

CHAPTER 9

Service Beyond Our Walls

Until today, I never received a letter from the Ministry of Health telling us to cover the Expo. I never received an email. I never even received a WhatsApp message. It was all word of mouth. It was all based on trust.

KENNETH KWEK

Chief Executive Officer

Words spoken at a webinar with staff on 27 November 2020, to describe how SGH swung into action

Mothership 2

In late April 2020, when dormitory and swab teams were in full swing, SGH Campus was tasked with another public health project – to operationalise a Community Care Facility (CCF)¹ at the Singapore Expo, Singapore’s largest convention and exhibition venue. This would create 3,200 beds to cater for COVID-19 cases who fulfilled the criteria determined by MOH. This would clearly be a formidable undertaking. The bed capacity alone was twice that of SGH’s. The team in charge had less than two weeks to make it happen.

Surgeon Tan Hiang Khoon², already co-leading SGH’s dormitory operations, was handed the new challenge of spearheading SGH’s efforts at the latest real estate entrusted to us, to be dubbed CCF@Expo. The co-lead was cardiologist Chow Weien³, who was already part of the SingHealth Medical Operations Cell. As a sizeable proportion of SGH Campus resources had already been diverted to the dormitories, a new team was formed for the CCF@Expo assignment.

TEAM LEADS OF CCF@EXPO

MEDICAL Dr Tan Kian Hian Dr Henry Ho Dr Charles Goh Dr Toh Song Tar Dr Suriya Prakaash (CGH)	NURSING Ms Loh Huey Peng (SNEC) Mr Yap Soon Ghee Ms Ang Shin Yuh	OPERATIONS Mr Jim Gu (SNEC)	INNOVATION Ms Lee Chen Ee (SingHealth)
INFECTION PREVENTION Ms Lee Lai Chee	ADMIN Mr Heng Yi Xiong	PHARMACY Ms Lee Soo Boon	PATIENT EXPERIENCE & STAFF WELLNESS Ms Tan Yee Pin (NCCS) Ms Yee Kaisin

All from SGH unless otherwise stated

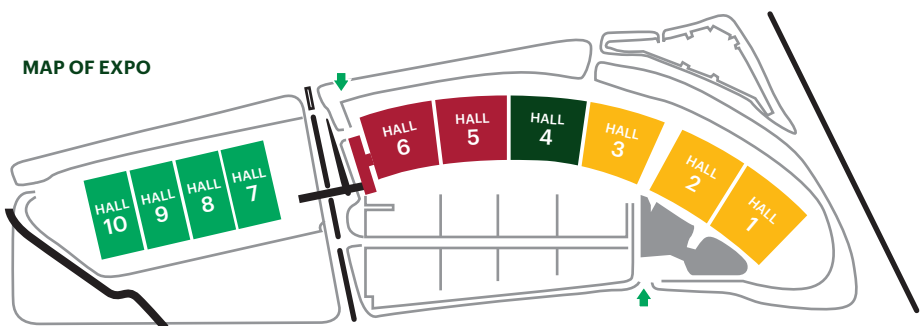
¹ Community Care Facility (CCF) was initially known as Community Isolation Facility (CIF).

² Dr Tan Hiang Khoon, Chairman, Division of Surgery and Surgical Oncology, SGH and NCCS.

³ Dr Chow Weien, Consultant, Department of Cardiology, Changi General Hospital.

It was a tall order. In a short time, the team had to decide how to run the unfamiliar, repurposed facility safely, with limited staff from the already-stretched mothership. A visit to one of the halls operated by another healthcare group left a deep impression on Hiang Khoon. “It was a clean environment, but there was a very strong sense of isolation and danger. I remember thinking – if I felt that way, how much worse it must be for those who had to stay for weeks and weeks. And it was dangerous for the staff because they would be walking into a hall with hundreds of infectious COVID-19 patients. The patients clearly outnumbered staff hundred to one.”

SGH was assigned four halls (Halls 7 to 10), across the road from Halls 1 to 6, which were managed by other healthcare institutions (see figure below). The team had to organise the venue to make sure that staff would be safe. This included identifying entry and exit zones and designating areas for specific purposes, such as zones for staff to rest and for them to put on and take off their personal protective equipment (PPE). The modest manpower we would marshal meant that the blueprint used by institutions manning the other halls would not work for us.



Halls 7 to 10 were assigned to SGH, and were across the road and had a different configuration from the other halls in Singapore Expo. At the time SingHealth and SGH Campus were activated, Woodlands Health Campus was already running Halls 1 to 3, Parkway Shenton was running Hall 4 and SAF helmed Halls 5 and 6.

Seeds of opportunity

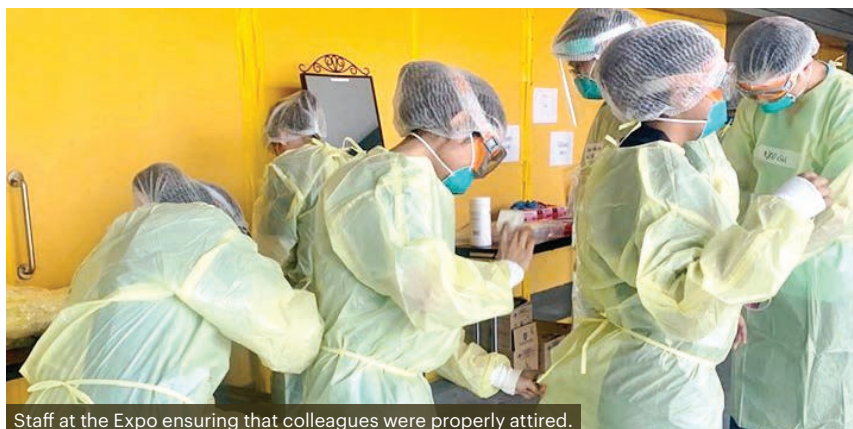
Faced with these towering demands, the CCF@Expo team adopted innovations such as teleconsultation and telehealth monitoring. By leveraging technology and introducing innovative workflows, the team managed to run the gargantuan facility as a basic but efficient health depot. It was projected that the use of technology reduced staffing needs by a whopping 80% (from the initial projected requirements). CCF@Expo was able to function round the clock with 12 medical administrators, 26 doctors and 72 “angels”⁴ on 12-hour shifts. With their inventive approach, they were able to publish their experience in an academic journal⁵.

Getting the four capacious halls running with hospital-like efficiency in under two weeks was no mean feat. The team partnered different parties such as Certis⁶, SingEx⁷, Resorts World⁸ and other healthcare entities such as Woodlands Health, Parkway Shenton, Singapore Armed Forces (SAF) Medical Corps and SATA CommHealth to make the enterprise a success. Providing medical expertise was only a part (albeit a critical part) of the exercise, Weien remarked that the many different teams working together “was like a United Nations”.



Inside the Community Care Facility@Expo operated by SingHealth.

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- ⁴ “Angels” was a term used to refer to allied health professionals, nurses, as well as administrative and operations personnel who were part of the CCF@Expo team.
- ⁵ Chia ML et al. Managing COVID-19 in a novel, rapidly deployable community isolation quarantine facility. *Ann Intern Med* 2021;174(2):247.
- ⁶ Certis, the security organisation, was appointed to take care of security needs at the CCF@Expo for recovering COVID-19 patients.
- ⁷ SingEx Venues is the operator for the Singapore Expo Convention & Exhibition Centre.
- ⁸ Resorts World Sentosa provided pro bono services as the managing agent of the CCF@Expo. Over 2,000 staff volunteers provided non-medical care for the residents.



Staff at the Expo ensuring that colleagues were properly attired.

Safety on unfamiliar ground

The staff from SGH Campus went into the project with a hospital mindset. But CCF@Expo was not a hospital. The team had to contextualise creatively continually. The usual hospital processes were rapidly adapted into practicable protocols. These protocols would enable safe care in what was essentially a makeshift medical facility. This was, in no small part, thanks to our Infection Prevention and Epidemiology (IPE) colleagues, who introduced practical steps to protect patients and staff from disease transmission. They also audited compliance with these processes. To ensure the safety of all, the SGH IPE team magnanimously extended their expertise to the staff of our non-healthcare partners.

Infection Prevention Nurse (IPN) Kamini⁹, who co-led a team of four, shared her experience outside hospital walls. “When we first conducted our audits, some staff were not so welcoming. They felt we were there to police them, or to catch them making a mistake. Hence, they just ignored us. So before starting the audit, I would introduce ourselves to the staff and explain that we were there not to find fault but to protect them from getting infected. Now, whenever I visit, staff are eager to ask me if they are doing things correctly. They understand that we are here to keep them safe.”

⁹ Kamini Devi d/o Magesparan, Senior Staff Nurse, Infection Prevention and Epidemiology.

Working as a team

Amidst the many unknowns of the pandemic, the leadership group had to engage the ground and be honest when giving updates about the evolving situation in the country and how it would impact the staff and patients at their new workplace. Effort was made to get daily feedback from the staff and implement feasible suggestions rapidly while maintaining morale. In addition, non-medical staff such as facilities and security personnel were managed as part of the team and were included in all discussions.

“Patients at the heart of all we do.” Nothing rang more true at the Expo than this oft-heard SingHealth adage. Our patients there were predominantly migrant workers from the dormitories. Many were stressed, worried and cut off from their usual social support networks. They had concerns about their

jobs, salaries, and about their health. By the time they arrived at CCF@Expo, they had undergone repeated extensions of quarantine and multiple rounds of testing. Some had endured several involuntary changes in residence, as efforts by the authorities to limit the spread of infection led to changes in plans, changes that translated into seismic shifts in their lives. The team provided them with medical care, assuring them that they would be well looked after. Pastoral care, needless to say, was also rendered.

SINGHEALTH CCF@EXPO

7,700	patients
3,200	beds
549	staff mobilised at different times
99	days of operations (24 April to 31 July 2020)
12	days to reach full capacity (1 May to 12 May 2020)

A DEFINING MOMENT

Within the first week of deployment, the nascent CCF@Expo team was put to the test. It was after 10:00pm and the day shift staff were heading home when busloads of patients arrived. It was clear that the lean night-shift team would be overwhelmed. A distress call was sent out and one by one, the staff from the day shift turned back, from the bus stops and MRT stations, to help manage the admissions.

A member of the CCF@Expo team shared. “I was amazed but happy – we were all from different departments and institutions, yet we pulled together.”

Special Operations teams

In addition to the main medical teams managing the dormitories and CCF@Expo, the mobile swab team (MST) and mobile phlebotomy team (MPT)¹⁰ also played crucial roles in the national response. These mobile teams were like “special operations” military teams that could be rapidly deployed where and when needed, usually at short notice. They contributed to the success of the work we had to do outside SGH.

Oftentimes, assignments for the following day were announced by Joint Task Force (Assurance) [JTF(A)]¹¹ late in the day, leaving little time for preparations. Be that as it may, the teams’ response was typically a robust, “Ok. We’ll go and recce the place now.” The teams adapted to any kind of environment that they were deployed to – from hotel lobbies, schools, corridors, and parking lots to construction sites. They were adept at responding to changing instructions, doing hasty reconnaissance

¹⁰ Phlebotomy is the process of drawing blood from a patient for testing. The blood drawn by MPTs would undergo serology testing for COVID-19 antibodies. In those pre-vaccine days, the presence of such antibodies indicated a prior infection.

¹¹ The typical operations cycle for the swab operations would start with a WhatsApp group chat with JTF(A) discussing the potential sites for swabbing and then prioritising the most critical ones. The information would then cascade to the SingHealth Medical Operations cell and hospital level teams and finally, the swab teams.

of unfamiliar and sometimes desolate locations. Beyond these JTF(A) assigned work, MSTs also helped to swab residents and staff of nursing homes as well as essential contract staff on SGH Campus, as and when instructed. With a gung-ho attitude and without a fixed home, the MSTs repeatedly quenched the authorities' thirst to determine the extent to which the virus had penetrated the community, for they could swab a few hundred people within hours. A few members of the MSTs also trained swabbers recruited by the Health Promotion Board.

SGH CAMPUS MOBILE SWAB OPERATIONS

111 days
(12 April to 31 July 2020)

162 deployments

51,026 swabs performed

Nurses from various SingHealth institutions volunteered on their days off to be part of the MSTs. A thorough orientation followed by theory and practical training were given before deployment duties.

The SGH Campus MSTs continued deployments from their launch on 12 April 2020 till they finally stood down from full time operations on 31 July 2020, 111 days after that inaugural swabbing operation at Redhill.



The Mobile Swab Teams even trained staff of nursing homes to conduct swabs on their residents.

Deploying Mobile Phlebotomy Teams

On 14 May 2020, there was a request for SGH to provide MPTs. While swabbing was meant to pick up hidden cases of COVID-19, phlebotomy operations would allow for blood sample collection to confirm or exclude a recent infection. Two teams comprising 20 members each were formed and deployed daily to multiple dormitories over eight weeks.

As the provider of phlebotomy services on SGH Campus, the SGH Department of Clinical Pathology was asked to spearhead this undertaking. Scientist Ng Wai Yoong¹² was initially anxious about setting up the teams. “Getting the staff numbers was challenging as many departments already had their COVID-19 commitments and it was going to be difficult to maintain large operationally ready teams over an unknown duration.”

The phlebotomists were drawn mainly from SGH and from nurses of various SingHealth institutions. Together with volunteers among allied health colleagues and other staff from SGH, National Heart Centre Singapore (NHCS) and SingHealth headquarters, the MPTs were rapidly assembled within a matter of days. Medical administrator Tan Xiao Hui¹³ described her first deployment to the migrant workers’ dormitory, S11@Punggol. “It was so warm and humid. Our scrubs were soaked with perspiration beneath the PPE. Some of us had heat stress and had to stop for breaks. But the team’s morale remained high and we cheered each other on.”

Despite the discomfort and the unfamiliar environment, everyone was determined to get the work done.

¹² Dr Ng Wai Yoong, Assistant Director, Department of Clinical Pathology.

¹³ Tan Xiao Hui, Senior Executive, Pathology Academic Clinical Programme.

One day at Blue Stars dormitory, it started to rain heavily and operations halted as the workers couldn't get to us. I then saw our colleagues pick up umbrellas to accompany the workers to the registration counters and phlebotomy stations so that the operations could continue. Their dedication to the mission left me in awe!

Beatrice Koh, Medical Laboratory Scientist, Department of Clinical Pathology

She was one of the first to volunteer and organise the MPT operations.

Each MPT made multiple visits to the dormitories. They had to coordinate with the dormitory operators and Forward Assurance and Support (FAST) teams¹⁴, which decided which workers needed the phlebotomy tests, and ensured that the queues were orderly. In 14 out of their 26 expeditions, they performed more than 1,000 venepunctures per day. SGH's

MPTs were subsequently called upon to assist the National University Health System at Sungei Tengah Lodge. This was the largest migrant worker dormitory in Singapore, housing over 23,000 workers.

SGH CAMPUS MOBILE PHLEBOTOMY OPERATIONS

8	weeks of operations (26 May 2020 to 16 July 2020)
30	phlebotomists and
37	ancillary staff
26	outings
26,542	blood draws (range from 100 to 2,046 a day)

¹⁴ FAST teams were composed of officers from the Singapore Police Force, Singapore Armed Forces, Ministry of Manpower and other government agencies. These teams were deployed in the migrant worker dormitories during this phase of the pandemic.

Before electronic registration was available, the swab samples and blood samples procured during these operations were manually catalogued and labelled by staff from SGH laboratories¹⁵ and credit had to go to them for helping with the smooth running of the mobile swab and phlebotomy teams.

DRAWING BLOOD

(sung to the tune of "Planting Rice")

*Dressed in PPE not fun
Donning face shield and face mask
Dressed in gown and latex gloves
You will run out and not last.*

*Carefully check right patient
Steady gaze for juicy vein
Gently give assurance
Press to the end of task.*

LINDA CHAN

Deputy Director
Nursing



The Mobile Phlebotomy Teams worked in unfamiliar conditions in various dormitories.

¹⁵ The Molecular Pathology Laboratory ramped up capacity to run the PCRs on the swabs from the dormitories, while the Virology Laboratory performed the serology assays. For more details, see Chapter 3.



To be heard through the N95 mask, MMT doctors used a voice amplifier when they saw patients in the carpark of the SIF at Village Hotel Sentosa. Large air-cooling units were deployed to help our teams work better while gowned up in PPE.

Thinking outside the (hospital) box

If necessity is the mother of invention, then a crisis must be the grandmother of innovation. Removed from a familiar working environment, our teams had to innovate to make things work. The concept of practising battlefield medicine was alien to most. The usual safety nets of multiple ward rounds, access to specialist referrals, support from allied health professionals and round-the-clock nursing care could not be expected – making it happen was also not reality. The provision of good clinical care at the external deployment sites therefore needed creativity and adaptability. There was a plethora of suggestions and initiatives – both bottom-up and top-down, and many were implemented swiftly.

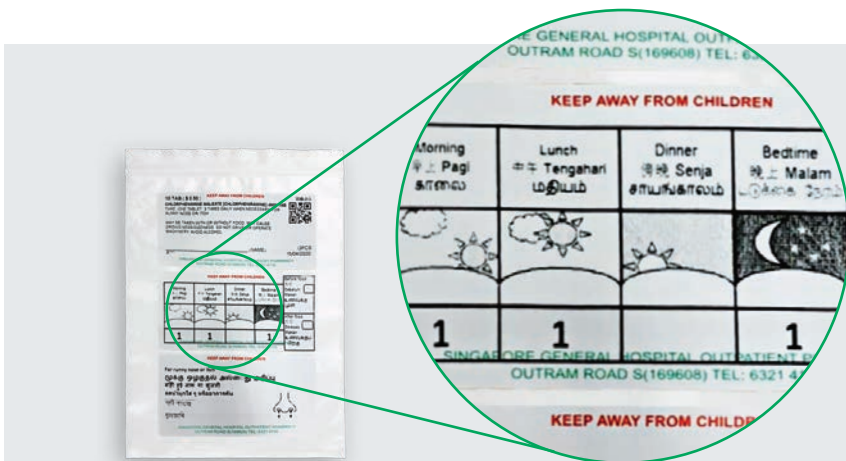
Simple adjustments to work processes helped to make things more manageable. The medical team at the Swab Isolation Facility (SIF)¹⁶ at Village Hotel Sentosa was stationed in a basement parking lot. Communication was difficult as a result of echoes being magnified in the confined areas. The use of voice amplifiers similar to those adopted by tour guides made it easier for our staff to converse with patients.

¹⁶ Swab Isolation Facilities were mostly hotels converted to isolation compounds for patients awaiting the results of a swab test.

For dorm operations, initially we used disposable scrubs. The stock diminished rapidly and our supplier, a foreign company, could not keep up with the demand. We then replaced the tops with white T-shirts. Little did we realise that our staff at the dorms were sweating so much under their PPE that the white shirts would become translucent. We quickly replaced them with grey coloured shirts. This was different from our experience with SARS, which was fought within the hospital. For COVID-19, the battleground conditions varied with the environment.

James Toi Huat Chye, Chief Operating Officer (Ambulatory)

Most of our patients were foreign workers. To overcome the language barrier and prevent misunderstanding, pictures were often used to facilitate communication with them.



The SGH Pharmacy team used sun and moon labels on medicine packages to guide patients regarding the timing of their medications.



Pictures and illustrations were developed to help bridge the language barrier with the patients.

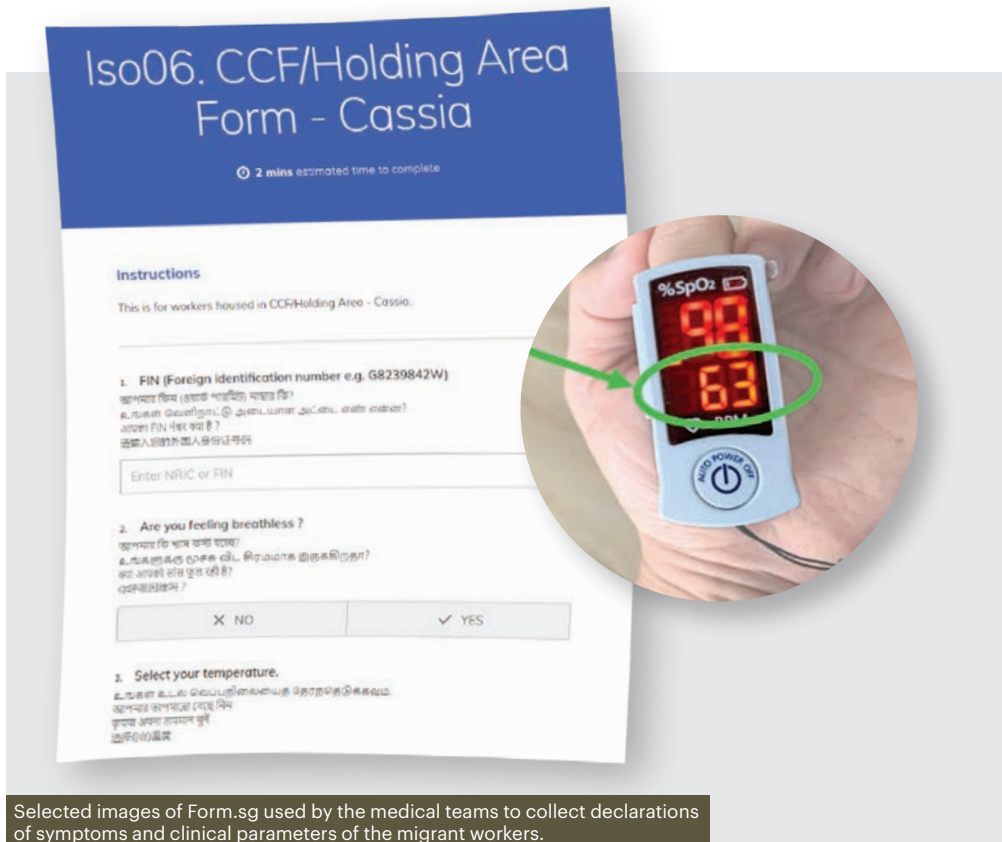
Strict safety rules prohibited medical teams from entering the dormitory buildings to do daily reviews of COVID-19 patients within their isolation rooms. However, the SGH team at Avery Lodge capitalised on the fact that these patients were housed on the ground floor and performed daily medical reviews through the windows. In this way, the team led by surgeon Goh Seo Kiat¹⁷ was able to directly engage with the isolated patients, measure their clinical parameters with portable equipment, and render treatment.



The medical team at Avery Lodge performed ward rounds and measured clinical parameters for COVID-19 patients in isolation rooms through the window.

¹⁷ Dr Goh Seo Kiat, Senior Consultant, Department of Orthopaedic Surgery.

At other dormitories, the patients under isolation or a room representative would report symptoms and clinical parameters using online forms on their personal phones. The data were then collated and abnormal results notified to the respective medical teams. These online forms in multiple languages were created by surgeon-in-training Justin Ker¹⁸ and research fellow Khoo Yong Jie¹⁹. They even included images to show the migrant workers how to use the pulse oximeter. As each dormitory used different models of the device, these forms were further customised accordingly.



Selected images of Form.sg used by the medical teams to collect declarations of symptoms and clinical parameters of the migrant workers.

¹⁸ Dr Justin Ker Ruixin, Senior Resident, SingHealth Neurosurgery Residency Programme.

¹⁹ Khoo Yong Jie, Research Fellow, National Neuroscience Institute.

At CCF@Expo, the innovative use of virtual consultations, robots, self-declaration of clinical parameters by patients, and circadian lighting²⁰ enabled the huge facility to run smoothly. Surgeon Henry Ho²¹ explained how the robots were used. “We used eight remote-controlled robots to reduce staff exposure as they cared for COVID-19 patients at CCF@Expo. Through the screen on the robot, our doctors, nurses and pharmacists were able to see the residents’ conditions to triage their needs. The remote access also enabled residents to have longer interactions with, and benefit from, the expertise of more caregivers, such as counsellors and even interpreters, who did not have to be physically at the Expo.



Migrant worker in CCF@Expo receiving instructions on inhaler techniques via video consultation with the pharmacist through a remote-controlled robot.

²⁰ Brightness levels of the hall lights were gradually adjusted at the start and end of each day, in line with the lightening and darkening sky. This mimicking of the changing light intensity each day was important for the many who had extended periods of isolation under artificial lighting, without exposure to sunrise and sunset. Circadian lighting is known to improve one's sense of well-being.

²¹ Dr Henry Ho, Head and Senior Consultant, Department of Urology. He was also Research Lead for the CCF@Expo team.

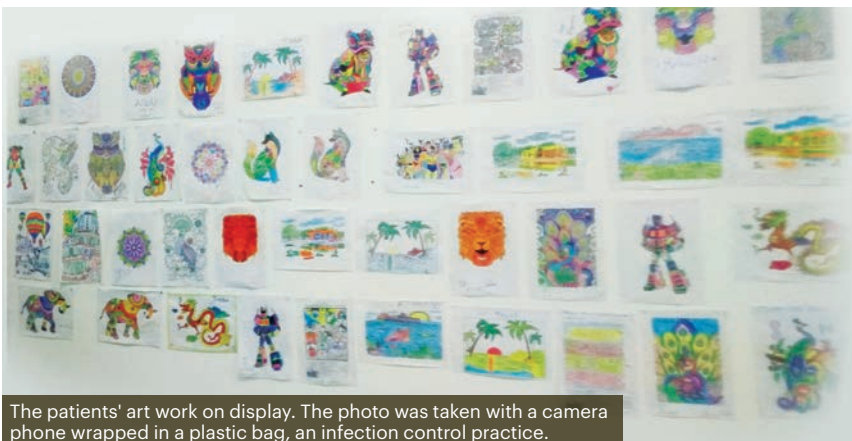
Our nurses used the remote-controlled device to walk about and look for residents who failed to submit regular vital sign readings, saving them long treks through the cavernous halls.

After clinic hours, the robots were parked within the halls to provide a night concierge service. Residents who were unwell could use them to activate the care team on-call outside the halls.”

Beyond technology

Throughout the external operations, in the dormitories and isolation facilities, the healthcare team came up with ideas to ensure a human touch for the well-being of their charges.

At the CCF@Expo, the creation of an art gallery for patients to express themselves was very well received. Using donated art materials, many of the patients started expressing themselves creatively. Perhaps art helped them cope with the stress of prolonged confinement. It certainly gave their healthcare providers a glimpse of their perspectives.



The patients' art work on display. The photo was taken with a camera phone wrapped in a plastic bag, an infection control practice.

At that time – the nationwide partial lockdown called the Circuit Breaker was in effect – even visiting hair-dressers was proscribed. This was also true in the CCFs. Project Smart, which encouraged migrant workers to cut one another’s hair, made a big difference to their morale. The ability to take care of personal grooming was a boost to self-esteem and had the unexpected effect of allowing people from different backgrounds and cultures to work together and help each other²².

Few patients had formal barber training, fewer could cut straight, but everyone gathered around and commented. Many friendships were broken or forged over the clippers that day. It was a hugely oversubscribed service as most were desperate for a trim. I have never seen so much glee and joy from getting a bad haircut between two complete strangers.

Jay Lim, Associate Consultant, Department of Urology



One of the staff in Hall 8 demonstrating her hairdressing skills. The residents’ artistic creations adorned the wall of the art gallery at CCF@Expo.

²²Such interactions between residents in the CCF@Expo halls were acceptable as they were all recovering or recovered COVID-19 patients.



Dr Jayant V Iyer from the HOTA team reaching out to the workers in their native languages.

Recognising the need to reassure and provide the workers with accurate information, a dedicated Holistic response and Outreach Team (HOTA) was formed to engage dormitory workers in their native languages. These doctors from SGH Campus and Sengkang General Hospital²³ went straight to work in many dorms, reaching out to workers and helping to alleviate their concerns. Their detailed reports of conditions in each dormitory and the concerns of the migrant workers were invaluable in refining the medical support plans.

Tan Hiang Khoo made it a priority to provide holistic care. “I realised the importance of taking care of them beyond just the clinical aspects. This weighed heavily on my mind. I reached out to psychologist Yee Pin²⁴, and she brought in medical social workers (MSWs) Emily²⁵ and Hui Ping²⁶, as well as speech therapist Kai Sin²⁷, to look after both patient and staff well-being.”

²³ Members of the HOTA team included: Dr Jayant V Iyer, Glaucoma Department, SNEC; Dr Dennis Chia, Department of Emergency Medicine, SKH; Dr Susmita Roy Chowdhury, Department of Emergency Medicine, SGH; Dr Muntasir Mannan Choudhury, Department of Orthopaedic Surgery, SKH; Dr Hamid Rahmatullah bin Abd Razak, Department of Orthopaedic Surgery, SKH.

²⁴ Tan Yee Pin, Clinical Psychologist, National Cancer Centre Singapore.

²⁵ Emily Tan, Principal Medical Social Worker, Department of Medical Social Services.

²⁶ Peh Hui Ping, Medical Social Worker, Department of Medical Social Services.

²⁷ Yee Kai Sin, Speech Therapist, Department of Speech Therapy.

WALKING IN ANOTHER'S SHOES



To provide psychological support for the migrant workers, I would try to put myself in their shoes. But I just couldn't wear their shoes, mainly because of the difference in culture. For example, when they told us they couldn't eat the food we provided, the initial response was, "Why are they complaining? We've already done so much for them." It turned out that the rice was giving them indigestion, as they were used to a different type of rice cooked differently. They were not being ungrateful at all. Once everyone adjusted, they were very appreciative.

There was a resident from India whose father was gravely ill at home. As the eldest son, he was required to be there for the last rites and funeral. Uncertain when he could leave, he was distraught. I entered the hall frequently to counsel him, and he would show me photos of his father. I felt helpless, unable to give him certainty in my answers. When his father passed away, I was told it was OK for men in their culture to cry. But I could not be sure, so it was difficult to assess if he was at any risk of self-harm. When he was finally able to leave, I saw him off at the Expo. From the airport, he sent me photos to tell me he had checked in, and again when he landed. It was just like what our family would do when they travelled. So over a matter of days, we had become family to them.

EMILY TAN

Principal Medical Social Worker,
Department of Medical Social Services

Finding our footing

Working on the frontlines required our teams to work closely with non-medical teams, such as dormitory operators, Certis security officers, SAF personnel, MOM staff and various contractors. At the SIFs, cooperation and trust between the medical teams and hotel operators were crucial for the successful execution of operations.

Looking back, our teams deployed on these external duties thrived despite being outside their comfort zone, and many went beyond the call of duty. The close bonds and camaraderie between different professions and departments were in no small part enabled by a seamless and non-hierarchical work culture. Many went on to do multiple tours of duty in the dormitories. Some departments even adopted specific dormitories to which their staff were consistently deployed. This allowed important ground knowledge to be shared across generations of teams.

Surgeon Chan Chung Yip²⁸ described how the teams ensured continuity during a handover. “Alumni of various dorm teams were inducted into WhatsApp chat groups, where news from the media and happenings on site continued to be shared.”

²⁸ Dr Chan Chung Yip, Head and Senior Consultant, Department of Hepato-pancreato-biliary and Transplant Surgery. He was one of the SGH leads for the mobile medical teams deployed to the dormitories.



OPERATIONALLY READY MEDICAL SERVICEMEN

SGH benefited from a previously unrecognised asset - having amongst their staff former military regulars, especially those who had held leadership positions while serving in uniform.

External COVID-19 operations by SingHealth

This core of ex-military medical regulars was able to tap into a rich and valuable network of military personnel, past and present. The network facilitated rapid information sharing and often helped the doctors overcome the red tape of official channels of communication. This enabled the medical operations to be carried out efficiently.

Besides ex-regulars, those with prior military medical experience, either as full time or operationally ready NSmen²⁹, also found their past training helpful during the crisis. Among the many NSmen were examples such as ophthalmology trainee Charles Ong³⁰, who was embedded in JTF(A) as the SingHealth liaison, and surgeon Puah Ken Lee³¹, who was instrumental in helping to manage the northern dormitories, including S11@Punggol.

Prior experience in working under austere conditions also proved advantageous. Emergency physician Lim Chin Siah³² had previously served in Afghanistan under Mediciens Sans Frontiers (Doctors without borders) and was a natural pick for the post of leader of the SGH mobile swab teams. Work experience outside the confines of an academic hospital turned out to be a valuable resource for these prolonged, intense operations.

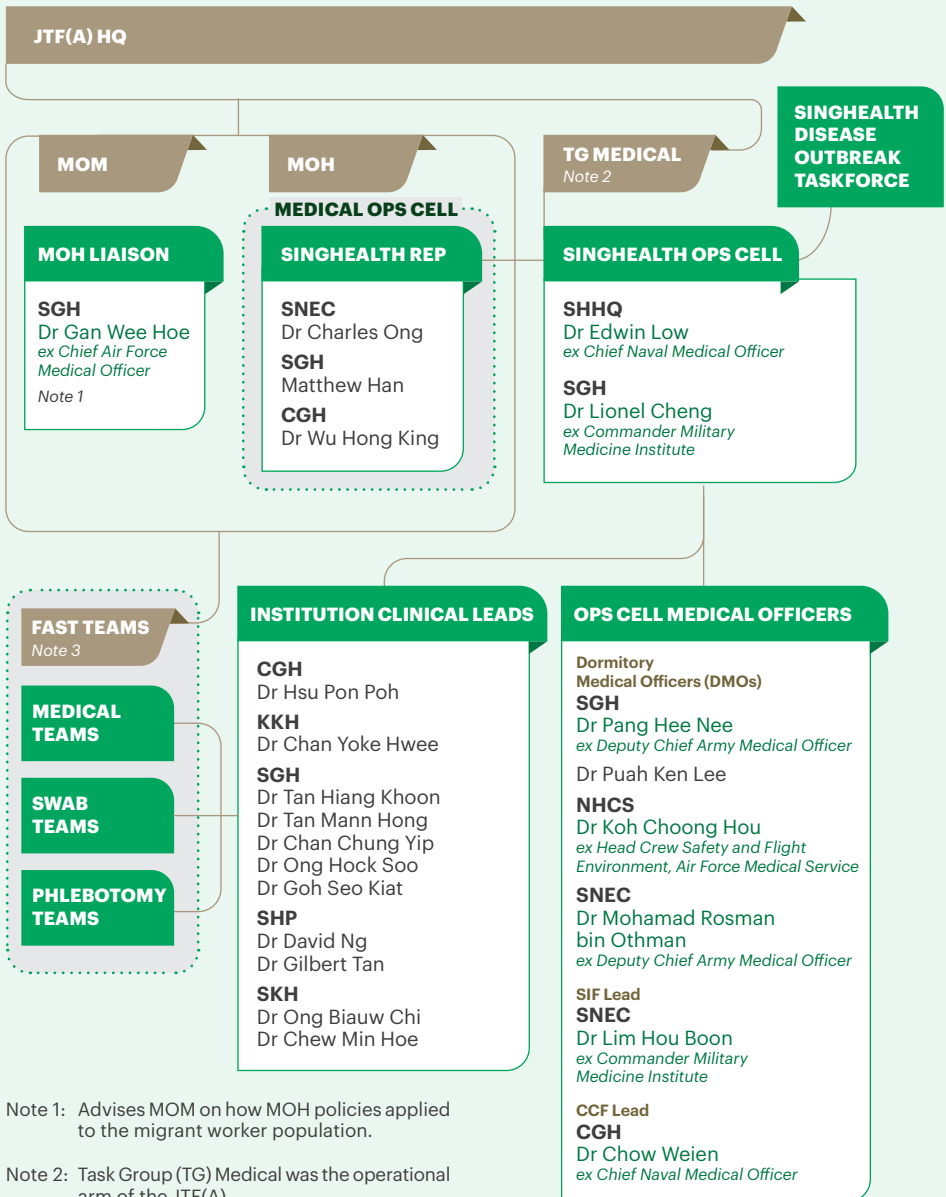
²⁹All male Singaporeans are required to serve full time national service (NS) for two years, after which they return to normal civilian life as operationally-ready NSmen. During this time, they may be recalled for annual refresher training or operations, usually lasting up to two weeks. These annual sessions are referred to as in-camp training (ICT).

³⁰Dr Charles Ong Jit Teng, Resident, SingHealth Ophthalmology Residency Programme.

³¹Dr Puah Ken Lee, Consultant, Department of Orthopaedic Surgery.

³²Dr Lim Chin Siah, Consultant, Department of Emergency Medicine.

SINGHEALTH EXTERNAL MEDICAL DEPLOYMENT COMMAND STRUCTURE



Light at the end of the tunnel

Towards the end of May 2020, the dormitory infections had stabilised but the numbers were still substantial. Many of us wondered how long we would need to be garrisoned at these sites. Hospital services were gradually picking up. The loss of manpower and skills from the hospital could compromise SGH's service commitments to its patients. The medical team at S11@Punggol, ground zero of the dormitory outbreak in Singapore, was busy simulating exit scenarios. Radiologist Lionel Cheng recalled the afternoon when the exit plan started to materialise. "Hee Nee, Ken Lee and I stood in front of the white board in the S11@Punggol dormitory operations room. On it were multiple boxes and arrows indicating various strategies to clear the dorm. How were we going to sort almost 10,000 workers in the dorm? Clusters of infections kept popping up and there was no way to keep ring-fencing in such crowded conditions. It then dawned upon us that if S11@Punggol was ground zero, it was likely that many workers would already be infected and have at least short-term immunity. Thus, if we could mount a massive serology operation, we could quickly identify a sizeable group which would be immune, who could potentially return to work."



Surgeons Puah Ken Lee (facing camera) and Pang Hee Nee (back to camera) formulating the exit strategy for the workers in the S11@Punggol dormitory.



Inaugural graduating cohort of S11@Punggol dormitory workers making their way to the Block for Recovered Workers on 20 May 2020, cheered on by healthcare team members lining the way.

Thanks to very detailed records kept by the dormitory operator at S11@Punggol, the team was able to determine exactly which blocks nested the initial wave of infections. However, due to the overwhelming numbers, not all cases were swab-positive – they had been presumed positive based on clinical and contact information. Combining serological and swab results permitted the dorm residents to be segregated into several groups – recovered, currently infected, COVID-19 status unknown/uncertain and COVID-19 naive (unexposed) groups. When this strategy was proposed and accepted, what followed was a massive serology and swabbing operation for the occupants of S11@Punggol, more than 10,000 of them. The management and disposition strategy could then be customised for each group.

Those who had recovered from previous infection and were swab-negative could return to their jobs. The assumption was that the number of recovered workers would be high, since this was the first dormitory to have an outbreak, and the infection would have had a longer time to spread. If a majority was proven to be recovered, there was potential to allow these workers to resume work as they would theoretically not be susceptible to a new infection.

This painstaking cycle of swabbing, serological testing and categorising was repeated for each sector of the dormitory. As we had suspected, a substantial proportion of the dormitory workers had already been infected, and would be able to go back to work. These workers subsequently graduated to a Block for Recovered Workers (BRW). The pioneer batch of graduates gladly marched to the BRW on 20 May 2020. A mini ceremony replete with music and healthcare team members cheering from a safe distance marked the event. This was the beginning of the end of a period of great uncertainty and distress for these workers.

It would take more than a month before this first batch of workers from S11@Punggol finally returned to work on 24 June 2020 – the delay was related in part to various administrative uncertainties. That morning, when the first group of workers exited the BRW and boarded transport to work, witnesses reported it as a truly emotional experience, as this day had seemed impossible a few months earlier.



The first batch of workers from S11@Punggol dormitory finally returning to work on the morning of 24 June 2020, almost three months after the dormitory was gazetted an isolation area on 5 April 2020.

The Assurance Care and Engagement (ACE) group was then formed by MOM as part of a national framework to provide a sustainable, long-term structure of dormitory management during this COVID-19 pandemic and beyond. As ACE took over the running of the external operations, our mobile medical teams were able to step down on 11 September 2020, marking 154 days of operations.

“NEVER WAS SO MUCH OWED BY SO MANY TO SO FEW”

WINSTON CHURCHILL

During the circuit breaker, I grew accustomed to empty roads and abandoned construction sites. The noisy excavators at a major worksite near my home stood silent and still. One day, I spotted movement at the worksite and saw workers reporting for duty. I was suddenly overcome with emotion. Never in my wildest dreams would I imagine that seeing construction workers on site could bring tears to my eyes. The prolonged operations had taken a deep emotional toll on all of us. But life was slowly restarting. And all of us had played a role in making that happen.

The external operations turned out to be a golden opportunity for staff to form bonds across different institutions in SGH Campus and SingHealth. All of us were impressed by the immense depth of talent and commitment of those who stepped forward. We walked away with a deep respect for colleagues from different departments. It was as if SGH Campus had undergone some sort of orientation programme, akin to what university freshmen or military recruits experience. The friendships forged in adversity were priceless and will strengthen our unity in any future crisis.

We are forever indebted to the hundreds of silent saints who worked tirelessly at multiple levels, both at the frontline and back rooms, who will never be formally recognised for their immense efforts. All they have is the respect of colleagues – reciprocal nods of recognition during chance encounters along the corridors of SGH Campus. What sustains them is the satisfaction of having contributed to the nation in one of its darker moments. Each person, faithfully looking after his or her sphere of influence, multiplied thousands of times across SGH Campus and SingHealth, contributed to a formidable resource that Singapore could count upon.

LIONEL CHENG

Senior Consultant,
Department of Diagnostic Radiology

Lionel was seconded from SGH to SingHealth and spent almost five months coordinating its combined external operations.

At first of all, I would like to express my gratitude and sincere thanks to all of you for keeping the foreign workers healthy day and night during this COVID-19 infested period and it will continue till the last affected person.

I'm also a victim. I'm a Bangladeshi and working here in Singapore as a shipbuilder.

You've played a vital role in providing regular medical care, medicine, mask and sanitiser to keep us physically fit.

You've also arranged regular exercise, sports, arts and painting for our physical and mental development.

For this I would like to express my special thanks to the Doctors, Nurses and all health workers on duty here.

I thank the security on duty here and the cleaners who have always given us security and worked day and night to keep us clean.

You are the son of the Sun of the nation, the national Hero. Because you are the front-line fighter against the COVID-19 virus.

I know that this loan of your service, care, sincerity and love will never be possible to repay but it will never be forgotten. This generosity of yours will be forever remembered by the Bangladeshis.

I believe that your generosity will one day be honored not only by Bangladesh but by the whole world.

Finally, I salute you all and salute on behalf of all Bangladeshis.

Thanks —