

# Transplant MATTERS

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New Frontiers in  
Transplantation 02

Transplant  
Magnified 06

# A Porcine Model Of Lung Transplant In SingHealth - Donor Retrieval, Implantation Surgery And Survival Study

- A personal account by Dr Chua Yang Chong



Last June to October, there were a series of five sessions where the cardiothoracic surgical team for lung transplant came together to practice donor lung explant surgery, lung implantation surgery (bronchial, arterial and venous/atrial anastomoses) as well as streamline all protocols involved in lung transplantation including lung preservation.

The lung transplant programme is part of the 'Mechanical Circulatory Support, Heart and Lung Transplant Unit' based in the National Heart Centre Singapore (NHCS), under the oversight of SingHealth Duke-NUS Transplant Centre (SDTC). This study was supported by the John 3:16 Multivisceral Transplant Fund. Our goal was to increase the proficiency and familiarity of the

cardiothoracic surgical team for lung transplant. The lung transplant protocol was adapted from the Toronto model but we made adjustments for local context. I am most grateful to the Toronto Lung Transplant Program (TLTP) for the scientific protocol, and their belief in me ever since I was a fresh-faced fellow in Toronto General Hospital.



So many people have been involved in this effort, and in order not to miss anyone, I would like to express my utmost gratitude to;

**1) External advisor -**

**Dr Matthew Hartwig from Duke Medicine, North Carolina, USA**

**2) Senior leadership-**

**Prof Terrance Chua from NHCS and Prof Prema Raj from SDTC**

**3) Cardiothoracic surgery-**

**Dr Sivathasan, Dr Kenny Sin, Dr Tan Teing Ee, Dr Ong Boon Hean, Dr Kang Ning, Dr Zameer Aziz, Dr Huang Mingjie, Dr Jason Leung**

**4) Cardiothoracic anaesthetists-**

**Dr Kenny Loh, Dr Andrew Roscoe, Dr Priscilla Phoon, Dr Antonia Ho**

**5) Pulmonology team-**

**Dr Sewa Duu Wen, Dr Michelle Kam**

**6) Cardiothoracic OT nurses-**

**Ms Ng Lay Hwa, Ms Alice Koh, Ms Janice Heng, Ms Qin Fang, Ms Tan Sok Boey, Ms Xiao Ting, and the team of scrub and circulating nurses**

**7) Perfusionists**

**8) Heart and Lung transplant coordinators-**

**Ms Kerk Ka Lee, Ms Joycelyn Tan, and team**

**9) SEMC team-**

**Dr Bryan Ogden and his team of vets and technicians, in particular Miss Soong. Ms Amy Tay on costings and budget.**



## 04 NEW FRONTIERS IN TRANSPLANTATION

The experience truly brought the multidisciplinary team together. We had the opportunity to work together like in a real case. Although most individual personnel had been trained, the coordination, leadership and communication in working together had never been put to test. We could observe the operative times reducing as we

progressed through the sessions. We also had the chance to test the equipment and consumables. To those less exposed, these sessions brought the abstract concepts and theories of lung transplant into tangible steps and real images.

As it has been said many times, a journey of a thousand miles begins

with the first step. This hopefully will be impetus to consolidate the strengths and engagement of our lung transplant team. Within our plan, we will conduct team visits to centres of excellence overseas, attend more team courses and workshops, and collaborate extensively with overseas experts. Look forward to our next update!



▲ Vietnamese team visit



▲ Team Briefing



▲ Vietnamese team visit to the lab

# Annual Scientific Meeting 2022 Of The Singapore Society Of Transplantation

## Passion in Action – Art and Science in organ/tissue donation and transplant coordination

The Singapore Society of Transplantation (SOT) Annual Scientific Meeting was held in the afternoon of 26 November 2022, at the Parkroyal Hotel. The event was a success as it brought together a diverse group of healthcare professionals from National University Hospital, Singapore General Hospital, and KK Women's and Children's Hospital, including scientists, clinicians, transplant coordinators, and other stakeholders.

Sally Kong, Deputy Director of the National Organ Transplant Unit (NOTU), began the conference by presenting her experience as a Medical Social Worker (MSW) turned Transplant Coordinator (TC). Sally explained the transplant's past, present, and future, as well as the hurdles she faced when pushing for transplant on the ground. Her thoughts offered guests unique perspectives, particularly those who work directly with patients and families.

Following Sally's sharing, Jim Boggs, founder of EffectiveArts, a long-time NOTU partner, has been training doctors, nurses, MSWs, and TCs on how to handle difficult conversations with families, donors, and recipients. Jim underlined the necessity of being able to have these difficult conversations with families, because organ donation helps not just the beneficiaries, but also provides closure for the

donor's family. Notwithstanding the difficulties posed by COVID-19, Jim has continued to teach these seminars to ensure that healthcare practitioners are well-prepared to address these dialogues.

Dr Sreekanthan, Senior Consultant at KKH, spoke on using Left Ventricular Assist Device (LVAD) as a bridge to transplant for paediatric cardiac patients.

In addition to the presentations, the SOT Annual Scientific Meeting also featured a free paper sharing session. During this session, experts in the field of transplant had the opportunity to share their research findings and insights on emerging developments, where attendees were involved in the free paper discussion through a questions and answer session.

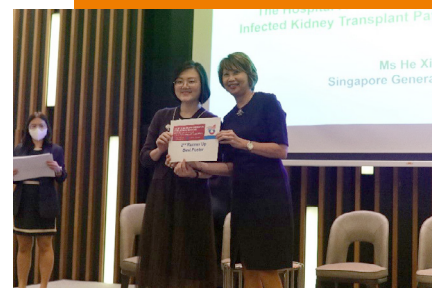
These talks and discussions are critical for increasing the effectiveness of organ donation and transplantation in Singapore. The SOT Annual Scientific Meeting provides a forum for healthcare experts to exchange information and ideas, resulting in breakthroughs in the field of transplantation. These developments have the potential to greatly enhance the treatment and outcomes of individuals in need of life-saving organ transplants.



▲ Dr Tan Ek Khoon sharing about the role of machine perfusion to increase organ supply



▲ Dr Ho Quan Yao, left, receives Best Oral Free Paper from Deputy Director of NOTU, Ms Sally Kong, right



▲ Ms He Xia, left, receives 2nd runner up best poster award from Deputy Director of NOTU, Ms Sally Kong, right

# Transplant Awareness Talk

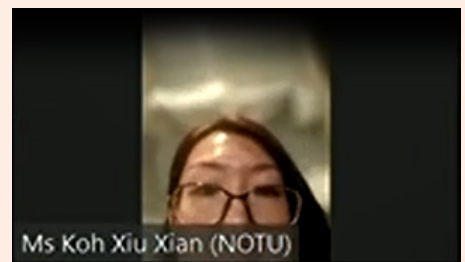
One small step for transplant, One huge step for man

As a prelude to Transplant Awareness Month in October, a webinar was organised with the objective of promoting knowledge and awareness of some of the advances in organ transplantation and COVID-19 related updates.

The webinar included talks on various aspects of transplantation. A/Prof Koh Ye Xin spoke about the normothermic machine perfusion, which is a medical technology used to preserve organs for transplantation. Ms Koh Xiu Xian shared the National Guidance on COVID-19 Vaccination in Transplantation, which provides general guidelines for donors and recipients before and after transplantation. Prof Tan Thuan Tong highlighted the importance of COVID-19 vaccination for transplanted patients who have

weakened immune systems and discussed ethical concerns related to mandating vaccination for transplant patients. Finally, Mr Anthony Sbat introduced Transplant Tube, a medical broadcasting station that provides healthcare professionals with access to more than 3,000 medical resources and over 100 countries in transplantation, providing real-time updates on the latest medical news, research and transplant cases around the world.

To promote engagement and participation, the event also featured a game where participants made a guess on what the transplantable organs and tissues in the body are. A total of 158 participants took part in the game, with 30 participants winning \$20 NTUC vouchers.



# Transplant Awareness Month

In addition, SingHealth Duke-NUS Transplant Centre (SDTC) hosted a webinar for its annual Transplant Awareness Month event on 26 October 2022. Together, both sessions aimed at educating and increasing awareness of Organ Donation and Transplantation and attracted about 200 attendees from across SingHealth.

During the webinar, A/Prof Alvin Chua and Dr Matthew Jose from the Transplant Tissue Centre shared valuable insights into xenotransplantation and the breakthrough in xenotransplantation for heart transplant. They shed light on the controversial topic of xenotransplantation and how it offers a potential solution to the shortage of organs. Furthermore, the webinar also invited Dr Crystal Lim to discuss the ethical considerations for xenotransplantation, allowing the participants to examine

the different perspectives of xenotransplantation. Lastly, Prof Aloysius Ho shared about the coincidental benefits of Haematopoietic Progenitor Cell Transplant.

A highlight of the event was the video competition, which received numerous submissions from SingHealth healthcare professionals. The contest provided a platform for participants to showcase their creativity and explore different aspects of transplant individually or as a team. Furthermore, a crossword puzzle related to transplant was also conducted on Facebook.

Through the sessions, participants were able to clear their misconceptions and gain new insights on Organ Donation and Transplantation. SDTC hopes to continue raising awareness of this vital topic through future events and initiatives.



# New Frontier In Transplantation: Artificial Intelligence!

SingHealth Duke-NUS Transplant Centre (SDTC) has successfully hosted an event aimed at introducing the transplantation community to the application of Artificial Intelligence (AI) and Big Data Analytics in healthcare on 2 November 2022. The event, titled "New Frontier in Transplantation: AI!", was chaired by A/Prof Prema Raj, Head of SDTC, and brought together over 50 professionals from the healthcare industry.

The primary objective of the event was to provide a platform for the participants to learn about the applications of AI and explore how it could be incorporated into their current or future projects. To achieve this goal, the event invited an expert in the field - A/Prof Ngiam Kee Yuan, Group Chief Technology Officer at NUHS, to share his first-hand experience in the development of his AI

healthcare projects. He has been a long-time advocate for the application of AI in healthcare and has been invited to speak at various talks and events, even on national television. A/Prof Ngiam's presentation covered topics such as developing AI models in healthcare and provided examples of different models used. The attendees gave overwhelmingly positive feedback about the relevance of the topics discussed.

The event highlighted the healthcare industry's growing interest in AI and its potential benefits in the field of transplantation. SDTC is committed to hosting similar events in the future, providing a platform for healthcare professionals to learn about emerging technologies and their applications in their respective fields.



▲ A/Prof Ngiam Kee Yuan, Group Chief Technology Officer, National University Health System

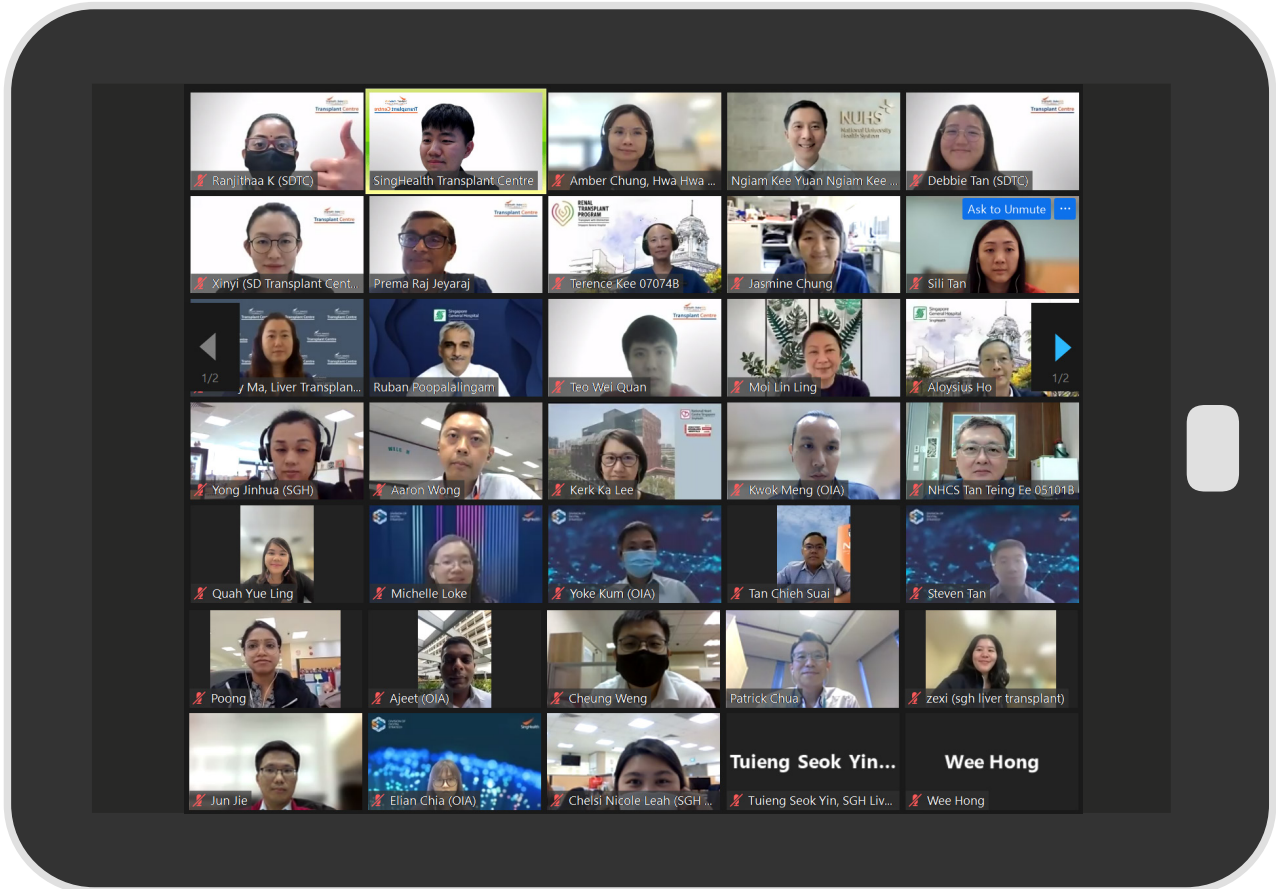
## Challenges in AI Development

- **Data**
  - Large datasets required to train models
  - Access to multiple data sources and mapping datasets
  - Messy, missing and noisy data
  - Variation in coding standards (ICD10, SNOMED)
- **Hardware**
  - GPUs, supercomputers
  - Centralized resources, scalability and economies of scale
- **Developing advanced AI tools**
  - Data science talent
  - Translation between clinicians and datascientists
- **Deployment in the EMR environment**



▲ Prof Ngiam's Slide on Challenges in AI Development

# Webinar Group Photo of New Frontier in Transplantation: AI!



## ACKNOWLEDGEMENTS

This newsletter is proudly produced by:



# Transplant Centre

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