CHAPTER 9

HOW DELTA DAMPENED HOPES

RENDERING: SARS-COV-2 VIRUS; FIRDAUS, A*STAR'S BIOINFORMATICS INSTITUTE

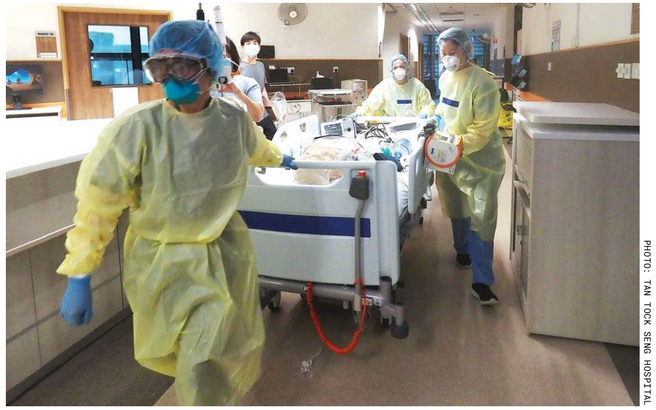


PHOTO: TAN TOCK SENG HOSPITAL

Singapore's first hospital cluster was at Tan Tock Seng Hospital, leading to the first and only hospital lockdown during the pandemic.

FROM the lockdown of a hospital to potentially uncontainable clusters breaking out in the community, Delta left a trail of destruction in its wake. This marked a major setback for the nation.

Prior to this, besides a few errant cases, people were used to seeing locally transmitted cases in the single digits for months – at times even zero cases. But the new Delta wave led to a surge in cases, as this variant was more infectious than the original strain.

The gravity of the situation was obvious: it was also the first and only time a hospital here was locked down during the pandemic, with the only other time that Tan Tock Seng Hospital (TTSH) closed its doors to the public being the 2003 SARS outbreak.

No one had expected a healthcare worker from a hospital that was one of Singapore's key battlefields in the fight against COVID-19 to catch the virus, much less a person who had already been vaccinated. Anxiety was brewing.

A TIMELINE OF COVID-19 CLUSTERS

2021

APR

28 APR 21
Senior staff nurse at Tan Tock Seng Hospital (TTSH) tests positive for COVID-19. Ward is locked down.

29 APR 21
Visitors to TTSH are disallowed.

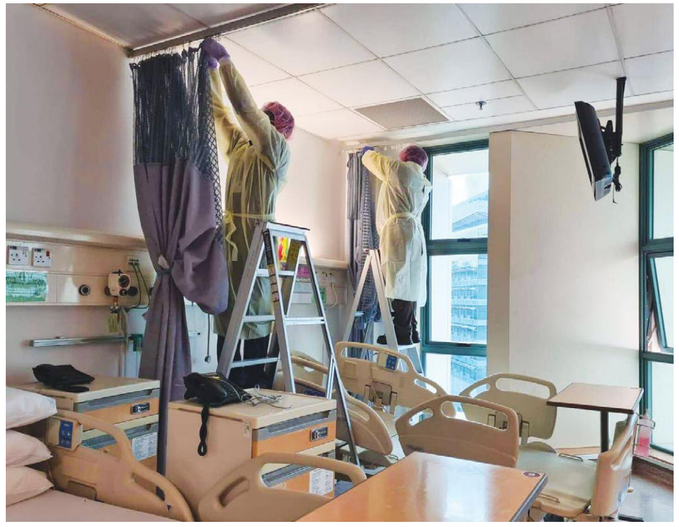
30 APR 21
Two other wards are locked down.

MAY

4 MAY 21
The TTSH cluster becomes the largest active COVID-19 cluster, with a total of 40 cases linked to it.

PHOTOS: TAN TOCK SENG HOSPITAL

The housekeeping team at Tan Tock Seng Hospital carried out extensive terminal cleaning and decontamination cycles at the wards using hydrogen peroxide vaporisers and ultraviolet decontamination devices.



INSIDE THE WARZONE

Chairman of TTSH's Medical Board Professor Chin Jing Jih, who handles all clinical issues at the hospital, recalls the fear when the TTSH cluster broke.

"The first reaction we had was that we needed to get a handle on this because otherwise, it's going to spread like wildfire in the hospital to weak and vulnerable patients," he said.

As TTSH went into lockdown, as part of sectoral ring-fencing strategies, the aim was to limit the spread of COVID-19 transmissions within a targeted location or area without having to impose a whole-country lockdown.

While ring-fencing was also used in the SARS outbreak, such strategies had to be scaled up and expanded during the COVID-19 crisis, given its high rate of transmission.

"The biggest challenge is how to ring-fence the community. When we looked at TTSH, I remember there was one discussion with the Multi-Ministry Taskforce on whether we can isolate the Novena Square area," revealed Permanent Secretary for Health Mr Chan Yeng Kit.

"In the end, we recommended against it. Even if we lock down the buildings, people have come out already. So we didn't do, and have never done, geographical lockdowns."

But while TTSH's internal ring-fencing measures were timely, they had to face other repercussions too. At one point, over a thousand staff were under quarantine and on leave of absence – basically out of action. This, too, was a tough decision to make.

Prof Chin compared his thought process to surgery. "You cut bigger margins to make sure that the cancer cells are all taken off, but that also means a bigger chunk of tissues being taken away. To us, more people in quarantine means a greater impact on our staff strength," he said.

> "TO US, MORE PEOPLE IN QUARANTINE MEANS A GREATER IMPACT ON OUR STAFF STRENGTH."
>
> – PROF CHIN JING JIH, CHAIRMAN OF TAN TOCK SENG HOSPITAL'S MEDICAL BOARD

MAY

5 MAY 21
A cleaner at Changi Airport Terminal 3 tests positive for COVID-19.

12 MAY 21
The Changi Airport cluster grows to 26 cases, and Jewel, Terminal 1 and 3 are closed to the public.

20 MAY 21
The Changi Airport cluster becomes the largest active COVID-19 cluster, with a total of 100 cases linked to it.

Ms Lim Mei Ling, Senior Nurse Manager at TTSH, further shared that uncertainty and anxiety were dominant sentiments on the ground at that time. "In affected wards, quarantine orders could be extended for up to 21 days," she said.

As a result, staff from other departments and healthcare institutions had to be brought in to supplement the hospital's dwindling manpower. This was not always ideal as these reinforcements were working in an unfamiliar environment, and had to adjust to new team dynamics within a short span of time.

Those who were unaffected by quarantine and isolation measures had to step up to cover additional areas of care in the hospital, leading to longer working hours which could extend up to 12 hours per shift. This took a toll on not just their mental health as they were unable to get sufficient rest, but their family time too.

"I was worried about spreading the virus to my family, so I sent my kids to my in-laws' place," said Ms Lim. "I did not see them for more than three weeks."

AN OUTBREAK FROM WITHIN TAN TOCK SENG HOSPITAL

AT FIRST, she thought it was just fatigue. After all, nurses had to follow a strict hygiene code, decked out in protective equipment – PPE gowns, gloves, face masks and even face shields – at all times. It seemed unlikely that the virus would penetrate these defences.

But over the next few hours, Tan Tock Seng Hospital (TTSH)'s Senior Staff Nurse Ms Jennilyn Flores Angeles developed respiratory symptoms one after another, including a high fever, cough, runny nose and body aches.

She immediately went for a swab test and, as the clock struck midnight, she was confirmed COVID-positive on April 28, 2021.

The next day, six new cases linked to the TTSH cluster were reported, including a 94-year-old patient in Ward 9D. The hospital sprang into action and locked down the ward immediately.

By April 30, 2021, TTSH had disallowed all visitors and locked down two other wards. As part of a mass screening exercise, all 1,100 patients and 4,500 staff in the hospital were swabbed, while potential close contacts were quarantined. Emergency cases were redirected to other hospitals.

But the numbers continued to climb. In a matter of days, it became the largest active cluster in Singapore, with 40 cases linked to it as of May 4.

Professor Chin Jing Jih, Chairman of the Medical Board at TTSH, admitted that the hospital was caught by surprise: "We never expected the enemy to come from within."

CLUSTERS OF CONCERN

But if the TTSH cluster took the country by surprise, nothing could have prepared Singapore for what came after. Cluster after cluster appeared within the community across the next few months, driving home the point that Delta was a force to be reckoned with.

Just after the TTSH cluster reached its peak, a new one emerged at Changi Airport. On May 5, 2021, an 88-year-old cleaner at Terminal 3 tested positive for the virus. A week later, the cluster had grown to 26 cases. By May 20, it had taken over TTSH as Singapore's largest active cluster with 100 cases.

More worrying were the clusters that had broken out at Housing and Development Board (HDB) estates, particularly those with a high proportion of elderly residents.

In June 2021, four clusters were reported in the Bukit Merah View and nearby Redhill estates, with seniors making up almost half of these cases.

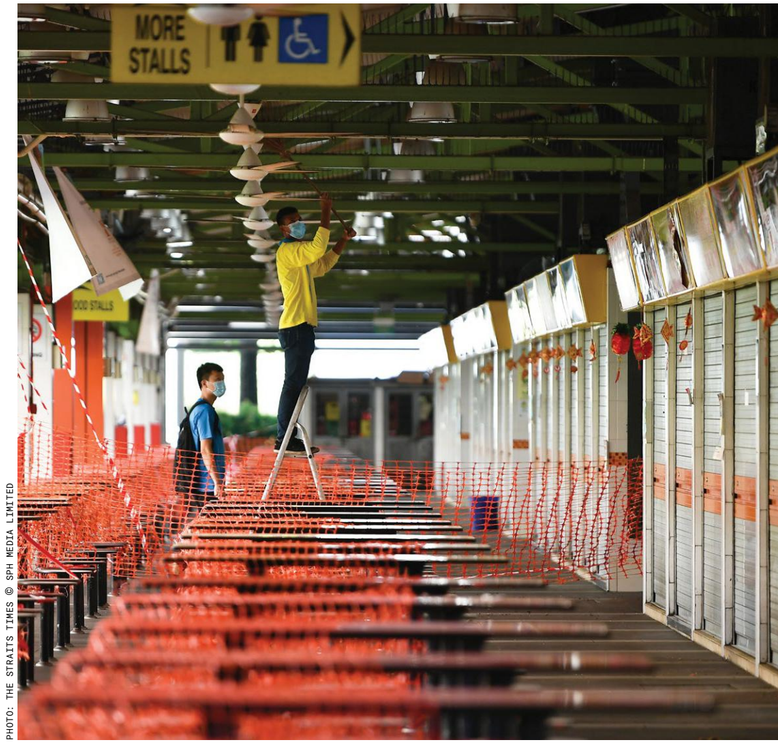


PHOTO: THE STRAITS TIMES © SPH MEDIA LIMITED

Bukit Merah View Market and Food Centre on Jun 23, 2021.

JUN

6 JUN 21
The TTSH cluster is officially closed, with no new cases linked to it after 28 days.

9 JUN 21
The first case of the Bukit Merah View Market and Food Centre cluster is reported.

13 JUN 21
The Bukit Merah View Market and Food Centre is closed for three days for deep cleaning.

14 JUN 21
Jewel Changi Airport reopens after a month-long closure.

About 40 per cent of these seniors were not fully vaccinated. Subsequently, more community cases were springing up in other residential areas in Punggol, Hougang, Tampines, Yishun and more.

This was when mass testing operations for affected public housing estates were introduced, complemented by wastewater testing efforts of the National Environment Agency (NEA). Wastewater testing served as a surveillance strategy to identify COVID-19 viral fragments in wastewater, allowing MOH to efficiently deploy its testing resources and swab operations to the right sites.

From May to August, slightly more than 30 of such mandatory mass testing operations were conducted, with about half of them surfacing positive cases. HDB, as well as the People's Association (PA), were key partners in this effort, managing residents through ground engagement and giving them prior notice through mailers and advisories.

PHOTOS: REUTERS/EDGAR SU

Residents queue to take their mandatory COVID-19 swab tests after cases were detected in their estate (above).

Quick test centres were set up near residential estates and at popular malls to make COVID-19 testing more convenient (right).

Mr Ng Hock Sing, Director of MOH's Emergency Preparedness and Response Division, said his key priority was assuring residents that testing operations were done out of precaution and for residents' protection, and that most people were unlikely to be infected.

"The PA would already have engaged the residents before we released the news to the public," he said. "Then, in the next one to two days, we will carry out the testing. We didn't want the residents to read about positive cases for the first time in the news."

JUL

12 JUL 21
The KTV cluster is announced by MOH, with three cases linked to it.

16 JUL 21
Linked to the KTV cluster, the Jurong Fishery Port (JFP) cluster is first announced after cases were found there. All nightlife establishments have to close for two weeks.

17 JUL 21
The KTV cluster has grown to 148 cases.

20 JUL 21
142 new cases in the JFP cluster are reported.

22 JUL 21
Return to Phase 2 (Heightened Alert) due to the growing JFP cluster

PHOTOS: MINISTRY OF SUSTAINABILITY AND THE ENVIRONMENT

Linked to the KTV cluster, the Jurong Fishery Port cluster was announced on Jul 16, 2021 after seven cases were detected there.

But two clusters in particular captured people's attention: the KTV and Jurong Fishery Port (JFP) clusters.

The first three cases linked to KTVs were announced on July 12, 2021. It was discovered that, since May 2021, numerous nightlife operators and establishments had been breaching safe management measures, failing to prevent the intermingling of large groups and allowing live entertainment and games.

Within five days, the cluster had swelled to 148 cases. More than 400 nightlife establishments were suspended for two weeks, with all employees required to undergo mandatory testing for COVID-19.

It did not stop there. On July 16, 2021, cases were detected among visitors to Hong Lim Market and Food Centre as well as JFP. The next day, both locations were closed to the public. At its peak, it saw a total of 1,155 cases.

It was later reported that the JFP cluster was linked to the KTV cluster, as the virus detected in both clusters were different from the Delta variant seen in other local clusters.

This was a sign that the virus was mutating at a pace far beyond what was anticipated. Another grave realisation was that vaccines could not prevent transmission within the larger community.

"3 STEPS FORWARD, 2 STEPS BACK"

Singapore was left with little choice but to revert to tightened restrictions, called Phase 2 (Heightened Alert). Dining in and social gatherings were once again disallowed, people could only leave the house in groups of two, and work-from-home and home-based learning became the default once more.

In fact, the entire period from May to August 2021 resembled a whack-a-mole situation where Singapore had to aggressively tackle a spate of emerging clusters, and a period of tightening and easing community measures ensued. In the span of just three months, Singapore had cycled between Phase 2 (Heightened Alert) and Phase 3 (Heightened Alert), where people were allowed to gather in groups of two, then five, then back to two.

These decisions were not made lightly. Minister for Health Mr Ong Ye Kung, who took over the reins just as Delta hit Singapore, explained, "The main consideration was to buy time for vaccinations because we were not at the stage we are at now, where we have very strong hybrid resilience – three shots, some four, plus infection."

His predecessor, Mr Gan Kim Yong, acknowledged the sentiment on the ground that it seemed that Singapore was "taking three steps forward, and two steps back".

But there was a need for recalibration to "prevent a massive outbreak and collapse of the healthcare system", said Mr Gan, who remained in the MTF while he moved on to helm the Ministry of Trade and Industry in May 2021. "We must be nimble and prepared to change."

The Jurong Fishery Port cluster was especially hard to contain as the virus had made its way into a large community, from fishmongers to stall assistants and delivery drivers.

SEP

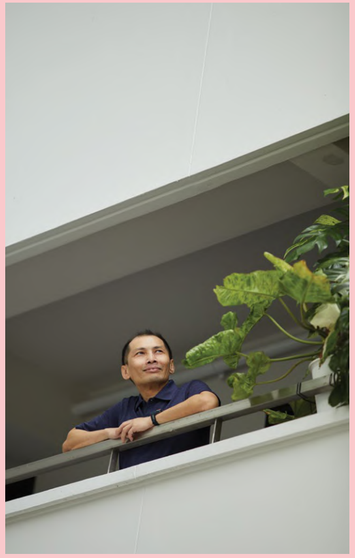
1 SEP 21
Changi Airport Terminal 1 and 3 reopen.

7 SEP 21
JFP cluster is officially closed.

SWABBING STORIES

THE MOST CHALLENGING PART OF BEING A SWABBER IS HAVING TO DEAL WITH PEOPLE'S EXPECTATIONS FOR SWABBERS TO DO THEIR JOBS PAINLESSLY.

PHOTO: NATIONAL UNIVERSITY HEALTH SYSTEM



MANY FEAR THE PAIN of being swabbed for a Polymerase Chain Reaction (PCR) test, but not many know the woes of being a swabber.

Like all frontline workers, Mr Liang You Rui, a swabber on contract with MOH, had to don full PPE gear and an N95 mask for hours every time he was called for a testing operation.

"At the end of the day, the mask would have cut lines into the side of your face, your fingers would be wrinkly, and your underwear would be soaked," he said. "All you want to do when you get home is lie down on the floor and fall asleep."

He was part of the Quick Response Force (QRF), an elite team of swabbers who were activated by the management of MOH whenever there was a more significant – and worrying – surge in COVID-19 cases. The QRF was also deployed to the mass testing operations at public housing estates during the Delta wave, such as those in Hougang and Chinatown.

But the most challenging part of being a swabber is having to deal with people – more specifically, their expectations for swabbers to do their jobs painlessly.

"This is a job where you know they won't see you and smile," quipped Mr Liang.

It didn't help that every resident had to be swabbed twice – once for an Antigen Rapid Test (ART) test, and once for a PCR test. The rationale was that diagnostic tests could sieve out positive cases as quickly as possible within 15 minutes, while PCR tests served as a confirmation of whether someone indeed had COVID-19 or not.

Typically, it takes only three minutes to swab one patient. For the elderly, however, especially those who had an irrational fear of being swabbed, this could take up to 15 minutes.

Mr Liang remembers the difficult cases well. "Some people will pull out the swab stick when it's halfway up their nose and slam it on the table," he recalled.

Another instance was when swabs were introduced for children under the age of 12. "The father wanted the child to be swabbed, but the mother didn't want to. The parents quarrelled in front of me, and we ended up taking over an hour just to swab this one kid," he recalled.

Mr Liang You Rui was part of an elite team of swabbers on contract with the Ministry of Health called the Quick Response Force (QRF), which was activated whenever there was a surge in COVID-19 cases.

The KTV and Jurong Fishery Port clusters posed challenges to contact tracers due to the immense number of unlinked cases.

LOSING TRACK OF CONTACT TRACING

As more cases sprouted, contact tracing efforts, which had previously been lauded as "gold standard", were struggling to keep up.

"The Delta wave was really challenging because of the sheer numbers," said Professor Vernon Lee, who headed the contact tracing work as the Senior Director of the Communicable Diseases Division at MOH.

Some clusters were harder to deal with than others. For instance, the infamous KTV cluster was hard to contain because of the illicit nature of activities. Both establishments and customers had been breaching safe management measures and were reluctant to share accurate information.

As Mr Chan, Permanent Secretary for Health, quipped: "Some were more worried about being killed by their wife than the virus."

The result was a great number of unlinked cases. "If we are unable to link someone to a known network of cases, that means there's some transmission going on that we don't know about – it could be a small transmission or it could be a big cluster that we have not detected," explained Prof Lee.

Still, the KTV cluster was not as bad as the JFP cluster, said Mr Ong, Minister for Health. The former was a closed community of KTV-goers, but the latter was a larger community consisting of fishmongers, stall assistants, delivery drivers and others who visited the port before working at various markets in Singapore.

"By the time we thought we had suppressed it, it was too late. Actually, it already went out to the community – hawker centres, markets and through the bus interchanges," he said, acknowledging that quicker action could have prevented the spread.

PHOTO: THE STRAITS TIMES © SPH MEDIA LIMITED

PHOTO: SMART NATION AND DIGITAL GOVERNMENT OFFICE

While SafeEntry and TraceTogether were useful tools to assist contact tracing efforts and establish links between cases, contact tracers were sometimes overwhelmed by the sheer amount of digital data that they had to sift through.

Digital tools like SafeEntry and TraceTogether were introduced to complement manual contact tracing efforts, and helped shorten the average time required for contact tracing from four days to less than one-and-a-half days. However, this resulted in a lot more data for contact tracers to sift through and verify. Even with about 450 contact tracers, they felt overwhelmed.

"TraceTogether helped us identify people who did not know each other but were close enough to be potentially exposed to infection. We had that data, but we also needed to figure out whether it was accurate," explained Mr Faris Abdul Wahab, a contact tracer with MOH.

He went on to outline a hypothetical situation: "Imagine a case travels daily via MRT from Jurong to Pasir Ris every day. I end up with 300 to 400 people being picked up as potential close contacts via TraceTogether just for one case. If you have three cases, you could end up with 900 people."

His colleague, Mr Paul Lee, added that this often led to a "compounding effect". As the number of cases increased to 1,000 a day, their work steadily piled up.

Contact tracing efforts were subsequently "repurposed" during the Delta wave, according to Prof Lee. It was becoming increasingly impossible to contact-trace every single case in detail, so efforts were focused on vulnerable settings like schools and eldercare facilities instead. Ultimately, contact tracers had to make the final call on whether or not to issue a quarantine order to close contacts depending on their risk assessment.

But even on the quarantine front, the coordination between MOH and its private partners was compromised by the sheer volume of cases. Quarantine orders were sometimes confusing and inconsistent, resulting in numerous complaints from members of the public. These included quarantine orders that were rescinded or extended at the last minute.

Not surprisingly, public confidence was at an all-time low as cases piled up. On April 1, 2021, Singapore had witnessed about 2,300 community cases, 54,500 dormitory cases and 30 deaths. By December 1, these numbers had burgeoned to about 180,400 community cases, 79,800 dormitory cases and 726 deaths.

"Delta was a period of great chaos," said Mr Ong. "I got a lot of flak – deservedly so – but we were caught off guard at that time. We were planning for it, but it came very fast, and too soon."

At a press conference in September 2021, he had also cautioned that Singapore's daily COVID-19 cases could hit 1,000 soon, as numbers had been doubling every week. This was seen as a necessary "rite of passage" for any country to go through before they could even hope to live with the disease.

Sure enough, on September 18, 1,009 new cases were reported. The healthcare system was under stress, and people were panicking. There was a pressing need for a change in strategy.

IT WAS BECOMING INCREASINGLY IMPOSSIBLE TO CONTACT-TRACE EVERY SINGLE CASE,

SO EFFORTS WERE FOCUSED ON VULNERABLE SETTINGS LIKE SCHOOLS AND ELDERCARE FACILITIES INSTEAD.

(From left to right) Contact tracers **Mr Paul Lee**, **Ms Eileen Chen** and **Mr Faris Abdul Wahab** were part of a team that found themselves handling about 1,000 cases a day at the height of the Delta wave, and had to make important calls on whether or not to issue quarantine orders to close contacts.

LETTING THEM GO WITH DIGNITY

WITH THE CHRISTIAN HYMN Amazing Grace playing in the background, Dr Ho Lai Peng and two nurses delicately dressed the deceased patient in new clothes and tidied his hair. Once it was done, she took a photograph of the patient that would be sent to his family members.

It was the last photograph of the patient, a Christian, who had died of COVID-19.

As a medical social worker for over three decades, Dr Ho was used to seeing suffering and death up close. But COVID-19 posed a different challenge altogether. Safe distancing rules meant that patients on their deathbeds could not be with their loved ones. And death sometimes came suddenly and quickly.

At the National Centre for Infectious Diseases, the responsibility of accompanying patients through their last days fell on Dr Ho and her team. They also became the middlemen helping family members fulfil their last wishes for the patients, and comforted them when patients passed on.

"The last photograph is very important. It makes the family feel at ease to know that their loved ones did not suffer in their last moments," she said.

The sheer number of cases that Dr Ho's team had to handle during COVID-19 – especially during the height of the Delta wave when the case fatality rate peaked – was overwhelming. To cope with the increase in caseload, three more members from her team were subsequently deployed to support the team at the COVID wards.

The work of a medical social worker extends to providing end-of-life care to patients and allaying the fears and anxieties that they and their loved ones have. The job is emotionally taxing, even for the most seasoned practitioners. At times, family members would vent their frustrations on Dr Ho's team when their requests to deliver food to patients or visit dying patients were rejected.

"Some would scold us and shout at us. We see their point of view and we try to empathise. But it is a lonely and tiring journey. There were days I didn't eat, didn't drink and didn't use the toilet for hours because there was so much to do. Sometimes, at the end of the work day, my colleagues would break down. You're just handling deaths the whole day," she said.

In trying times, Dr Ho clings on to the purpose of her work. "We are here to maintain the dignity of the deceased, and assure their next-of-kin that someone was there with the patient when they passed," she reasoned.

"This is social work – you enter difficult situations that people are facing. If you don't want to go into the fire, then you should not be a firefighter."

Ultimately, Dr Ho sees herself as playing a privileged role to protect the dignity of the dying. "I know my patient's family members would willingly trade positions with me to be in the ward, but they can't. So I see what I'm doing as a privilege – it is an honour to be able to play music for the deceased, to dress their body and comb their hair," she said.

Dr Ho Lai Peng, medical social worker at the National Centre for Infectious Diseases (NCID), and her team accompanied patients in their last days and saw them off with dignity.

AN INTERDEPENDENT ECOSYSTEM

PHOTO: REUTERS/EDGAR SU

As Singapore slowly got Delta under control and started to transition to living with COVID-19, the country sought to resume travel, establishing vaccinated travel lanes with other countries starting from Sep 2021.

"FOR EVERY COVID-POSITIVE PATIENT, 15 close contacts will be generated," explained Mr Tan Leong Boon, who was recalled to the Enhanced Quarantine Order Task Group (EQO TG) in May 2021 when the Delta wave hit.

Previously, he was involved in quarantine operations when there was an outbreak in foreign worker dormitories in Singapore a year before.

To him, the scale of the work that the EQO TG had to handle was magnified by 15 times. Their responsibilities went beyond just issuing QOs to close contacts – they also had to transport them to hotels or government quarantine facilities (GQFs), test them at the start and end of their QOs, as well as ensure their physical and mental well-being for 14 days.

There was also the issue of dealing with difficult individuals. Some were unhappy upon being informed that they were close contacts of COVID-positive cases, sometimes even getting verbally aggressive with Certis officers and demanding to know where they could have caught the virus from.

Some were at the other end of the spectrum, in a category that Mr Tan calls "Worried Well". These were individuals, usually family members of a confirmed case, who were concerned about whether they had caught the virus or not, but had not heard from anyone on what their next course of action should be.

Their work was "laborious and draining". In theory, the quarantine process seemed fairly straightforward, even simple. In practice, however, all sorts of complications arose. The entire quarantine "ecosystem" was precarious at times.

"Many parties are involved and they need to play their part in the ecosystem. If there's a delay at the call centre, then there's a delay by Certis, a delay at the regional swab centres, and a delay at check-in – the whole thing snowballs because everything is interdependent," said Mr Tan.