

COVID-19

Responses & Implications to Healthcare in Asia

As of April 1, 2020

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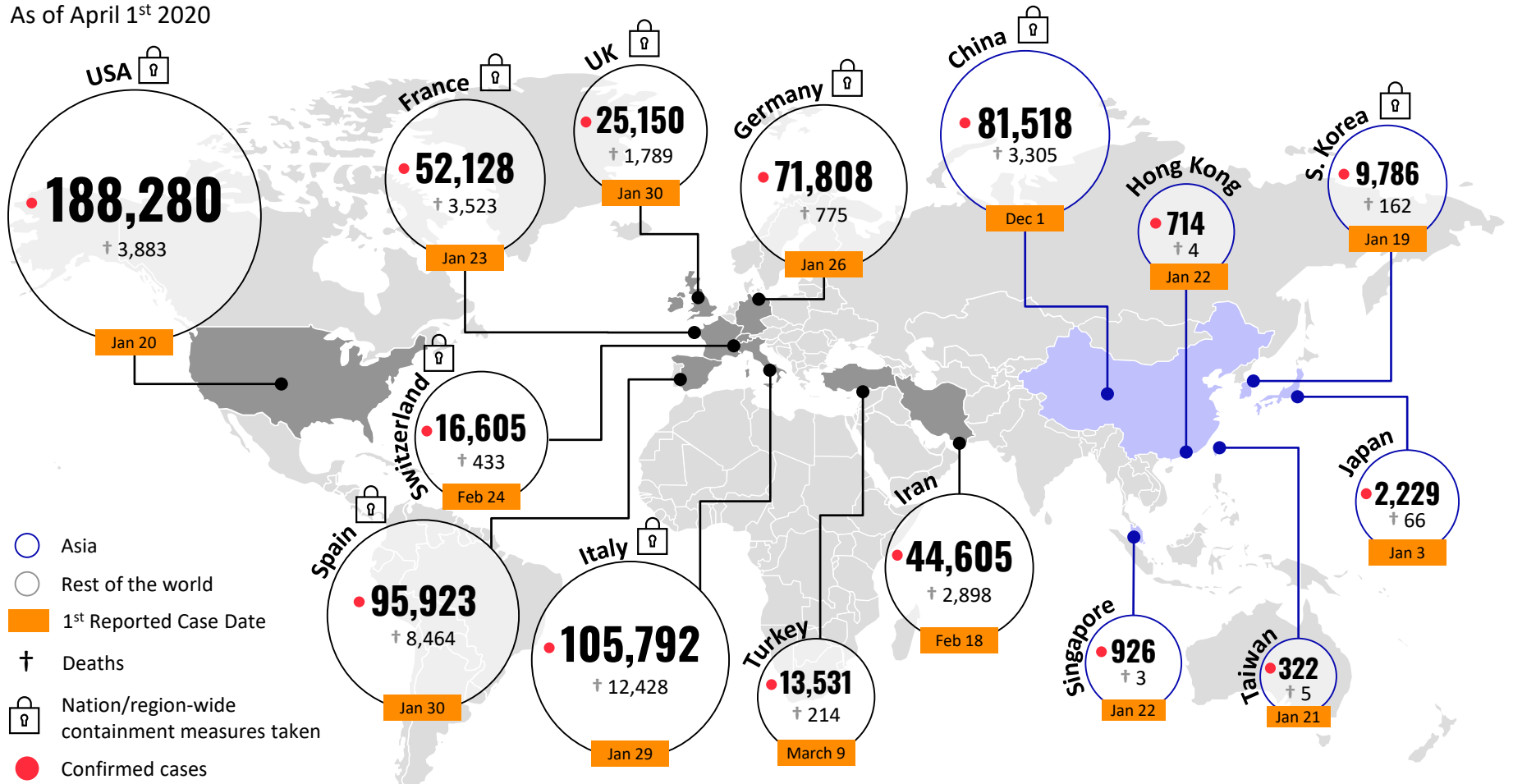
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NO LONGER AN 'ASIAN' EPIDEMIC – US AND EUROPE ARE THE NEW EPI-CENTRES

Total COVID-19 cases and deaths

As of April 1st 2020

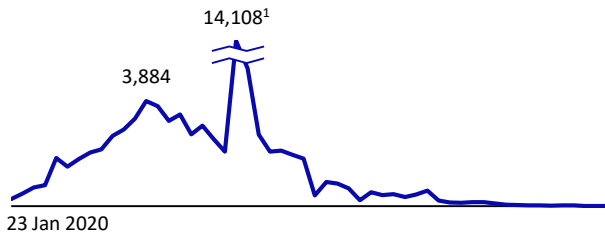


Source: Press review; Worldometer; World Health Organization; Oliver Wyman analyses

ASIAN COUNTRY SITUATION OVERVIEW

Asian countries are in different stages of COVID-19 outbreak and management

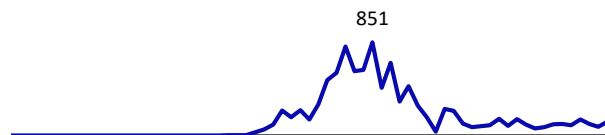
Daily new cases Jan 23rd – March 31st 2020



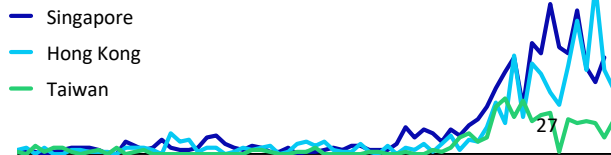
Total cases per 1 MM population



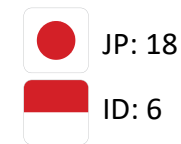
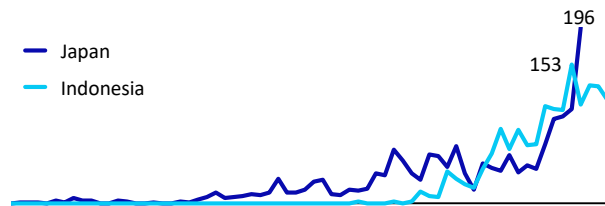
➤ **Past the peak** and gradual shift towards recovery;
gradual reopening of Wuhan and lifting of restrictions



➤ **Dramatic reduction in net new cases**;
uncertainty remains



➤ Mid March started **2nd wave with imported cases**
from Europe and US returnees, post a period of
stability and effective containment



➤ **Undertesting & underrepresentation** earlier
Surge in new cases as testing picked up –
Japan containment measures showing some flattening
Indo recently spiking as govt pushing out response

1. Spike in new cases associated with application of new diagnostic guidelines for confirming cases
Source: Singapore Ministry of Health, Taiwan CDC, Hong Kong Centre for Health Protection, Japan Ministry of Health, Worldometer

ASIAN COUNTRY GOV'T RESPONSES

Asian countries are taking aggressive measures – HK , China, Taiwan and Singapore leading the way with measures in place since January 2020

	Social distancing	Travel restrictions	Quarantine suspects	Economic stimulus	School closures	Lockdown
China	<ul style="list-style-type: none"> Traffic restrictions Suspension of mass gatherings Suspension of work activities 	<ul style="list-style-type: none"> Suspension of some flights globally – intended to resume over next 2 mos 	<ul style="list-style-type: none"> Anyone arriving from abroad to be transferred to quarantine for 14 days 	<ul style="list-style-type: none"> Injected \$174 BN of liquidity 	Nationwide	Loosening underway – Wuhan partial reopening
Japan	<ul style="list-style-type: none"> Postponement of Tokyo Olympics 	<ul style="list-style-type: none"> Travel bans Suspension of some flights globally 	<ul style="list-style-type: none"> Voluntary stay at home measures 	<ul style="list-style-type: none"> 2 packages worth \$9.6 BN for SME & self-employed 	Nationwide	
South Korea	<ul style="list-style-type: none"> Suspension of some events Closed all churches Mass testing 	<ul style="list-style-type: none"> Travel bans Suspension of some flights globally 	<ul style="list-style-type: none"> Quarantine orders 	<ul style="list-style-type: none"> Pledged \$9.8 BN Designated “special disaster zones” with tax exemptions 	Localized	
Taiwan	<ul style="list-style-type: none"> Suspension of major gatherings Face mask regulations (e.g., public transport) Fast reacting; strong gov't coordination 	<ul style="list-style-type: none"> Travel bans Suspension of some flights globally 	<ul style="list-style-type: none"> Quarantine orders All people entering will be put into home quarantine for 14 days 	<ul style="list-style-type: none"> Pledged \$2 BN 	Nationwide	
Singapore	<ul style="list-style-type: none"> Suspension of major gatherings and shut down on entertainment venues Legally enforced with fines BCP implemented 	<ul style="list-style-type: none"> Travel bans Suspension of some flights globally 	<ul style="list-style-type: none"> Quarantine orders Mandatory 14 day stay home notice 	<ul style="list-style-type: none"> \$48 BN “resilience budget” \$ 15 BN in job schemes 		
Hong Kong	<ul style="list-style-type: none"> Ban on public gatherings and meetings of 4+ people BCP implemented 	<ul style="list-style-type: none"> Travel bans Suspension of some flights globally 	<ul style="list-style-type: none"> Quarantine orders Wristband tracking 	<ul style="list-style-type: none"> \$3.2 BN relief pck to affected industries 	Nationwide	
Indonesia	<ul style="list-style-type: none"> Suspended issuance of permits for mass gatherings Recent spike in cases leading to public fear 	<ul style="list-style-type: none"> Travel bans Suspension of some flights in Asia 		<ul style="list-style-type: none"> More than \$10 BN in budget allocations & tax cuts 	Localised	

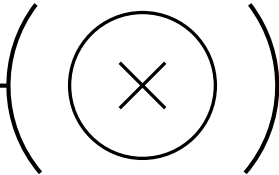
Source: Press reports

GOVERNMENT BEST PRACTICES

In addition to citizen-facing measures, governments are also focused on three key responses:

- 1. containment, 2. communication & transparency with the public and 3. coordination of healthcare sector

Not exhaustive



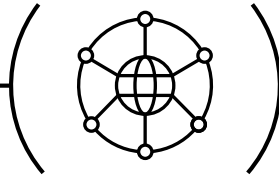
01. Containment

- **Case identification & contact tracing**
e.g., Taiwan used big data to generate real-time alerts during a clinic visit based on travel history & clinical symptoms
- **Quarantine of suspicious cases**
e.g., Taiwan & South Korea can track people quarantined through their mobile phones to ensure that they stay home during incubation period
- **Lock-down**
e.g., China locked down >50 MM people
- **National laboratory networks developing own diagnostic tests** – number of Asian countries developed own tests; South Korea is mass testing



02. Communication & trust

- **Setting up communication channels**
e.g., Singapore set up a nationwide WhatsApp & Telegram group with daily updates on number of cases & hygiene recommendations; Taiwan sends daily alerts
- **Educating public, fighting misinformation**
produced critical & frequent communication to the public from trusted officials (most Asian countries); fined the spread of fake news
- **Free hotline**
e.g., Taiwan instituted a toll-free hotline for citizens to report suspicious symptoms in themselves



03. Coordination of healthcare sector

- **National Command Centre**
e.g., Taiwan established National Health Command Centre (after SARS) & is the disease management center on large-outbreak responses & acts as the operational command point for direct communications
- **Coordination across systems**
e.g., Singapore holds daily meetings between regional health system managers, hospital leaders & Ministry of Health
- **Actions on resource allocation**
e.g., Taiwan, Hong Kong & Singapore allocated masks to retailers & set price limits; soldiers mobilised to product/distribution line

TECHNOLOGY BEING APPLIED IN NEW USE CASES TO COMBAT THE PANDEMIC

As other countries continue to grapple with the crises, it will inevitably evoke discussions and debate between public health vs personal privacy



Health Code System Quarantine management



- **Health Code System** developed within Alipay and WeChat apps
- Every individual assigned a **'Health Status'** dependent on level of contagion risk – green, yellow or red
 - Health status determined by algorithm, based on factors such as location, potential contact with infected person, self reported symptoms, etc.
 - Authorities able to dictate/restrict movements at individual level (e.g., red means 2-week quarantine) to prevent
- **Tracked and enforced** by local authorities – individuals required to show their health status when asked



TraceTogether Contact tracing



- **Contact tracing app** developed by Singaporean government (Ministry of Health, GovTech); currently 600 K+ users
- App identifies people who have been in close proximity for at least 30 mins, via Bluetooth
- **Data logs** shared with government officials **only when requested and authorised**
 - Only data kept by government is mobile number
 - App does not collect location data, but only records if users have been close to each other
- Source code already published globally for other developers and governments



Surveillance bands Stay-at-home tracking








- All inbound travelers are under medical surveillance since mid March – either through Whatsapp, WeChat or tracking wristband to ensure adherence to stay home/self isolation
- The government says that **it won't directly capture location – only the changes in location**, “especially the telecommunication and communication signals around the confinee to ensure that he (or she) is staying at home.” (HK CIO)
- If the wristband is broken or the smartphone is disconnected or taken away from the confinee's geofence, an **alert will be sent to the Department of Health and Police**

OBSERVED COVID-19 IMPACT TO HEALTHCARE SYSTEM IN ASIA

Provider & government observing the biggest short-term hits, although digital observing a spike in usage; long-term impact likely to be observed with changes required

● Negative impact ● Less severe impact ● Positive impact

	Short-term impact	Possible long-term impacts/requirements
 Provider ●	<ul style="list-style-type: none"> • Lower footfall in private hospitals – higher ALOS with lower ARPOB • Implemented protocols for triaging & isolating patients • Different rostering of staff; protecting healthcare workers • Rearrangement of hospital wards & rooms to create vacant isolation areas (China built 2 new hospitals) • Restricting doctor mobility (e.g., 1 hospital only) • Restricting patient mobility (e.g., online drug delivery) • Delaying non-essential surgeries/treatments 	<ul style="list-style-type: none"> • Risk assessments as board/senior mgt agenda; BCP/ SOPs for outbreaks • Greater focus on infection control • New focus on health prevention & promotion & monitoring • Investments around epidemic control • Greater coordination with government, payers, other stakeholders
 Payor ●	<ul style="list-style-type: none"> • Spike in OP/IP claims & minor underwriting losses • Withdrawal of certain coverage/exceptions where pandemics usually not covered or additional cover (diagnostic testing) • Insurers pushing patients to digital 	<ul style="list-style-type: none"> • Digital to be a more ubiquitous source of care delivery • Product innovation e.g., pan-/epidemic coverage, specific coverage, prevention, • Deepening risk education & increasing insurance awareness to accelerate long-term growth – may increase individual insurance • Decrease in employment may drive group insurance down
 Life Sciences ●	<ul style="list-style-type: none"> • Supply chain disruption (delays in manufacturing & distribution for non-critical drugs/supplies) – trade channels remain stocked; we expect slowdown to show by summer • Spike in orders for specific equipment (e.g., ventilators) and delays in larger capex (e.g., MRI) • Limiting export of some drugs & ingredients • Rapid testing & deployment of testing kits • Rapid testing for vaccinations 	<ul style="list-style-type: none"> • Fundamentally rethink of framework and economics of developing drugs for future epidemics • Develop mechanism for potential global/regional pooling of resources to be deployed where required (e.g., key medical equipment)
 Gov't ●	<ul style="list-style-type: none"> • Acting as coordinators across entire healthcare sector – multi-task force approach as best practice • Increasing public awareness & public hygiene campaigns and travel advisories • Implemented screening mechanisms at various checkpoints • Implemented BCP measures • Mobilized contact tracing team • Guaranteeing public access to testing/ affordable care 	<ul style="list-style-type: none"> • Healthcare top priority/will drive for political/election agendas • Investment in disease surveillance (e.g., case database that is instantly accessible to relevant organizations) • Greater international collaboration (e.g., shared lists of trained personnel, lists of supplies to be stockpiled/redirected) • Policies around privacy during outbreaks • Population health studies/registries – mechanism to monitor health in real-time/during outbreaks
 Digital ●	<ul style="list-style-type: none"> • Surge in telehealth (e.g., Ping'An Good Doctor daily consultation is >9x avg. before outbreak) • Use of TV screens & video chat with patients inside hospitals 	<ul style="list-style-type: none"> • Greater integration of online/offline models • Development of next gen online medical services/digital tools

COVID-19 NOT A 'BLACK SWAN' EVENT: WHAT NEEDS TO BE DONE

1 Monitor & establish ability to respond

- Protect your people & communicate frequently – ensure staff understand what to do, stay up to date on latest travel advice
- Assess extent of short-term exposure & key dependencies across organization
- Rapidly set-up robust response team structures, governance & processes
- Establish decision authority for response team leadership & link to board of management
- Ensure latest sources of facts & intelligence that can be disseminated to rest of organization daily
- Work with global & local health authorities, regulators and stakeholders
- Design immediate stabilization initiatives & a proportionate response
- Reach out to peer organizations – share best practices & convene the industry

2 Understand your risk on your business & quantify

- Identify commercial and business exposures and implications in H2 2020 and beyond e.g., supply chain, BORs
- Quantify, where possible, the potential implications on business and financials
- Develop approach to track & report risks on impact incl. operational, strategic & financial
- Develop resiliency plan, incl. update demand planning, operating model & network optimization
- Periodically stress test operational, strategic & financial resiliency measures

3 Consider long-term commercial implications

- *Revisit business* – identify & capture opportunities to mitigate & differentiate business e.g., products, integrating/care coordination between sites, etc.
- *Invest in digital* – build digital tools to augment offline process & enable large-scale solutions
- *Greater coordination across ecosystem* – improve organizational coordination internally & with key health authorities & stakeholders; develop coordination plans alongside
- *Ensure supply chain readiness* – enhance inbound & outbound supply chain measures, incl. crisis sales & operations planning

DEEP DIVE:

IMPACT ON PROVIDERS

DEEP DIVE: IMPACT FOR HOSPITALS

Financial strain will be observed at hospitals as resources are shifted & added from higher-margin/elective procedures to resource-intensive, lower ARPOB ICU treatments for COVID-19 patients

1 Revenue

- ALOS of 12-15 days, primarily monitoring & potentially ICU/ventilator support – up to 3-4x longer than typical ALOS
- Elective procedure volume is cancelled/postponed, adding short-term capacity but long-term financial strain
- *Observed a decrease in overall hospital performance for designated SARS hospitals (outpatient most impacted)*
- *Observed a decrease in some specialties revenue up to 4+ years in dedicated SARS hospital*
- *Observed patient transfers for non-SARS related incidents (typically higher margin) to other hospitals (vs. dedicated SARS hospitals)*
- *Observed a number of hospitals associated or repurposed to being SARS-affiliated to have been negatively affected by publicity*

2 Ops & Costs

- Staff**
- Increased staffing required due to restriction of medical staff to one hospital, different rostering of staff to protect healthcare workers
 - Rising price of temporary staff – average pay for nurses has more than double in the U.S.
 - Underutilization of specialists/elective procedure doctors
 - Significant costs will remain in long-term with underutilized/higher staffing
 - *Observed a reduction of healthcare manpower due to death in SARS-dedicated hospitals; however, largely because infections propagated in hospitals*
 - *Observed factors that causes distress in healthcare workers in hospitals incl. perception of risks, depressive affect, instances of stigmatization*

- Emergency equipment/supplies**
- Purchase of emergency medical equipment (e.g., ventilators) & other supplies (e.g., sanitizers, masks)
 - Rationing of equipment & supplies
 - Rapid action to source existing & proven low-cost ventilators from emerging markets
 - Potential large inventory with limited utilization/requires storage facilities post crisis

- Space**
- Rearrangement of hospital wards & rooms to create vacant isolation areas, incl. isolation/recovery rooms, ICU rooms
 - Repurposing of space to screen and triage (e.g., car park)
 - Government repurposing hotels/buildings to be used as hospitals/quarantine centres

COMPARING COVID-19 VS. SARS

While SARS had a higher mortality rate, COVID-19 is faring worse in number of confirmed cases, transmission & the effects of globalization & increased connectivity

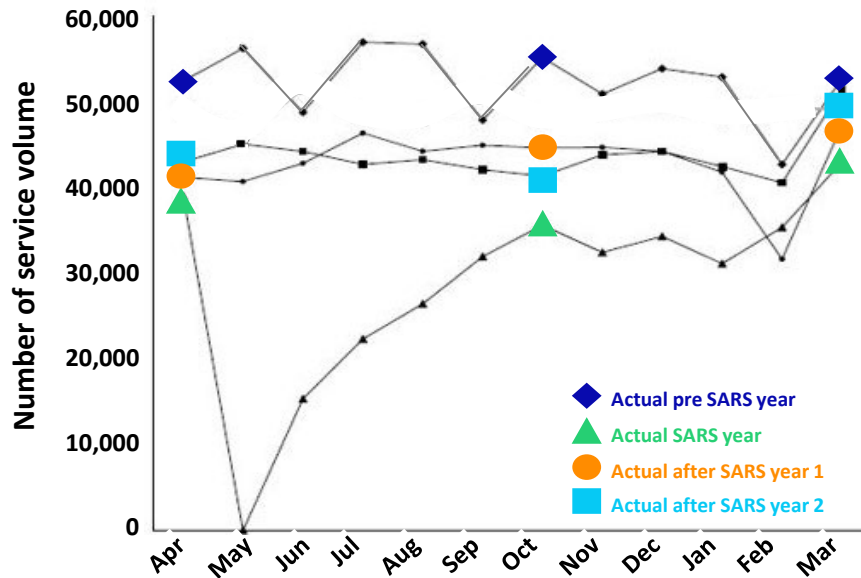
	COVID-19	SARS (2002-2004)
Number of confirmed cases	387,404	8,098
Mortality rate	~2% (4.3% - death/confirmed cases)	10%
Incubation period (interval from infection to onset of symptoms)	2–14 days (up to 24 days)	3–10 days
Transmission (reproduction number)	<ul style="list-style-type: none"> • Early phases can contribute to transmission • High number of asymptomatic/mild cases • Virality: 1.4–3.5 	<ul style="list-style-type: none"> • Peak viral shedding after patients are ill • Transmission high within hospitals • Virality: 2–3
ICU admission rate	2–10% based on age group (some reports suggest as high as 30% overall)	20–30% (median days: 14.5 in ICU)
Velocity of virus (days before first 1,000 people infected)	48 days	130 days
Connectivity	<ul style="list-style-type: none"> • Started in largest city in central China • CH outward travel >2x in past decade • Worldwide hotspots • Community spread 	<ul style="list-style-type: none"> • Started in Guangdong province • Outbreak propagated within hospitals

Worse result

CASE STUDY: HOSPITAL PERFORMANCE DURING & AFTER SARS

Hospital recovery delayed after SARS in SARS-designated hospital in Taiwan

Impact of SARS to performance in a SARS-designated hospital



Average monthly service volumes compared to pre-SARS mean

	During SARS	1 st year after	2 nd year after
OP	55%	82%	84%
IP	43%	81%	87%
Emergency	55%	77%	87%

Source: The impact of SARS on hospital performance. BMC Health Serv Res. 2008

1 Decline in overall hospital performance (during SARS & 2 years after SARS)

- **Outpatient** observed slowest recovery rate

2 Specialties had different recovery rates:

- *1st year*: family medicine, metabolism, nephrology (chronic patients who need long-term treatment go back to former local hospitals)
- *2nd-3rd year*: neurology, cardiology, infectious diseases, neurosurgery, urology, plastic surgery, density & psychiatry, pediatrics
- *Not recovered by 4th year*: general surgery, ophthalmology, orthopaedics, ENT, internal medicine, pulmonary medicine, gastroenterology, OBS/GYN, dermatology, rehabilitation and Chinese medicine

3 Factors that changed hospital performance:

- Patient transfer to other hospitals
- Reduction of healthcare manpower due to death
- Sequelae to staff infection
- Staff turnover
- Publicity related to change of hospital status

IMPACT ON PROVIDERS – LONGER TERM SARS LESSONS IN SINGAPORE

Asian countries learnt from SARS and implemented changes to hospitals/healthcare systems which has supported their capacity to treat & minimize infections as well as create better public preparedness



Diseases Outbreak Response System
National strategy for pandemic response in Singapore



Example: Communication to public based on DORSCON level
Members guided on actions based on severity & spread of disease

- Disease Outbreak Response System Condition: framework to enable whole-of-gov't response to any outbreak & serves to ramp up higher level of response
- Components of pandemic response
 - Surveillance
 - Management of suspect cases
 - Infection control in healthcare settings
 - Visitor control & temperature screening in hospitals
 - Isolation & discharge criteria of suspect & confirmed cases
 - Border control measures
 - Temperature screening in institutions/buildings
 - Contact tracing & quarantine
 - Social distancing
 - Medical treatment & pandemic vaccine
 - Communications
 - Infection control in non-healthcare settings

DORSCON ALERT LEVELS

(Disease Outbreak Response System Condition)

	GREEN	YELLOW	ORANGE	RED
Nature of Disease	Disease is mild OR Disease is severe but does not spread easily from person to person (e.g. MERS, H7N9)	Disease is severe and spreads easily from person to person but is occurring outside Singapore. OR Disease is spreading in Singapore but is (a) Typically mild i.e only slightly more severe than seasonal influenza. Could be severe in vulnerable groups. (e.g. H1N1 pandemic) OR (b) being contained	Disease is severe AND spreads easily from person to person, but disease has not spread widely in Singapore and is being contained (e.g. SARS experience in Singapore)	Disease is severe AND is spreading widely
Impact on Daily Life	Minimal disruption e.g. border screening, travel advice	Minimal disruption e.g. additional measures at border and/or healthcare settings expected, higher work and school absenteeism likely	Moderate disruption e.g. quarantine, temperature screening, visitor restrictions at hospitals	Major disruption e.g. school closures, work from home orders, significant number of deaths.
Advice to Public	<ul style="list-style-type: none"> • Be socially responsible: if you are sick, stay at home • Maintain good personal hygiene • Look out for health advisories 	<ul style="list-style-type: none"> • Be socially responsible: if you are sick, stay at home • Maintain good personal hygiene • Look out for health advisories 	<ul style="list-style-type: none"> • Be socially responsible: if you are sick, stay at home • Maintain good personal hygiene • Look out for health advisories • Comply with control measures 	<ul style="list-style-type: none"> • Be socially responsible: if you are sick, stay at home • Maintain good personal hygiene • Look out for health advisories • Comply with control measures • Practise social distancing: avoid crowded areas

READ OUR LATEST INSIGHTS ABOUT COVID-19 AND ITS GLOBAL IMPACT ONLINE

Oliver Wyman and our parent company Marsh & McLennan (MMC) have been monitoring the latest events and are putting forth our perspectives to support you clients and the industries you serve around the world. The Coronavirus Hub will be updated daily as the situation evolves.



[Visit our dedicated COVID-19 website](#)



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