The indirect effects of COVID-19 on pregnant women, newborns, young children and adolescents are also likely to be significant. Countries must also respond to the mental health consequences of the pandemic, which are considerable and likely to persist.

In response to the pandemic, governments have promptly put in place strict containment and mitigation policies to minimise the risk of transmission, to slow the spread of the virus and, in some places, to suppress transmission completely. Also because of their experience with previous SARS and MERS outbreaks, Asia-Pacific governments responded early to the COVID-19 outbreak compared with other region of the world (IMF, 2020[2]).

Across Asia and the Pacific, governments have also introduced countercyclical fiscal and monetary policies. While many measures have been taken to protect jobs, businesses, and ease the strain on health systems, they are not without consequence. Higher government spending and lower revenue collection has driven increased government borrowing, leading to surges in public debt. As a result, the fiscal deficit in Asia-Pacific reporting countries and territories is projected to increase, on average, by more than 3 percentage points of GDP in 2020 compared to 2015-19 to reach 5.9% of GDP (IMF, 2020[3]).

As shown in this report, the health systems in low- and lower-middle-income Asia-Pacific countries have limited capacity and heavily depend on household out-of-pocket spending. Much remains unknown as to how much COVID-19 will affect the different sources of health financing and service delivery across Asia-Pacific countries and territories. However, the significant cost of the

COVID-19 response may not fully be within the financial capacity of low- and lower-middle-income countries.

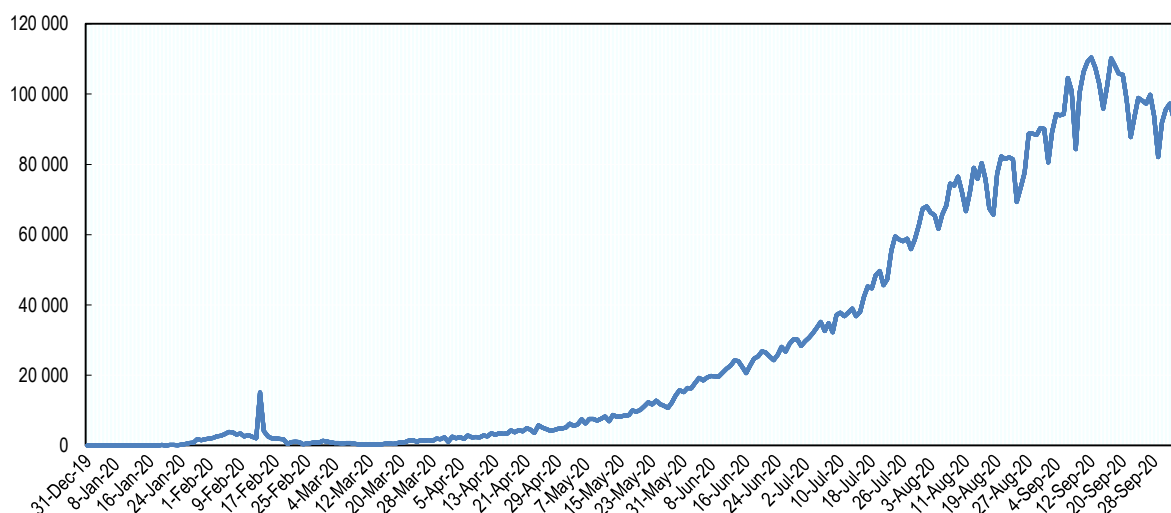
The health impact of COVID-19

The incidence of COVID-19 in Asia-Pacific countries is significant, and for some, still rising

Wuhan city of Hubei Province in China reported the first cluster of COVID-19 cases in December 2019. More cases have been reported across the Asia-Pacific region and worldwide. As of 5 October 2020, cumulative cases in the region have reached over 8.3 million – one fourth of the total cases reported in the world -, with a cumulative incidence of 2 060.2 per million population².

Despite China reaching its peak in February 2020 with nearly 60 000 total cases, other parts of Asia and the Pacific continue to see upwards trends (Figure 2.1). Notably, at the beginning of October 2020 in India daily new cases remain at around 80 000, making it the worst hit country in terms of cases in absolute terms. In the Philippines too, daily cases have continued to rise through mid-July and August.

Figure 2.1. Daily new cases of COVID-19 in Asia-Pacific up to 5 October 2020



Source: ADB, 2020.

Adjusting for population size, Singapore reported the highest number of total cases per population, totalling over 10 000 cases per 1 million people up to the 5 October 2020³. Following this, India and Wuhan city reported 5 000 cases or more per 1 million people. In contrast, Lao PDR, Myanmar and Viet Nam reported less than 18 cases per 1 million people (Table 2.1).

The loss of human life is considerable

While the majority of people who are infected with COVID-19 recover, the death toll in Asia-Pacific is considerable, and many of those who recovered from the acute stage continue to suffer for months with fatigue and other symptoms. Death rates are highest among elderly populations, and those with pre-existing health conditions. Deaths in the Asia-Pacific region attributed to COVID-19⁴ have increased over time (Figure 2.2) and reached over 140 300 – around 12% of the deaths reported in the world – at the beginning of October 2020⁵. Of this, in absolute terms, India suffered the highest number of deaths, reaching over 102 600.

Table 2.1. COVID-19 cases and deaths by Asia-Pacific country and territory as of 5 October 2020

Country/territory	Cumulative cases per 1 000 000 population	Cumulative deaths per 1 000 000 population
Australia	1 085.8	35.8
Bangladesh	2 284.9	33.1
Brunei Darussalam	340.4	7.0
Cambodia	17.2	0.0
China	61.4	3.3
- Hubei Province	1 149.6	76.1
- Wuhan city	5 554.3	426.9
Fiji	36.2	2.3
Hong Kong, China	687.8	14.1
India	4 897.0	75.9
Indonesia	1 133.9	41.7
Japan	677.6	12.6
Korea, Rep.	466.0	8.1
Lao PDR	3.3	0.0
Macau, China	72.8	0.0
Malaysia	392.7	4.3
Mongolia	99.0	0.0
Myanmar	331.3	7.7
Nepal	3 091.1	19.0
New Zealand	306.8	5.1
Pakistan	1 482.5	30.7
Papua New Guinea	62.7	0.8
Philippines	3 023.8	54.2
Singapore	10 252.8	4.8
Sri Lanka	157.0	0.6
Thailand	51.7	0.8
Viet Nam	11.5	0.4

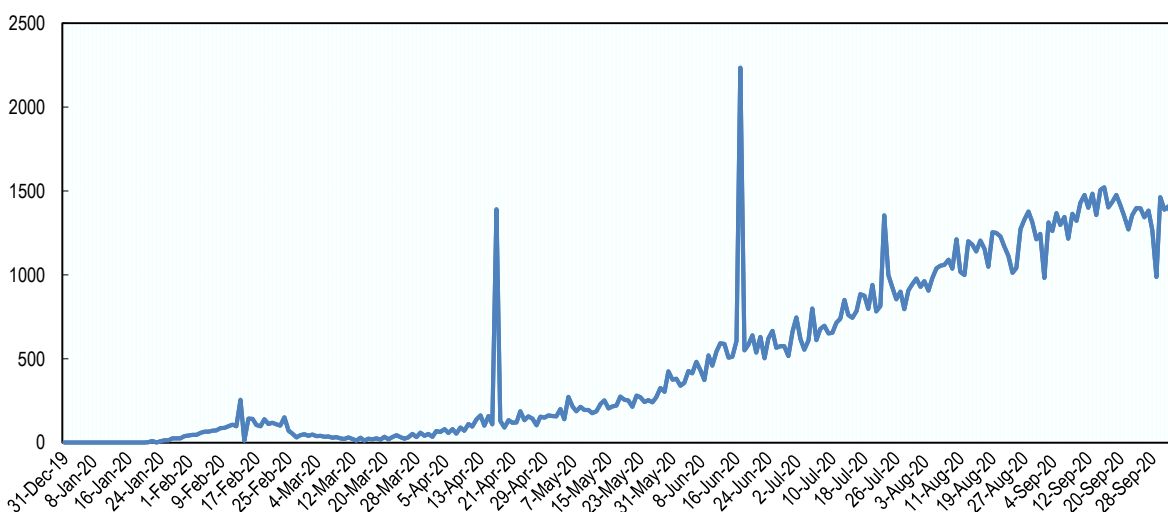
Note: As in more than 40% of China's counties not even a single COVID-19 case has been identified, the table shows also the cumulative cases and deaths in the Hubei Province and Wuhan city, the geographical areas most hit by the pandemic in China. Solomon Islands reported no cases as of 5 October 2020.

Source: ADB (2020[1]) *COVID-19 Policy Database*; National Health Commission, China, for Hubei Province and Wuhan City data.

Adjusting for population, Wuhan city reported the highest number of deaths from coronavirus, with over 426 deaths per 1 million people. Following this, India reported over 75 deaths per 1 million people, and Australia, Bangladesh, Indonesia, Pakistan and the Philippines reported over 30 deaths per 1 million people (Table 2.1). Meanwhile, Papua New Guinea, Sri Lanka, Thailand, and Viet Nam reported less than one death per million people, while Cambodia; Lao PDR; Macau, China; and Mongolia reported no deaths from COVID-19.

Variation in population density, the rural-urban composition, the degree of international visitors, as well as demographic characteristics, among others, may well explain these observed differences in death rates.

Figure 2.2. Daily reported COVID-19 deaths in Asia-Pacific up to 5 October 2020



Note: The peak on the 16 April is explained by the high number of deaths added for Wuhan city (China) on that day, whereas the peak on the 17 June is explained by the high number of deaths reported in India on that day.

Source: ADB (2020[1]) COVID-19 Policy Database.

Containment and mitigation, and fiscal policies

Stringent containment and mitigation policies were employed across much of Asia-Pacific

Containment and mitigation policies aim to minimise the risk of transmission of COVID-19 from infected to non-infected individuals in order to prevent the virus from accelerating exponentially, or at least to substantially reduce its growth rate, and also aim to avoid health systems to become completely overwhelmed (OECD, 2020[4]). Policies can be grouped into three broad categories:

- Social or physical distancing measures, such as closing workplaces and non-essential services, school closures, banning mass gatherings, and travel restrictions;
- Improved personal and environmental hygiene, including the use of personal protective equipment; and
- Testing, tracking and tracing of infected individuals, with confinement of infected persons and their close contacts.

Data from Oxford's COVID-19 Government Response Tracker (OxCGRT) were used to compare government responses across Asia-Pacific countries and territories and over time Box 2.1.

In order to compare the stringency of government policies across Asia-Pacific countries and territories, each country/territory is classified based on how they compare against the Asia-Pacific median. Therefore, countries and territories government policies significantly above/below the median will be classified as "more stringent"/"less stringent" than median (▲/▼), with the remaining countries and territories classified as close to the median (●) (Table 2.2).

Compared to the 179 countries covered by the Oxford database, Asia-Pacific countries and territories government policies were slightly more stringent than the global average at the end of the first quarter 2020 (67.3 vs 66.8), while they were similar at the end of the second quarter (62.2), and at the end of August 2020 (57.9). India and Nepal are the only countries that systematically reported policies that were more stringent than the Asia-Pacific median over time. On the contrary, policies in Brunei Darussalam, Cambodia, Japan and Macau, China were systematically less stringent. Across Asia-Pacific countries and territories, policies were more stringent at the end of the first quarter 2020 compared to the end of the second quarter 2020 and to the end of August 2020.

Box 2.1. The Oxford's government response index

OxCGRT collects information on government policy measures across 17 indicators, organised into four groups: containment and closure policies, economic policies, health system policies and miscellaneous policies. This OECD report is using the “government response index” to measure the government responses across Asia-Pacific countries and territories at three points in time, namely the end of the first quarter 2020, the end of the second quarter 2020 and at the end of August. This index uses scores assigned to each of the following policies: school closures; workplace closures; public event cancellations; restrictions on gatherings; public transportation closures; stay-at-home orders; restrictions on internal movement; international travel bans; income support for households; debt/contract relief for households; public information campaigns; testing policy; and contact tracing. The database assigns a score to the stringency of each measure by, for example, depicting whether the measure is a recommendation or a requirement and whether it is targeted or nation-wide. The higher the score, the more active/stringent government policies in the specific field. As an example, a score of 0 is assigned to “restrictions on gatherings” if there are no restrictions, whereas a score of 4 is assigned if restrictions on gatherings of ten people or less are in place. And a score of 0 is assigned if there are no restrictions to international travels, while a score of 4 is assigned if a total border closure is in place.

The government response index aggregates policy responses into indices between 1 and 100 to reflect the level of government action. A high score – meaning a high level of stringency of government measures – does not imply that a country/territory has necessarily been more appropriate or effective in its response.

Source: Hale et al. (2020[5]), *Oxford COVID-19 Government Response Tracker*, <https://covidtracker.bsg.ox.ac.uk/>.

Table 2.2. Stringency of government policies in Asia-Pacific countries and territories according to the Oxford “government response index”

Country/territory	End of Q1 2020	End of Q2 2020	End- August 2020
Australia	67.3	63.1	79.2
Bangladesh	73.1	68.3	72.1
Brunei Darussalam	47.4	44.9	36.5
Cambodia	46.2	40.4	40.4
Fiji	85.9	67.3	60.3
Hong Kong, China	72.4	57.1	76.9
India	91.0	77.2	76.6
Indonesia	41.7	43.9	51.6
Japan	42.3	37.2	41.7
Korea, Rep.	75.6	62.5	60.6
Lao PDR	69.2	43.0	46.8
Macau, China	50.6	38.5	39.7
Malaysia	60.9	62.2	66.7
Mongolia	53.9	67.3	58.3
Myanmar	48.7	64.7	65.4
Nepal	88.5	85.9	77.6
New Zealand	86.5	35.9	54.2
Pakistan	73.1	62.2	57.4
Papua New Guinea	61.5	48.1	51.9
Philippines	82.1	72.4	55.8
Singapore	39.7	65.4	64.1
Sri Lanka	79.5	57.7	38.5
Thailand	53.5	67.3	56.4
Viet Nam	70.5	55.1	69.6
Median	68.3	62.2	57.9

Note: China is not included in the above table as the variation of government policies implemented at Province and County level is large. Solomon Islands is not included in the above table as it is an outlier in terms of the government response index.

Source: Authors' calculations based on Hale et al. (2020[5]), *Oxford COVID-19 Government Response Tracker*, <https://covidtracker.bsg.ox.ac.uk/>.

A non-exhaustive list of the main containment policies in selected countries and territories in Asia-Pacific is reported in (Table 2.3).

Table 2.3. Examples of containment and mitigation policies in Asia-Pacific countries and territories

Policy	Country examples:	Selected examples
<i>Social distancing or physical measures:</i>		
Travel restrictions	Australia; Cambodia; Fiji; Hong Kong; China; India; Japan; Lao PDR; Macau, China; Malaysia; Mongolia; Myanmar; Nepal; Pakistan; Papua New Guinea; Philippines; Solomon Islands; Thailand; Viet Nam	Fiji closed international airports and placed restrictions on domestic travel on 16 March. Domestic travel resumed in May. Solomon Islands closed borders on 25 March, they are remaining closed until at least 21 January 2021. Mongolia imposed a travel ban from high risk countries, beginning on 27 January with China. From 27 March, all foreign arrivals into Cambodia must obtain a visa, a health certificate, and a deposit of USD 2000 to cover potential health care costs.
Banning public gatherings	Australia; Fiji; Hong Kong, China; Mongolia; Myanmar	Australia banned public gatherings of more than two people from 29 March until 8 May. Hong Kong, China prohibited public gatherings of more than four people from 27 March until late August.
Mobility restrictions	China; Fiji; India; Indonesia; Nepal; Pakistan; Papua New Guinea; the Philippines; Sri Lanka; Viet Nam	In early January, China implemented large-scale mobility restrictions at the national level, which were gradually eased starting mid-February. India announced a nationwide lockdown on 24 March, with localised lockdowns in containment zones further extended. Partial lockdown introduced in Indonesia in mid-late March with authority delegated to subnational governments. Relaxed in June; re-imposed on 14 September. Viet Nam imposed a nationwide lockdown from 1 April to 15 April. Targeted lockdowns introduced in July following new cases in selected areas of the country. Lockdowns from 15 March to 30 April for Metro Manila (the Philippines).
School closures	China; Fiji; India; Indonesia; Japan; Lao PDR; Macau, China; Malaysia; Mongolia; Myanmar; New Zealand; Pakistan; Philippines; Solomon Islands; Thailand; Viet Nam	In Indonesia , schools in most affected areas were closed at end of March. Schools in low-risk areas began opening from July. During mid-March, Lao PDR closed all schools. Schools re-opened two months later with new social distancing measures. Mongolia closed all schools, universities and educational institutions from 27 January to 1 September. Live classroom lessons are broadcasted on TV.
Workplace closures	Bangladesh; Macau, China; New Zealand; Papua New Guinea;	From 21 January, Macau, China introduced a temporary mandatory remote work arrangement for civil servants. On 24 March Papua New Guinea imposed work-from-home requirements.
Closure of non-essential services	Australia; China; New Zealand; Solomon Islands; Viet Nam	On 25 March New Zealand implemented the closure of all non-essential businesses, re-opening began in late April. The government in Solomon Island temporarily scaled down public services to essential services only from 25 March until 8 May.
<i>Improved personal and environmental hygiene:</i>		
Use of masks in public place	Australia; Hong Kong, China; New Zealand; Pakistan; Viet Nam	Victoria, Australia mandated the use of masks in public places from 11 October. Hong Kong, China required mask-wearing in all public places from 23 July, including on public transport. From 16 March , Vietnam made wearing face masks compulsory for people in public.
<i>Testing, tracking and tracing of infected individuals, with confinement of infected persons:</i>		
Contact tracing apps	Australia; Brunei Darussalam, China; India; Japan; Malaysia; Singapore; Vietnam	Australia launched a contact tracing application 'COVIDSafe' on 26 April. India launched in April the Aarogya Setu (Health Bridge) app. Japan launched its Contact-Confirming Application on the 19 June. Malaysia launched its contact tracing application MySejahtera on 17 April.
Large-scale testing and quarantine policies	China; Hong Kong, China	In May, China tested the entire city of Wuhan – home to around 11 million people – over a 10-day period. In October, a mass-screening campaign was conducted in the 9 million metropolis of Qingdao over 5 days. In Hong Kong, China , the government provided one-off virus testing services to all citizens on voluntary basis during 1-14 September, with about 1.8 million people participating in the testing exercise.

Note: not all measures were implemented nationwide.

Source: Authors compilation based on the IMF Policy Tracker and on national sources.

There are several “success stories” in Asia-Pacific that point to different strategies that countries have used to suppress the COVID-19 epidemic. The Republic of Korea promptly did extensive testing, tracing, and isolating of all cases from the start of the epidemic, supported by innovative surveillance technology (Box 2.2).

Box 2.2. Prompt extensive testing, tracing and isolating of all cases, supported by innovative surveillance technology in the Republic of Korea

The Republic of Korea has been praised for the successful containment of COVID-19. Following substantial spread among the members of a large religious group that fuelled early virus transmission, the country was quickly able to bring COVID-19 under control. The Republic of Korea’s response stands out because it flattened the epidemic curve swiftly without closing businesses, issuing stay-at-home orders or implementing many of the stricter measures adopted by other countries.

This success seems first to stem from the lessons learnt by the country following the 2015 outbreak of Middle East respiratory syndrome coronavirus (MERS). After this outbreak, the country enforced a series of policy changes to improve pandemic preparedness and response. When COVID-19 struck, the authorities were ready to establish an aggressive response, and the population was experienced in the use of face masks and contact tracing activities.

When the first COVID-19 cases were reported, the Republic of Korea promptly set-up mass population testing, tracing and isolating of all cases. Many biotechnology companies were created in the aftermath of the MERS crisis and this facilitated the establishment of public-private partnerships to develop and scale up testing for COVID-19. After expanding testing capacity, the government quickly designed a targeted screening policy. Authorities opened around 600 screening centres using innovative approaches to expand and enhance case finding, such as drive-through or phone booth style testing centres. To prevent infected people from entering hospitals, screening clinics were set up outside entrances. Some facilities were also transformed into temporary isolation wards so to avoid transmission within households and reduce hospital occupancy rates. Health care workers regularly monitored these patients who did not warrant inpatient treatment.

Aggressive contact tracing was also key, and massive public communications campaigns were set up to empower citizens to assist the health system with contact tracing.

The Korean experience may not necessarily be relevant to all Asia Pacific countries and territories. The country is urbanised and isolated in terms of borders. Cultural factors may be relevant too. Yet it is clear that the country’s investments in preparedness and an early decision to focus on a massive testing and tracing strategy certainly are a lesson for other countries.

Source: The Government of the Republic of Korea (2020[6]) “How Korea responded Flattening the curve on COVID-19. How Korea responded to a pandemic using ICT”.

Viet Nam has fewer resources, and achieved sustained success by swiftly deploying strict containment measures with the help of the military, public security services and grass-root organisations (Box 2.3).

A cluster-based approach to contact tracing and an easy to grasp risk communication strategy have been two pillars of the government’s response to COVID-19 in Japan (Box 2.4).

Governments across Asia-Pacific have rolled out substantial fiscal measures in the health sector in response to the coronavirus

Governments within the Asia-Pacific region and beyond put together substantial response packages to combat COVID-19. For example, as of July 2020, in China the package of economic measures totals USD 2 161 billion (or 16% of GDP (ADB, 2020[1])).

The health sector was an early recipient of these additional resources. Amongst Asia and Pacific countries with comparable data, central government budgetary commitments to health system responses to COVID-19 ranged from around 1.1% of GDP in Hong Kong, China to around 0.01% in Myanmar and Papua New Guinea (Figure 2.3).

Box 2.3. Viet Nam reacted very quickly with extreme but sensible measures

Viet Nam received international praise for its handling of the coronavirus pandemic. By August 2020 officials had reported no deaths, and daily new cases remained low. The success can be attributed to the country's experience with dealing with infectious disease outbreaks, such as the Severe Acute Respiratory Syndrome in 2003, alongside pre-emptive containment measures, a comprehensive testing and tracing system, and a strong central government.

Viet Nam swiftly deployed an aggressive strategy to contain COVID-19, with the help of the military, public security services and grass-root organisations. Borders were closed early on to foreign visitors, and nationals returning from abroad were faced with airport health screenings and a 14-day quarantine period. Measures such as physical distancing, school closures, public event cancellations and the wearing of masks at public venues were all strictly implemented, along with requiring hand sanitizers in public areas, workplaces and residential buildings. The government introduced a nationwide shut-down of all non-essential services, as well as strict restrictions on movements imposed across most of the country for three weeks in early April.

Alongside containment measures, Viet Nam established an extensive contact tracing system, with isolation and quarantining for up to third-tier contacts. Groups of people who lived near confirmed cases, sometimes an entire street or village, were swiftly tested and isolated, which helped limit community transmission.

Public buy-in was critical for success. From an early stage, communications about the virus and the strategy were transparent. Details on symptoms, protective measures, and testing sites were communicated through mass media, a government website, public grass-root organisations, posters at hospitals, offices, residential buildings and markets, via text messages on mobile phones, and as voice messages before a phone call could be made.

The Viet Nam experience shows the influence of a strong centre of government in creating a unified response to the pandemic. The government framed the virus as a “common foreign enemy”, and called on the harmonisation of the population to defeat it. Other countries and territories with a weaker central of government may therefore struggle to replicate such as response.

Source: IMF (2020[7]) “Vietnam's Success in Containing COVID-19 Offers Roadmap for Other Developing Countries”.

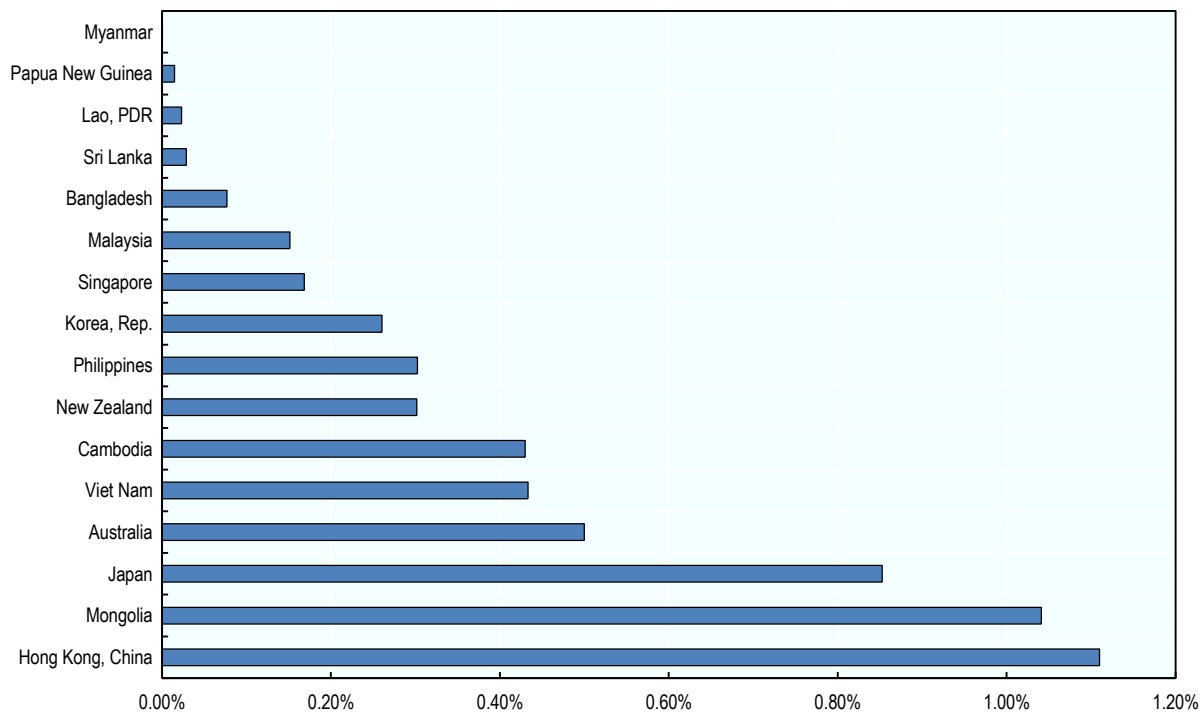
Box 2.4. A cluster-focused approach and an easy to grasp risk communication in Japan

Japan have focused on retrospectively identifying clusters – groups of infected people from a single source - to capture the evolution of transmission dynamics. Under this cluster-based approach, each cluster of more than five COVID-19 cases is tracked to the original infection source, and persons with high transmissibility isolated to prevent the spread of infection. This approach is in addition to a ‘prospective’ contact tracing.

Moreover, based on analyses of the shared characteristics of clusters, Japan developed an easy to grasp risk communication to modify citizens’ behaviour. The concept is known as the “Three Cs” (<https://www.mhlw.go.jp/content/3CS.pdf>). It denotes three environmental conditions increasing the risk of COVID-19 transmission – that is Confined and enclosed spaces with poor ventilation; Crowded places with many people nearby; and Close-contact settings especially when people have close-range conversations. The population is asked to avoid these “Three-Cs”, in particular when they overlap as the risk is higher. The political leaders and experts joined efforts to repeat this simple message to reduce the social contacts to mitigate the spread of the epidemic.

In Australia for example, the federal government injected over 14% of GDP in fiscal and balance sheet measures to address the significant impacts of COVID-19. These measures include over AUD 9.4 billion in additional health spending. Specific measures include AUD 1.4 billion on guaranteeing Medicare, AUD 3.4 billion on the emergency response including purchasing personal protection equipment and testing, and AUD 3.6 billion on providing support to hospitals responding to COVID-19. Alongside federal measures, every state and territory in Australia has announced a spending response to the COVID-19 crisis, including measures taken in the health sector (Australian Government, 2020[8]).

Figure 2.3. **Central government COVID-19 health spending commitment, percentage of GDP, as of July 2020**



Source: ADB, 2020, and government country websites (Australia, Japan, Republic of Korea and New Zealand).

Assessing health system vulnerabilities

This section will look at health systems capacity to respond to the COVID-19 outbreak, in terms of workforce, intensive care unit beds, different sources of health care financing, and testing and contact tracing systems. It will also look at delayed and foregone care as well as rising health needs for mental health due to COVID-19.

Workforce shortages existed prior to the crisis

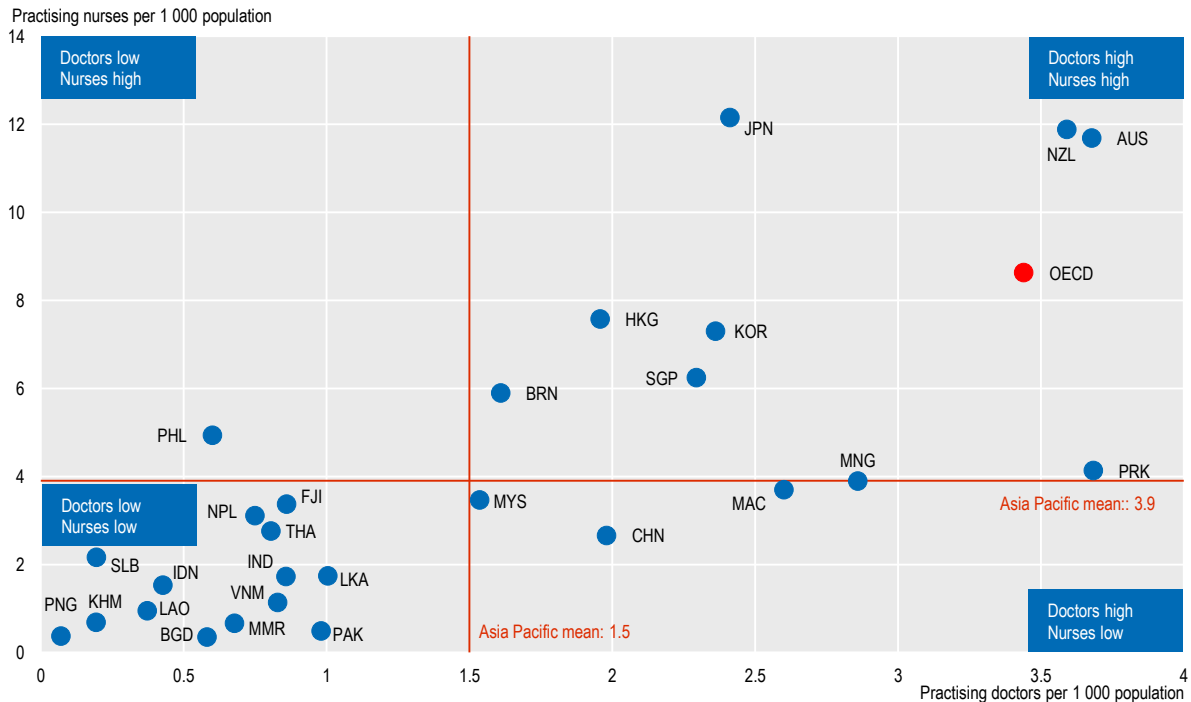
The coronavirus pandemic has put health systems around the world under severe stress, testing their capacity to care for patients and protect health workers. This stresses risk being even more significant in lower-income settings where health system capacity is typically limited (Walker et al., 2020[9]).

Doctors, nurses and other health professionals are at the forefront of the coronavirus pandemic. The pandemic made pre-existing shortages of doctors and nurses more visible and acute in many Asia-Pacific countries and territories. Some countries, such as Australia, New Zealand and Japan, have relatively high numbers of doctors and nurses, which provided them with a greater capacity to respond to the COVID-19 pandemic. Low-income countries, such as Papua New Guinea, Cambodia and Lao PDR, on the other hand, have fewer doctors and nurses, and therefore – in principle – less capacity to respond when hit by an epidemic (Figure 2.4).

Many health systems in the region lack critical ICU beds and critical care capacity

The number of hospital beds varies between 2.7 and 3 per 1 000 population on average across upper-middle and lower-middle and low-income Asia-Pacific countries respectively. This is lower than

Figure 2.4. Number of practicing doctors and nurses per 1 000 population, latest year available



Note: The red labels relate to the lines, and the intersection of the two lines is the equivalent of the mean for the Asia-Pacific countries. The OECD dot is the mean for all OECD countries.

Source: WHO Global Health Observatory, 2020; OECD Health Statistics, 2020.

the OECD average of 4.6 and the high-income Asia-Pacific countries and territories average of 5.4, but it varied considerably across countries. More than 10 beds per 1 000 population are available in Japan, the Republic of Korea and Korea DPR, whereas the stock of beds was less than one per 1 000 population in Bangladesh, Pakistan, Cambodia, and India. These large disparities reflect substantial differences in the resources available and invested in hospital care across countries.

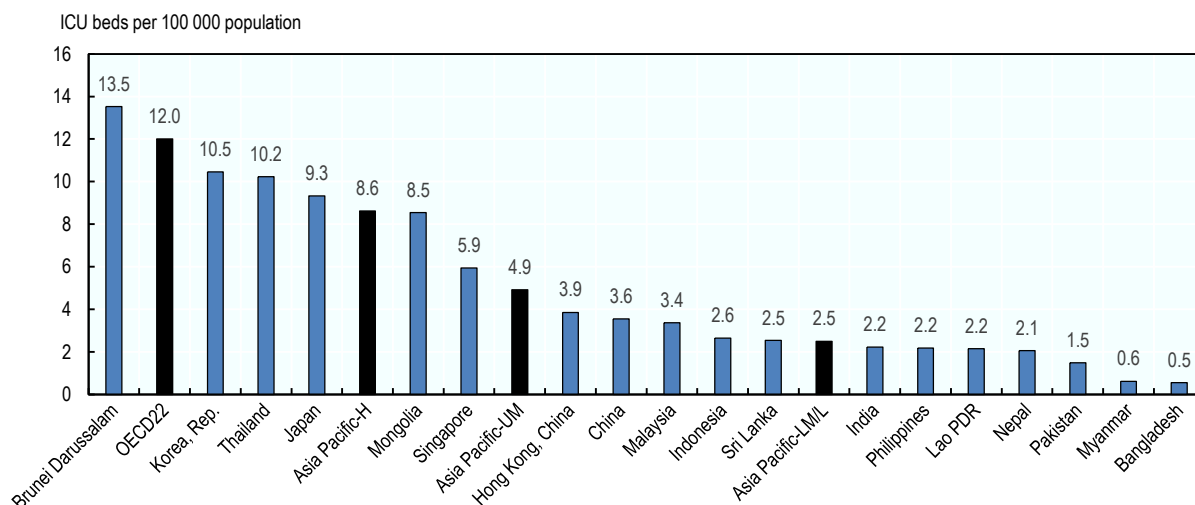
Whilst hospital bed capacity matters, intensive care unit (ICU) capacity is paramount in case of this pandemic as a significant share of patients infected by COVID-19 develop severe forms of the disease that need to receive care within an ICU.

Notwithstanding definitional differences⁶, the most recent publicly available data suggests that, before the COVID-19 crisis, the variation in ICU capacity across Asia-Pacific countries and territories ranged from 13.5 ICU beds per 100 000 people in Brunei Darussalam to less than one ICU bed per 100 000 people in Myanmar and Bangladesh. On average, upper-middle and high-income Asia-Pacific countries and territories have an ICU capacity three times and two times the capacity of lower-middle and low-income countries respectively (Figure 2.5).

Testing and contact tracing

Comprehensive testing and contact tracing infrastructure can affect the ability of a country to respond and contain the COVID-19 pandemic, and has flow on implications for health care including the number of cases requiring ICU care. Adequate testing is needed to ensure early detection of new infection clusters, and an effective contact tracing system can facilitate timely isolation and quarantine of new infection clusters to reduce community transmission (<https://iris.wpro.who.int/bitstream/handle/10665.1/14553/WPR-DSE-2020-025-eng.pdf>). Several Asia Pacific countries ramped up testing and tracing capabilities during the COVID-19 pandemic, but some countries lagged behind

Figure 2.5. ICU beds per 100 000 population, around 2017



Note: Paediatric and neonatal ICU beds are excluded. High-care units/beds are excluded too.

Source: Phua et al. (2020[10]) "Critical Care Bed Capacity in Asian Countries and Regions", <http://dx.doi.org/10.1097/ccm.0000000000004222>. The figure for Japan is from the Ministry of Health, Labour and Welfare official data.

(IMF, 2020[2]). The number of tests performed up to 5 October 2020 ranged from less than 8 per 1 000 population in Myanmar and Indonesia to 202.1 and 525.1 per 1 000 population in New Zealand and Singapore respectively (Hasell et al., 2020[11]).

According to the Oxford COVID-19 Government Response Tracker, as of 5 October there is no government policy on contact tracing in the Solomon Islands, whereas Bangladesh, Brunei Darussalam, Cambodia, Indonesia and Myanmar have in place a limited contact tracing after a positive diagnosis of COVID-19. All the other countries and territories in this study report a comprehensive contact tracing after a positive diagnosis of COVID-19.

For interventions such as testing, contact tracing and isolation to be effective in controlling disease spread, people must truthfully disclose information about their symptoms and contact patterns, and isolate as necessary. Therefore, the effectiveness of these measures also depends on societal preferences and legal and regulatory frameworks relating to privacy.

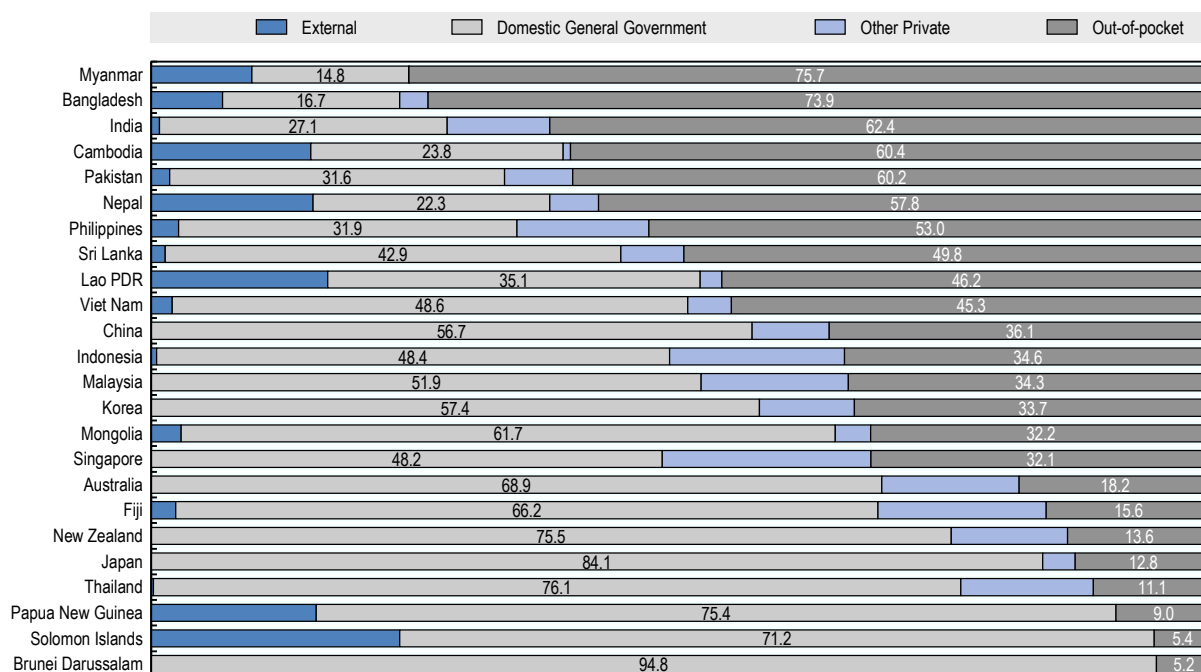
In at least one third of the countries, low levels of health spending and large dependency on out-of-pocket spending limit the ability of health systems to respond

Per capita health care spending can be observed in Asia-Pacific countries in 2017 ranged from USD PPP 94 (with exchange rates calculated using PPPs) in Bangladesh to Australia's USD PPP 4 816 international dollars. The average OECD current health spending per capita in 2017 was around 16 times that of the low-income countries in Asia-Pacific (3 996 versus USD PPP 247). This differences have implications for a country capacity and ability to respond to a pandemic, or other high-impact crisis.

Health care is financed by a combination of public, household out-of-pocket (OOP) and external sources. The mix of financing sources for health vary across Asia-Pacific countries. In Pakistan, Cambodia, India, Bangladesh and Myanmar more than 60 cents out of one dollar spent on health are financed by household OOP. Conversely, in New Zealand, Japan, Thailand, Papua New Guinea and Brunei Darussalam more than three quarters of health financing was from government sources in 2017 (Figure 2.6).

It is still unclear how COVID-19 is affecting the different sources of health financing across Asia-Pacific countries, as the pandemic is still unfolding and there is a general dearth of real time reporting of these data. Despite declining government revenues, government expenditures are expected to rise as a share of GDP in 2020, fuelled by a significant increase in borrowing. Part of this increase in government spending has been to finance the immediate response to the pandemic in terms of increasing the capacity of health systems to manage the COVID-19 outbreak (IMF, 2020[2]).

Figure 2.6. **Percent share of current health spending by financing source, 2017**



Source: WHO Global Health Expenditure Dataset, 2020.

A recent study (Tan-Torres Edejer et al., 2020[12]) estimated the additional costs of implementing the pillars of a strategic preparedness and response plan⁷ to the COVID-19 pandemic. These additional costs have been estimated at USD 3.3 and USD 9.1 per capita per 4 and 12 weeks respectively in low-income countries in a status quo scenario. This represents a significant cost that may not be within the financial capacity of some countries.

The ongoing health effects of COVID-19 may put additional strain on already weakened health systems

COVID-19 has highlighted critical workforce gaps in health systems and, as the pandemic progresses, the strain on the health workforce is likely to shift to those providing rehabilitation and primary care services.

A large proportion of COVID-19 patients require some form of rehabilitation and support after their illness. There is also emerging evidence that COVID-19 can lead to long-term and ongoing symptoms in patients who have recovered from infection. This can include a range of symptoms, including chronic fatigue, lung damage, anxiety and depression (Smith, 2020[13]). As case numbers continue to rise, the disease burden of 'long COVID' will lead to increasing demands on health services and health systems.

The COVID-19 pandemic is also expected to have lasting effects due to delayed and foregone care as well as other health needs for mental health

The pandemic has unleashed a secondary crisis by disrupting the supply and demand for health services. According to a WHO rapid survey (WHO, 2020[14]) to which 163 (out of 194) countries provided responses, prevention and treatment services for non-communicable diseases (NCDs) have been severely disrupted since the COVID-19 pandemic began, particularly for low-income countries. Many people who need treatment for diseases like cancer, cardiovascular disease and diabetes have not been receiving the health services and medicines they need since the COVID-19 pandemic began. More than half of the countries surveyed have partially or completely disrupted services for hypertension treatment; 49% for treatment for diabetes and diabetes-related complications; 42.5% for cancer treatment, and 31% for cardiovascular emergencies. Rehabilitation services have been disrupted in two-thirds of these countries. In the majority of responding countries, ministry of health staff working on NCDs were partially or fully reassigned to support COVID-19. The postponement of public screening programmes was also widespread, reported by more than half of countries. As an example, screening mammograms delivered in specialised facilities in Australia were suspended from late March to late April/early May 2020 due to COVID-19 restrictions (AIHW, 2020[15]).

Disruptions to the services for human immunodeficiency virus (HIV), tuberculosis and malaria resulting from the COVID-19 pandemic and its response could lead to a substantial number of additional deaths and years of life lost in low- and middle-income countries (Hogan et al., 2020[16]). In regions most affected by HIV, TB and malaria, such as South Asia, the knock-on impact of COVID-19 on these three diseases in terms of incremental deaths may outweigh the direct impact of COVID-19 virus (The Global Fund, 2020[17]). The results of a Global Fund survey (<https://globalfund.exposure.co/disruptions-in-hiv-tb-and-malaria-programs-due-to-covid19>) indicate challenges to HIV prevention; testing and case finding for HIV, TB and malaria; cancelled or delayed prevention activities; and medical and laboratory staff being reassigned to the fight against COVID-19. Qualitative data from this survey indicates lockdowns, restriction on gatherings of people and transport stoppages are the main reasons activities were cancelled or delayed.

The indirect effects of COVID-19 on pregnant women, new-borns, young children and adolescents are also significant (WHO Independent Accountability Panel 2020 <https://iapewec.org/wp-content/uploads/2020/07/IAP-2020-Report-Executive-Summary-English.pdf>). There have been closures of both static and mobile reproductive health clinics, scaling-down of sexual and reproductive health services and shortfalls in reproductive health commodities. Lockdowns and movement restrictions, and health workers being diverted from maternity to COVID-19 units, limits availability of life-saving services for pregnant women and newborns, while immunisation campaigns were disrupted.

The unpredictability and uncertainty of the COVID-19 pandemic, the need to implement lockdowns, physical distancing and other containment strategies and the resulting economic breakdown have also had adverse impacts on the physical and mental health of populations and exacerbate health inequalities, especially in people with pre-existing mental health disorders (Moreno et al., 2020[18]). Since the outbreak of COVID-19, violence against women and girls, particularly domestic violence, has intensified (<https://www.unwomen.org/en/news/in-focus/in-focus-gender-equality-in-covid-19-response/violence-against-women-during-covid-19>).

Approaches to mitigate consequences of containment strategies are possible. For example, Australia has been able to implement a range of additional health measures to mitigate some of the COVID-19 adverse impacts, such as telehealth consultations and additional funding for mental health services (<https://www.health.gov.au/sites/default/files/documents/2020/10/budget-2020-21->

prioritising-mental-health-and-telehealth-COVID-19-pandemic-response-budget-2020-21-prioritising-mental-health-and-telehealth-COVID-19-pandemic-response.pdf).

Conclusions

COVID-19 has had a huge impact across Asia-Pacific, testing the resilience of economies and health systems, and placing immense pressure on health workers operating at the front line. An overall and complete assessment of country and territories responses will only be possible after the pandemic is over, but some early findings are already apparent.

In terms of the overall health impact, India, the Philippines and the Hubei province in China were the most affected in the first nine months of 2020, based on data on COVID-19 reported deaths. Indonesia has also been badly hit by the virus. In contrast, most countries situated in South-East Asia as well as Pacific Islands countries, have been less adversely affected to date.

Variation in population density, the rural-urban composition, the degree of international visitors, as well as demographic characteristics, among others, may well explain these observed differences in death rates. Differences in containment and mitigation strategies, in particular restrictions on movement, the speed and effectiveness in which they were implemented, and testing and contact tracing infrastructure have also played a role (IMF, 2020[2]).

This chapter has also illustrated certain differences in the capacities of countries' health systems to absorb and adapt to the crisis, also based on planning and preparedness as lessons have been learned from SARS and MERS outbreaks. Looking at countries and territories' core (pre-existing) capacity provides an approximate sense of a health system's ability to cope with such a surge in demand – with availability of sufficient health workers, infection prevention and control and personal protection equipment particularly critical.

Much remains unknown as to how COVID-19 will affect health spending and the different sources of health financing across Asia-Pacific countries and territories. However, the significant cost of the COVID-19 response may not fully be within the financial capacity of Asia Pacific countries, in particular low-income ones.

Prevention and treatment services for non-communicable diseases as well as for HIV, tuberculosis and malaria have been severely disrupted since the COVID-19 pandemic began. This could lead to a substantial number of additional deaths and years of life lost, in particular in low- and middle-income countries. The indirect effects of COVID-19 on pregnant women, newborns, young children and adolescents are also huge.

COVID-19 has had major effects on countries and territories' economies and health systems. It is critical to ensure that economic pressures - either during or after the pandemic has ended - do not divert already limited resources away from essential health services in low- and middle-income countries.

Notes

1. The official names for the virus responsible for COVID-19 is "severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)" and the disease it causes "coronavirus disease (COVID-19)". In this chapter, COVID-19 is used to refer to the virus and the disease it causes.
2. It should be noted that there is a considerable variation in testing rates on a country-by-country basis.
3. As Singapore conducts more testing than many other countries in the region, including screening of migrant workers in dormitories, it detects more mild and asymptomatic cases which contributes to their high case population rate.
4. There may be variation in the completeness of COVID-19 death counts across countries.

5. Whilst reported COVID-19 deaths are a critical measure of how much a country or territory has been affected by the virus, cross-country comparisons of this indicator are not straightforward due to significant differences in recording, registration and coding practices. Looking at all deaths – and particularly excess mortality, a measure of deaths over and above what could normally be expected at a given time of the year – avoids these problems caused by differences in reporting. Excess mortality is by definition not a direct measure of COVID-19 deaths, as it captures all excess deaths irrespective of the cause. However, unfortunately, this measure is not readily available for the countries and territories covered in this report.
6. There may be differences in the notion of intensive care affecting the comparability of the data. These differences mainly concern therapeutic capacity, personnel, monitoring capacity, unit design and organ support and responsiveness (Marshall et al., 2017[19]).
7. The nine pillars are: country-level coordination, planning and monitoring; risk communication and community engagement; surveillance, rapid-response teams and case investigation; points of entry and international travel and transport; national laboratories; infection prevention and control; case management; operational support and logistics; maintaining essential health services and systems.

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From:
Health at a Glance: Asia/Pacific 2020
Measuring Progress Towards Universal Health Coverage

Access the complete publication at:
<https://doi.org/10.1787/26b007cd-en>

Please cite this chapter as:

OECD/World Health Organization (2020), "The impact of the COVID-19 outbreak on Asia-Pacific health systems", in *Health at a Glance: Asia/Pacific 2020: Measuring Progress Towards Universal Health Coverage*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/aaa5448f-en>

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