



MINISTRY OF HEALTH  
SINGAPORE



Presenting

Resiliency in our

COVID-19 Journey

Pharmacy National Award  
(COVID-19) Winners



 #PassionPridePurpose

# Resiliency in our COVID-19 Journey

A 3 part series



Ensuring drug  
supply resiliency



Safeguarding  
public health and  
safety



Reflections and  
moving forward

# Meet some of our pharmacy heroes!

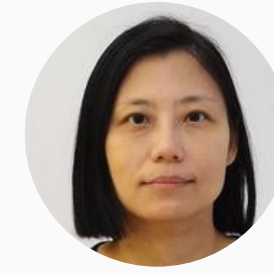
Singapore faced unprecedented disruptions and challenges during the COVID-19 pandemic, affecting drug supplies and provision of patient care.

Read on to know more about how they and the team behind them played a part against the fight against COVID-19.



**Agnes Chan**  
Director

Health Products Regulation Group,  
Health Sciences Authority



**Goh Lay Hong**  
Principal Pharmacist (Clinical)

Tan Tock Seng Hospital



**Lee Hwee San**  
Deputy Director

Crisis Strategy and Operations  
Group, Ministry of Health



**Mabel Phng Mien Hui**  
Deputy Director

ALPS Pte. Ltd.



**Chan Soo Chung**  
Executive Director

National Healthcare Group  
Pharmacy



**Lea Cathrine**  
Senior Pharmacy Technician

Institute of Mental Health



**Hoo Si Roo, Grace**  
Senior Pharmacist (Specialist)

National Centre for Infectious  
Diseases



**Abigail Tan**  
**Senior Pharmacy Technician**

KK Women's and Children's Hospital



**Norjanah Binte Alias**  
**Senior Pharmacy Technician**

Ng Teng Foong General Hospital



**Ryan Low Zhi Wei**  
**Pharmacist**

Khoo Teck Puat Hospital



**Neo Zhi Yang**  
**Senior Pharmacist**

Singapore General Hospital



**Wong Zhi Xin**  
**Senior Clinical Pharmacist**

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**Priscilla Chua Chai Ping**  
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**Tan Chwee Huat**  
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**Yong Pei Chean**  
**Senior Principal Pharmacist,  
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Woodlands Health



**Lou Huei-xin**  
**Deputy Chief Pharmacist**

Chief Pharmacy Office,  
Ministry of Health

# Part 1: Ensuring Drug Supply Resiliency

## - a multi-prong data driven strategy



### **Data and guideline driven strategy**

Pharmacy staff across PHIs played a critical role in determining sufficient stockpiling of intensive care unit drugs, COVID-19 vaccines and therapeutics based on actual and projected consumption levels and emerging data on COVID-19 treatments.



### **Access to COVID-19 vaccines & therapeutics**

Through HSA's Pandemic Special Access Route, Singapore was able to secure early access to critical novel vaccines, medicines, and medical devices.



### **Continual supply of medications & vaccines**

To ensure continual and sufficient supply of drugs for treatment of existing diseases as well as COVID-19 therapeutics and vaccines, the team at MOH and ALPS worked closely with pharmaceutical companies, pharmaceutical association and other agencies to source for alternative brands and ramped up warehousing space to accommodate the additional supply.

# Data and guideline driven strategy

A significant number of COVID patients required ICU care due to the severity of their conditions. Given the global shortage of ICU drugs, it was critical for our healthcare institutions to ensure that we had sufficient supplies locally. Tapping on the TTSH experience of treating the first COVID-19 patients and analysing past drug utilization data, Lay Hong and the ICU team at TTSH helped to form the basis of projecting requirements for the national ICU drug stockpile. They also came up with strategies to conserve the limited drug supplies with our nursing and medical teams by using alternatives and minimizing wastage.

*"It was stressful preparing for the ICU ramp up and the worry that we would not be able to care for so many patients with the existing number of ICU trained staff."*



## **Working with limited manpower...**

*Grateful for the **support from the ICU team members** who did not hesitate when deployed to the Outbreak ICU and carried out their duties to guide the doctors in prescribing optimally for the patients*



Goh Lay Hong



**Goh Lay Hong**

Assistant Director (Quality) / Principal Pharmacist (Clinical), Clinical Specialty-Based Team, Tan Tock Seng Hospital



# Access to COVID-19 vaccines & therapeutics

Under a new regulatory pathway known as the Pandemic Special Access Route (PSAR), which HSA had swiftly implemented in response to the COVID-19 pandemic to expedite access to new COVID-19 vaccines and therapeutics through “interim authorisation”, Agnes and her team at HSA were able to evaluate these new vaccines and therapeutics expeditiously while simultaneously applying the same rigorous data-driven evaluation processes, based on the best available scientific knowledge at the time to determine the benefits and risks.

*“The regulatory agilities enabled HSA to act quickly in response to an emergency that may pose serious threats to the public and speed up access to critical novel vaccines, therapeutics and medical devices, such as in the situation of the COVID-19 pandemic.”*



## **Focusing on the science...**

*The pressure was no doubt tremendous. However, I simply stayed focused on the science and abided by the principle that if I were to approve a vaccine for use by our people, it must be good enough to go into the arms of my parents and family.*



Agnes Chan



**Agnes Chan**

Director, Health Products Regulation Group, Therapeutic Products Branch, Health Sciences Authority



# Continual supply of medications & vaccines

Hwee San's team at MOH was responsible in ensuring adequate supplies of new COVID-19 vaccines and therapeutics, medical consumables, personal protective equipment and medical equipment for healthcare institutions such that our healthcare system continues to function as per normal. They are also part of the team driving the success of our national COVID-19 vaccination program and ensuring the access to treatments for the C+ cases.

*"The management of COVID-19 vaccines required ultra-low storage temperatures of -70°C, making the storage and deployment to vaccination sites, without impacting the efficacy and quality, critical."*



## Working shoulder to shoulder...

*When the first C+ case was reported in Singapore, more than 50 MOH officers returned to work on the first day of CNY to review and manage the situation. I was truly impressed with the show of **dedication and commitment** from all my fellow colleagues. This spirit of working shoulder to shoulder with each other continues even today.*



Lee Hwee San



**Lee Hwee San** (2<sup>nd</sup> from the right)  
Deputy Director, Crisis Strategy and Operations Group, Ministry of Health





# Continual supply of medications & vaccines

To overcome the global and local drug supply disruptions caused by the huge surge in demand, disruption of supply chain and locked down, Mabel and her team in ALPS collaborated closely with PHIs, pharmaceutical companies and MOH to build up sufficient drug supplies and sourced for alternative brands when the current companies were not able to support.

*“Collaboration is key to achieving supply chain resilience.”*



*Rowing the boat together..*



*I found it heart-warming to see pharmacists from various segments of the drug supply chain such as manufacturing, procurement, warehousing and distribution working collaboratively to ensure continuity of drug supplies in Singapore.*



Mabel Phng Mien Hui



**Mabel Phng Mien Hui** (2<sup>nd</sup> from the right)  
Deputy Director  
ALPS Pte. Ltd.

# Part 2: Safeguarding Patient's Health & Safety



## Facilitate access to COVID-19 Vaccines & Therapeutics

To ensure safe roll-out of COVID-19 vaccines in vaccination centres and therapeutics in polyclinics and GPs



## Establish, review & refine treatment guidelines

To ensure patient get the most appropriate care



## Manage suspected & positive COVID-19 cases

Pharmacy staff demonstrated extraordinary courage by stepping forth to care for suspected and positive COVID-19 cases



## Ensure continual access to medications & pharmacy services

To ensure that patients have access to their medications and pharmacy services despite staying at home



## Educating and empowering patients

Raise awareness and understanding COVID-19 prevention and treatment



## Supporting the sharing of health data

Deploying of IT infrastructure and standardization of drug codes to facilitate the sharing of vaccination records

# Facilitate safe access to COVID-19 Vaccines & Therapeutics

To ensure safe roll-out of COVID-19 vaccines and subsequently, oral anti-virals (OAV) in the polyclinics, Soo Chung and her team worked with the polyclinic teams and various stakeholders to plan the logistics for ordering of vaccines, storage requirements and monitoring of usage due to the short shelf life. The workflow for prescribing the OAV was developed collaboratively with the doctors and a hotline was also extended to participating GPs to help review their patients and answer enquiries regarding OAVs.

*“The introduction of oral antivirals like Paxlovid and Molnupiravir, provided an opportunity for the polyclinic pharmacists to play the role in assessing patients’ clinical and medication history to identify drug-drug interactions and adjust dosage of chronic medication where necessary.”*



**Making lives better...**



*Knowing that my efforts make lives better sustains me.  
Working with committed people who care about others, inspires me.*



Chan Soo Chung



**Chan Soo Chung**

Executive Director

National Healthcare Group Pharmacy



# Facilitate safe access to COVID-19 Vaccines & Therapeutics

Despite not having any prior exposure to aseptic techniques, Lea, a senior pharmacy technician at IMH, stepped forward to be trained to support the dilution of COVID-19 vaccines for hospital wide vaccination.

*“In the beginning, I was struggling with the workflow and time management, due to the stability of the vaccine after dilution. Though it is challenging for me as it was my first time performing dilution using aseptic techniques, I made sure that I delivered my highest standard to ensure the safety of our patients.”*



## **A positive outlook in life...**

*Being enthusiastic and have positive outlook in life pushed me forward during times of uncertainty and fear. Because of **the support and care from my organization**, I kept fighting and stayed strong during the challenges.*



Lea Cathrine Valerio Villaroman



**Lea Cathrine Valerio Villaroman**  
Senior Pharmacy Technician  
Institute of Mental Health

# Establish, review and refine treatment guidelines

As a member of the national COVID-19 Therapeutic Workgroup, Grace constantly reviewed existing and new scientific evidence to guide safe use of new therapeutics, bearing in mind the evolving variants and the availability of the COVID-19 therapeutics locally. The workgroup also provides professional opinion on stewardship of key COVID-19 therapeutics to conserve the limited supplies of these drugs.”

*“We provided doctors, nurses and pharmacists on the ground with drug administration guidance documents and quick reference checklists.”*



## ***Persevering despite the unknown...***

*The outpouring of kindness from food vendors who sponsored lunches, donation of care packs and handwritten love notes from the public **provided much warmth** especially during the toughest times and reminded me why I am still doing what I am doing.*

*It gave me strength to persevere despite not knowing when this pandemic will end or when will things at work improve.*



Hoo Si Ru, Grace



**Hoo Si Ru, Grace**

Senior Pharmacist (Specialist)

National Centre for Infectious Diseases

# Managing suspected and positive COVID-19 cases

The initial months of COVID-19 was fraught with uncertainties and danger but our pharmacy staff demonstrated extraordinary courage by stepping forth to serve suspected and positive COVID-19 cases in our healthcare institutions, dormitories and community care facilities. As the KTPH A&E Pharmacy In-Charge, Ryan was involved in planning the A&E response to pandemic, such as planning workflows for discharge and inflight supply of medication to fever tent and holding areas.

*“It was a stressful period as workflows had to keep evolving according to the COVID-19 situation. With limited manpower, our A&E team had to support the patient’s needs while fully decked out in PPE for 12 whole hours!”*



## *Family support during difficult times...*

*On the first day of Chinese New Year in 2020, I had to meet up with the A&E Nursing team to discuss the medication supply for the fever tent.*

*Hence, after visitation, my entire family, including **my 90 year old grandmother sent me to work!** My grandmother was excited to see the fever tents and cheerfully waved me goodbye!*

*Despite the difficult times, I was glad to have my family’s support.*



Ryan Loh Zhi Wei



Ryan Loh Zhi Wei

Pharmacist

Khoo Teck Puat Hospital

# Managing suspected and positive COVID-19 cases

Another pharmacy staff, Norjanah bravely volunteered to work in the NTFGH Emergency Department to counsel and dispense medications to suspected and positive COVID-19 patients.

*“One of the biggest challenge was the language barrier with the foreign workers. Despite the difficulty, one of the foreign worker thanked me for my help and assurance. This made me realized how petrified he felt, being in a foreign country during pandemic and being uncertain of what is going to happen. This made me want to contribute more.”*



## **Encouragement from colleagues...**

*My outpatient colleagues and supervisor regularly checked in on me via WhatsApp and social media platforms as department segregation was mandatory for a few months. Their **constant words of encouragement and reminders to be safe were very comforting.***



**Norjanah Binte Alias**



**Norjanah Binte Alias**

Senior Pharmacy Technician

Ng Teng Fong General Hospital

# Managing suspected and positive COVID-19 cases

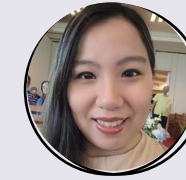
Abigail, senior pharmacy technician, volunteered to be deployed to the Community Care Facilities (CCF) and dormitories where she ensured sufficient medication inventory and dispensing medications to those within the facilities and dorms.

*“Beyond providing the symptomatic treatment for C+ patients, I also coordinated the supply of chronic medications which were not available in the dorms and CCFs to ensure continuity of care for the patients in these facilities.”*



## **Support from the public...**

*I was 11 when SARS happened, so I remembered how healthcare workers back then were being treated. When COVID-19 happened, I was really afraid of being humiliated and shunned by the public. But they have shown us otherwise. Even Grab had a pool of drivers who offered to fetch us to and from work – **this was especially sweet.***



**Abigail Tan**



**Abigail Tan**

Senior Pharmacy Technician,  
KK Women's and Children's Hospital



# Ensuring continual access to medications & pharmacy services

With the Safe Management Measures in place during COVID-19, patients are advised to stay home and have their medications delivered. Our nimble pharmacy colleagues ramped up medication delivery services (MDS) by 4 times. At SGH, Zhi Yang and his team set up a triage model to screen patients for MDS eligibility by a pharmacist using a specific checklist in order to ramp up the SGH MDS.

*“We were able to increase pharmacy operations efficiency due to early upstream identification of prescription-related issues. The successful increase in MDS uptake also allowed virtual healthcare services such as teleconsultation to be adopted hospital wide.”*

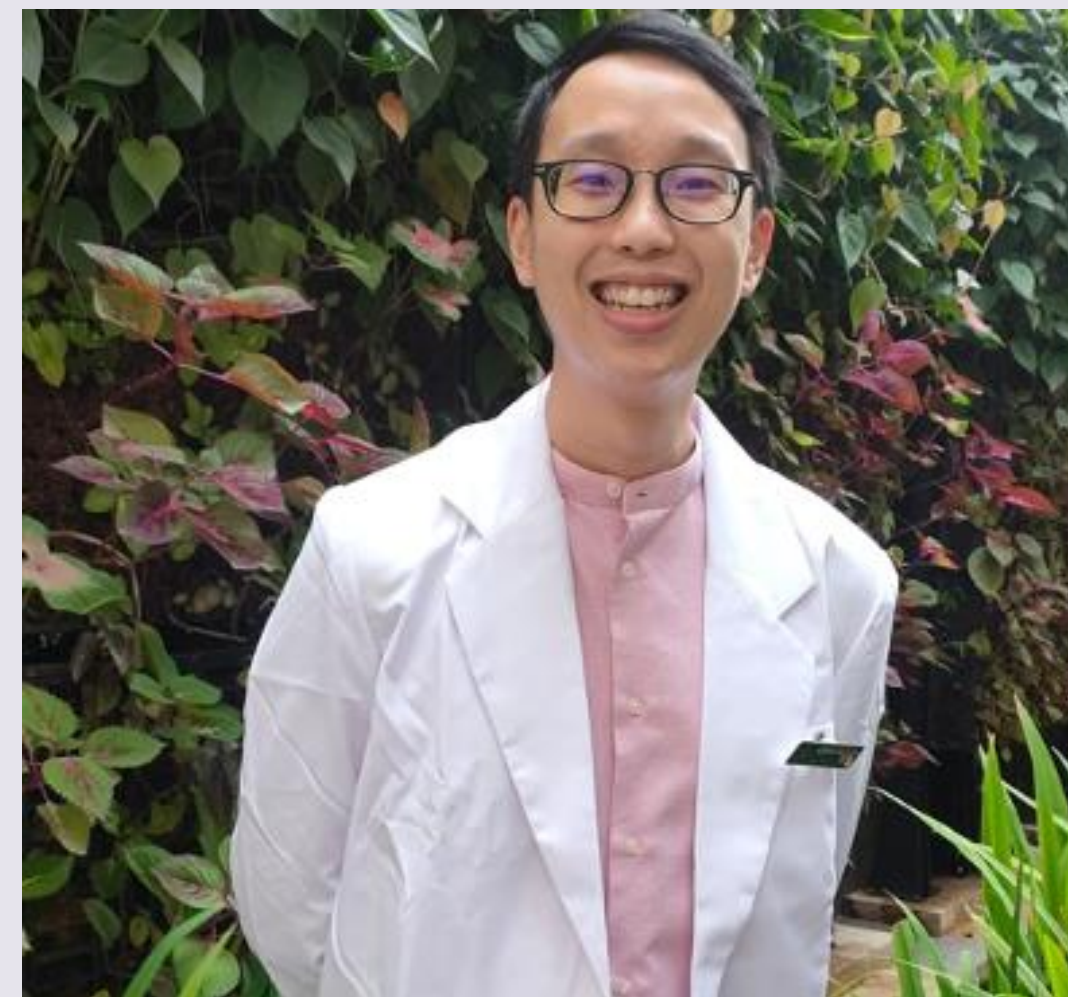


## **Looking after our colleagues...**

*To minimize unnecessary contact and infection transmission between hospital staff and patients within the pharmacy and bring convenience to our fellow healthcare workers, we also setup a 24-hour secured medication locker service for all healthcare workers working within the Outram Campus to collect their medications.*



Neo Zhi Yang



**Neo Zhi Yang**

Senior Pharmacist

Singapore General Hospital

# Ensuring continual access to medications & pharmacy services

To relieve the hospital bed crunch for COVID-19 patients, the National University Hospital piloted its first COVID-19 virtual ward, which allowed stable patients requiring hospitalisation to be cared for remotely at home. Zhi Xin led the setup of guidelines for the administration and monitoring of COVID-19 therapeutics in home setting, medication review and delivery processes, as well as set up workflows for phone/video counselling.

*“As the first hospital to offer home parenteral COVID-19 therapeutics in Singapore, our guidelines were also shared with other hospitals’ virtual ward team to speed up their set up process.”*



## Fulfilling last wishes...



*There was a severely ill COVID-19 patient on controlled drugs, whose family would like her to pass on at home. However, the home palliative service could not take on COVID-19 patients, and there were no existing protocols then to allow such patients to be discharged. To **fulfil the family’s wish**, the virtual ward team worked to provide care, medication counselling and access to necessary medications. Her daughter was very grateful to our team for allowing the patient to pass on at home with dignity, as opposed to alone in an isolated ward.*



Wong Zhi Xin



Wong Zhi Xin

Senior Clinical Pharmacist, Pharmacy,  
National University Health System

# Educating and empowering patients

At the start of the pandemic, there were a lot of unfounded rumors related to COVID-19. As the immediate past President, Pei Chean, led the Pharmaceutical Society of Singapore (PSS) to empower and educate the public on COVID-19 prevention and treatment. PSS pharmacists came together to create a hand hygiene and disinfectants guide, which was adopted by MOH as part of their COVID-19 resources. To continue engaging the public despite the pandemic, they pivoted the annual PSS Pharmacy Week carnival online to educate the public on topics such as medication taking tips and medication misinformation.

*“We published FAQs to bust the myths of COVID-19 and inform on the updates of COVID-19 vaccination options to help the public understand more on the virus.”*



## **Thriving on the camaraderie...**

*The camaraderie spirit from everyone and people willing to step up despite short notice and high workload kept me motivated in doing what I am doing.*



**Yong Pei Chean**



**Yong Pei Chean**

Senior Principal Pharmacist, Chief,  
Pharmacy, Woodlands Health

# Educating and empowering patients

Recognizing that communication was key to medication adherence, Chwee Huat and his team at AH realized that overcoming the language barrier was important to support the teams at the dorms and community care facilities. They worked with volunteers to expand upon the existing translations that other clusters had kindly shared.

*“We translated materials such as pictogram labels and counselling placards into 9 different languages to help our Dorm and CCF teams in counselling the migrant workers efficiently and safely in medication taking.”*



## **All hands on deck...**

*During this period we could witness the kindness, generosity and graciousness from our society and the world got smaller, including that of ex-healthcare professionals including ex-Pharmacists and Pharmacy Technicians. When we asked for help, we got it. Volunteers were more than ready to help in the Dorm Ops as well as the CCFs, this greatly alleviated the bottleneck in healthcare manpower resources.*



**Tan Chwee Huat**



**Tan Chwee Huat**

Senior Principal Pharmacist  
Alexandra Campus, NUHS

# Supporting the sharing of health data

Beyond the availing of COVID-19 vaccines, guidance on the inoculation process for patient safety, documentation, and subsequent sharing of immunisation records were critical enablers for Singapore to progressively open our economy and community through vaccination-differentiated SMMs.

Priscilla and her team at IHiS supported the iterative development and deployment of the IT solution for Singapore's COVID-19 Vaccination Programme. Her role included adapting the solution to changes in the prevailing vaccination policies, reviewing healthcare providers' operations and processes, as well as providing onsite tech assistance to their staff. She also implemented the Singapore Drug Dictionary as standardised vaccination codes across all required IT systems for data exchange, enabling deeper health insights.

*"These efforts facilitate the sharing of health records and data between national IT systems to ensure that vaccination records are up to date for healthcare professionals to better manage their patients."*



**Working together...**



*The fact that it's very heartening to see the whole of Singapore – public and private working in one accord, **without divide and without hesitancy**, towards making COVID-19 and vaccination ops a success*



Priscilla Chua



**Priscilla Chua**

Director

Integrated Health Information Services

## Part 3: Reflections & Moving Forward



### Collaboration and Engagement with stakeholders

As we moved towards endemic, with the lowering of Dorscon status to green, we must keep in mind all the learnings and friendships forged during the COVID-19 period.

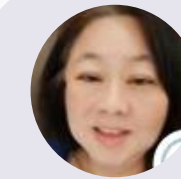
# Collaboration and Engagement with stakeholders

To meet the demands of the evolving pandemic, Huei-Xin and her team at MOH forged new working relationships with different stakeholders to secure access to and monitor drug supplies as well as to handle COVID-19 vaccines. They also worked with retail pharmacies to educate and roll out the use of ART kits safely. To date, her team continues to support the management of COVID-19 vaccines and therapeutics.

*“Learning from the COVID-19 experience, it’s important for us to always be prepared for the next pandemic. We are working towards developing a national drug supply resiliency framework to strengthen our drug supply chain such that our patients will continue to have uninterrupted access to their medications.”*

*Teamwork makes the dream work!*

*The pandemic provided a rare opportunity to work with stakeholders that we would not normally engage. New colleagues and friends from PHIs, retail pharmacies, MOH, other Ministries, Statutory Boards, private companies, professional associations, etc went the extra mile to help ensure access and sufficient supplies of relevant drugs and information to empower public.*



Lou Huei-xin



**Lou Huei-Xin** (2<sup>nd</sup> row, 2<sup>nd</sup> from the left)  
Deputy Chief Pharmacist  
Chief Pharmacist Office, Ministry of Health



# **CONGRATULATIONS & THANK YOU**

**ALL our Pharmacy Heroes!**

**We would also like to acknowledge and thank the contributions of all our pharmacy staff who have been working and contributing to the fight against COVID-19 in each of your own ways.**

**Together, we overcame the pandemic!**

