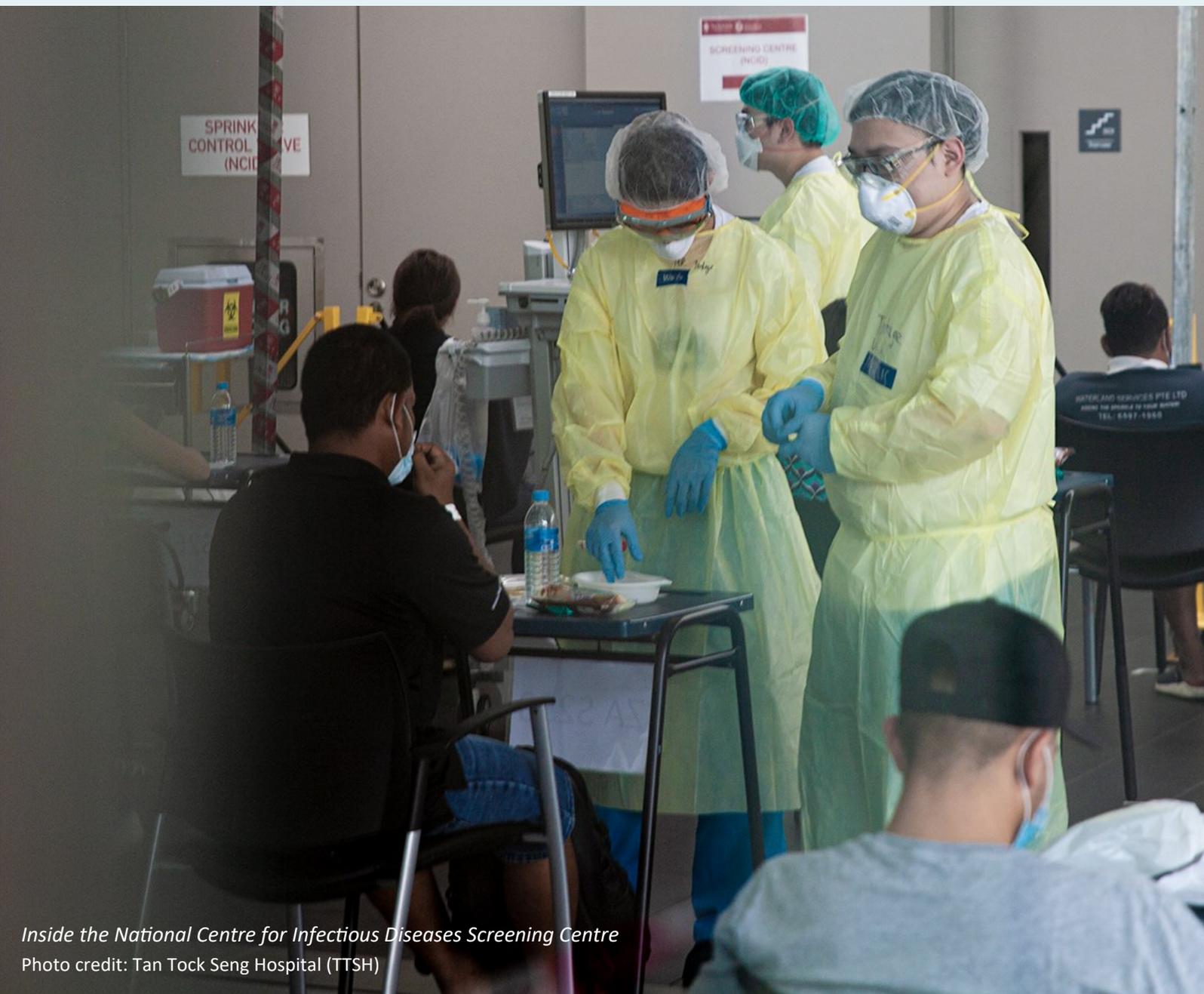


# Reflections on the COVID-19 Pandemic by an Infectious Disease Physician

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*Inside the National Centre for Infectious Diseases Screening Centre*  
Photo credit: Tan Tock Seng Hospital (TTSH)



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*Prof Leo Yee-Sin*

*On the swift mobilisation of the healthcare community to battle COVID-19*

**The news about a cluster of severe pneumonia cases with unknown ethology in Wuhan, China, broke on 31 December 2019.** Preliminary information pointed towards a seafood market that was also selling wild game meat. I, along with many colleagues, felt a keen sense of déjà vu, especially those who had experienced the Severe Acute Respiratory Syndrome (SARS) 2003, when we heard this information about a zoonotic disease with unknown transmission capability. We began to question the accuracy of the information as it came mostly from the media. Then it became clearer to us that it could be, potentially, a case of human-to-human transmission, because family members who never had exposure to the market came down with the disease from their household member who was exposed to it. With that, we knew that Singapore would not be spared.

We received scant information at the initial phase of the epidemic in Wuhan, China. The hints that this could be another coronavirus prompted the National Public Health Laboratory (NPHL) at National Centre for Infectious Diseases (NCID) to re-assemble their diagnostic capability to prepare a pan-coronavirus polymerase chain reaction (PCR) diagnostic tool.

The subsequent release of a genetic sequence helped to further refine NPHL's test which was validated after detection of the first case in Singapore.

### **Operationally Ready**

The clinical team at NCID went full steam ahead in preparation and readiness. The Special Precaution Area (a specifically designed high containment outpatient area) at NCID's outpatient clinic started screening returning travellers. The first imported case was isolated at the Singapore General Hospital (SGH). The second patient and subsequently, the majority of the cases were admitted to NCID. Looking back, we realised that the strategy to include all acute care public hospitals from the start to tackle the virus paid off. It helped to balance the load from the influx of patients given the large scale of the outbreak.

The capacity of NCID was upsized after SARS 2003 with 330 beds scalable to 586 beds. It was obvious that SARS-CoV-2, the causative agent of COVID-19, very quickly overwhelmed the capacity of NCID. With the COVID-19 pandemic, we had to scale up four times the size of its regular operations. This required additional human resources from Tan Tock Seng Hospital (TTSH). We witnessed that all wards and beds at NCID were fully occupied, proving the scalability of design to hold a larger volume of cases.

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The Screening Centre was in full operation by the Emergency Department of TTSB since the start of COVID-19 pandemic. On 23 March, at the height of the pandemic, the Screening Centre managed a total of 523 cases. Temporary sets of tentage were erected at almost every hospital's Emergency Department. Extracorporeal membrane oxygenation (ECMO) teams from SingHealth's National Heart Centre Singapore, National University Health System and nurses from intensive care departments of other public hospitals were deployed to strengthen the care of critically ill cases at NCID.

On 20 April, the daily number of cases reached a record high of 1,426 when the large population of migrant worker was affected. We acted swiftly. The entire healthcare community was mobilised to cope with the unprecedented speed of spread of the virus and the sheer number of cases. Together, the NCID's clinical team and the epidemiology unit identified that age, BMI and certain inflammatory markers could predict disease severity. This allowed us to safely triage cases to appropriate levels of care.

**I commend all the acute care hospitals, primary care in the public and private sectors, community hospitals and private hospitals for showing high level of commitment to overcome this challenge.**

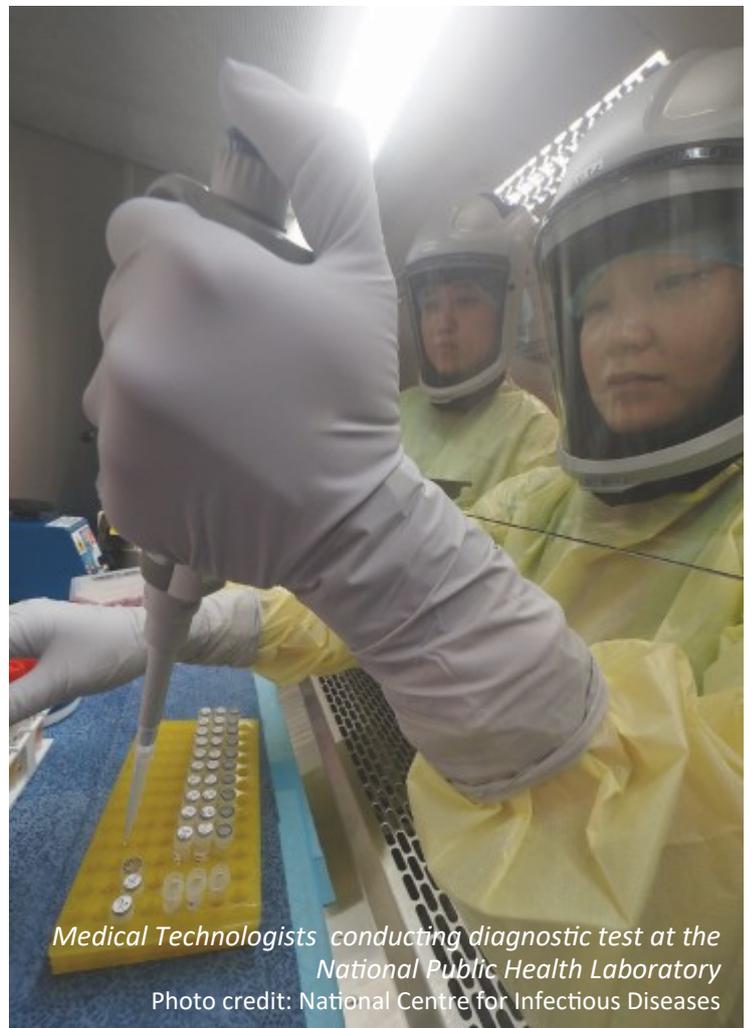


## Operationally Ready: National Centre for Infectious Diseases (NCID)

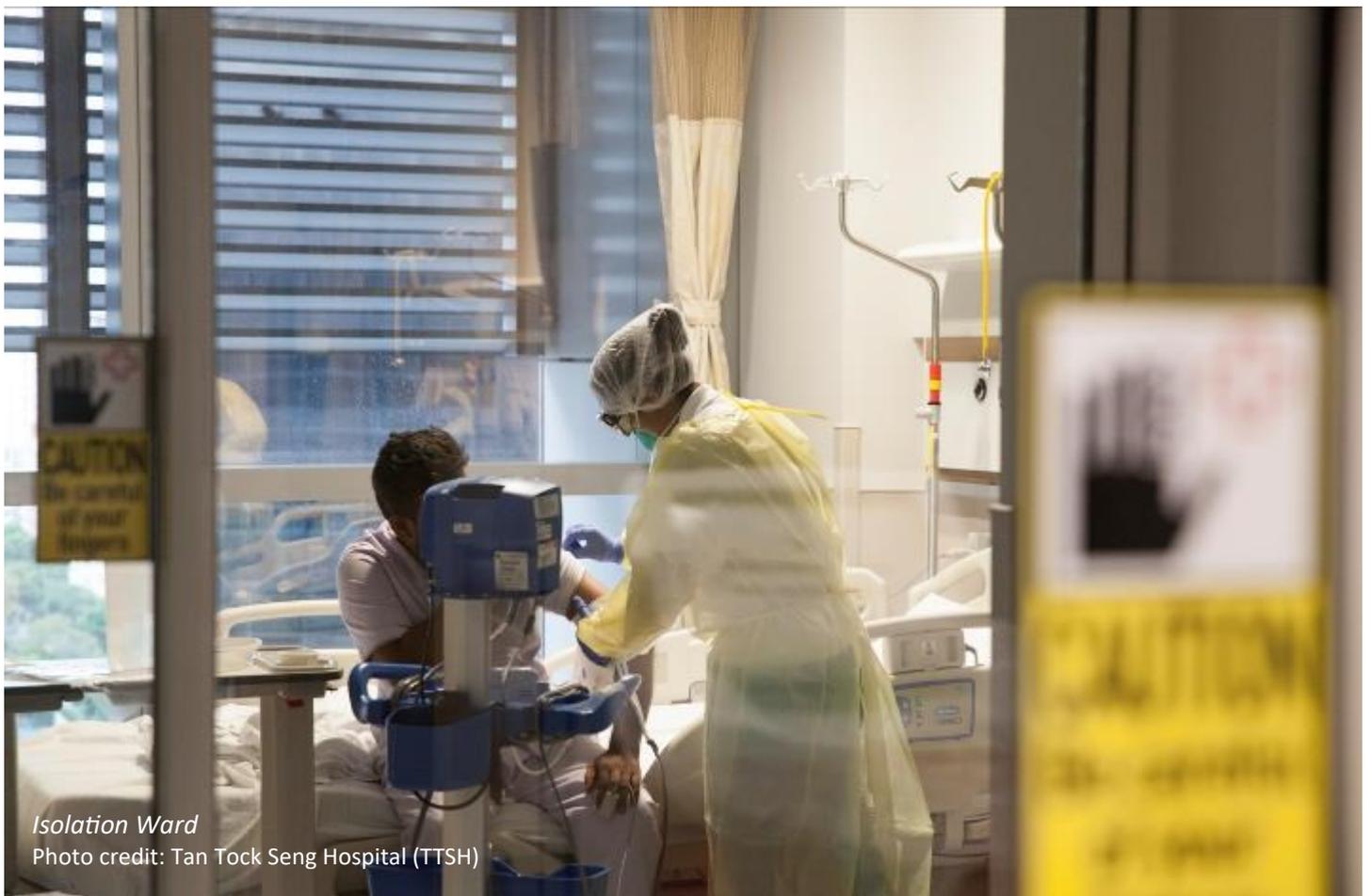
The NCID was officially opened on 7 September 2019, just four months before COVID-19 hit our shores. The various units in NCID had progressively occupied the new building since November 2018. The new state-of-the-art NCID building was operationally ready in time to take on the challenges of COVID-19. As a new set-up, NCID is a unique model that integrates clinical services with focus on outbreak management, public health functions including a national laboratory and epidemiology unit, and research, training and community outreach functions, all under one roof.

## Knowing the Enemy

Apart from getting operationally ready, the most urgent task for NCID was knowing the enemy. The COVID-19 Research Workgroup was set up just one day before the first case was confirmed on 23 January 2020. With the support from the Chief Health Scientist, Professor Tan Chorh Chuan, we had gathered a comprehensive and highly complementary group of researchers to generate research on science and evidence with direct impact on local prevention and treatment strategies. We are heartened to know that from amongst these, a multitude of research studies were internationally leading and with high global impact.



*Medical Technologists conducting diagnostic test at the National Public Health Laboratory*  
Photo credit: National Centre for Infectious Diseases



*Isolation Ward*  
Photo credit: Tan Tock Seng Hospital (TTSH)



NCID Screening Centre team at work  
Photo credit: Tan Tock Seng Hospital

## All Hands on Deck

We must keep in mind that the fight against COVID-19 is not just the responsibility of the healthcare sector's alone. The pandemic affects every facet of the society sparing no one, no country and no region. We saw that the whole-of-government approach was adopted very early with foresight and this had brought much success in containing the spread of the virus. Some key elements implemented included horizon scanning in risk assessment, enhanced surveillance, contact tracing, active case finding, systematic testing and beefing up of testing capacity and capability, risk communication, building community trust and compliance to safe management measures. All these are part of a whole string of intertwining activities that oiled the management of the entire outbreak operation, ensuring its effectiveness.

We are now close to one-year into the COVID-19 pandemic and it is still early to say that it will blow over soon.

I reflect on the following take-away points while we remember the events these past months. Firstly, it is critical to build and sustain pre-pandemic readiness and maintain a flexible and responsive system to counter outbreaks of different sizes and characteristics; secondly, we must be able to gather and analyse data swiftly to generate knowledge and evidence in order to guide policies and sound decision making, enabling leaders at every level to effectively implement and follow through; and lastly, we need to have sound and consistent messages to build community resilience through strengthening trust in the system.

On a wider scale, Singapore cannot overcome COVID-19 alone. We will have to play our part as a global citizen. We must recognise that time is of the essence, and we need to stay ahead of the curve and realise that COVID-19 is likely to stay for the long haul. There remains an urgency to better understand how humankind can better mitigate the impact and reduce the damage caused by COVID-19 all round. We are in this journey together, as a nation and with the rest of the world.