Acknowledgment of Country

The Clinical School acknowledge and honours the Aboriginal Elders of the Gadigal People of the Eora Nation, those who once lived here and first walked this land and their descendants who maintain these spiritual connections and traditions. We acknowledge that the Gadigal people occupied and cared for this land over countless generations and we celebrate their continuing contribution to the life of this region.
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CLINICAL ACADEMICS

Professor Jerry Greenfield
Clinical Associate Dean
Commenced: 2016
Specialty: Endocrinology

Professor Allan Spigelman
Head of Surgery, Professor of Surgery
Commenced: 2006
Specialty: Surgical Oncology

Professor Ric Day
Professor of Medicine
Commenced: 1990
Specialties: Clinical Pharmacology & Rheumatology

A/Professor Jane McCrohon
Associate Professor of Medicine
Commenced: 2008
Specialty: Cardiology & Medical Imaging
Retired in June 2020

A/Professor William Sewell
Associate Professor of Medicine
Commenced: 1998
Specialty: Immunology

A/Professor Mark Danta
Associate Professor of Medicine, Postgraduate Coordinator
Commenced: 2006
Specialty: Gastroenterology

Professor Elgene Lim
Professor of Medicine
Commenced: 2017
Specialty: Medical Oncology & Breast Cancer

Dr Rohan Gett
Senior Lecturer in Surgery, Director of Medical Student Education
Commenced: 2006
Specialty: Colorectal Surgery

Dr Anthony Chambers
Senior Lecturer in Surgery
Commenced: 2010
Specialty: Surgical Oncology

Dr Darren Gold
Senior Lecturer in Surgery
Commenced: 2007
Specialty: Colorectal Surgery

On LSL since June 2020
ADMINISTRATIVE STAFF

Melinda Gamulin
School Manager

Thuy Huynh
Administrative Officer

Alison Cullen
Education Support Officer

Cassandra Shearer
Executive Assistant

Kate Steele
Education Support Administrator

Laura Derkenne
Postgraduate Administrator
Introduction

It is an understatement to say that 2020 was like no other year – many words have been used to describe it – unprecedented, world changing, paradigm shifting and unforgettable. Wildfires were just the beginning. Lives were lost, animals were killed and properties were destroyed. Little did we know that things would get a whole lot worse. From March, the way we teach, educate, research, examine and interact has changed forever. COVID-19 has and continues to dictate how we conduct ourselves. Teaching rapidly converted to an online format, which you all embraced with enthusiasm. Whilst on ward teaching was scaled down to groups of two, online tutorials scaled up to hundreds. Medical student teaching transformed. Higher Degree Committee meetings were convened in the virtual world. Laboratories and clinical research facilities were temporarily closed. Conferences converted to online formats, with overseas travel put on hold indefinitely. Grand Rounds was transformed to an online platform. Year 6 students became Assistants in Medicine, an opportunity that would not have arisen had it not been for the COVID-19 pandemic. St Vincent’s Clinical School initiated the Faculty of Medicine COVID 19 essay competition, which highlighted the creative abilities of our Phase 3 students.

Despite the upheaval of 2020, there are many achievements that need to be celebrated:

- Australia Day Honours were awarded to A/Professor Antony Graham (OAM)
- Dr Nikki Bart was awarded a Fullbright Scholar Award
- Conjoint Professor Bernard Haylen was inducted into the Hall of Fame of the International Continence Society
- Conjoint Professor Stuart Tangye was awarded a COVID-19 Rapid Response Research Initiative Award by UNSW
- PhD students Andrew Law and Laura Rodríguez de la Fuente won the Peter Farrell Cup
- PhD student Dr Jennifer Snaith was awarded runner up in the Medicine Visualise your Thesis competition
- Conjoint Professor Bruce Brew was one of four research leaders awarded $40,000 in the 2020 round of UNSW Medicine Neuroscience, Mental Health and Addiction Theme and SPHERE Clinical Academic Group Collaborative Research Seed Funding
- PhD student Yolanda Colino was awarded the ‘Dean’s Award for Outstanding PhD thesis’
- Conjoint Professor Susan Clark was elected as a Fellow of the Academy of Health and Medical Sciences for her world leading discoveries in the field of epigenetics
- Conjoint Professor Lesley Campbell was jointly awarded the prestigious Australian Diabetes Society Lifetime Achievement Award. This award acknowledges and celebrates Professor Campbell’s professional achievements in diabetes management, research, and advocacy
- PhD student Ranita Kirubakaran was awarded an HDR research student award by the UNSW Arc Post Graduate Council.
- Conjoint Professor Bruce Brew was one of four research leaders awarded $40,000 in the 2020 round of UNSW Medicine Neuroscience, Mental Health and Addiction Theme and SPHERE Clinical Academic Group Collaborative Research Seed Funding
- Dr Joseph Grace was appointed into the German Society of Phlebology as an honorary member of their International Faculty.
- Dr Brooke Pereira received a travel grant from Matrix Biology & Matrix Biology Plus Award to attend the 2020 Pan Pacific Connective Tissues Societies Symposium
- PhD student Dr Celine Santiago was a finalist in the CSANZ Young Investigator award
- PhD student Dr Jennifer Massey received a MS Research Australia Postdoctorate Fellowship 2020 – 2023
- Dr Patricia Reyes was involved in the War Memorial Hospital Health Justice Partnership (HJP) which won the Southeast Sydney Local Health District Integrated Value Care Award in August for integrating the legal service within the sub-acute hospital and community geriatrics to address and prevent abuse of the older person
• A/Prof Andrew Field received American Society of Cytopathology International Achievement Award and Membership of the newly established WHO IARC Standing Editorial Board for the development and publication of four new International Cytopathology Reporting Systems.

Research remains a major focus of the School and we value all of the Medical Research Institutes on the campus. Many of our Conjoints are located at Centre for Applied Medical Research, the Garvan Institute of Medical Research and the Victor Chang Cardiac Research Institute. We continue to enjoy good relations with Professor Terry Campbell, Head of Research, St Vincent’s Health Network, Sydney; Professor Chris Goodnow, the Director of the Garvan Institute, Professor Jason Kovacic, the new Director of Victor Chang and A/Professor Anthony Schembri, CEO of St Vincent’s Health Network, Sydney.

Congratulations go to all who have received promotions in 2020. Well done to Elgene Lim, one of our research-focussed Clinical Academics, who was promoted to Professor. This year saw Academic and Conjoint promotions to Levels D and E being conducted via interview, reinforcing the importance and gravitas of these promotions. The committee was expertly led by Senior Vice Dean of Clinical Affairs, Professor John Watson.

The following Conjoint were successful in their promotion applications:

Professor (Level E):
Kurosh Parsi
Louise Emmett
Steven Faux
Anthony Joshua
David Muller
Tri Phan
Shane Grey

Associate Professor (Level D):
Christine Chaffer
Thomas Cox
David Croucher

Congratulations to Drs Nada Hamad and Anthony Byrne who were successful in their applications for Faculty Awards for Educational Excellence - the only two awarded in the entire Faculty. We are also delighted that Dr Nada Hamad was elected as Deputy Chair (Academic) of Medicine’s Equity, Diversity and Inclusion Committee (MEDIC).

Senior Vice Dean Clinical Affairs, Professor John Watson led a revamp of the Conjoint database in 2020. Thanks to Cassie Shearer who assisted me with the process of approving close to 500 Conjoint in our School.

2020 has seen some changes in the Staff in our School. A/Prof Bill Sewell commenced an extended period of Long Service Leave in July and A/Prof Jane McCrohon retired. Bill has been affiliated with UNSW since 1988, when he became a Senior Lecturer at St. Vincent’s Clinical School. He was promoted to Associate Professor in 1996. Bill has taught in all phases of the UNSW undergraduate curriculum in Immunology and Biomedical Sciences. He has supervised numerous ILP/Honours and PhD students over the years and he served as the Faculty's Associate Dean of Postgraduate Research Training from 2009-2016. Bill's research has covered many aspects of Immunology, with a special interest in allergic inflammation. Jane McCrohon has been affiliated with UNSW since 2002, when she became a Conjoint Senior Lecturer. She commenced her current role at St Vincent’s Hospital as a Staff Specialist Cardiologist in 2008 and was promoted to Associate Professor in 2006. Jane joined St Vincent’s Clinical School in 2008. She has taught in all phases of the UNSW undergraduate curriculum and has supervised a number of medical, ILP, Honours and PhD students over the years. Her research has focused on cardiac imaging, particularly with CT. Given the policies on social distancing, we were unable to host a farewell function in the usual way. We wish both academics all the best for the future and thank them for their contribution to UNSW. We look forward to many future interactions with Jane and Bill over the coming years.

The School could not function without the hard work and expertise of our Clinical Academics, Professors Allan Spigelman, Ric Day, Elgene Lim, and Associate Professor Mark Danta, and Drs Rohan Gett, Darren Gold and Anthony Chambers. We are lucky to be supported by the talented administrative team, headed by Melinda and comprising of Laura, Alison, Kate, Thuy and Cassandra.

On a final note, thank you for your support and perseverance in 2020. Many of the modified learning opportunities evolved with your input and with your willingness to be part of this change. Despite the challenges, we have been blessed with your support and the willingness and understanding of our brilliant students. I have learnt so much from all of you and have benefited greatly from leading dedicated Clinical Academics and support staff, talented Conjoint teachers and researchers and resilient and amazing medical students. Thank you for what you have taught me in 2020. Here’s to 2021!
2020 brought extra challenges to teaching at St Vincent’s Clinical School. While the same busy activity continued, tutorials and lectures were often delivered through Microsoft Teams and on Zoom. This required agility and patience from students and hasty adaptation to the brave new world of technology for the staff.

Throughout the year we had 125 Phase 1 students start their medical careers with us and 47 Phase 2 students who completed intensive clinical blocks. There were 33 ILP students who enjoyed a year of research and finally 42 Phase 3 (Y6) students who rounded off their education and prepared for their final examinations.

While many of these students started the year conventionally, most transitioned to 100% online teaching by March. Course content had to be re-written and adjusted for the new formats and students tuned in from home, often long distances from their usual campuses.

Even with the difficulties encountered throughout the year, there were 25 elective students who had to complete hastily allocated terms locally. While the delivery of education required new media, the examinations processes were similarly challenging.

A new initiative in response to the COVID-19 crisis was to have the Assistant in Medicine (AIMs) program where UNSW students and Notre Dame students worked as paid student interns. They assisted throughout the hospital using their medical skills to fill gaps and cover rosters where COVID-19 had generated extra work for the hospital. The AIMs program was well received and strongly supported by not only the students but the medical staff in general.

56 students were examined in Phase 2 online OSCE assessments. There were 42 Phase 3 Vivas and 39 Portfolio examinations where students had to reflect on their experiences from the entire course. Later, there were 12 supplementary examinations and 38 Phase 2 ICE exams. The final set of examinations at the clinical school involved hosting 48 students for the Phase 1 OSCE.

An essay competition was cleverly initiated at the St Vincent’s Clinical School and then rolled out not only across the entire UNSW Medicine Faculty but onwards to Notre Dame university. The morale boosting competition allowed students to discuss their thoughts on the biology of COVID-19 and to address the medical and societal challenges that had been generated by the virus.

Overall, 2020 was a successful and rewarding year particularly given the changes in teaching style and format. As Director of Medical Education at the campus, I would like to thank the conjoint teachers, doctors who once again gave so generously throughout the year to ensure that our students were exposed to all the medical and surgical disciplines in the hospital. Most of all, I would like to thank the administrative staff; Ali, Kate, Melinda, Laura, Cassie and Thuy for tirelessly and generously holding the whole show together.
2020 started off well with a few staff movements early on with Laura Derkenne taking an internal transfer to the UNSW Graduate Research School for 4 months. Laura was replaced by Cecilia White who did a great job looking after all our Higher Degree Research students and SVH Medical Grand Rounds.

In late March, we saw all the Clinical School administrative staff commence to work from home due to COVID-19 outbreak and only entering the hospital one day per week to facilitate the remaining face-to-face teaching until the end of December 2020. All of our planned events were postponed or cancelled and we moved our undergraduate teaching programs online onto MS Teams.

It has been a turbulent year for the world and especially the healthcare community but in such testing times, we are hugely proud to work with so many adaptive and resilient people and all the SVH doctors involved in our teaching to keep it running.

I would also like to thank the administration team (Alison, Thuy, Cassie, Laura and Kate) for their persistence, care and hard work in keeping the school’s administration functioning in the face of adversity.

Despite a year of lock downs and setbacks, there have been a number of glimmering highlights for us such as moving our teaching online and teaching doctors how to use MS Teams. We held the Phase 3 (Year 6) clinical examinations online and gave the graduating class of 2020 a farewell function.

The School could not function without the support of our Conjoint staff members, St Vincents Hospital, the affiliated Medical Research Institutes (Garvan and Victor Chang), St Vincent's Centre for Applied Medical Research (AMR), the Faculty of Medicine, UNSW, the local community and the patient population and, of course, our student body.

I am hopeful that 2021 will be a much better year, and we are looking forward to working with you all again and your continued support to UNSW.
School Awards & Acknowledgements

Tutors of the Year

JMO Tutor of the Year: Dr Samuel Kim
RMO Tutor of the Year: Dr James Deacon
Registrar Tutor of the Year: Dr Cameron White
Consultant Tutor of the Year (SVH): A/Professor Graham Jones
Consultant Tutor of the Year (SVPH/SVC): Dr Emily Granger

Undergraduate Student Awards

St Vincent’s Clinical School Prize: Lillian Dong
Doug Tracy Prize for Surgery: Fiona Johnston
John Hickie Prize for Medicine: Lillian Dong
ILP/Honours Grand Rounds Presentation Prize: Regina Tan
ILP/Honours Project Prize (2019): Arun Shresta
Student Researcher of the Year Award: Catriona Shen

Higher Degree Research Student Award

2020 HDR Thesis Award: Dr Pankaj Jain (VCCRI) under the supervision of Professor Chris Hayward for his thesis titled “Assessment of Left Ventricular Contractility and Loading Conditions Under Continuous-flow Left Ventricular Assist Device Support”.

**Publication of the Year**

**Professor Tri Phan & Professor Peter Croucher** - “The dormant cancer cell life cycle”, published in Nature Reviews Cancer 2020, July. Doi: 10.1038/s41568-020-0263-0

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**Quarterly Publications**

**January - March 2020**


**April - June 2020**

**Prof Tri Phan & Rama Dhenni** - “The geography of memory B cell reactivation in vaccine-induced immunity and in autoimmune disease relapses”, Immunological Reviews, May 2020. DOI: https://doi.org/10.1111/imr.12862

**July - September 2020**

**Sunny Wu & A/Professor Alex Swarbrick** - “Stromal cell diversity associated with immune evasion in human triple-negative breast cancer, EMBO Journal, August 2020. DOI: https://doi.org/10.15252/embj.2019104063

**Andre Reis & Dr Tim Mercer** - “A universal and independent synthetic DNA ladder for the quantitative measurement of genomic features”, Nature Communications Journal, July 2020. DOI: https://www.nature.com/articles/s41467-020-17445-5

**October - December 2020**

**Prof Kathy Samaras** - “Metformin Use Is Associated With Slowed Cognitive Decline and Reduced Incident Dementia in Older Adults With Type 2 Diabetes: The Sydney Memory and Ageing Study”, Diabetes Care, 2020 November 43 (11) 2691-2701. DOI: https://care.diabetesjournals.org/content/43/11/2691
Teaching Conjoint of the Month

Each month we highlight exceptional teaching Conjoint staff members in our School. The Clinical School would not function without the generous assistance and support of our exceptional Conjoint staff, who make an outstanding contribution to teaching, by taking a group of students on a bedside, offering procedural skills sessions, marking assignments, stepping in at the last minute to help out etc. There are many talented, inspiring and dedicated doctors and professionals who positively impact student’s learning despite their busy work schedule.

We are pleased to announce the following Conjoint Teachers for 2020:

**JANUARY**
Dr Dean Letchford – Phase 2 Oncology Tutor, Phase 2 Assignment Marker and Examiner

**FEBRUARY**
Dr Aruna Shivam – Phase 3 Supervisor, Phase 2 Assignment maker & Phase 1-3 Examiner

**MARCH**
Prof Milton Cohen – Phase 2 AH2 Tutorials and Clinic visits

**APRIL**
Dr Simon Mosalski – Phase 2 Aged Care and Rehab Tutorials & Clinic Visit

**MAY**
Dr Matthew McCartney – Phase 2 Bedside teaching, Assignment Marking, Phase 3 Skills & examiner

**JUNE**
Dr Salim Maher – Phase 2 Bedside Teaching, Assignment Marking & Examiner

**JULY**
Dr Sharon Hu – Phase 3 Clinical Skills & Examiner

**AUGUST**
Dr Nada Hamad – Phase 3 Supervisor & Biomed Examiner

**SEPTEMBER**
A/Prof Roger Chen – Phase 3 Bedside Tutor and Examiner

**OCTOBER**
Dr Amer Amin – Phase 3 Teaching & Examiner, Phase 2 Oncology Tutor

**NOVEMBER**
Dr Yiling Situ – Phase 2 Bedside Teaching, Phase 3 Examiner

**DECEMBER**
Dr Sarah Scheuer – Phase 2 Bedside Teaching, Phase 3 PRINT Tutor
In Memoriam

Dr Terence O’Connor

A/Professor Terence William O’Connor passed away in February 2020. Terence had a long and distinguished career across our campus as a general and GI surgeon.

Having graduated from Medicine in 1971, Terence became a medical student at St Vincent’s and was awarded the St Vincent’s Medal for Surgery at Graduation.

Throughout his decades at St Vincent’s, Terence held several important Campus positions, including Board Member of the General Hospital, Chairman of St Vincent’s Clinic and Trustee of the St Vincent’s Clinic Foundation. He was indeed instrumental in the development of St Vincent’s Clinic and went over to the USA with others to look at the Mayo Clinic model. Terence was appointed Adjunct Professor at Notre Dame University and was a Surgical Tutor at UNSW.

Having developed Parkinson’s Disease, Terence retired from active surgical practise in 2011.

Of all his contributions to the SVH campus, what is most important was the way in which he lived our Mission & Values - Terence will always be remembered for his enormous integrity and compassion which really shone through in his interactions with patients and colleagues.

Professor Ron Penny

Professor Ron Penny passed away after succumbing to a chronic illness in late December 2019.

Ron graduated with honours from the University of Sydney in 1960, after undertaking further studies in haematology, oncology and immunology in the United Kingdom and the United States. On his return in 1967, he set up the first Clinical Immunology Unit in New South Wales at Royal Prince Alfred Hospital. In 1969, this unit was transferred to St Vincent’s Hospital, initially retaining a research focus in leukaemia, myeloma, paraproteinaemia and lymphoma.

In 1973, Ron became Professor of Clinical Immunology at UNSW and in 1979 he received the first Doctorate of Science awarded to a Member of a clinical Department by the University.

The Centre for Immunology was established by the UNSW under Ronald’s Directorship in 1983. Five years later, he was awarded a Personal Chair in Clinical Immunology in 1988.

He was an Emeritus Professor of Medicine at UNSW.
Highlights & Achievements

- **Dr Joseph Grace** - Appointed into the German Society of Phlebology as an honorary member of their International Faculty. This is an esteemed educational role for the purpose of sharing information and promoting engagements between the relevant Australasian colleges.

- **Dr Brooke Pereira** - Received a travel grant from Matrix Biology & Matrix Biology Plus Award to attend the 2020 Pan Pacific Connective Tissues Societies Symposium.

- PhD student **Dr Celine Santiago** - was a finalist in the CSANZ Young Investigator award.

- **Prof Stuart Tangye** - Received a Research Excellence Award from the NHMRC and awarded a COVID-19 response research initiative award by UNSW.

- PhD student **Dr Jennifer Massey** - Received a MS Research Australia Postdoctorate Fellowship 2020 – 2023.

- **A/Prof Anthony Graham** - Australia Day Honours awarded an OAM for his service to medicine as a Vascular Surgeon.

- **Dr Patricia Reyes** - The War Memorial Hospital Health Justice Partnership (HJP) won the Southeast Sydney Local Health District Integrated Value Care Award in August for integrating the legal service within the sub-acute hospital and community geriatrics to address and prevent abuse of the older person.

- **A/Prof Andrew Field** - Received American Society of Cytopathology International Achievement Award and Membership of the newly established WHO IARC Standing Editorial Board for the development and publication of four new International Cytopathology Reporting Systems.

- **Dr Nikki Bart** - Awarded Fulbright Scholar Award.

- **Prof Bernard Haylen** - Awarded into Hall of Fame for the International Continence Society.

- PhD students **Andrew Law & Laura Rodriguez de la Fuente** - Won 2020 Peter Farrell Cup for their ALTEN project.

- PhD student **Dr Jennifer Snaith** - Awarded runner up in the Medicine Visualise your thesis competition.
• **Prof Bruce Brew** - one of four research leaders awarded $40,000 in the 2020 round of UNSW Medicine Neuroscience, Mental Health and Addiction Theme and SPHERE Clinical Academic Group Collaborative Research Seed Funding for the project: ‘Improving and translating the diagnostic capacity of Cerebral Small Vessel Disease with advance cardiac and brain MRI’.

• PhD student **Yolanda Colino** - Awarded the UNSW Deans Award for outstanding PhD thesis.

• **Prof Susan Clark** - Elected as a Fellow to Academy of Health and Medical Sciences for her world leading discoveries in the field of Epigenetics.

• **Prof Lesley Campbell** - Awarded the prestigious Australian Diabetes Society Lifetime Achievement Award. This award acknowledges and celebrates Professor Campbell's professional achievements in diabetes management, research, and advocacy.

• UNSW Arc Postgraduate Awards - **Prof Jerry Greenfield** received a PGC Research Supervisor Award and PhD student **Ranita Kirubakaran** received a PhD research student award.

• **Dr Sophie Stocker** - awarded the Certara New Investigator Award, ASCEPT-APSA 2020 Joint Virtual Scientific Meeting.
Snapshot of 2020

A perspective by Alison Cullen, Education Support Officer

**Life before Covid**

2019 ends with huge optimism as we welcome in a new decade, a new dawn, a new year filled with hopes of fulfilling our ‘2020 visions’. The undergraduate program, which includes a series of clinical skills, tutorials and events is in the final stages of planning as the majority of teaching are confirmed for the year ahead!

**Jan 2020**

**Pneumonia of unknown cause**

Year 5 and Grad Entry students are the first to return from their summer break. We read on the news about a place called Wuhan, where a mysterious cluster of pneumonia cases send their city into lockdown. We continue to follow the news but it seems like a faraway threat. By the end of January though, this quickly becomes a global concern. We receive our first of many correspondences from our relatively new, yet much respected Dean of Medicine, Professor Vlado Perkovic. His message reads that ‘as people in the healthcare sector, we have a particular responsibility to be aware of our own health and ensure that we do not put our patients at risk’ - a message that will become central to our values and decision making in the months to follow. We assist a number of students whose electives in Asia are unexpectedly cancelled, as well as those returning students requiring to self-quarantine. Australia’s first case of Covid-19 is confirmed in Victoria on 25 January though the virus does not yet have an official name.

**Feb 2020**

**A rapidly changing world**

Year 4 ILP students are next to commence and we take extra care to equip them for the unpredictable year ahead. The International Committee on Taxonomy of Viruses (ICTV) announces “severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)” as the name of the new virus on 11 February. The advice for us continues to be more restrictive than for the rest of the community, given our particular responsibility as workers in healthcare. We carefully follow NSW Health guidelines as community anxiety mounts and people become sensitive to any flu-like symptoms. Year 3 students commence their coursework, Adult Health 1 & Adult Health 2, cautiously but with optimism.

**March 2020**

**The longest month**

We are full house as Year 6 return from their electives. By 2 March, the first case of community transmission is reported in Australia. We are gripped by the rapidly changing guidelines and then the unthinkable happens. On the evening of 9 March – we send an urgent communication to students as the hospital announces that group settings are to be avoided, Outpatient Clinics have all been cancelled and students are no longer able to attend theatres. 10 March (the following day) is the longest day, followed by the longest week where the entire structure of everything we deliver is in question. Professor Jerry Greenfield, our Head of School and calm by nature, is flat out in online meetings. He is a good person to have around in extraordinary times. He filters critical information from multiple stakeholders to ensure medical student education and research projects continue where it is safe to do so. A/Prof Adrienne Torda, our relatively new Associate Dean (Education & Innovation), Professor Gary Velan (Senior Vice Dean, Education) and Professor John Watson AM (Senior Vice Dean, Clinical Affairs) are also on hand to navigate us during this rather intense and unprecedented time with tightly regulated and consistent communication. On 11 March WHO declares COVID-19 to be a pandemic.

After suspending all group teaching for 48 hours, we quickly become experts in using Microsoft Teams, Zoom and Black Board Collaborate. Our first online tutorial is livestreamed to Phase 2, Adult Health 2 students on 12 March by Dr David Skalicky, followed by Professor Ric Day – both seasoned clinical tutors, who make the transition appear seamless. Around this time, visiting students from Oman are requested to return home by their faculty so we say goodbye to four lovely students whose electives are sadly cut short. A handful of our students are re-deployed to different teams as some departments restructure the workforce in preparation for a possible surge.

Professor Greenfield continues to lead the team with a sound cultural understanding of the hospital environment and the welfare of our students, patients and colleagues at the forefront. Despite the initial hesitation by some staff and students, it becomes widely accepted that pulling medical students out of the hospital can have long-term consequences. It is vitally important that students, particularly those close
to completing the program, continue in their training to ensure workforce for our hospitals is uninterrupted. We continue to liaise closely with our students, UNSW Medicine, St Vincent’s Covid Task Force - EOC (Emergency Operations Centre), University of Notre Dame (UNDA) and other Clinical Teaching Units as we collaborate to figure out our new reality. Thanks to Dr Rohan Gedd and A/Prof Tony Grab’s insistence, by mid March, our senior students are permitted to attend Theatre, to scrub and provide assistance in the absence of the intern due to workflow demands.

By the end of March, 1 person per 4 square metres rule comes into effect, significantly limiting our capacity, resulting in Phase 1 and 2 students transitioning to fully online programs. As many retreat to work from home, the clinical school is deserted. Despite the lack of people around, surprisingly the hospital feels like the safest place on earth. As online learning is in full swing for the junior students, we make particular efforts to encourage attendance and interactions to provide an authentic and meaningful learning experiences just like in a tutorial room.

April 2020
Let’s get creative!

It is impressive how people come together during challenging times. The month of April sees many initiatives flourish and this new way of connecting becomes a regular occurrence – such as the introduction of online St Vincent’s Q&A hosted by Professor Greenfield, Dr Gedd and myself, our Weekly Online Cases where interesting medical or surgical cases encountered during this time are shared by our clinical academics. Dr Louis Wang’s popular JMO Lecture Series is made available to our Phase 3 and Dr Greg O’Sullivan sets out a series of extra Anaesthetics tutorials for UNDA and UNSW students. There is buzz in the air, as the NSW Health initiated ‘Assistant in Medicine’ Program (AiM) is in the making. These are paid sub-intern roles for final year medical students and A/Prof Torda puts together a ‘boot camp’ of eWorkshops on 6 & 7 April for all Year 6 to attend in anticipation. We utilise modified learning opportunities such as teleconsults, case conferences, Trauma Grand Rounds and Medical Grand Rounds, all of which are now delivered online. Cardiology Grand Rounds goes global as doctors in New York are invited to video conference live direct from the epicentre of the COVID-19 crisis. Professor Kay Wilhelm is one of the first to present online at St Vincent’s Medical Grand Rounds on the topic ‘Staying Sane in the Age of Covid-19’. An Essay competition is launched in collaboration with UNDA to lift student morale and provide a positive platform to express views on important topics ranging from how the world might change after the pandemic to discussing the pathophysiology of Covid 19. The competition is eventually rolled out as a faculty wide event.

More students are re-deployed as some departments significantly reduce the number of people on their ward (including clinical staff) but alternative opportunities are offered for students to work on research and quality assurance projects. Students are also taken out from the acute ED areas and re-deployed to fast track or assisting the evening registers. Dr Sarah Michael – the Deputy Director of Medical Services (JMO Workforce) goes out of her way to create additional placements with low risk teams in an effort to keep students on the wards. On 7 April, health screening for all staff and visitors upon entry becomes mandatory. On the same day, AMC, MBA and MDANZ issue a media release - No students, No future – reinforcing the view that training our future health workforce is essential. On 17 April, a joint statement is released by the Commonwealth DoH, DESE, AHPRA/national boards and accreditation authorities outlining National principles for clinical education during the COVID-19 pandemic.

We wrap up the month with an AiM boot camp for 20 students, to complement the eWorkshops – only this time we are onsite, in small groups of 5 students, they spend the morning on a rapid Clinical Skills Refresher to brush up their Cannulation, BLS (including Covid-19 algorithm), Suturing, Catheterisation and Venepuncture skills. A big shout out to Dr James Southwell-Keely, Dr Roger Haddad, Dr Kiane Zou, Dr Hugh Giddings, Dr Ben Tassie and Dr Chaitu Ambati for facilitating and the divine Alex Pile, our incredible clinical nurse who is responsible for coordinating SIM centre access and clinical skills training for Phases 2 & 3.

May 2020
The new normal

We host our first online orientation for Teaching Period 2 as our Phase 3 switch rotations. Outpatients remain closed and telehealth continues. On the bright side, Theatre allows students back to scrub or observe (one student per theatre case) and ED also welcome students back in the Green Zone. There is a brief shortage of PPE, and Dr Gedd forages far and wide to sources two gowns and 10 sets of gloves for our new surgical students for their glove and gown assessment. Bedside tutorials continue to be limited to 2 students plus the tutor. End of term assessments such as Case presentation and Viva Assessment also transition online. We are all a bit zoomed out, so we
host a socially distanced morning tea (5 students at a time) to check in with our senior students.

**June 2020**

**AiM high**

NSW Government starts to relax some of the existing social restrictions previously set in place, however, hospital recommendations for staff/students in regards to internal meetings and gatherings largely remains unchanged.

On 15 June, 24 Assistant in Medicine (AiM) officially commence their contracts, 16 hours a week for 3 months! 12 of those are from UNSW and 12 from UNDA and the students thrive on this new responsibility and sense of purpose.

**July 2020**

**The second wave**

Our neighbouring state of Victoria goes into lockdown and a second wave of the virus seriously strain their community. It is a stark reminder that our freedom can shrink from the ability to travel 5000km across the globe to just 5km within your home town. We continue to observe social distancing and the hospital guideline limits the number of students to one at a time on each ward round, in order to reduce the number of people entering each room at any given time. Mandatory use of masks is introduced within the hospital.

**August 2020**

**Practice, practice, practice for Online OSCE**

We are consumed by the organisation of Phase 3 online OSCE as we prepare examiners, marshals, patients and students for the big day.

As the situation in NSW is stable, we successfully obtain permission from EOC for our Year 3 students to return to St Vincent’s Campus to commence their 11 week Intensive Clinical Block at the end of August.

We finish TP3 on a happy note as our student reps from the UNSW Medicine LGBTQIA+ Working Group organises a socially distanced morning tea with cupcakes and rainbow lanyards, in support of fostering a safe, empowering and inclusive environment for young LGBTQIA+ and gender diverse people.

**September 2020**

**Exams galore**

We successfully execute our first ever Online OSCE – a huge technical processes with hundreds of people working together extraordinarily hard to make sure our students have a fair opportunity to shine and demonstrate they will be competent doctors. Viva Exam and Portfolio Exams are also delivered without a hitch within the St Vincent’s bubble with lots of hand sanitisers, masks and individually packed catering provided.

**October 2020**

**The end is near**

PRINT (Pre-Internship) kicks off with the Big Picture Competition, which had been postponed since March! We enjoy flicking through adventure photos from a time when we were allowed to travel. We manage to deliver PRINT much the same as in previous years, with all onsite clinical skills such as Intercostal Catheter, Lumbar Puncture, Removal of Foreign Body and Joint Aspiration run in small groups. AMA and AVANT also pop by as usual to offer talks and small group lunches for our graduating students.

As Year 5 students prepare for their Biomedical Science Exam, our lovely A/Prof Bill Sewell who has become a wizard at using Black Board Collaborate ran a Virtual Lab Visit to ensure student’s white books are signed off.

**November 2020**

**Gratitude**

We host a big send off for our Class of 2020 at a beautiful venue in Surry Hills. This is a Year 6 celebration like no other, as we go all out with an array of snacks, individually packed canapés, graduation cupcakes and some of our favourite tunes to summarise 2020. We are so proud of our students for surviving and perhaps even thriving, in these turbulent times.

For weeks now, there’s been no community transmission and to our relief, MedFac and EOC approves for our Phase 2 ICE and Phase 1 OSCE to run in person, with appropriate Covid Safety Plan in place.

**December 2020**

**Donut days continue... until a week before Christmas!!**

We are on a mission to assist in bringing back our international students as they hope to return by 2021. Our annual team breakfast is held at Bills. NSW records no community transmission for over 28 days and interstate borders re-open. There’s a rush of relief and we seem to have reached a new relationship with the virus, where each outbreak is closely managed and eventually less disruptive to our lives.

2021 starts as a year of hope.
Bill Sewell’s online farewell

INTENSIVE CLINICAL BLOCK (ICB) - plastering

Wear It Purple Day, socially distanced morning tea

UNSW & UNDA COVID19 Essay Award Ceremony

Mrs Diane Armstrong and Oscar Zou

AiM boot camp - suturing workshop

Dr Darren Gold receiving a gift from a student (Best Surgical Tutor cap)
A reflection on COVID-19 by Dr Jennifer Snaith, PhD candidate. Published in the Internal Medicine Journal, August 2020.

LETTER TO THE EDITOR

General correspondence

COVID-19: It’s changed us

January 2020. Robert (not the patient’s true name) entered my clinic room and shook my hand without hesitation. Aged in his late 60s, he had lived with type 1 diabetes for more than 50 years. I reminded myself how much I cherished seeing the ‘survivors’, so rich in lived experience and archived lessons. Robert’s story did not disappoint.

The memory reel began. His diagnosis as a boy, and the doctor that promised poor likelihood of survival to adulthood. The 100 000 insulin injections needle-d into his skin over his lifetime, tallied during a reflective moment. To survive he initially relied on animal insulin extract, delivered by blunt syringe. He marvelled at the idea of modern automated insulin delivery methods but still preferred pens to an insulin pump. But glucose monitoring options sparked his curiosity the most, since after all, in the beginning he had none. He struggled with glucose lability and grieved the loss of symptomatology of a low glucose event, likely from decades of recurrent hypoglycaemia and impaired metabolic defence mechanisms. On demand measurement of interstitial fluid glucose levels without finger lancing? Magic.

Hypoglycaemia caused him (and me) greatest anxiety. This was unsurprising as his brother, also affected by type 1 diabetes, died following a severe episode. Consequently, Robert checked his capillary glucose levels by finger-prick several times an hour, and throughout the night. He never wanted to fall unconscious again like he did at work a few weeks ago. Together we reflected on the evolution of diabetes management and gave thanks for scientific advancement. I suggested trialling continuous glucose monitoring with alarm capacity to capture and manage hypoglycaemia earlier.

By the end of our consultation, I understood where diabetes fitted within his narrative. With a hint of pride, he planned to show me his Kellion Victory medal at his next appointment in April. Decorated for surviving for 50 years against all odds, this generation of people with type 1 diabetes weathered the journey by resilience, self-management and expert capacity for adaptation.

February 2020. It was business as usual for us. Phones buzzed, laboratory machines whirred and laughter split from the lunch room. We spoke excitedly about travels to an upcoming international meeting and deliberated over where we will fit our growing referrals for diabetes care. We continued to conjure ideas for future research initiatives and fielded calls from volunteers for our active type 1 diabetes projects – their way of ‘giving back’ to science, they said. Our mission to improve the health of people living with diabetes was a slow but important task. We knew that well.

March 2020. A trickle of emails. Local cases. Restrictions on returning travellers. Then a gush. A deluge of updates from health services, universities and governments. It was hard to keep up. The canary in the gold mine for us was the cancellation of international conferences due to anticipated COVID-19 outbreaks, and the requirement for quarantine on return. Overnight, our department, our hospital, our research institute and our university retreated, ready for lockdown. Monday morning battle briefings were instituted. Anxiety was high but messaging was key – a fine balance between overreaction and modelled reality. The restrictions on gatherings progressed from 500 to 2. Meetings outlawed, lunch room cordoned, elbow bumps only please. Videoconferences and online meetings dictated our days, but days felt like weeks. We would wait for the daily announcement of new restrictions until finally, stay at home orders were imposed. Tools downed in the laboratory, the typhoon was coming, and we needed to take shelter. Sydney held its breath.

The overseas accounts were harrowing. We pained for our international colleagues and worried for our own. Would we be asked to join the ranks of our hospital front lines? Apprehension for our patients grew. How would we continue chronic care amid the calamity? We read the data from Wuhan. People with diabetics were among those with the worst outcomes. Our patients understood this too.

They rang. ‘The chemist is out of ketone strips. My insulin supply is running low and I can’t do without it.’ We had colleagues with type 1 diabetes, emergency physicians, surgeons. ‘Am I safe at work?’ they asked.

Overnight, our clinics upheaved. All appointments converted to telehealth, a move that we had advocated for years without success. We talked through our patients’ unease, revised sick day management and posted their prescriptions to their homes. We discussed that there was a lack of data on COVID-19 outcomes in type 1 diabetes, but that metabolic vulnerability was ever-present. We would adhere to common sense.
principles: optimise glucose levels and maintain social distancing.

April 2020. My second appointment with Robert was via video call. He was thriving with his new continuous glucose monitor and felt more confident. His HbA1c had reduced by a whole percent with less hypoglycaemia, after trying the simple measures we discussed in partnership. In fact, he recognised that this consultation format held great potential, especially now that his glucose reports could be reviewed remotely, and that above all, what our appointment needed was good quality conversation.

The year so far has been a confusing whirlwind of change. Feronicity at first, followed by stillness. In Australia, we have been blessed with the gift of time and experience of others not so lucky. Like many, we did not expect the pandemic to change so many aspects of our professional lives and did not expect the turmoil to exert the benefits it has. Our delivery of chronic disease care has evolved. Our relationships with our colleagues are stronger. We have forged new bonds that would have taken decades to develop or may have never developed at all. Yet we are saddened by the delays in our research and lost opportunities to realise our long-term missions.

For our patients, COVID-19 has also brought a new wave of apprehension. We are reminded that for those living with chronic disease, sacrifice and change is nothing new, and often permanent. Akin to a life-altering diagnosis, the events of the first months of 2020 hit us hard. As we realise the chronicity of this pandemic and the uncertainty this creates, we should recognise there are the opportunities to learn from our patients. May we recalibrate and adapt, just as they always have.

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References

Jenny Jiazhen Yang.
Faculty of Medicine COVID-19 essay competition entry.

Discuss the pathophysiology of Covid-19 and theorise why there is a variation in disease severity in the community.

By Jenny Yang (s5025213)

Clinical School: St Vincent's Hospital
Introduction
On December 31, 2019, the World Health Organisation (WHO) was notified by the China Health Authority of a cluster of cases of ‘pneumonia of unknown aetiology’, which first appeared earlier in the month in Wuhan city, in the Hubei Province of China (Harapan et al., 2020). On January 7, 2020, the causative agent was identified to be a novel coronavirus, since named ‘severe acute respiratory syndrome coronavirus 2’ (SARS-CoV-2; formerly 2019-coronavirus [2019-nCoV]), with the disease termed ‘coronavirus disease 2019’ (COVID-2019) by the WHO (Guo et al., 2020). Cases spread rapidly, both within China and internationally, resulting in the WHO declaring this outbreak a Public Health Emergency of International Concern on January 30, 2020 (Harapan et al., 2020).

Coronavirus Family
Coronaviruses (CoV) are a large and diverse group of enveloped, positive-sense RNA viruses (Figure 1), which constitute the orthocoronavirinae subfamily. They are further divided into four genera: α−, β−, γ−, δ−, with the former two tending to infect mammals, and the latter two infecting birds. There are now seven human-susceptible coronaviruses – four causing mild respiratory illnesses similar to the ‘common cold’ (two α−CoV, two β−CoV), and three β-CoV, Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV), Middle Eastern respiratory syndrome (MERS-CoV), and SARS-CoV-2, capable of causing severe or fatal respiratory tract infections (Guo et al., 2020; Harapan et al., 2020).

Figure 1. Structure of a typical Coronavirus (Mousavizadeh & Ghasemi, 2020)
Clinical Presentation of COVID-19

Like the other coronaviruses, SARS-CoV-2 typically produces an acute respiratory illness, with the most common symptoms including fever (88.7%), cough (67.8%), fatigue (38.1%), increased sputum production (33.7%), and shortness of breath (18.7%). Gastrointestinal symptoms such as nausea or vomiting (5.0%) and diarrhoea (3.8%) are less common manifestations (Guan et al., 2020). The incubation period is typically 3-7 days, but can range from 1-14 days (Guo et al., 2020). Chest computed tomography scans are typically consistent with pneumonia (Rothan & Byrareddy, 2020), showing patterns of ground-glass opacity or bilateral patchy shadowing, however some patients may have no radiologic abnormalities (Guan et al., 2020). The severity of symptoms varies significantly, ranging from asymptomatic or mild cold-like illness to severe respiratory failure and septic shock. The classification of disease severity into mild, severe, and critical is shown in Table 1 (He, Deng, & Li, 2020).

Table 1. Classification of Severity of COVID-19 based on Symptoms. Adapted from (He et al., 2020)

<table>
<thead>
<tr>
<th>Disease Severity</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>Non-pneumonia or mild pneumonia</td>
</tr>
<tr>
<td>Severe</td>
<td>Dyspnoea, respiratory rate ≥30/min, blood oxygen saturation ≤93%, partial pressure of arterial oxygen to fraction of inspired oxygen ratio &lt; 300, and/or lung infiltrates &gt;50% within 24-48 h</td>
</tr>
<tr>
<td>Critical</td>
<td>Severe acute respiratory distress syndrome, respiratory failure, septic shock, and/or multiple organ dysfunction or failure</td>
</tr>
</tbody>
</table>

Transmission, Pathogenesis, and Host Immune Response

COVID-19 is believed to be primarily spread via respiratory droplets and close contact with infected persons. However, the detection of SARS-CoV-2 in faecal swabs, coupled with the presence of gastrointestinal symptoms in some patients, suggest the possibility of faecal-oral transmission as an alternative route (Gu, Han, & Wang, 2020; Guo et al., 2020).

Indeed, the pathogenesis of COVID-19 begins with the attachment of the envelope spike (S) glycoprotein to the cell surface receptor, angiotensin-converting enzyme 2 (ACE2), which is found not only on the epithelial cells of the lung, but also in the intestines, kidneys, heart, and blood vessels (Fang, Karakiulakis, & Roth, 2020). Binding to ACE2 facilitates virus entry via fusion of the viral and cell membrane. This is followed by the replication, and transcription of viral RNA, to allow the synthesis and release of viral proteins and virions (Figure 2).
Figure 2. Mechanism of SARS-CoV-2 Cell Entry and Life Cycle. ACE2, angiotensin-converting enzyme 2; ER, endoplasmic reticulum; ERGIC, endoplasmic reticulum-Golgi intermediate compartment. (He et al., 2020)

The course of SARS-CoV-2 infection can be divided into 3 stages: I, an asymptomatic incubation period with/without a detectable viral load, II, non-severe symptomatic period with detectable viral load, and 3, severe symptomatic period with high viral load. These are underpinned by the host immune response. An effective adaptive immune response mediated immunity — consisting of humoral and cell-mediated immunity — during Stage I and II is needed for viral clearance. Thus, these patients experience milder symptoms, and do not progress to severe disease. An inadequate adaptive immune response allows viral propagation and infection of other organs expressing ACE2 (Shi et al., 2020), with persistence of the inflammatory response driven by the innate immune system subsequently inducing a ‘cytokine storm’. This drives a predominantly cell-mediated immune response that results in severe tissue damage (Abdulamir & Hafidh, 2020). Thus, the mechanism of the severe stage of COVID-19 is an excessive inflammatory response, rather than direct cytotoxic effect by the virus (Abdulamir & Hafidh, 2020; Ahmadpoor & Rostaing, 2020). Determining the reason for this variation in individual immune response to
SARS-Cov-2 will thus provide the key to elucidating the variation in disease severity in the community.

**Risk Factors and Variation in Disease Severity**

Subgroups identified as being at higher risk of developing severe disease include the elderly, immunocompromised, and those with co-morbidities such as hypertension, cardiovascular disease, diabetes, smoking, and obesity (He et al., 2020; Minotti, Tirelli, Barbieri, Giaquinto, & Donà, 2020). This is unsurprising given that these populations have weakened immune systems, and thus are more likely to fail to amount an adequate adaptive immune response to eliminate the virus, therefore progressing to severe illness (Abdulamir & Hafidh, 2020). Furthermore, patients with hypertension, cardiovascular disease, or diabetes, are often treated with angiotensin converting enzyme inhibitors or angiotensin receptor blockers, drugs which lead to an upregulation of ACE2, and thus may increase susceptibility to SARS-Cov-2 infection. Ibuprofen can also increase ACE2 expression, thus the potentially worse clinical progression in patients who may have used it in an effort to relieve COVID-19 symptoms (Fang et al., 2020).

Interestingly, whilst immunosuppression increases susceptibility to viral infections in general, after contracting COVID-19, these patients appear to have a milder disease course when compared to patients with other co-morbidities. This is likely due to the ‘protective’ effect of immunosuppression in dampening the excessive inflammatory response underlying the severe stage of disease. The identification of immunocompromised patients as a high risk group is likely confounded by the concomitant presence of other co-morbidities. Indeed, patients in this subgroup without further co-morbidities do not appear to be at higher risk of severe disease (Minotti et al., 2020).

Meanwhile, children with COVID-19 tend to experience a milder disease course, despite their still immature immune system, which makes them more susceptible to severe disease for other respiratory viruses (Abdulamir & Hafidh, 2020). This is likely due to a variety of factors, including the presence of less co-morbidities, lower expression of ACE2, and the ‘protective’ effect of a weaker innate immune response (Abdulamir & Hafidh, 2020; Minotti et al., 2020). In contrast, elderly patients, despite also having a weaker immune response, will nevertheless have a greater reservoir of memory T cells from exposure to other coronaviruses, which may exhibit similarities to some SARS-Cov-2 proteins. This immune memory would thus help drive the excessive inflammatory response (Ahmadpoor & Rostaing, 2020).

Lastly, the individual genome may play a role, as variations in human leukocyte antigen (HLA) loci determines genetic susceptibility to different infectious diseases. Individuals with HLA
molecules that have greater binding specificity to SARS-CoV-2 viral antigens would likely be at advantage in mounting an adequate response to clear the virus during the early stages of disease (Shi et al., 2020).

Conclusion
In conclusion, the presentation and severity of COVID-19 shows significant variability within the community. This is likely due to differences in the host immune response, which is modulated by numerous factors including age, co-morbidities, and individual genetics.
References


Discuss the pathophysiology of COVID-19 and theorise why there is a variation in disease severity in the community.

Student: Nathaniel Bradford  
zID: z5016481

Introduction

Since its initial identification in December of 2019, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has caused a global pandemic with 3.1 million identified cases of coronavirus disease 2019 (COVID-19) resulting in 211,000 identified deaths [1]. The pathophysiology of COVID-19 is similar to the severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV) outbreaks of 2003 and 2012 respectively. It is transmitted primarily by respiratory droplets to the upper respiratory tract. It then enters host cells and can spread locally and systemically. Severity varies for reasons which remain poorly understood.

Pathophysiology

Overview

COVID-19 is caused by infection with the SARS-CoV-2 virus, a novel virus in the coronaviridae family which developed in Wuhan Province, China [2]. The virus is communicated via contact, respiratory droplets and faecal-oral transmission. Initial viral replication occurs in mucosae of the pharynx and nasal cavity before spreading to the lower respiratory tract and other organs [3]. Approximately 5 days post infection, COVID-19 can present with a variable combination of respiratory disorders (rhinorrhea, sternutation, pharyngitis, non-productive cough and pneumonia) and systemic disorders (fever, headache, fatigue, myalgia, lymphopenia, acute kidney injury, acute cardiac injury and diarrhoea) [4, 5]. Death can ultimately result from the progression of infection to an interrelated combination of cytokine storm with resultant acute respiratory distress syndrome (ARDS) and multiple organ injury. A summary of the postulated pathogenesis of COVID-19 is outlined in figure 1 and will be further explored below [6].

The mechanism by which SARS-CoV-2 causes aggressive inflammation is threefold: 1. Rapid viral replication leads to widespread apoptosis of epithelial and endothelial cells with vascular leakage. This results in the release of pro-inflammatory cytokines and chemokines with overactivation of T cells; 2. Viral induced downregulation and shedding of catalytically active angiotensin-converting
enzyme 2 (ACE2) leads to dysfunction of the renin-angiotensin system and augmentation of mechanism 1; 3. Antibody-dependent enhancement (ADE), a process whereby the antiviral neutralising antibodies fail to completely neutralise the virus and instead facilitate endocytosis (by attachment of virus-antibody complex to the Fc receptor on target cells) into immune cells for accelerated replication [7]. ADE is summarised in figure 2 [8]. This aggressive inflammation triggers immune mediated destruction of host tissues leading to both ARDS and multiple organ failure which can ultimately lead to death [9].
Viral entry and replication
SARS-CoV-2 enters the host cells by attaching to the ACE2 receptor with the SARS-CoV-2 envelope spike (S) protein. ACE2 is a widely expressed type 1 membrane protein found in the cardiovascular system, gastrointestinal tract and alveolar type 2 epithelial cells of the lungs among other sites [10].

SARS-CoV-2 is similar to SARS-CoV and MERS-CoV in both clinical manifestations and genetic sequence. The SARS-CoV-2 S protein sequence is 75% identical with the SARS-CoV S protein and the amino acid residues essential for the binding to the ACE2 receptor are retained. Hence, research investigating SARS-CoV remains useful in understanding SARS-CoV-2 pathogenesis, particularly in understanding the population of cells infected [11]. Following viral entry into host cells in SARS-CoV, viral RNA is translated into viral proteins and the viral genome is replicated. The envelope proteins become embedded in the endoplasmic reticulum or Golgi apparatus whilst the combination of viral RNA and nucleocapsid protein form the nucleocapsid. The viral particles are then transported to the cell membrane in vesicles where they are released [12].

Host Immune Response
Following SARS-CoV-2 infection, a two-phase immune response is induced. Initially during incubation and early COVID-19 stages, the adaptive immune response is essential in prevention of disease progression and elimination of the virus. Antigen presenting cells present the viral antigenic peptides by human leukocyte antigen system (HLA) for identification by the virus specific cytotoxic T lymphocytes which proceed to destroy infected cells [13]. The efficacy of the response will be determined by the general health of the infected individual, their specific genetic antiviral immunity profile and medical interventions such as anti-sera.

Failure of initial elimination of the virus allows for overwhelming virus replication and spread to organs with high expression of ACE2 causing extensive immunopathological damage of affected tissue. In this secondary stage of the disease, innate immunity plays the primary role with granulocyte and macrophage infiltration into affected tissues. Damage to cells of the lung parenchyma promotes induction of innate inflammation with increased vascular permeability mediated by proinflammatory granulocytes and macrophages [14]. The two-phase nature of the immune response in COVID-19 has implications for management with immune boosting encouraged in early disease and targeted inhibition of maladaptive immune responses in the second stage. Figure 3 summarises this proposed mechanism of the two-phase immune response in lung alveoli with SARS-CoV-2 infection [15].
ARDS and multiple organ failure
The most common immunopathological event and cause of death in COVID-19 is ARDS. Affected patients suffer severe respiratory distress with tachypnoea and cyanosis, often requiring mechanical ventilation to ensure adequate oxygen entry into the circulation [6]. Failure of ventilation necessitates extracorporeal membrane oxygenation [15]. ARDS usually results from the uncontrolled systemic release of pro-inflammatory cytokines and chemokines by the immune effector B cells and T cells. Studies conducted in SARS-CoV and MERS-CoV have implicated IL-6, IFN-α, and CCL5, CXCL8, CXCL-10 as commonly elevated cytokines and chemokines in the serum of critically ill ARDS patients compared patients with less severe disease [16, 17]. IL-1 and TNF strongly induce production of hyaluronan in lung alveolar epithelial cells which can absorb 1000 times its mass in water [18]. Hyaluronan deposition impairs oxygen exchange and is seen as “ground glass” appearance on chest CT [15, 19].

Causes for community variation
A puzzling feature of SARS-CoV-2 infection is the tendency for many individuals eliminate the infection after comparatively mild symptoms whilst others progress to severe disease with an immunopathogenic response and possibly death. Three possible consideration are genetic factors, medications and comorbidities.

Genetic factors
The response to the initial phase of infection is determined by the host’s general health and genetic background for specific viral defence. Induction of protective immunity in COVID-19 is determined by binding specifications of HLA molecules on antigen-presenting cells to SARS-CoV-2. Effector T cells
recognise the conformational features of the antigen-binding-grove on the HLA complex with the antigen peptides. Specific HLA subtypes have been identified to predispose to infection in many viral (including HIV, hepatitis B and influenza) and non-viral infectious diseases [20]. HLA haplotype should therefore play an important role in genetic susceptibility to SARS-CoV-2 infection and identification of implicated haplotypes will help to determine individual’s initial susceptibility.

In severe disease, the development of ARDS is also influenced by genetic factors. Expression of over 40 genes have previously been identified as influencing the development or outcome of ARDS including ACE2 [21]. An often-present feature in patients who progress to ARDS is the production of neutralising antibodies early in the disease [22]. A possible mechanism for this phenomenon is a genetic predisposition to both early and suboptimal production of anti-viral neutralising antibodies leading to ADE. The result is facilitation of viral replication both systemically and in the lungs [6].

Medication
The main medication controversy in COVID-19 has been angiotensin converting enzyme inhibitors (ACEI) and angiotensin receptor blockers (ARB). As SARS-CoV-2 enters host cells via ACE2, it has been suggested that ACEI and ARB use in hypertensive and diabetic patients (as well as thiazolidinediones and ibuprofen) which may cause upregulation of ACE2 could increase infection and severity of COVID-19 [23]. Contrary to this proposed mechanism, it has been suggested that renin-angiotensin system (RAS) inhibition may reduce the activation of type 1 angiotensin receptors by angiotensin II. This will cause enhanced conversion of angiotensin II into angiotensin 1-7 by ACE2 and reduce inflammatory lung injury. The two competing theories are summarised in Figure 4 [24]. Given the existence of two differing mechanisms of RAS inhibition in COVID-19 with diametrically opposed outcomes, there is a need for further research. The lack of existing evidence has led multiple relevant societies internationally to recommend continued compliance to antihypertensive regimens [25-27].
Pre-existing conditions

Pulmonary disease, cardiovascular disease, renal disease, diabetes and hypertension have all been associated with more severe COVID-19 and higher mortality, especially in older populations. As both severity of COVID-19 and prevalence of comorbid conditions increase with age, it is difficult to isolate the implicated condition and determine the degree to which it influences outcomes [28]. Wu et al. found that whilst increased age was associated with development of ARDS and progression to death (most likely due to reduced immune function with aging), comorbidities were associated with development of ARDS alone and did not independently increase mortality (n=201) [29]. This finding is supported by a recent study (n=4103) conducted by Petrilli et al. which utilised linear regression (unlike many previous studies [30-35]) to investigate hospitalisation and critical illness in COVID-19. It was found that age >65 and comorbidities were powerful predictors of hospitalisation but not of critical illness when compared to inflammatory markers on admission. Age had a greater influence than any comorbidities for critical illness (Age 65-74: OR=1.88, CI 95%=1.20-2.95; Age >75: OR=2.57, CI95%=1.62-4.11). Notably, obesity (a pro-inflammatory condition) had substantially higher association with critical illness (BMI 30-40: OR=1.38, CI=1.03-1.85; BMI>40: OR=1.73, CI=1.03-2.90) than any other chronic conditions including pulmonary conditions and cardiovascular conditions [28].

Figure 4. Competing theories on the role of RAS inhibition in COVID-19. Above: RAS inhibition leads to increased ACE2 expression and SARS-CoV-2 entry. Below: RAS inhibition leads to increased angiotensin 1-7 and reduced inflammation. Adapted from South et al. (2020) [24].
Conclusion

The pathophysiology of SARS-CoV-2 is similar to SARS-CoV-1 and other coronaviruses. ACE2 entry into host cells significantly defines the presentation and complications of COVID-19. Whilst many individuals overcome initial infection, some will progress to ARDS and multiple organ injury which may lead to death. Advanced age is the most important predictor of poor outcome. Comorbidities (especially obesity) are also influential whilst the role of medications and genetics remains unclear.
References


Sathai Sushil.
Faculty of Medicine COVID-19 essay competition entry.

Discuss the pathophysiology of COVID-19 and theorise why there is a variation in disease severity in the community.

On 11th March 2020, the World Health Organisation declared COVID-19 a pandemic after the outbreak of the novel coronavirus (SARS-CoV-2) had caused an alarming level of spread and significantly impacted societies around the world (United Nations, 2020). There are seven coronaviruses known to date, out of which three of them (MERS-CoV, SARS-CoV and SARS-CoV-2) are associated with greater mortality (Zimmer, 2020). Although SARS-CoV-2 has a lower mortality rate than MERS-CoV and SARS-CoV, a greater number of people have died from SARS-CoV-2 than the other two combined (Zimmer, 2020). This is potentially due to the presymptomatic transmission of SARS-CoV-2, which has allowed for a greater transmission of the disease by individuals who are not in isolation as compared to the other two viruses, which are spread less efficiently only by symptomatic individuals (Woodward, 2020a).

SARS-CoV-2 is an enveloped, positively charged, single-stranded RNA virus and like MERS-CoV and SARS-CoV, it enters cells by binding to angiotensin-converting enzyme-2 (ACE-2) receptors (Tian et al., 2020). The pathogenesis of COVID-19 involves two overlapping phases, the viral phase followed by the host response phase. It can be described with reference to the three stages included in figure 1 (Siddiqi & Mehra, 2020). The incubation period for COVID-19 can be anywhere between 2 and 14 days, with a median of 5.1 days from the point of viral exposure (Newman, 2020).

During the early infection stage, SARS-CoV-2 binds to ACE-2 receptors on respiratory and small intestine epithelium, resulting in mild respiratory symptoms such as a dry cough, gastrointestinal symptoms such as diarrhoea and nausea, and constitutional symptoms such as malaise, headaches and fevers. At this stage, clinical management typically involves providing patients with symptomatic relief (Siddiqi & Mehra, 2020).

As the infection progresses to the pulmonary phase, viral multiplication and localised lung inflammation occurs, during which patients develop viral pneumonitis and present with symptoms...
such as a cough, dyspnoea and fevers. At this stage, bilateral infiltrates or ground-glass opacities are noted on CT imaging (Siddiqi & Mehra, 2020).

A small proportion of COVID-19 patients will progress to the third and most severe stage characterised by hyperinflammation. While this stage is associated with lymphocytopenia, it has been hypothesised that leukocytes other than T cells release a large number of inflammatory cytokines, resulting in a cytokine storm that culminates in acute respiratory distress syndrome (ARDS) (Li et al., 2020). ARDS caused by COVID-19 has appeared to have a worse prognosis than ARDS from other causes, with a mortality rate up to 61.5% as compared to a mortality rate of up to 40% in typical ARDS (Gibson et al., 2020). At this stage, management could involve giving patients immunomodulatory drugs to suppress their systemic inflammation. If they are in respiratory failure, they might also require mechanical ventilation (Siddiqi & Mehra, 2020).

Age is a significant predictor of the prognosis of COVID-19, where mortality rates in China ranged from 0.0016% in children under 10 years old to 7.8% in individuals over 79 years old, and similar rates were observed in New York (Rossman, 2020). Older individuals are likely to experience greater disease severity due to immunosenescence, an age-related decline and dysfunction in immune function, which causes them to be deficient in cytotoxic T lymphocytes and natural killer cells which are necessary to control the infection in the early stages (Rossman, 2020; Zheng et al., 2020). Failure to clear the pathogen in the earlier stages results in progression to the hyperinflammation phase, where immune cells other than lymphocytes are likely to cause a cytokine storm, potentially resulting in ARDS, multi-organ failure and subsequently, death (Shi et al., 2020; Zimmer, 2020). Elderly also experience physical changes that weaken their coughing strength and the cilia function on their respiratory epithelium, which results in trapping of mucus in their lungs (Thompson, 2020). Moreover, older individuals tend to have comorbidities, such as chronic lung disease, heart disease, hypertension and diabetes, which are associated with a worse disease prognosis (Thompson, 2020), as discussed later in the essay.

On the other hand, children typically have a less severe disease presentation and are asymptomatic or present with milder coryzal symptoms and fevers. A plausible cause for this could be the greater presence of ACE-2 receptors in children’s upper airways as compared to their lower airways, causing them to present with symptoms typical of an upper respiratory tract infection (Fernandes et al., 2020). Children are also less likely to be severely ill with COVID-19 due to their immature immune systems that are less capable of mounting cytokine storms, which have been associated with ARDS and multi-organ failure in adults (Fernandes et al., 2020). However, there have been young healthcare workers who have died from COVID-19, potentially due to the exposure to greater viral loads as compared to the general public, and the lack of appropriate personal protective equipment (PPE) when treating infected patients (Gupta, 2020; Woodward, 2020b).

Cardiopulmonary comorbidities are also associated with an increased mortality risk with COVID-19. Based on previous research on SARS-CoV, it was demonstrated that the virus directly damages cardiac tissue due to the expression of ACE-2 receptors on cardiac muscle. This is likely to have a worse impact on patients with cardiopulmonary comorbidities as they have a reduced cardiac functional reserve and thus, are at an increased risk of cardiac insufficiency (Zheng et al., 2020). There is also a hypothesis that angiotensin-converting enzyme inhibitors or angiotensin II receptor blockers, which are used by most patients with hypertension or cardiovascular comorbidities, could significantly increase mRNA expression of ACE-2 receptors, resulting in more receptors for SARS-CoV-2 to gain access through in patients with cardiovascular disease (Sommerstein et al., 2020; Zheng et al., 2020).
Moreover, genetics has been proposed to influence disease severity. There are genome-wide association studies that are currently being undertaken to investigate how variations in the genetic code are associated with disease severity (Molteni, 2020). A particular focus has been the gene that codes for ACE-2 receptors as there is ongoing research to investigate if variants of this gene might influence whether the ACE-2 receptors have lower or greater affinity for SARS-CoV-2 to bind to and invade host cells (Gupta, 2020).

Evidence has also shown that the mortality rate from SARS-CoV-2 has been higher for males than females. A proposed hypothesis is that the gene coding for ACE-2 receptors is located on the X chromosome (Zimmer, 2020). Since men only have one copy of the X chromosome, variations in genes that increase the affinity of ACE-2 receptors for SARS-CoV-2 would have a more significant effect in males than in females (Zimmer, 2020). However, more research is required in this area. The higher mortality rate for men could also be explained by the fact that more men smoke and thus, might have pre-existing damage to their respiratory tracts and cilia function (Zimmer, 2020).

Despite the notable global impact of COVID-19, there are significant variations in disease severity between regions and countries. Research has demonstrated that the virus has mutated into more than 30 strains that are capable of generating different levels of viral load, making some strains much more potent than others (Chen, 2020). Given that researchers have identified a deadlier strain of SARS-CoV-2 in Europe and New York (Chen, 2020) this could explain why there have been more severe disease presentations in these regions as compared other countries. Another cause for the variation in disease severity would be the extent of air pollution in different regions, which is known to harm cardiovascular and respiratory health and could increase the risk of mortality with COVID-19 due to pre-existing compromise in cardiovascular and respiratory functioning in the patients (Resnick, 2020). A key factor that would influence disease variation is the ability of medical systems to cope with a surge in COVID-19 patients due to the strain placed on their resources, such as PPE, testing kits, ventilators and medical professionals (Amaro, 2020). That being said, countries with good medical systems have suffered tremendously due to their demographics and culture. For instance, despite having an excellent medical system, COVID-19 has had devastating consequences in Italy as it has one of the largest ageing populations in Europe and has a dense population (Belligoni, 2020). This, coupled with their culture of intergenerational living, has resulted in a high proportion of elderly being exposed to the virus by the younger members of their communities, who might present as asymptomatic carriers (Blanchard, 2020).

While there is evidence of variation in disease severity in the community, more concrete research on risk factors which predispose individuals to severe disease progressions is needed, as it would enable us to identify and protect high-risk groups by providing them with masks or prioritising them for testing services (Resnick, 2020). Ultimately, it is the development of an effective vaccine that would prevent rapid viral transmission. However, this is likely to be lengthy process, given that vaccines require multiple large-scale clinical trials to investigate their safety and efficacy before they can be rolled out to the public (McKie, 2020).

Word count: 1,497 words

References


Events 2020

Year 6 Presentation & Farewell

The farewell and presentation event was held in October 2020 to celebrate the final year students in Surry Hills. The students had the option to attend one of two sessions in order to comply with social gathering guidelines. This did not deter the group from fully enjoying the festivities! The night was a lovely end to a rather stressful and year for both the students and School staff.

We wish the class of 2020 all the best for their future careers!
Research Week

The St Vincent's campus Research Week was held in September 2020 and went completely virtual like many of its peers in the COVID-19 inflicted year. The week-long event was well received and many of the Clinical School's affiliated academics, conjoints and students participated in the online workshops and presentations.

For more on Research Week, read the report on page 32.
For most of us, 2020 has been a year like no other. Certainly for our St Vincent’s Campus, the relevance of our Founding Sister’s Mission of responding to community need has never been as relevant. And indeed respond is what we’ve done.

From the Pandemic’s outset in Australia, St Vincent’s played a pivotal role in relation to treating hundreds of patients and screening many tens of thousands. The central components of this rapid response rested on two fundamental characteristics; agility and partnership.

Our Campus was able to scale-up and re-purpose many of our services, we swiftly collaborated with our clinical, research and teaching partners in a unique way that consolidates our reputation for Campus integration.

Of course one of our strongest and most longstanding partnerships has been that between the St Vincent’s Campus and the UNSW Clinical School. There is no coincidence therefore, that as we were facing pressures on our front-line workforce in the face of COVID, UNSW and Notre Dame Clinical Schools stepped-up to partner us to establish the position of Assistant in Medicine (AIM) role.

It was a proud moment for me back in June when I joined the State’s first 25 medical students at the completion of their St Vincent’s AIM course. They have all since gone on to play important front-line roles in assisting the Campus in our Pandemic response.

From our critical care capability to the radically scaling-up of our treatment capacity, to our ability to lead some of the world’s most important research into the long-term impacts of COVID, to the ability of our Campus to initiate and lead community screening at a mass scale – these endeavours have been largely led by our conjoint St Vincent’s-UNSW clinicians.

In our efforts to contain the virus’ spread, many of the Campus’ physical consultations transitioned to online or telephone, otherwise known as ‘telehealth’. Such was the growth in this approach that from January to June 2020, St Vincent’s performed 7,056 occasions of care via telehealth, a significant increase on the 1,853 in 2019.

In parallel, the St Vincent’s expanded telehealth to more than 150 different services and 460 trained clinicians while also establishing a Virtual Care Clinic to safely manage the health needs of COVID-positive patients, with mild symptoms, in their homes.

Early in the pandemic, St Vincent’s was the first site in Australia to offer point-of-care rapid testing for the virus with results available within the hour. More broadly, St Vincent’s was also one of the first hospitals to establish community pop-up clinics to offer large-scale screening with sites at Bondi Beach, Rushcutters Bay and East Sydney, which have processed well over 100,000 COVID tests.

In relation to research, our Campus continues to go from strength to strength, from trials in the optimal delivery of homeless health, to phase 1 cancer trials to dry-blood spot testing for certain infectious diseases.

Perhaps not since our role in responding to HIV in the 1980’s has the St Vincent’s Campus’ focus on integrated research been so resolutely illustrated. Currently there are over 17 separate COVID trials being undertaken by St Vincent’s in conjunction with our research partners the Victor Chang, Garvan, Kirby, Nursing Research Institute and our clinical partners St Vincent’s Private and St Vincent’s Clinic.

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This collaboration has seen the Campus leverage the unique skillsets of our individual parts to deliver collective gains – in doing so attracting important research grants. No more so than the ADAPT study - longitudinal study on COVID patients – which has rightly attracted extraordinary media interest – given the important light it is shedding on some of the long-term impacts of COVID.

Beyond, COVID the strength and collaboration of our research across St Vincent’s has continued to flourish, particularly as we galvanise our status as one of Australia’s leading precision healthcare facilities.

Epitomised by a ground-breaking genomic research project led by Dr Kathy Wu and the St Vincent’s Clinical Genomics Unit exploring pharmagenomics, which recently secured $2.95 million as part of the
Commonwealth Government’s $20 million additional funding for mental health.
The St Vincent’s project, which is Australia’s first multicentred double-blinded randomised controlled trial will trial genotype-guided versus standard psychotropic therapy in moderately-to-severely depressed patients.

Over at the St Vincent’s AMR, we witnessed the multidisciplinary team of researchers from St Vincent’s Hospital Sydney and Macquarie University identify a way to modulate an important biochemical pathway involved in inflammation - the Kynurenine pathway (KP) - and prevent brain inflammation and degeneration.

The capacity to modulate the KP has significant ramifications particularly for preventing the progression of Multiple Sclerosis (MS) from an inflammatory condition to degeneration.

As I acknowledge the importance of our collaborations, I want to especially welcome Professor Jason Kovacic to his first Research Week. Jason was appointed Executive Director of the Victor Chang Cardiac Institute and the ability of the Chang to recruit someone of Jason’s calibre to lead the Institute is indicative of their international status as a genuine leader in cardiac research.

Still on collaborations, we are delighted that our foundation membership alongside UNSW, of the Sydney Partnership for Health, Education Research and Enterprise (SPHERE) is continuing to reap terrific rewards for the St Vincent’s Campus, particularly SPHERE’s translational fellowships where our clinicians are undertaking invaluable collaborative projects in a wide array of fields.

In relation to our Campus Masterplanning to ensure we have the right infrastructure and buildings to future-proof our Campus, we were delighted in September to receive $25 million in Stage 1 funding from the State Government to commit to our Cahill-Cater Redevelopment.

The $400 million plus project represents the clinical expansion within existing Hospital buildings, the demolition of the existing Cahill-Cater building and its replacement with a new building.

This proposed redevelopment provides the optimal solution for St Vincent’s to meet our rapidly growing ambulatory and inpatient demand, at the same time as further growing our research. The project will implement innovative ambulatory & virtual healthcare delivery models, and establish our long-envisioned St Vincent’s Heart Lung Vascular Institute, a Precision Medicine centre, a clinical trials unit, and a central infusion centre, additional operating theatres & procedural rooms, inpatient mental health facilities, as well as expanded imaging and pathology services.

During our Campus Masterplanning, we also identified West St as a priority building development to be progressed to create a new hub of innovation and learning, bringing together researchers, industry partners, educators, students and support staff together on the research precinct. I have no doubt, the West St development will prove an important boost for the Clinical School.

There can be no doubting that the past year has seen our Campus face some of the greatest challenges in its 163 year history.

The impact of COVID-19 has forever changed the way our hospital works. Not only did we rise to the challenges, but we maintained, and indeed grew many of our core clinical endeavours throughout the challenges posed by the Pandemic.

As I conclude this Foreword, I want to draw on the work of Prof Lesley Campbell who recently retired having commenced on the Campus in 1974, went on to hold many clinical leadership roles here. Her impressive clinical and research contribution to the Campus was matched by her teaching association with the Faculty of Medicine at UNSW.

This Pandemic year has been an inspiring one, from the point of view of the leadership qualities we have witnessed in those who have led our response, so I think it’s poignant to note that in her teaching and supervising of medical students at all training levels, Lesley served as a mentor for many young and upcoming physicians and a role model for other, particularly female, trainees who have modelled their careers on hers. She supervised and fostered the careers of over 20 PhD and postdoctoral candidates including Katherine Samaras, Jerry Greenfield, Tania Markovic, Adamandia Kriketos, Leonie Heilbron and Dorit Samocha-Bonet.

Our Campus is regarded as a jewel of the Australian clinical, research & teaching landscape – and it is the likes of Lesley Campbell and our association with UNSW – that has helped galvanise this reputation.
St Vincent's Private Hospital & Clinic

Geoff Alder
CEO, St Vincent’s Clinic
Tim Daniels
CEO, St Vincent’s Private Hospital

St Vincent’s Private Hospital Sydney and St Vincent’s Clinic are very proud of our long-standing involvement with the UNSW Clinical School. For over many years we have been helping to provide practical clinical experience in private sector settings to UNSW students, along with their fellow medical and nursing student colleagues from Notre Dame University and partner universities. Our involvement allows students to complement their theoretical studies with real world experience in real world situations in some of the best health facilities and under the guidance of some of the most recognised doctors in Australia.

Once again, SVC awarded a prize for the best student’s Independent Learning Project. We congratulate the 2020 recipient, Arun Shrestha. Arun’s study was on “Investigating cooperating oncogenes that drive acute leukaemia” under the supervision of Dr Timothy Molloy and Prof David Ma. We wish Arun the best of luck in all future endeavours.

SVPHS and SVC are also pleased to congratulate Dr Emily Granger who was awarded the SVC Tutor of the Year prize.

In 2020, a number of doctors from SVPH and SVC, representing a number of specialities, and students participated in the UNSW St Vincent’s Clinical School programme. Many of the doctors at the Clinic have obtained the title of Associate Professor or Professor as a result of their involvement with UNSW.

We look forward to working together with UNSW and its students for many years to come.
The global impact of COVID-19 pandemic has been the story of the year. Everyone has been affected. Not surprisingly the impact on the postgraduate programs on the St Vincent’s campus has been dramatic and far-reaching. While many of these effects have been short-term, there will be after-effects for the years to come. Wrapped within the negative effects are, however, some positive changes. As all will know, the universities, including UNSW are trying to address the severe financial shortfalls which has led to some organisation change. The Faculty of Medicine is looking to move to a model of precincts to deliver teaching and research, which is already the current model at St Vincent’s. There was a major restructure at the Graduate Research School, which complicated 2020, which is now complete.

In response to the pandemic, many research programs shifted their focus to address the new challenge. The Garvan Institute and St Vincent’s Hospital, particularly the Immunology and Infectious Disease programs, have made inroads into our understanding of the virus and its consequences. Specifically this relates to: therapeutics, including engineering antibodies for COVID-19 protection and treatment; searching for genes key to COVID-19 protection; tracing coronavirus evolution; visualising the 3D shape of SARS-CoV-2 viral proteins; and the ADAPT study of longer-term COVID-19 patient follow-up.

This has led to funding and high-impact publications.

COVID-19 also led to the accelerated uptake of online resources. At the postgraduate level this has led to improved flexibility, particularly the Research Progress Reviews (RPR) meetings. In June an examination module was added to Graduate Research Information System (GRIS), which has further streamlined the candidature pathway. This now means that the entire candidature journey is online which, hopefully, means the processes becomes more efficient and transparent. The examination module on GRIS allows the online processing of the examination from the Notification of Examination, approval of examiners, examination and rebuttal finalisation. This is all a positive step in the improved management of HDR students at UNSW.

While Australia has done incredibly well the negative impact of the virus, however, has been significant, particularly on other research programs, supervisors and students. During the early phase of the pandemic the medical research centres and hospital-based researchers had to stop or slow research, particularly clinical programs. The delays added to the stress of HDR students, in particular those nearing completion. UNSW tried to mitigate the impact of COVID by providing HDR Completion Scholarships to extend
scholarship support. So far, there has been excellent uptake of these scholarships. Obviously, travel restrictions led to a dramatic drop in international students, who could not enter the country and reduced face-to-face interaction between collaborators. In response, UNSW permitted external enrolment in PhD programs.

Despite the impact of COVID, 33 HDR students commenced in 2020, an increase on previous years, a sign of vitality with the research programs on the campus. Currently, there are 112 students actively enrolled and there were 10 completion in 2020. At a local level we have had successes. A new initiative was introduced by Professor Jonathan Morris, the Dean of GRS, to recognise outstanding theses examined in the year. Two St Vincent’s students were recognised: Yolanda Colino Sanguino for ‘Dissecting the role of histone variant H2A.Z acetylation in transcription regulation’; and Pankaj Jain for ‘Assessment of Left Ventricular Contractility and Loading Conditions Under Continuous-flow Left Ventricular Assist Device Support’. Pankaj was also awarded the 2020 St Vincent’s Clinical School Best Thesis Award. In the UNSW Visualise Your Thesis Competition, Jennifer Snaith supervised by Professor Jerry Greenfield was runner-up with her entry: “Can Metformin Treat Insulin Resistance in Type 1 Diabetes?” Finally, Jerry was also recognised with a UNSW Arc Postgraduate Supervisor Award, while Ranita Kirubakaran was awarded a UNSW Arc Postgraduate Student Award.

COVID-19 has highlighted that the St Vincent’s campus and the St Vincent’s Clinical School remains an important centre for medical postgraduate studies at UNSW. Again, I thank Laura Derkenne, the PGC administrator who keeps the HDR candidates and supervisors in order. At the Garvan Institute Dr Tracy Anderson has also been invaluable, while Prof Boris Martinac at the Victor Chang Cardiac Research Institute has provided great support. While 2021 begins as 2020 ended, there is great optimism that through public health interventions including vaccination life as a postgraduate student or supervisor will return to normal in late 2021!
Successful Grant Applications

**RG191474 - National Heart Foundation of Australia/Health Professional Scholarship**
Professor Chris Hayward from 1/01/2020 to 31/12/2022 for $122,100 for “The importance of pulsatility in modern mechanical circulatory support devices”

**RG192218 - Diabetes Australia Research Trust (DART)/General Grants and Millennium Awards**
Professor Trevor Biden from 1/01/2020 to 31/12/2020 for $60,000 for “A novel mechanism for co-ordinating insulin secretion and biosynthesis in pancreatic beta cells”

**RG192226 - Diabetes Australia Research Trust (DART)/General Grants and Millennium Awards**
Dr Yanchuan Shi from 1/01/2020 to 31/12/2020 for $60,000 for “Turning Up the Heat on Obesity and Diabetes, The Role of Y1 Receptors in Brown Fat Activity”

**RG200002 - National Health & Medical Research Council/ EPCDR – Mental Health Pharmacogenomics (MRFF) grant**
Dr Kathy Wu for $2.95M for “An Australian Multicentre Double-Blinded Randomised Controlled Trial of Genotype-guided versus Standard Psychotropic Therapy in Moderately-to-Severely Depressed Patients Initiating Pharmacotherapy”

**RG201926 - Ingham Institute for Applied Medical Research/ SPHERE MSK CAG**
Professor Ric Day from 10/04/2020 to 15/12/2021 for $10,000.00 for “Pharmacist-led Intervention for people with gout(PIN-gout study)”

**NSW Cardiovascular Grant - Early-Mid Career Researcher Grant**
Dr Christopher Stanley for $449,837.50 for “Getting to the heart of sepsis’ – a novel approach to restore patient blood pressure”

**Maridulu Budyari Gumal/Sydney Partnership for Health, Education, Research & Enterprise (SPHERE) Musculoskeletal Health Clinical Academic Group (MSK CAG) Blue Sky Project Funding**
Professor Ric Day for $10,000 for “Pharmacist-led Intervention for people with gout (PIN-gout study)”

**UNSW Medicine Neuroscience, Mental Health and Addiction Theme and Maridulu Budyari Gumal and The Sydney Partnership for Health, Education, Research & Enterprise (SPHERE) CAG Seed Funding**
Dr Julia Lappin, Kathy Samaras and Ric Day for $39,990 for “Feasibility and safety study of dulaglutide for metabolic risk in patients with psychosis treated with clozapine”

**Arthritis Australia National Research Program Project Grant funded by the Australian Rheumatology Association**
Professor Ric Day for $30,000 for “Effect of self-monitoring urate levels on adherence to Allopurinol”

**NHMRC Grant**
Professor Kathy Samaras for $1,998,024 for “Preventing cognitive decline with metformin: a randomised controlled trial”

**Sydney Catalyst Seed Funding Grant**
Dr Brooke Pereira for $50,000 for “Dual targeting of stromal and immunological aberrations in pancreatic cancer by combining periflene inhibition with immunotherapy”

**Sr Mary Bernice, Packer Family Foundation Research Grant**
$120,000
Prof Jerry Greenfield for “Elucidating the immune and metabolic phenotype of autoantibody negative diabetes in adults”

**Kavan Research Grant (for bowel or orthopaedic research) - $50,000**
A/Prof Richard Hillman for “Trial of individually collected anal testing (TICAT)”

**St Vincent Clinic Foundation - Annual Grant - $40,000**
A/Prof Andrew Jabbour for “Implementing and validating a novel method of non-invasive detection of cardiac rejection for the management of heart transplant recipients using high field strength (3T) MRI imaging”

**St Vincent Clinic Foundation - Annual Grant - $40,000**
Prof Reginald Lord for “Evaluating the performance of a three gene hypermethylation PCR assay for the diagnosis of oesophageal adenocarcinoma and high risk Barrett’s oesophagus”

**St Vincent Clinic Foundation - Annual Grant - $40,000**
Dr David Hermann for “Pinpointing and targeting novel drivers of pancreatic cancer progression, invasion and metastasis”
Research Highlights

Researcher Skills Development Program

The inaugural year of the Researcher Skills Development Program for the St Vincent’s Research Campus was a resounding success, with many researchers tuning in live to the online webinars and finding them very useful.

Some webinars are available to watch on replay. For access, please contact the organisers. The main organisers of this program:

- Naomi Arbon – Victor Chang Cardiac Research Institute
- Lowenna Holt – Garvan Institute of Medical Research
- Thuy Huynh – UNSW St Vincent’s Clinical School

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Research Week 2020

With the support of Associate Professor Anthony Schembri (CEO), Professor Terry Campbell (Director of Research) and Associate Professor Philip Cunningham (COO AMR), the St Vincent’s Campus Research Week 2020 was held as a virtual event from Monday 14th to Friday 18th September 2020.

Research Week is a celebration of the remarkable depth and breadth of translational health research undertaken across the Darlinghurst Campus and our sister entities.

The St Vincent’s Research Campus Sydney is one of the largest medical research precincts in Australia and brings together the Garvan Institute of Medical Research, The Kinghorn Cancer Centre, Victor Chang Cardiac Research Institute, Nursing Research Institute, SVH Centre for Applied Medical Research, Kirby Institute and our many prestigious academic partners including UNSW Sydney who was a major sponsor for this year’s event.

The COVID-19 pandemic significantly impacted St Vincent’s Campus Research, with many researchers having to adapt, stop or change their “normal” way of research and trials in labs and the hospital. The result from these challenges? Stronger, braver, resilient and more creative researchers!

The 28th Annual St Vincent’s Research Symposium

The St Vincent’s Research Symposium has been held annually for over 25 years and brings together the brightest minds across the Campus to share their research with peers. It involves a great coming together of prominent healthcare researchers from across the St Vincent’s Research Campus and our academic partners.

This is an outstanding opportunity for campus staff and visitors to celebrate some of the country’s finest medical research and healthcare innovation. This year the program will focus on the 2 broad research fields of COVID-19 and Neurology Research as well as the usual poster and fast forward presentations.

We were excited about this program which had a large input from senior clinicians as well as basic science researchers on this campus as they face this “Brave New World – Brave New Research”.

This virtual event allowed students and researchers to continue to present their research and discuss quality medicine, health, science, allied health, multidisciplinary and translational research. The event involved sessions with questions from the audience and virtual meeting rooms so that participants could engage and network with their colleagues.
Awards and Prizes

Best Student Flash Talk, Sponsored by Illumina: Etienne Masle-Farquhar, PhD Candidate, Garvan Institute of Medical Research. "Egr2 and Egr3 deletion results in clear cell-intrinsic transcriptional changes and expansion of specific B lymphocyte subsets"

People Choice Award, Symposium Fast Forward Presentations, Sponsored by Thermofisher: Catriona Shen, ILP Medical Student, UNSW St Vincent’s Clinical School. “Understanding barriers to correct intravenous drug administrations to improve patient safety”

Best Poster Flash Talk, Sponsored by Illumina: Joel Lasschuit, Staff Specialist, Department of Endocrinology, PhD Candidate, Garvan Institute of Medical Research. “Reliability of a three-dimensional wound camera and correlation with standard ruler measurement in diabetes-related foot ulceration”

Best Student Poster Flash Talk, Sponsored by BD: Louise Baldwin, PhD Candidate, Garvan Institute of Medical Research. “Characterising immune evasive sub-clones of 4T1 breast cancer cells to identify new effective breast cancer immunotherapy targets.”

People Choice Award, Sponsored by Thermofisher: Shona Ritchie, PhD Candidate, Garvan Institute of Medical Research. “Investigating epigenetic dysregulation of p53-educated cancer-associated fibroblasts in pancreatic ductal adenocarcinoma.”

St Vincent’s Campus Research Week Organising Committee

Chair: Ms Thuy Huynh, UNSW St Vincent’s Clinical School
Research Week Organising Committee Members: Brendan Clifford, Dr Christine Shiner, Christopher Hastings, Christopher Rofe, Francoise Liepa, Hayley Shephard, Helena Malinowska, Hilary Higgins, Dr Jane Carland, John Willis, Jonathon Lennon, Julia Owens, Kuet Li, Dr Lauren Christie, Lee Mead, Lisa Singleton, Dr Pamela Blaikie, Patty Zenonos, A/Prof Philip Cunningham, Dr Sophie Stocker, Tanya Pritchard, Prof Terry Campbell

St Vincent’s Research Symposium Organising Committee

Chair: Dr Melissa Mangala, Victor Chang Cardiac Research Institute
Research Symposium Organising Committee Members: Dr Alex Viardot, Dr Eindra Aung, Etienne Farquhar, Dr James Walshe, Dr John Zaunders, Dr Kathryn Wolhuter, A/Prof Philip Cunningham, Sri Meka, Prof Terry Campbell, Thuy Huynh, Dr Valentin Romanov
The year 2020 is the epitome of what Gen Zs would say, “going from 0-100 real quick”.

We had colleagues returning from overseas, waiting to spill their latest tea on their elective break (or general tea, really). Unfortunately for us, the coronavirus decided to drop by and spread goodwill throughout the whole planet Earth. To make things worse, some of our international friends were barred from entering Australia.

Nonetheless, we sought senior advice and did what we should - move on with our lives. To do just that, though, was no easy feat.

For our remaining terms, we were eternally grateful not only for creating lasting memories with our friends but also for the fact that all of the terms in 2020 are not counted towards our overall WAM. Some celebrated, but the rest grieved for we had lost our means to boost our grades.

Huge efforts were made, from trying our best to pass the remaining terms, to trying our best to not pass the ‘rona.

As time went by, our presence on the wards became less prominent, all in the name of social distancing - not to say they were great prior to the pandemic. Being nerds by defaults, most of us took the opportunity to revise for our upcoming exams. One of us lives by the protocol and because of that, he ended up getting swabbed thrice (all of which came back negative) all because of a mere sore throat.

A handful of us were lucky enough to be conscripted by the Hospital, fulfilling the dreams of our inner first-year-medical-student to help the sick and alleviate the pressure faced by frontliners. 12 UNSW medical students along with 12 University of Notre-Dame students banded together to take on the role of the first-ever Assistants in Medicine (AiM). We covered after hours shifts on the wards alongside JMOs and worked in the ED under supervision. It was a fantastic opportunity for us to build our confidence and skills, taking us a step closer to being interns. Also, did we mention we were paid for it too?

Our first token of appreciation goes to our beloved seniors (now JMOs). Without their help, mock vivas would not be a huge success. To some, mock vivas were definitely not the highlight as the vivas came to us as a mockery to our clinical acumen. This was hugely remediated by the bedside tutorials organised by the Clinical School - so thank you Ali, Kate, and fellow Consultants!

Alas, exam season rolled around and the uncertainty of how we would be examined (face-to-face or via Teams) added more stress than needed. Sitting for our exams this year was a unique experience, to say the least. Instead of introducing ourselves with a “Hi, my name is [insert name] and I’m a senior medical student”, we went for the unconventional “Can you hear me?”, “Can you see me now?”, “How about now?”.

Calling for technical help was my favourite because it gave me time to think about the case and also to contemplate as to why I have chosen Medicine as a career.

Due to the support of the faculty, clinical school, and our peers, we survived the rough few weeks of exam. When our final exam - the portfolio exam - was over, we were left with mixed feelings. On one hand, we were happy that we were done with exams. On the other hand, it was bittersweet as it marked the end of 6 years of medical school.
Despite the ‘rona drama, we fortunately passed our exams and off we went into PRINT. PRINT was surprisingly interesting and productive for most, while the rest felt it was emotional since it would be the only time when we could still introduce ourselves as medical students (also the last time we could avoid all questions thrown by Consultants and patients alike). For some, it was a time to learn ‘intern duties’ such as how to survive after hours shift. For others, it was time to party and enjoy the last few weeks left as a medical student.

There was an occasion where instead of trying to get a consult via the phone, we got an impromptu tutorial on how to get one - mortified yet grateful.

Whilst being trained to become a safe and competent intern, we were also given the opportunity to tutor fellow junior students both online and in-person.

Being a huge believer of paying it forward, many of us actively took part in being mock assessors for the BioMed exam for the 5th years, PRINT student tutors for the 4th years and the ICE exam for 3rd years. It was a great opportunity to not just pass on your knowledge but also to realise how far we had all come.

We celebrated the end of Year 6 at the lovely, quaint Bustle Studios with Frozen’s Let It Go playing in the background amongst several other KPop songs. You might think that we concluded the party with a memorable photoshoot but instead, we immortalised our function with a short session of Among Us as we are staying true to our Gen Z persona.

Shout out to Mickey et al for organising the function and congratulations to Lili & Fiona for being awarded the Clinical School Prizes!

Aside from leaving a huge legacy behind, we’ve also gifted a charging station and a seemingly endless supply of high-end bean juice pods. Just promise us if you have any symptom following abstinence from coffee, you need help; but at this stage in medical school, all of us are probably dependent on coffee - we’re just in denial.

We will miss hanging out in the common room, grabbing a good cuppa and sandwiches from the local Deli, Haris and his baking, and of course seeing Chris in his scrubs, gracing us with his enviable computational prowess.

We would like to thank St Vincent’s Clinical School for supporting us through these past 2 years. Special thanks to Ali and Kate for being so supportive and approachable. We will miss you guys! Till then, take care everyone and best of luck with your studies!

Shree & Haris, signing off for the Year 2020!

Shreenithi Meyyappan & Haris Ahmad
Phase 3  
Elective Term

Last Christmas, I visited Cambridge University to do a 1 month elective in cardiac surgery and cardiac transplantation at the Royal Papworth Hospital. Having done my research year at the cardiothoracic department at St. Vincent’s, I was keen to continue my learning at Papworth, the leading heart and lung centre in the UK. I had the chance to work with Professor. Stephen Large, a pioneer of donation after circulatory death in cardiac transplantation, who became a brilliant mentor, role model and travel companion.

Arriving in Cambridge was a breath of fresh air – literally as I got off the train and was blasted with the 5 degree wind chill. I stayed at an AirBnB on the outskirts of the Colleges, halfway between Papworth and Cambridge University. My host was a Haematologist who was also an ex-Cambridge student and he provided invaluable tips on good food and how to weasel my way into College Formals.

My weekdays at Papworth were always eventful but never repetitive. The mornings were usually still dark as I cycled to Papworth wearing full winter gear. On a typical day, I would start by seeing patients before their surgeries – something that Mr. Large impressed greatly upon me. By 8am I’d be scrubbing into surgeries and by 9am a live beating heart would lay before me. The surgeries were complex and amazing, the team very skilful and the hours long. I am most grateful to my soft clogs that saved me from many days of back pain from long days standing by the operating table. My afternoons would involve a mix of attending clinics, doing research work or seeing the afternoon surgeries. Days rarely ended before 6pm. I always made sure to see follow up on patients I had seen that week to check their progress and to have a chat before I left. This was most rewarding.

One of the great benefits of doing an overseas elective was meeting the other medical students from other countries. I had the pleasure of meeting a German student by the name of Christoph who was doing a thoracic surgery elective. Christoph and I would convene for lunch at the cafeteria and our discussions would usually revolve around the interesting cases we saw or more often than not the theatre gossip we had overheard. In the evenings, we often met up to cycle into the city to try new restaurants or to go punting along the Backs. I also met Will, a Cambridge final year student who introduced me to much of college life at Cambridge – including Lacrosse on weekends, lunch at Trinity College and Ghost story nights at St. John’s College.

While at Papworth with Mr. Large, I also had the opportunity to do many clinical things outside the Hospital. One memorable experience was joining a midnight organ retrieval to London. I remember seeing a dead heart come back to life again inside the ‘Heart in a Box’ machine as we travelled at 100km/h in an ambulance back to Papworth. When we arrived in theatre, I will never forget holding the explanted heart of a recipient who was now without a heart but still alive on the operating table. I also spent time doing research with Mr. Large on ex-Vivo perfusion machines and DCD hearts. I had the fortune of joining him on a conference trip to Barcelona, where I saw him and other eminent researchers present on clinical transplantation. The highlight, however was undoubtedly our lunch at Calpep where we enjoyed Riojas and tapas, perhaps a little too much.

My elective was a highlight of medical school and was helped made possible by the Michael Armstrong Prize. I am grateful for the clinicians, especially Mr. Large, and friends that made this trip so memorable.

Oscar Zou  
MLA Prize Winner 2019
**Community Category**  
Sophie Putt – Fire, Sri Lanka

**Elective Category**  
Fiona Johnston – Christ Eye Hospital, Mombasa

**Selfie Category**  
Sina Sobhanmanesh – Kids, Vanuatu

**Travel Category**  
Melissa Cullen – Guattie
Phase 3
Year 5 Students

The silver lining in the dark cloud that was 2020 for 5th year medical students was that we all got an extra medicine placement for free: epidemiology!

Fortunately, the year kicked off with a relatively traditional start, letting us experience Dr Jones’ Socratic grillings on lab values and bear Dr Gett’s disappointment with our woeful phlebotomy skills. Fifth year was exciting, shiny and new, and though we were a bit nervous to be back on the wards, we quickly became accustomed to gratefully accepting our team’s offers of morning coffee (those surgical term 7am starts are tough after a year of luxurious ILP sleep-ins!). Unfortunately, we were just getting the hang of cannulas and were barely making a dent into trying every type of Darlo Deli’s extensive list of sandwiches before we were plunged into lockdown.

As checking case numbers and daily hotspots became a normal part of everyone’s lives, UNSW medical students got a unique insight into healthcare during global health crises, as well as allowing us to continue with our daily lives and responsibilities. Despite limitations to certain placements, teams, teachers and the clinical school went above and beyond to accommodate us on rounds, in tutorials and in theatre.

Despite the abrupt change of pace partway through this year, the cohort remains as strong as ever. There’s nothing quite like shared battles to unite a troop and nothing quite like daily rounds to foster a sense of unity in experience. Friendships were made, bolstered and nurtured through coffee runs, clinics and the knowing nods and eye glances made across the wards to one other as one team sped past another. Social distancing didn’t get in the way of important community events and advocacy either, like Wear it Purple Day, hosted at the clinical school by UNSW Medsoc Queer’s Aziz and Lily to show support for queer and genderqueer students, staff and patients alike.

A huge thank you has to go to Ali and Kate for being so wonderfully supportive and helpful, as well as so lovely to chat to when we’re hovering around the clinical school! Thank you also to all the teams who took time to teach us and for being so kind every time we looked helplessly at a CT. Finally, a big thank you to the sixth years for holding our hands through Biomed – you were so patient and helpful. Although 2020 has been a challenge, we’ve learned so much and can’t wait to be vaccinated and back on the wards in sixth year!

Anneka Parker and Oliver Watson
Phase 2 Students

2020 - the year we didn’t expect but will never forget. What an interesting time for all of us to experience our first true foray into the medical system. It was a year that we entered unprepared and exited slightly more knowledgeable, while everything in-between was just one chaotic blur of uncertainty.

We were let loose in the hospitals and the whole daunting experience began. Getting lost on the wards, tentatively walking up to people hoping they didn’t shoo you away and asking everyone “sorry, are you a doctor? do you have any patients for me to see?” That all sums it up quite well… but then the unexpected happened! A global pandemic joined the fray.

After promptly being booted out of the hospital for apparently ‘not being essential to the functioning of the hospital’ or something pfft... we had a nice long month break before the storm of online learning to come. The discussion went “from where should we meet” to “is this on zoom or teams… what’s blackboard collaborate?” We had to quickly adapt to a more self-directed style of learning and began to miss the osmosis of learning from the hospital environment. New software in abundance we all tried to fill the gap hospital left for us but we couldn’t help but hope to return as soon as possible.

Flash forward past many many months of learning over the web, we luckily got the thumbs up to head back into hospitals for the end of the year. We dusted off the stethoscopes, took out the RMs bought months prior and armed ourselves with rigorous hand washing routines. The “intensive clinical block” as it was called consisted of a super dense, 5-day a week, 11 week block of pure unadulterated learning.

Intensive clinical block - new experiences - 1.5m apart. With masks becoming commonplace on the wards, surgeries going on lockdown, the hospital was certainly a different environment from the one we first entered. Though like a diamond made under pressure, the new stressors of a pandemic led to some amazing opportunities with the Clinical School developing an extensive buddy system with junior doctors. It was such a useful resource for us timid third years and are so grateful to the clinical school for setting it up and the mentors being so willing to give their time up for us.

There are many more oddities to the year and stories to tell about being a third year medical student amidst a pandemic but there’s only so much time! Lastly we wanted to extend a massive thanks to everyone in the hospital. To Ali and Kate - thank you for helping us feel welcomed and supported in this new environment, thanks to the doctors for all their advice and teachings, and to our older year students for the same! And of course to all the patients who were willing to let us speak to them and practice in the midst of a very stressful time for everyone. We are forever grateful and excited to see everyone in future years!

Michael Orjekh & Anju Ramanayake
Phase 1 Students

2020 has been an exceptional year in all our lives. Although much of our clinical teaching was not delivered traditionally, I feel fortunate to have been part of the experience of this first year of medicine.

During each and every one of my hospital sessions, our tutors created a safe and enjoyable learning environment. They exercised an inspiring degree of compromise and adaptation, allowing us to not just salvage these sessions but actually turn them into something unique and valuable. Although many of us were initially reluctant to expose our scruffy bed hair and messy bedrooms, the insistence by tutors for cameras and mics on helped us get closer to our peers, many of whom we were meeting for the first time online. These sessions, where everyone was engaged and answering questions from different corners of the globe, helped to give some semblance of normalcy and often became highlights of the weeks they took place in.

Despite the online format, we still managed to cover various clinical skills, including evolving our physical examination and observation techniques. However, without a doubt we worked on history taking the most. It was really encouraging for me to see an improvement in these areas over the year and, ever so slowly, the anticipatory butterflies before presenting a history in front of the class faded. There were so many skills and considerations in regards to patient interactions that I had been oblivious to prior to this year, and no doubt we have just been exposed to the tip of the proverbial iceberg. It fills me with excitement at the prospect of delving deeper into these areas and eventually obtaining skills that truly make a difference to the care of people in a clinical setting.

I personally feel indebted to the tutors and organisers of all our hospital sessions who worked through the challenges of online delivery. Week in week out they would step up, giving us both general advice and pushing us to not become complacent or frustrated by our inability to visit the hospital.

I think I can comfortably speak for all students when I say thank you very much to the St Vincent’s Clinical School team, we appreciate all you have done for us and the logistical challenges you guys overcame during the year to still deliver us memorable and useful learning experiences. I am sure when we soon make it back into the hospitals (fingers crossed) that we will get to say thank you to our tutors in person and continue our development as future medical practitioners.

Nicholas Shalaby
Honours & Independent Learning Projects

**Project:** Prevalence of gout in people undergoing heart and lung transplantation: a systematic review and meta-analysis  
**Supervisors:** Prof. Ric Day & Dr Laila Girgis  
**Student:** Benedict Chui

**Project:** The effect of GLP-1 agonists in pre-clinical rodent models of Parkinson’s Disease: A systematic review and meta-analysis  
**Supervisors:** Dr Stephen Tisch & Prof. Jerry Greenfield  
**Student:** Simran Dahiya

**Project:** The role of rapid genetic testing in preoperative planning for breast cancer patients  
**Supervisors:** Dr Anthony Chambers & Dr Warren Hargreaves  
**Student:** Patrick Dodd

**Project:** Novel transcatheter interventions for uncommon cardiac pathologies  
**Supervisors:** Prof. David Muller & Prof. Christopher Hayward  
**Student:** Lachlan Dowling

**Project:** ‘What drugs are they really taking?’ - Festival wastewater analysis and on-site survey of festivalgoers  
**Supervisors:** Dr Jonathan Brett & Dr Krista Siefried  
**Student:** Amy Healey

**Project:** Development of Donor-Recipient Matching Algorithm for Lung Transplantation in NSW  
**Supervisors:** Dr Mark Connellan & Dr Emily Granger  
**Student:** Zhao Hua Qin

**Project:** Investigation of airway oscillometry indices in post-lung transplantation: a cross-sectional assessment  
**Supervisors:** A/Prof. Marshall Plit & Dr David Darley  
**Student:** Joan Sim

**Project:** Decision Support for Tacrolimus: What is the best population pharmacokinetic model available to guide tacrolimus dosing in lung transplant patients?  
**Supervisors:** Dr Sophie Stocker & Dr Jane Carland  
**Student:** Rani Singh

**Project:** Defining eosinophilic subpopulations in chronic rhinosinusitis  
**Supervisors:** Prof. Richard Harvey & A/Prof. William Sewell  
**Student:** Andrea Sit

**Project:** Understanding the pathogenic evolution of IGHV4-34 autoantibodies in Autoimmune Haemolytic Anaemia  
**Supervisors:** Dr Joanne Reed & Prof. Robert Brink  
**Student:** Kristen Srethbhakdi

**Project:** Capsule endoscopy in 2020: clinical applications and utility - with illustrative case reports  
**Supervisors:** Dr Robert Feller & A/Prof. Mark Danta  
**Student:** Keane Tan
Project: The impact of Aspirin, NSAIDs and Anti-platelet Therapy on the Incidence and Recurrence of Hepatocellular Carcinoma (HCC)
Supervisors: A/Prof. Mark Danta, Dr Joanne Joseph, Dr Ian Lockart & Dr Christina Abdel Shaheed
Student: Regina Tan

Project: Diabetes, cognitive impairment: Prevalence in "older" patients attending a diabetes clinic
Supervisors: A/Prof. Roger Chen & Prof. Jerry Greenfield
Student: Timothy Tan

Project: Definitive Radiotherapy for Basal Cell Carcinoma and Cutaneous Squamous Cell Carcinoma of the Ear
Supervisors: Prof. Gerald Fogarty & Dr Dion Forstner
Student: Anthony Tanous

Project: A reliable and often missed cardinal sign of psoriasis
Supervisors: Dr Liang Joo Leow & Dr Vicki Howard
Student: Natalie Teh

Project: The Effects of Two Layers of Graduated Compression Stockings on Superficial Tributary Veins
Supervisors: A/Prof. Kurosh Parsi & Dr David Connor
Student: Samuel Thoo

Project: Flow cytometry of T cell malignancies
Supervisors: A/Prof. William Sewell & Dr Joanne Joseph
Student: Linh My Thi Tran

Project: The role for Nailfold Capillaroscopy (NFC) in the diagnosis of Interstitial Pneumonia with Autoimmune Features (IPAF) and Connective Tissue Disease ILD (CTD-ILD)
Supervisors: Dr Laila Girgis & Dr Christina Abdel Shaheed
Student: Eshwar Umashankar

Project: Therapeutic drug monitoring for patients with tuberculosis "TDM for TB"
Supervisors: Dr Anthony Byrne & Dr Danijela Kocic
Student: Ryan Wong

Project: Cervical cancer screening on dried menstrual blood samples
Supervisors: A/Prof. William Sewell & Dr Susan Britton
Student: Edward Wroughton

Project: Metabolic Monitoring of the Microbiome in Gastrointestinal Disease Study (3M-G study)
Supervisors: A/Prof. Mark Danta, Dr Catherine Burke & Dr Gabrielle Wark
Student: Phui Yeng Chee

Project: Understanding Barriers to Correct Intravenous Administration - a mixed-methods study on patient safety
Supervisors: Dr Sophie Stocker & Prof. Ric Day
Student: Catriona Shen

Project: Diabetes and Fractures: Clinical Characteristics, Risk Factors and Role of Hypoglycaemia
Supervisors: A/Prof. Roger Chen & Prof. Jerry Greenfield
Student: Shenani Weerasinghe
School
Conjoint Staff
As at 20 December 2020

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Bruce Brew
Samuel Brett
Robert Brink
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Lesley Campbell
Andrew Carr
Jackie Center
Susan Clark
Peter Croucher
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Bernard Haylen
Christopher Hayward
Herbert Herzog
Anthony Joshua
Anne Keogh
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David Muller
Christopher Ormandy
Michael O’Rourke
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Judith Freund
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Shane Grey
Richard Hillman
Cameron Holloway
Andrew Jabbour
Graham Jones
Cecile King
Eugene Kofylyar
Dennis Kuchar
Sarah Kummerfield
David Laybutt
Joseph Lee
Cindy Ma
Romesh Markus
Timothy Mercer
Ann McCormack
John Moore
Michael Neil
Marina Pajic
Marshall Plit
Nicholas Pocock
John Raflos
Darren Roberts
Justin Roe
Anthony Schembri
Carsten Schmitz-peiffer
Jacob Sevastos
Leon Simons
Clare Stizraker
Philip Stricker
Rajesh Subbiah
Alexander Swarbrick
Stephen Tisch
Alexander Viardot
Margot Whitfield
Deborah Yates

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Tracy Anderson
Mandy Ballinger
Erez Ben-Menachem
Melinda Berry
Sandy Beveridge
Nigel Biggs
James Blackburn
Jonathan Brett
Hergen Buscher
Anthony Byrne
Catherine Caldon
Jeng Chan
Gavin Chapman
Daniel Chen
Svetlana Cherepanoff
Venessa Chin
Tatyana Chitanova
Arcady Cipponi
Rachel Cear
Robert Feller
Douglas Fenton-Lee
Gerald Fogarty
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David Gallego-Ortega
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Astrid Magenau
Inken Martin
Ashisa Mehta
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Marcia Munoz
Kavitha Muthiah
Priya Nair
Yoshitaka Nakayama
Andrew Nguyen
MArk Nichols
Gary Nichols
Samantha Oakes
John O’Neill
Gregory O’Sullivan
Shari Parker
Kate Patterson
Andrew Philip
Sandy Pineda Gonzalez
Paul Preisz
Min Ru Qiu
Joanne Reed
Iromi Samarasinghe
Don Samocha-Bonet
Davina Seah
Peter Schofield
Christina Shaheed
Yanchuan Shi
Vanathin Sivasubramaniam
Timothy Steel
Jennifer Stevens
Alastair Stewart
Sophie Stocker
Emily Stone
Daniel Suan
Clive Sun
Ian Sutton
Jiang Tao
Katherine Tonks
Winnie Tong
Katrina Tonga
Vicky Tsai
Bruce Walker
Bin Wang
Louis Wang
Robert Weatherit
Barbara Withers
Kathy Wu
Tao Yang
Mary-Anne Young
Ze Yan (Jane) Yu
David Zahra
John Zaunders
Lei Zhang

ANNUAL REPORT 2020/67
## 2020 Promotions

### Professor
- Kurosh Parsi
- Louise Emnett
- Steven Faux
- Anthony Joshua

### Associate Professor
- David Muller
- Tri Phan
- Shane Grey (Adjunct)
- Christine Chaffer
- Thomas Cox
- David Croucher

### Lecturer
- Joanna Achinger-Kawecka
- Audrey Adji
- Gonzalo Aguirrebarrena
- Judy Alford
- Abraham Arulanandam
- Yael Barnett
- Nicole Bart
- Linda Borella
- Kathryn Brooke
- Deborah Bumett
- Wai-Ling Chan
- Weixen Chen
- Julia Chen
- Delfine Cheng
- Fionia Chow
- Julia Crawford
- Mark Corbell
- David Conoor
- Osvaldo Contreras
- Rasha Cosman
- Peter Cosman
- Megan Cruikshank
- Monique Cruz
- Daniele Cultrone
- Hartmut Cuny
- Niantao Deng
- Sam Emmanuel
- Qian Du
- Sam Emmanuelle
- Sean Flanagan
- Simon Ghaly
- Anthony Gill
- Joseph Grace
- Jessica Green
- Jake Henry
- Stephanie Hesselson
- Andrew Higgs
- Georgina Hollway
- Eugene Hsu
- David Humphreys
- Karim Ibrahim
- Chi Kin (Kenny) Ip
- Michelle Isaacs
- Arjun Iyer
- Vaibhav Janbandhu
- Farzad Jazayeri
- Renato Johnson
- Simon Junanakar
- Xenia Kaidonis
- Warren Kaplan
- Weng Hua Khoo
- Melissa Kho
- Michael King
- Daniela Kocic
- Joel Lasschult
- Carus Lau
- Nicola Lee
- Julie Leung
- Frank Lin

### Associate Lecturer
- Edward Acczel
- Amer Amin
- Stephanie Armstrong
- Megan Barnett
- Nean Bartonic
- Michael Bennett
- Jonathan Berger
- Julia Bier
- Stephanie Blake
- Richard Binnehrassett
- Lucy Bracken
- Xavier Brennan
- Ricardo Campos Devesa E Silva
- Andrew Casey
- Micheal Chai
- Sophie Chatterton
- Callum Cherrett
- Jessica Chitty
- Kenneth Cho
- Amelia Chowdhury
- Sean Conte
- Patrick Cook
- Bridget Cooper
- Lindi Dansereau
- Matthew Davies
- James Deacon
- Ira Devenyi
- Pietro Di Ciaccio
- Ellen Elizabeth Di Sandro
- James Doherty
- Liam Dwyer
- Jesse Ende
- Julia Fattore
- Javier Fernandez-Chamorro
- Elyse Filipe dos Santos
- Simon Ghaly
- Anthony Gill
- Joseph Grace
- Jessica Green
- Jake Henry
- Stephanie Hesselson
- Andrew Higgs
- Georgina Hollway
- Eugene Hsu
- David Humphreys
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- Daniela Kocic
- Joel Lasschult
- Carus Lau
- Nicola Lee
- Julie Leung
- Frank Lin

### Phuc Loi Luu
- Jennifer Massey
- Timothy Matthews
- Eleina Mayson
- Heloisa Milolli
- Simon Mosalov
- Michael Munik
- Piyushkumar Mundra
- Mayooran Narasivayam
- Chai (Andy) Ng
- Max Nobis
- Abdullah Omari
- Vanessa Paddon
- Andrew Parker
- Ralph Patrick
- Katherine Pierce
- Ross Penglase
- Beatriz Perez San Juan
- Ruth Pidsley
- Alex Pile
- Sean Porazinski
- Amy Prawira
- Patricia Reyes
- Christopher Robinson
- Daniel Roden
- Craig Rodgers
- Santosh Sanagapalli
- Shalima Sasidharan Sasidharan

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- Sean Porazinski
- Amy Prawira
- Patricia Reyes
- Christopher Robinson
- Daniel Roden
- Craig Rodgers
- Santosh Sanagapalli
- Shalima Sasidharan Sasidharan

### Anne Macadam
- Melissa Mangala
- Jack Mangos
- Christopher Masters
- Thomas Meredith
- Georgia McCaughan
- Nicholas McNamee
- Tamara Mildred
- Nilani Mills
- Veronika Molan
- Katherine Moore
- Christopher Muir
- Kendelle Murphy
- Andrea Naim
- Amy Nicks
- Sahar Nosrat
- Kevin O'Gorman
- Amelie Parker
- Adam Pasfield
- Shivani Patel
- Brooke Pereira
- Justin Phan
- Neil Portman
- Kulanka Premachanddra

### Anna Macadam
- Melissa Mangala
- Jack Mangos
- Christopher Masters
- Thomas Meredith
- Georgia McCaughan
- Nicholas McNamee
- Tamara Mildred
- Nilani Mills
- Veronika Molan
- Katherine Moore
- Christopher Muir
- Kendelle Murphy
- Andrea Naim
- Amy Nicks
- Sahar Nosrat
- Kevin O'Gorman
- Amelie Parker
- Adam Pasfield
- Shivani Patel
- Brooke Pereira
- Justin Phan
- Neil Portman
- Kulanka Premachanddra
- Laura Rangel
- Lisa Raven
- John Reeves
- Shane Rendalls
- Alexandra Ricci
- Rys Van der Rijt
- Kirsty Rose
- Nicholas Russell
- Aisha Saikal
- Celine Santiago
- Yarda Sardessai
- Taylor Scott

### Aruna Shivam
- Yah-Wei Sheu
- Sarah Scheuer
- Mandelup Singh
- Yiling Sito
- Ksenia Skvortsova
- Jennifer Snith
- Malhar Soni
- Ning Song
- Christopher Soo
- Matthew Summers
- Jasmin Tilling
- Kristen Thompson
- Thach Tran
- Fiona Tran
- Fionia Tudehope
- Veronica Tung
- Catherine Vacher
- Elise Vissel
- Aleksandar Vukomanovic
- Hannad Wade
- Daniel Wang
- Nicholin Wanigaratne
- Belinda Watson
- Helen Willcox
- Isabella Wilson
- Stephanie Withshire
- Didia Wohr
- Melissa Wright
- Mary-Anne Xia
- Ellen Yeung
- Roland Zhang
- Xin Zhang
- Kiane Zhou


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### Key Dates 2021

**TERM DATES**

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<td>Teaching period M3A</td>
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**EXAM DATES**

| Phase 1 OSCE | 23 & 24 November 2021 |
| Phase 2 ICE | 16 & 17 November 2021 |
| Phase 3 Clinical | 8 & 9 September 2021 |
| Phase 3 Oral | 14 & 15 September 2021 |
| Phase 3 Portfolio | 22 & 23 September 2021 |