



Avant Foundation and Avant Grants Annual Review 2022



Professor Jennifer Philip,
lead researcher for The Royal
Melbourne Hospital, an Avant
Foundation Grant Recipient

Avant Foundation and Avant Grants

Supporting outstanding
research, education and
leadership projects

Chair's message

Dr Michael Wright

MBBS, MSc, PhD, FRACGP, GAICD

General Practitioner, Chief Medical Officer, Avant
and Chair, Avant Foundation



Avant is delighted to support doctors develop their research and leadership capabilities and to gain skills in delivering quality and safety improvements. In 2022, the Avant Foundation and Avant grants programs funded a range of research projects which will contribute significantly to improving quality, safety and professionalism in medicine. Once again, the calibre of applications was exceptionally high and I have been impressed by the desire of my medical colleagues to improve the healthcare system for the benefit of our patients and the Australian community.

In 2022, the Avant Foundation was able to distribute nine grants totalling \$524,783 to charities supporting research or quality improvement projects designed to make a real difference to how medicine is practised. One such example was a project led by the University of Tasmania which was teaching medical students how to deliver telehealth consultations safely and effectively. The Avant Foundation also provided a bursary to the Australian Indigenous Doctors Association (AIDA), which was put towards two Indigenous first year medical students.

Through the Avant Early Career Research Program (Avant's enhanced Doctor in Training Research Scholarship Program that has been running since 2012) Avant provided \$450,000 in funding to 27 early career researchers. This included 13 microgrants specifically supporting smaller projects. In addition, 17 research skills development grants were awarded to provide access to the Stanford Medical Statistics Program, an online education program designed to build essential skills, such as how to ask the right questions and interpreting data.

This was the second year of Avant's Coaching Collaborative program, which brought together previous grant alumni and new microgrant recipients. Through this program we have brought leadership skills in experienced and emerging researchers whose work is focused on advancing quality, safety and professionalism in medicine. Research leaders participated in a professional coaching course, and emerging researchers completed a professional development course, before being matched with a coach, or research leader.

As we look to the future, there are still two avenues to apply for grant funding; the Avant Foundation funds research which is doctor-led but managed by charitable organisations that are Deductible Gift Recipients (DGR), while Avant grants (including Avant's Early Career Research Program) funds individual medical practitioners and practices. In both categories, we are looking for projects with the potential to create sustainable change, enhance patient care and drive continuous medical improvement.

I have been extremely proud to Chair the Avant Foundation throughout 2022 and into 2023. As a researcher with a strong belief in the importance of medical research improving our health system, it is an honour and pleasure to oversee these grants. The Avant and Avant Foundation grant programs demonstrate Avant's commitment to supporting the Australian medical profession and strengthening the role of research in identifying and facing the healthcare challenges and opportunities ahead.

Michael Wright



Supporting doctors to make sustainable changes to medical practice and patient care through research grants, coaching and advocacy."

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Avant Foundation

The Avant Foundation was established in 2017 and focuses on funding initiatives run by charities who are Deductible Gift Recipients (DGR).

With medical practice becoming increasingly complex, the funding the Avant Foundation provide supports research to improve quality, safety and professionalism in the systems and processes in the practice of medicine.

In doing so, the Avant Foundation's objective is to reduce medico-legal risk and facilitate better patient care.

The priority areas for funding in 2022 included:

- Doctors' health and wellbeing
- Telehealth and virtual care
- Fragmentation of care
- Medical leadership/quality improvement leadership
- Understanding patient complaints
- Prescribing, including drugs of dependence and e-prescribing

Avant Foundation
(since 2017)



Avant Foundation's Impact in 2022

As the complexity of healthcare evolves, there is an increasing need for doctors to lead initiatives designed to focus attention on quality, safety and professionalism with a view to improved health outcomes for patients.

In 2022, the Avant Foundation sought to provide funding for charities that:

- Supported academic research that will ultimately influence quality, safety and professionalism in the practice of medicine
- Seeded an interest in quality, safety and professionalism improvements
- Engaged the profession in the broader objectives of quality, safety and professionalism
- Supported doctors to develop capabilities in quality improvement, safety and professionalism
- Supported doctors to develop as leaders and lead change within the healthcare system
- Supported doctors as leaders in healthcare system/medical workplace transformation, with a focus on quality improvement

In 2022, the Avant Foundation distributed nine grants to charities totalling \$524,783.

This includes a bursaries provided to the Australian Indigenous Doctors Association (AIDA) which was put towards two Indigenous medical students through the first year of their medical degree.

Expressions of interest for 2023 Avant Foundation grants opened in November 2022.



Avant Foundation grant recipients 2022

Charities and research projects funded through the Avant Foundation in 2022 included:

Monash Health, VIC

Lead Researcher –
Dr Anthony Rotman

The PARTNER study: Delivering timely, best care using remotely collected patient reported outcome measures

Award: \$19,910

Austin Health, VIC

Lead Researcher –
Associate Professor Mark Howard

Non invasive ventilation (NIV) @ HOME – a quality improvement initiative in the clinical setting (digital communication)

Award: \$99,975

St John of God, WA

Lead Researcher –
Dr Nicole Ghedina

Does introduction of an e-triage kiosk with direct patient data entry improve access to clinical care for patients attending an Australian Emergency Department?

Award: \$50,389

University of Tasmania, TAS

Lead Researcher –
Professor Richard Turner

Teaching telehealth to tomorrow's doctors for better patient safety

Award: \$36,787

Monash University, VIC

Lead Researcher –
Associate Professor
Vincent Pellegrino

A multi-platform clinical training suite to improve artificial heart-lung therapy safety and effectiveness

Award: \$99,975

Austin Hospital, VIC

Lead Researcher –
Dr Andrew Casamento

The use of home spirometry to monitor and manage rural and regional patients with airway stenosis during the COVID-19 pandemic and beyond

Award: \$47,900

Royal Melbourne Hospital, VIC

Lead Researcher –
Professor Jennifer Philip

The PARTNER study: delivering best outcomes in palliative care

Award: \$100,000

St Vincent's Hospital, VIC

Lead Researcher –
Associate Professor Jess Howell

Delivering best practice liver cancer surveillance and care: The PRECISE study

Award: \$40,000

Australian Indigenous Doctors Association

A bursary to support the education of two indigenous medical students chosen by the Australian Indigenous Doctors' Association (AIDA). The bursary is valued at \$15,000 per student and intended to improve quality, safety and professionalism in medicine

Award: \$30,000



Visit avantdifference.org.au
for application information.



Shontae Coyne is one of two Indigenous medical students supported during the first year of their medical degree through Avant Foundation's funding to the Australian Indigenous Doctors Association.

Shontae's passion to help her people improve their health came from her own experience and hardship. Sadly, both of her parents passed at a young age due to health problems, as well as others in her family from heart conditions and diabetes. Her desire to break the pattern of Indigenous Australians dying at a younger age and higher rate than non-Indigenous Australians is the main driver for her to study medicine at university.

Shontae says; "I remember seeing all the kids in my class being picked up by their parents, and thinking "I wish that could be me". My family are my biggest motivators, I want to be strong like my Nan, and brave like my dad. I want to be passionate, loving and kind, patient and inspiring.

“ I want my life experiences to be a reason for my success, rather than an excuse not to succeed.”

"The only way we can see change within the Indigenous community is by making the change happen ourselves. Our elders have been a catalyst for change, and we need to make sure that change continues. I want to see a day where my people don't have to worry about dying 10-17 years younger than non-Indigenous people. I believe that as a proud Noongar woman, I can influence and hopefully inspire this change".

Shontae's desire to give back to her community and increase Indigenous life expectancy by promoting health education led to her successful application to AIDA for a bursary.

The funds Shontae received have helped relieve financial stress and cope with being away from her family. She has used the AIDA bursary to purchase books and technology and contribute to accommodation in college. She says, "Living on campus has made study easier and helped me make friendships that will last a lifetime. One thing I learned is that medicine is a group effort, everyone is in the same boat. I also realised that I needed to stop comparing myself to everyone else in medicine, it is a personal journey; like everyone says it's a marathon, not a sprint. I am so thankful for this opportunity and being able to apply more focus on my studies because of this scholarship."

As well as progressing on her inspirational journey to become a doctor, Shontae has taken an active role in her community through volunteer work and mentoring other students transitioning to high school. Art and dance are important ways for her to connect to her cultural identity and she has been proud to share her story of vulnerability and resilience through the Commissioner for Aboriginal Children and Young People.



Dr Anthony Rotman, lead researcher and ENT surgeon

Avant Foundation grant recipients

Monash Health: Home spirometry to monitor patients with airway stenosis

Telehealth has a myriad of potential benefits, including improving the quality of healthcare. It can also promote the safe timing of intervention before any critical patient deterioration can occur.

This research will examine if the use of home-based spirometry, which is the testing of airway/lung function, and two patient-reported outcome measure questionnaires, are adequate for distanced monitoring in the management of laryngotracheal stenosis.

"Laryngology deals with disorders of the voice, airway and swallow mechanisms," explains Dr Anthony Rotman. "Being able to help patients with these vital functions in a practical way spurred my interest in this area, particularly 'laryngotracheal stenosis', or narrowing of the airway."

Monitoring patients remotely

Laryngotracheal stenosis is a chronic condition which requires multiple hospital visits for direct visualisation of the airway in clinic, as well as intermittent surgical intervention in the operating theatre. This condition and its management persists for many years with significant physical and psychosocial impacts on those affected.

Being able to remotely monitor patients from rural areas with airway stenosis would be a shift in management paradigms, which normally relies on face-to-face review and outpatient endoscopy.

In this study, a hand-held, ultrasonic, bluetooth-enabled spirometer device and patient-reported outcome measures will replace traditional monitoring. Expected improvements related to this project include:

- reduced patient travel time for face-to-face appointments
- reduced cost
- reduced personal exposure to community-acquired infections, including COVID
- reduced discomfort of repeated endoscopic procedures in clinic.

Better quality healthcare

Furthermore, testing will track patient disease in an objective manner, improving quality of healthcare and consequently, reducing the burden on the hospital system. If successful, it will also improve the accuracy of timing of surgical intervention, minimising patient risk of unnecessary anaesthetic and airway interventions and the associated pain and time off work. As a result, this would reduce the burden on the surgical waitlist.



As a practising ENT surgeon with a sub-specialty interest in laryngology and airway stenosis, this research is an important part of my ongoing practice development to optimise care for my patients."

"Spirometry has proven accuracy and if this study can demonstrate the ability to remotely monitor patients, it will permit a safer, more convenient and affordable way for airway monitoring."

While this project will predominantly target rural and regional patients, it can also be used to expand care to metropolitan patients, as well as informing future studies in other forms of laryngotracheal stenosis.

Dr Rotman of Monash Health was the lead researcher of the project that received an Avant Foundation grant. He is an ENT surgeon based at Southern Health in Melbourne.

St John of God: Using e-triage to reduce emergency wait times



Dr Nicole Ghedina, lead researcher and emergency physician

With strained and overcrowded hospital emergency departments (EDs), patients often experience prolonged triage waiting times. This can increase their risk of clinical deterioration prior to accessing medical care, particularly in urgent cases.

Dr Nicole Ghedina is researching how to decrease pre-triage waiting time and improve clinical care for ED patients, using an electronic triage kiosk system with direct patient data entry. This will replace nurse-performed verbal and physical assessment but allow for simultaneous nurse-performed data entry.

"We aim to study whether the introduction of a patient self-registration and triage electronic kiosk decreases the door-to-provider time for ED patients with urgent care needs," Dr Ghedina explains.

"We also plan to review how the introduction of electronic triage kiosks impacts on pre-triage wait time, patient satisfaction, staff satisfaction, time to treatment and clinical outcomes for emergency department patients."

Successful e-triage systems overseas

Dr Ghedina became interested in researching ways to improve triage waiting times after audits showed delays during peak activity times, and observing how e-triage kiosk systems have improved speed of care in overseas hospitals.

The research is being conducted in Dr Ghedina's busy urban district general hospital treating ~77,000 ED patients each year. In a pilot audit, they demonstrated a median triage wait time of 17 minutes, and longer during periods of high demand.

"Triage is a crucial part of the process of emergency department patient care. We were concerned that prolonged wait times may represent a delay to clinical care for people with urgent care needs," Dr Ghedina says.

"E-triage kiosk systems have been introduced in overseas hospitals with improvements in time to care. We plan to implement a patient self-registration and e-triage kiosk system to our ED. This technology has not been widely used in Australia, so we are interested to study the outcomes from the implementation."

Spearheading improvements to ED patient care and outcomes

Dr Ghedina says the Avant Foundation grant will allow this important research to be conducted, improving triage processes in the hospital ED and the services offered to the broader local community.

"We will use the funds to undertake community consultation prior to implementation of the e-triage system, to employ a research assistant to study the effects of the implementation of the system, and to write up and disseminate the results of our study," she says.

"As this is a novel technology in Australia, other EDs may be interested to understand our experience and consider innovations in their own hospitals."

Dr Ghedina of St John of God was the lead researcher of the project that received an Avant Foundation grant. She is the director of emergency medicine research at St John of God Midland ED.



Patients with urgent care needs may be able to access the care that they need sooner. There may also be other improvements in patient safety including the chance to interact with the ED information system in languages other than English."

Dr Ghedina



Professor Jennifer Philip, lead researcher and palliative care physician

The Royal Melbourne Hospital: The PARTNER study: delivering best outcomes in palliative care

Palliative care patients who experience worsening symptoms are often unsure how to seek help. Changing symptoms can herald a change in the illness or a new complication. If recognised early, responses may be put in place, but if not recognised, the complication may worsen and can result in emergency presentation.

"While patients and their family members are very aware of symptoms, and for many they may even be a cause of suffering, they do not always report them to their doctors and nurses," explains Professor Jennifer Philip.

"Clinicians also do not always carefully or systematically enquire about symptoms, so they can go unrecognised. If left unaddressed, the suffering may continue."

Paying close attention to the patient experience

Patient-reported outcome measures (PROMs) are routinely used for monitoring patients' experiences, including symptom burden in people with advanced disease.

Monitoring PROMs can lead to improved symptom management, improved quality of life, fewer ED presentations, and improved survival, yet collection of PROMs is not part of routine care.

The PARTNER (PATient Reported Needs Recording) study will pilot a system of remote PROMS monitoring based on smart phone/electronic devices for palliative care patients at home. Patients with advanced illness will receive regular text message reminders with a link to complete monitoring surveys related to their health status. High scores will trigger an alert to a triaging clinician for review, which may include community palliative care, outpatient clinics, or urgent assessment.

Towards improving healthcare

"Through a systematic approach to symptom reporting and response, we believe that patient experiences of illness and quality of care will be improved," says Professor Philip.



Recognising, reporting and responding to symptoms is a key part of care delivery. When we do this well, quality of life can improved."

Professor Jennifer Philip

"Most importantly, recognising, reporting and responding to symptoms is a key part of care delivery. When we do this well, quality of life can improve – this is a core goal of palliative care," says Professor Philip.

The impact of the PARTNER study outcomes will aim to reduce the personal and economic burdens endured by those living with advanced chronic illness, including a reduction of personal costs of distress for patients and families, reduction of unscheduled emergency care and reduction of health service use overall. The study is expected to conclude by the end of 2023.

Professor Philip of the Royal Melbourne Hospital was the lead researcher of the project that received an Avant Foundation grant.



Visit avantdifference.org.au
for application information.



A/Professor Mark Howard,
lead researcher and respiratory
and sleep medicine clinician

Austin Health: NIV@Home: a digital approach to care

Non-Invasive Ventilation at Home, or NIV@Home, is a new model that provides clinicians with access to real-time ventilation data, so they can make informed decisions with their patients to prevent respiratory failure.

Currently, the Victorian Respiratory Support Service (VRSS) at Austin Health provides care for more than 1,000 patients with respiratory failure, who require home ventilation by using Non-Invasive Ventilation (NIV).

"I have witnessed increasing difficulty for patients with chronic respiratory failure in accessing care due to restricted access to acute hospitals, infection risk during the pandemic, and the need for carers to enable this vulnerable patient group to support travel for care," says Associate Professor Mark Howard.

Existing model expensive and time-consuming

The current treatment pathway involves hospital admission to fit and adjust equipment, which can take between 4–6 hours, as well as the need for follow-up appointments. Growth in patient numbers, combined with a shortage of inpatient beds, contributes to delays in initiating treatment and responding to patients deteriorating in the community.

"This research will determine what combination of remotely accessible ventilator data combined with simple physiological monitoring can be used to safely implement non-invasive ventilation for chronic respiratory failure in the home," explains Associate Professor Howard.

Despite the increasing demand for telehealth-based care, there is a lack of evidence for clinicians to determine what is required to provide safe remote care and understand when remote patient care is risky.

The digital approach

NIV@Home combines science, digital platforms and clinical guidelines to offer a person-centred approach to care.

This approach to care also means that regular observation and communication can be achieved through a digital patient portal. This allows clinicians to respond to changes to patient in-home ventilation settings to prevent respiratory failure.

"The Avant Foundation grant will support our research to implement safe, high quality care in the home, and to improve the lives of vulnerable patients with respiratory failure," says Associate Professor Howard.

"Furthermore, the grant will underpin our vision to improve access to care by integrating home ventilator data into medical records, avoiding the need for patients to attend acute hospitals and enabling clinicians to make better treatment decisions."

Looking ahead

The NIV@Home project will take advantage of emerging technical capabilities for non-invasive ventilation. It will aim to combine remote access to ventilator data in the home with telehealth that will help fulfill these needs.

"Once fully integrated into practice, clinicians will be able to review ventilator data during telehealth consultations to make better and safer decisions about treatment effectiveness for respiratory failure and adjustment of home ventilation settings," says Associate Professor Howard.

Associate Professor Howard of Austin Health was the lead researcher of the project that received an Avant Foundation grant. He is a full-time clinician-researcher and works at both the University of Melbourne and Monash University.



Visit avantdifference.org.au
for application information.

“

Despite the increasing demand for telehealth-based care, there is a lack of evidence for clinicians to determine what combination of information is required to provide safe remote care, when patients cannot be evaluated face to face and in which patients remote care is risky.”

Associate Professor Mark Howard, Lead researcher at Austin Health





Professor Richard Turner,
specialist general surgeon

University of Tasmania: Teaching telehealth to tomorrow's doctors for better patient safety

When COVID made its way to Australia in 2020, specialist general surgeon and academic, Professor Richard Turner turned Australia's COVID restrictions into an opportunity to train final year medical students in telehealth.

Professor Turner's project, 'Teaching telehealth for tomorrow: A telehealth simulation program for Australia's future healthcare workforce', addresses two main challenges:

- **Increased demand for telehealth, due to the pandemic.** As telehealth becomes part of the 'blended care' of a contemporary healthcare setting, doctors need to deliver it safely and effectively. Training final year medical students will ensure proficiency and confidence in telehealth consultations to meet these demands.
- **Reduced clinical placement opportunities for final year students.** Due to lockdowns and restrictions, the hospital and community placements that comprise a major part of a medical student's training were greatly restricted, and face-to-face non-urgent consultations were cancelled, increasing the need to telehealth.

Moving towards 'blended care'

There is no well-established telemedicine curriculum in undergraduate years, so Professor Turner and his project team realised that telehealth simulations using well-trained simulated patients portraying authentic clinical scenarios, prefaced by a suitable briefing on the topic, would be the ideal solution.

"Even without COVID, many service providers are discovering that telehealth makes for more efficient throughput and improved compliance with outpatient attendances," Professor Turner says.

"Junior doctors have been at the forefront of telehealth service delivery, with many hospital and community follow-up and surveillance clinics providing telephone or camera-enabled consultations. The education of medical students must therefore include proficiency in telehealth consultation skills, where safety and patient-centred care are paramount."

Unlike the face-to-face, diagnosis-focused consultations students are used to, the main objective of telehealth is triaging a patient's problem and keeping them safe.

"Management is more about 'disposition' than 'treatment'," Professor Turner explains. "Patient-centred care includes the novel concept of 'digital warmth'. We have aimed to emphasise all of these aspects in our telehealth education package."

Telehealth training in medical schools and hospitals

Partners supporting the project include the Tasmanian state government service facilitator, Telehealth Tasmania, the Postgraduate Medical Education Council of Tasmania and the National Telehealth Summit.

Professor Turner hopes this may lead to inclusion of telehealth training in health education policy and hospital internships.

"The project will influence health education policy in the university sector by consolidating the place of our model for telehealth training in medical school curricula around the country, pending refinements informed by evaluation. In the hospital sector, through partnerships with Telehealth Tasmania and the Postgraduate Medical Education Council of Tasmania, an adapted version of the model may also become a mandatory requirement of Internship."

Funding support from the Avant Foundation provided to the University of Tasmania will enable Professor Turner and the team to:

- purchase basic home-monitoring equipment, so students can teach patients how to use them
- conduct transcription and analysis of stakeholder interviews
- hire two experts to deliver the telehealth teaching program.

The program was completed in May 2023 and Professor Turner hopes a successful 'proof-of-concept' will justify ongoing budgetary allocation for telehealth teaching in the University of Tasmania's medicine program.

Monash Health: The effects of being on-call 24/7 on senior medical staff



Professor Meredith Allen,
lead researcher and paediatric
intensive care consultant

In medicine, on-call work is often required in addition to a normal working week. This means that an employee must be available and fit to return to work after hours if their employer contacts them.

On-call support provides 24/7 coverage when the volume of after hours work or specialist skill set does not justify the cost of a full shift roster.

While Professor Meredith Allen was completing her PhD in critical care, she noticed that optimising the functioning of healthcare teams was more likely to improve the outcome for critically ill children than her laboratory research.

Since then, Professor Allen has shifted her research focus to human factors, system safety and healthcare resilience. She has seen an increase in consultant-led care to improve efficiency, timely decision making and patient outcomes.

Lack of sleep impacting performance

The aim of this project is to describe in detail the burden of being on-call across a range of medical and surgical specialities, examine the impact on sleep quality and quantity, and explore the personal and professional impact of this sleep disruption.

"This research project is the first step in trying to understand the current demands on consultants in our health services and how this may impact performance," says Professor Allen.



Information gathered will add a building block to our knowledge on fatigue and optimising cognitive functioning and critical decision making in senior medical staff."

The grant provided by Avant Foundation has enabled the research to join with established sleep researchers across Australia and expand to seven health services in Victoria.

Effects of chronic sleep deprivation

Sleep plays an essential role in restorative and regulatory function and is critical to maintaining physical and mental health. Senior medical staff may face 30-plus years of sleep disruption due to being on-call.

Despite a recent focus on health professional fatigue and burnout, there is minimal to no published data on the burden of on-call for senior medical staff across disciplines, and the degree to which being on-call disrupts sleep.

"Avant Foundation grants provide the opportunity for frontline professionals in healthcare who are not part of an established research group, to undertake methodologically sound, clinically-relevant research to improve patient safety and the quality of care we deliver," explains Professor Allen.

This study is the first part of a body of work looking at sleep quality in senior medical staff in collaboration with Monash University. Understanding this data will inform future research that aims to improve the sleep patterns and quality of life in senior medical staff. And this will ultimately improve the quality and safety of the workplace.

Associate Professor Allen of Monash Health was the lead researcher of the project that received an Avant Foundation grant. She is a paediatric intensive care consultant at Monash Health and has held department, divisional and organisational lead roles in patient safety.



**Dr Philip Choi, lead researcher
and stroke neurologist**

Eastern Health: Bridging the gap between urban and regional stroke care

Victorian stroke neurologist, Dr Philip Choi's 2021–22 pilot study, funded by an Avant Foundation grant, aimed to improve access to specialist care for regional stroke patients.

Dr Choi identified that while stroke patients living in metropolitan areas have access to specialist stroke unit care led by subspecialised neurologists or stroke physicians, most regional stroke patients receive care from junior medical staff supervised by general physicians or GPs. This inevitably impacts the management and recovery of regional stroke patients.

"While regional Victorians suffer from an over-represented stroke disease burden, they are disadvantaged from an under-serviced stroke system of care, particularly in the acute inpatient period," Dr Choi says.

Dr Choi and his team aimed to address this gap, with his Bridging the Urban and regional Divide in Stroke care (BUILDS) pilot study.

The primary aim of this research was to assess the feasibility of implementing a novel tele-stroke unit consultative service at Echuca Regional Health. The ambition was to improve the quality of acute stroke inpatient care by ensuring every admitted stroke or suspected-stroke patient has access to stroke subspecialist input during their inpatient stay.

The BUILDS stroke neurologist partners with local clinicians, including an adequately resourced Stroke Coordinator to provide 'true stroke unit care'. An additional aim was to foster interest and expertise in stroke care through medical stroke leadership and creation of a series of fit-for-purpose educational

presentations on acute stroke management tailored to medical staff working in regional areas.

"The technology-driven system-of-care addressed the inequality in acute stroke care in a regional hospital. Subspecialty stroke inpatient clinical support is provided through daily telemedicine ward rounds and case conferencing, as well as regular targeted educational presentations for local clinical staff," Dr Choi explains.

Existing telehealth models of care for greater efficiency

Dr Choi and his research team partnered with Echuca Regional Health for the 12-month program. The stroke service at Echuca, led by Lauren Arthursen (a speech pathologist by training) has a proven track record in quality innovation in telehealth stroke care.

Dr Choi used funds from the Avant Foundation grant towards purchasing basic equipment to enable tele-medicine consults, salary support of a local stroke coordinator and for the stroke neurologist's time.

Timely care and better outcomes

BUILDS aims to improve the outcomes of survivors of stroke in regional areas of Australia. With this in mind, Dr Choi collected clinical data as well as patient and staff feedback throughout the pilot. This information was used to refine the model and develop a case for continuity of the service at Echuca and has been utilised to commence planning for expansion into other regional areas in Victoria and beyond.

"A tele-stroke unit model ensures key components of stroke unit care; a well-resourced stroke coordinator and ready access to stroke medical expertise, are available to all admitted stroke patients. This ensures timely diagnosis, and therefore appropriate investigations and treatments," Dr Choi says.

Positive response leads to further funding

The BUILDS pilot program has received positive feedback from both patients and local clinicians. The Echuca Hospital executive team have been impressed by the patient outcomes and capacity building of the local clinicians and will transition this tele-stroke unit model into its usual care. The study was so successful it has secured further funding to expand into two more regional centres in 2023.

"Due to the success of the pilot, as supported by the Avant Foundation grant, we have secured further funding in July 2022 and we are looking forward to piloting BUILDS in two other regional health services in 2023: Burnie in Tasmania and Sale in Victoria," Dr Choi says.

Dr Choi of Eastern Health was the lead researcher of the project that received an Avant Foundation grant. He is an adjunct senior lecturer with Monash University and a stroke neurologist based at Box Hill Hospital in Melbourne.

George Institute for Global Health: Optimising telemedicine delivery in out patients



Professor Christine Jenkins,
lead researcher and head of
the respiratory program at the
George Institute

When COVID brought on the sudden and dramatic transformation of health service delivery in the form of virtual care, Professor Christine Jenkins knew that telehealth was a necessity during lockdowns.

"However, I wondered if it would serve the patients' best interests as an alternative to in-person consultations once restrictions were lifted," explains Professor Jenkins.

"We should not assume it is the best option for care when there is the potential to see patients again. I fear that cost containment and pragmatic concerns are driving the reinforcement of telemedicine as the default option, and quality of care and patient outcomes are not being prioritised."

Professor Jenkins hypothesises that there is the possibility that diagnoses will be missed, and investigations and management will be delayed.



Most of the telehealth consultations are happening by phone. This is asking the patient to go into a consultation with the physician blindfolded."

Professor Christine Jenkins

Weighing the risks and benefits

The research includes semi-structured interviews with 60 patients and carers, 24 specialists, and 16 administrators. The goal of the study is to define perspectives on the benefits and risks of changing to the widescale use of telehealth modes of service delivery.

"We hope to identify barriers and facilitators to telehealth, and the contexts in which it works best, along with those for which it is important to preserve in-person consultations," says Professor Jenkins.

The aim of the project is to obtain insights about the advantages and disadvantages of telehealth from health professionals, administrators, patients, and carers who have experienced both face-to-face and telehealth consultations across respiratory, neurology, and cardiology services.

Further research needed

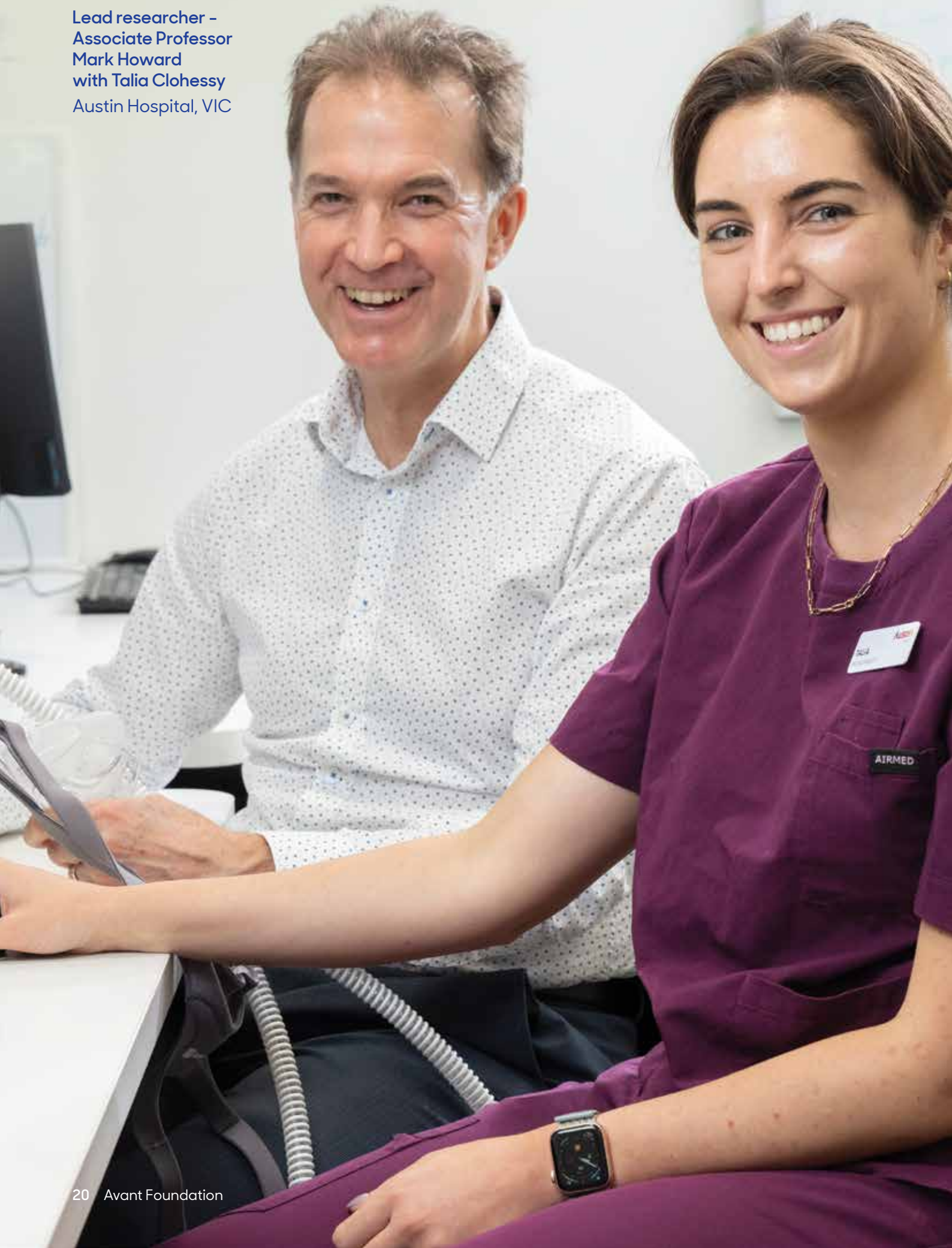
The effects of switching to telehealth formats have not been adequately investigated and more work is required in order to identify outcomes.

"We continue to be very interested in telehealth and believe the strengths and weaknesses of this mode of service delivery are still inadequately explored. Although it suits patients and sometimes also clinicians, it may not be the best mode for achieving quality outcomes for chronic disease management," says Professor Jenkins.

More research can explore patient satisfaction and health-related outcomes. It can look at whether to maintain the widespread use of telehealth services or seek to reinstate face-to-face in-person care to optimise patient outcomes. However, these outcomes may differ according to medical specialty, and timing.

Professor Jenkins of the George Institute for Global Health was the lead researcher of the project that received an Avant Foundation grant. She is head of the respiratory program at the George Institute and has led many investigator-initiated and competitively-funded clinical trials in airways disease.

Lead researcher -
Associate Professor
Mark Howard
with Talia Clohessy
Austin Hospital, VIC



The University of Newcastle: Navigating boundary challenges in medicine



Associate Professor Lisa Lampe,
lead researcher and psychiatrist

Doctors need to be able to clearly set boundaries within the doctor-patient relationship. Importantly, they should also have appropriate professional boundaries with peers, friends, family and other healthcare professionals.



The potential for adverse consequences makes it clear that we need to be able to recognise and manage boundary challenges, as this is a priority for safe medical practice. However, navigating these challenges can be stressful."

Lack of existing research

Associate Professor Lampe's interest in this research comes from her own experiences as a doctor specialising in psychiatry and having an interest in anxiety, as well as having a longstanding role as a medical educator.

"I recognised the importance of understanding the challenges of navigating non-sexual boundaries and realising that they are common and stressful, but doctors only have limited preparation in dealing with them. All of these factors contributed to my interest in this area," says Associate Professor Lampe.

Currently, there is a lack of empirical research regarding the frequency and impacts of non-sexual boundary violations among doctors. The outcomes from the research could identify the types of boundary challenges that create distress and threaten patient outcomes, which could be of critical importance.

Challenges in setting boundaries

Associate Professor Lampe's research explores doctors' and medical students' awareness of boundary issues, such as how frequently these are experienced, associations with stress and burnout, and what personal and professional problems may follow.

The research will identify gaps in doctors' and medical students' knowledge, perceived educational needs around skills to manage boundary challenges, as well as the impact it can have on patient care and occupational stress levels.

"By identifying perceived impacts and current levels of awareness, this project represents a first step in fixing a current gap in the education and professional development of doctors," says Associate Professor Lampe.

Analysing awareness and knowledge

The 12-month study will use online survey methods, including questionnaire measures and case vignettes. Case vignettes will be used to test awareness of boundaries and explore attitudes, experience and confidence in managing issues.

Results are expected to inform future educational initiatives, in efforts to reduce risk. It may also help understand whether there are particular stages of training or types of practice that are associated with more boundary challenges. This information could be helpful for educational initiatives around quality, safety and professionalism at all stages of a medical career.

Associate Professor Lisa Lampe of the University of Newcastle was the lead researcher of the project that received an Avant Foundation grant. She is a psychiatrist with national and international recognition of her clinical expertise in anxiety disorders.

Avant Foundation Board Members 2022

Avant has established strong governance for the Avant Foundation, led by an experienced, diverse, skills-based board and supported by a management team with experience in managing grant programs.



Dr Michael Wright, Chair

MBBS, MSc, PhD, FRACGP, GAICD,
Chair of the Avant Foundation
and Chief Medical Officer, Avant



**Associate Professor
Beverley Rowbotham AO**

MBBS (Hons 1) MD, FRACP,
FRCPA, FAICD



Emeritus Professor Kim Oates AO

MD, DSc, MHP, FRACP, FRCP, FAFPHM,
FRACMA, DCH



Ms Julie Webster

GAICD, MBus, BCom



Dr Matthew Doane

MD, MiPH, DABA, FANZCA



**Associate Professor
Chris Milross**

MB BS Medicine Hons 2.1, MD,
FRANZCR, FRACMA, FAICD



Professor Grant Phelps

BMBS, MBA, FRACP, FRACMA,
FAICD, FIML

Avant Foundation Judging Panel 2022

The Avant Foundation focuses its investments on highly applicable charitable projects across the healthcare system that can be readily translated into changes in the clinical environment and influence health policy. The grant applications are evaluated by a judging panel with significant clinical and research experience across a range of specialties.



Dr Penny Browne

MBBS, FRACGP, MHL, Inaugural Chair



Dr Patrick Clancy

MBBS, FRACGP, MHLth & MedLaw



Dr Matthew Doane

MD, MiPH, DABA, FANZCA



Associate Professor Chris Milross

MB, BS, MD, FRANZCR, FRACMA, GAICD



Emeritus Professor Kim Oates AO

MD, DSc, MHP, FRACP, FRCP, FAFPHM, FRACMA, DCH



Dr Chris Go

BMed, MD, MPH



Professor Grant Phelps

BMBS, MBA, FRACP, FRACMA, FAICD, FIML



Dr Amanda Smith

MBBS, FANZCA



Professor Simon Willcock

MBBS (Hons I), PhD, FRACGP, Dip. Obs., RANZCOG/RACGP, GAICD



Dr Peter Henderson

MBChB, FRCOG, FRANZCOG

Avant Grants

Early Career Research Program

Avant's Early Career Research Program (formerly the Doctor in Training Research Program) was launched in 2012 to support young doctors' research to promote better patient outcomes. To date, Avant has invested \$4.307m across 176 projects covering numerous research areas including transplants, oncology and cardiology.

The program encourages early career researchers to explore their research ideas and gain the necessary skills to follow their research through to publication. It supports early career researchers build their capabilities through a range of research grants, research coaching and research skills development.

In 2022, Avant provided 14 grants for research projects ranging from \$12,500 to \$50,000.

Some of those projects included:

- POEMS: A Prospective Observational Embedded Microbiome Study of critical illness
- Developmental dysplasia of the hip research application
- Improving respiratory health for Aboriginal children: a knowledge translation approach

- Machine learning to distinguish tumour progression from radiation necrosis in brain metastases

Avant also introduced 15 microgrants of \$5,000 each to support smaller projects and pre-clinical trial work, such as literature or systematic reviews or a pilot to test a concept. These aim to provide a strong foundation for building critical research capabilities.

Recipients of microgrants received one-on-one coaching from an experienced research leader through a research centred Coaching Collaborative program run by Capstan Partners.

In 2022, microgrants, to a value of \$75,000 were allocated, for projects including:

- Molecular features of butterfly gliomas
- Impact of paraoesophageal hernia repair on respiratory function
- 3D modelling in partial nephrectomy

In medicine, the ability to ask the right research question and interpret data is an essential skill. To that end, Avant also awarded 22 research skills development grants with access to the **Stanford' Medical Statistics Program** (online.stanford.edu/programs/medical-statistics-program), a Stanford School of Medicine educational program offered via **Stanford Online** (online.stanford.edu). The online, self-paced program consists of three courses taught by Stanford faculty that introduce statistical concepts and techniques commonly used in medical research and provide a foundation of statistical literacy.

"This was a fantastic program that I really enjoyed," said Dr Craig Coorey. "I learned a lot of new insights into data, and I have no doubt my future research will benefit from this program."

Applications for the 2023 Early Career Research Program opened in March 2023.

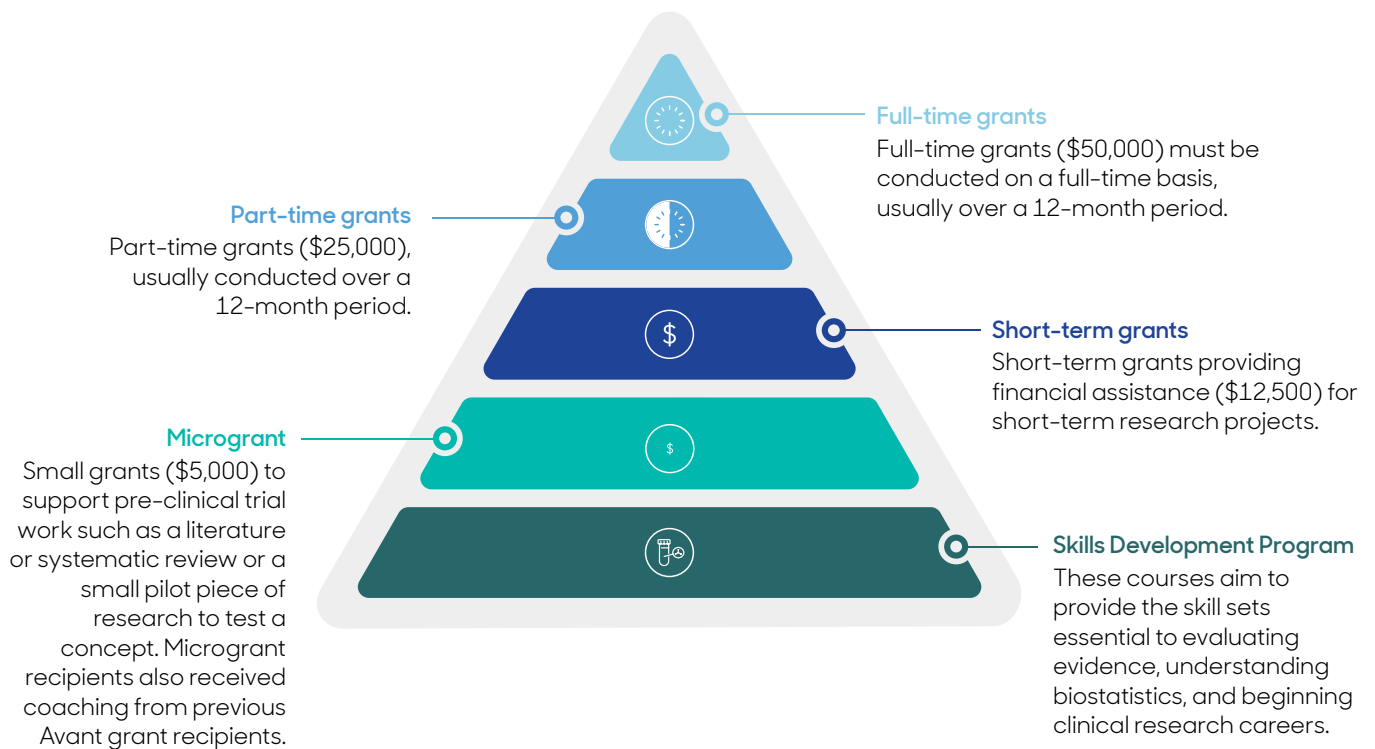
See avantdifference.org.au/early-career-research-program for more information.

In 2022, Avant offered up to \$450,000 in funding across a total of 29 different grants designed to support early career doctors at different stages of their research careers.

Early Career Research Program



Structure of the Early Career Research Program in 2022



Coaching Collaborative – emerging researchers and research leaders

The Coaching Collaborative has been an opportunity for research leaders to lead coaching conversations with emerging researchers. The key objective has been for emerging researchers to be coached by a research leader to identify their goals, work towards making key decisions and prepare for challenging events.

The Coaching Collaborative sessions have offered an opportunity for participants from both streams of the Coaching Collaborative to come together for confidential, one-to-one coaching conversations.

Coaching sessions began after the research leaders complete online professional coaching study with the Australian Institute of Professional Coaches and group coaching skills webinars.

Avant has matched participants and monitors the progress of coaching skill development. As well as professional coaching sessions, Avant managed supervision sessions for the research leader and provide participant feedback. Each participant received support to discuss any challenges and independently arrange coaching sessions using the platforms and processes that best suit them.

Coaching Collaborative
Over the last year Avant has brought together



10
Research
Leaders
(coaches)



15
Emerging
Researchers



70
hours practicing
coaching
conversations



150
hours of online
learn to coach
modules



17
hours of
professional
webinars



40
hours receiving
professional
coaching



Visit avantdifference.org.au
for application information.

“

The Coaching Collaborative program was an excellent addition to the Early Career Research Program grant I received. The coaching course I completed as a research leader with the Australian Institute of Professional Coaches was so rewarding. I also had ongoing support and interactive tutorials from my coach and the Capstan and Avant team which I am so grateful for. I'm now able to draw on the many skills I've learnt to coach those around me in clinical and research opportunities. Thank you!”

Dr Dhivya Thangavel

B.Med GDAAdvGynSurg FRANZCOG

(Dr Dhivya Thangavel is pictured at the 2021 Awards Dinner with Dr Nicole Bart, another research leader from the 2022 Coaching Collaborative program).



Avant grant recipients 2022

Accredited trainees

Full-time \$50,000

Dr Benjamin Dickson

Delineating the risk factors and source of neonatal acquisition of multi-drug resistant Gram-negative pathogens in high countries in South-East Asia and the Pacific

Dr Shejil Kumar

Combining osteoanabolic pharmacotherapy with osteogenic exercise in women with postmenopausal osteoporosis/osteopenia

Accredited trainees

Part-time \$25,000

Dr Gloria Lau

Improving respiratory health for Aboriginal children: a knowledge translation approach

Dr Fiona Li

Discrete choice experiment: determining patient decision-making factors in management of postmenopausal vaginal symptoms

Dr Monica Ng

Kidney Extracellular vesicles for Predicting AKI resolution (KEPAK) study

Dr Jessica Tong

Efficacy and safety of corticosteroids for paediatric orbital cellulitis

Accredited trainee

Short-term \$12,500

Dr Tess Evans

POEMS: a Prospective Observational Embedded Microbiome Study of critical illness

Dr Alison McLean

Towards implementation of pharmacogenomics – guided therapy in patients with mental illness: the ENACT trial: Stages 2 & 3

Prevocational trainees

Full-time \$50,000

Dr Helena Franco

Developmental Dysplasia of the Hip

Prevocational trainees

Part-time \$25,000

Dr Thomas Drake-Brockman

QUENDA: Qualitative Exploration to understand pain in children and Develop novel technologies to Address challenges

Dr Emma Lumsden

The use of negative pressure wound therapy in paediatric burns

Dr Al-Rahim Habib

DrumBeat.ai: Integrating artificial intelligence (AI) into clinical practice to identify ear disease in rural and remote Aboriginal and Torres Strait Islander children

Prevocational Grant

Short-term \$12,500

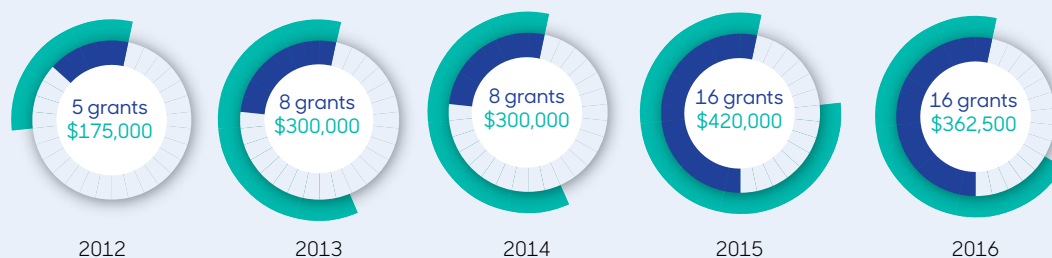
Dr Genevieve Ho

Remote image acquisition for reflectance confocal microscopy: A pre-implementation study for skin cancer diagnostic accuracy

Dr Kevin Jang

Machine learning to distinguish tumour progression from radiation necrosis in brain metastases

Early Career Research Program Grants



Microgrant \$5,000

Dr Timea Jurth

Improving patient selection for pulmonary endarterectomy in chronic thromboembolic pulmonary hypertension

Dr Kate Poulgrain

Molecular features of butterfly gliomas

Dr Sudarshana Jeyarajakumar

Impact of ethnicity on perinatal outcomes in women with gestational diabetes mellitus

Dr Richard Shao

Patient-centred, multi-disciplinary, innovative and cost-effective health solution to understand and manage non-motor symptoms of Parkinson's disease in a culturally and linguistically diverse (CALD) population

Dr Amanda Wee

POP IT – Post-Operative Pessary In native Tissue repair: a prospective, single blinded RCT

Dr Pranav Sharma

Diagnostic accuracy of contrast-enhanced MRI for detection of perineural spread in head and neck cancers: systematic review and meta-analysis

Dr Dumindu Weerakkody

Head and neck surgery – COVID 19

Dr Xinling Wong

Cost-effectiveness of HLA-B*1502 genotype screening prior to carbamazepine administration in individuals of Asian ancestry in Australia

Dr Jessica Teoh

Intrauterine pregnancy of unknown viability (IPUV) Study

Dr Angela Burvill

Emerging therapies to lower Lp(a) – an economic evaluation

Dr Brandon Stretton

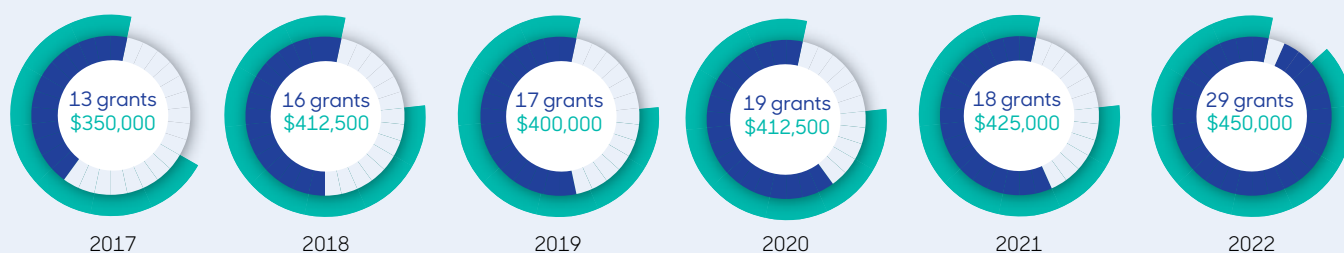
Evaluating the benefits of mock OSCEs vs faculty-led OSCEs

Dr Madison Boot

Signet ring cell carcinoma of the prostate – systematic review

Dr Ellen Kelsey

Botox as a tool for management of idiopathic overactive bladder





Dr Tess Evans, intensive care trainee registrar

Early Career Research Program award recipients

A microbiome study of critical illness

It is arguable that few conditions in the hospital setting see a more pressing need than that of sepsis, which accounts for one-fifth of global deaths. Even in Australia, up to 30% of ICU patients who develop sepsis will die.

The average cost for 24 hours in the ICU is approximately \$4,375¹, and this cost is multiplied at least tenfold for a sepsis admission. Since the advent of antimicrobials, no new specific treatments for sepsis have been developed in the last 50 years.

Taking a closer look

In Dr Tess Evans' research, the Prospective Observational Embedded Microbiome Study (POEMS) of critical illness will identify meaningful patterns of the gut microbiome to improve the outcome and hasten recovery of critically ill patients with septic shock.

"The funding from the Early Career Research Program grant will profile the gut microbiome of patients admitted to ICU with and without sepsis," explains Dr Tess Evans.

"I hope to identify subclinical groups within the sepsis population. We can use these to prognosticate, to understand the impact and response to usual care and ultimately, match them to existing therapeutic candidates in a novel clinical trial of enhanced recovery from critical illness."

Understanding changes to gut bacteria

The human gut microbiome is the community of bacteria that normally live in our stomach and intestines. Healthy commensal bacteria of the gut microbiota encompass 500 – 1,000 species that are necessary for immune system development and regulation, hormonal homeostasis, macromolecule and biliary acid metabolism, synthesis of otherwise inaccessible vitamins, and anti-inflammatory pathways.

Changes to these bacteria may drive many major chronic diseases and their role in the ICU caring for patients remains poorly understood. This study will use cutting-edge techniques and lead laboratory and clinical investigators to identify microbiome patterns and their effects to set up a clinical trial of individualised therapy in patients with severe infection.

"Once I have surveyed a topic at the edge of our knowledge from every possible vantage, I will have the skills to communicate it, propose and test solutions, and eventually move on to all the other questions that bug me at the bedside," says Dr Evans.

Dr Evans is an Early Career Research Program award recipient, she commenced a PhD program at the University of Western Australia in early 2022.



Avant puts into practice words that we all hold true – that medical training, quality care and research should not be siloed. As an embedded point-of-care study, POEMS is an example of this integrative paradigm."

¹ Hicks, Peter, et al. *The financial cost of intensive care in Australia: a multicentre registry study*. Med J Aust 2019; 211 (7): 324–325. doi: 10.5694/mja2.50309 mja.com.au/journal/2019/211/7/financial-cost-intensive-care-australia-multicentre-registry-study





Dr Alison McLean, clinical genetics advanced trainee

Implementing pharmacogenomics-guided therapy in patients with mental illness

Pharmacogenomics (PG) is the study of multiple genetic variants that influence an individual's metabolism of multiple medications, including many anti-depressants/anti-psychotics. PG-guided drug therapy aims to deliver the right drug at the right dose at the earliest intervention period.

Despite the increasing evidence of the benefits of PG-guided psychotropic treatment, there is limited literature on the outcomes of this approach in the Australian healthcare landscape.

"This project will be the first in Australia to develop, implement, and evaluate a novel model of care to incorporate evidence-based PG-guided therapy for patients with mental illness," explains Dr Alison McLean.

This pilot study is investigating whether PG testing can guide medication choice and correct dosage to avoid side effects and improve the time to remission of symptoms.

Patients with major depressive and/or anxiety disorders, who are new to treatment or whose medication (dose or type) was altered in the last 90 days, will be recruited from the psychiatry inpatient and outpatient services across Australia.

Prioritising PG testing

In 2018, there was a NSW Parliamentary Inquiry into the Management of Healthcare Delivery that highlighted that PG testing is not being adequately utilised in the public mental health system. It also identified PG testing as one of the key mental health priorities and made recommendations that NSW Health actively pursues and funds the increased use of PG testing as a means of improving treatment for patients with mental illness.

"Patients with mental health issues of depression and anxiety will benefit initially from this research, however, it is generalisable to all patients with mental health disorders. This research is timely given the increasing accessibility of genetic testing for patients, with lower costs and faster turnaround times improving the clinical utility of genetic testing," explains Dr McLean.

Advocating for genomic testing

"This opportunity will broaden my research skills to enable establishment of my own interdisciplinary research as a physician-academic in clinical genetics in the future. Over my career, I intend to strongly advocate for the integration of genomic testing into clinical medicine and ensure there is equity of access to genomic testing," says Dr McLean.

After completing her advanced training in clinical genetics, Dr McLean plans to work as a clinical geneticist in the public hospital system.



I hope to be able to continue to research the benefits of mainstreaming of genomic testing to improve health outcomes for patients."

Dr Alison McLean is an Early Career Research Program award recipient and is currently a clinical genetics advanced trainee at Royal North Shore Hospital in Sydney.



Visit avantdifference.org.au for application information.

Study into chronic kidney disease biomarkers will improve early detection and treatment



Dr Monica Ng, resident medical officer

Acute kidney injury (AKI) affects one third of people admitted to hospital with the life-threatening complications of chronic kidney disease and kidney failure.

Currently, clinicians don't have the tools to objectively identify people at high risk of chronic kidney disease (CKD) or kidney failure after AKI, who would most benefit from intensive follow-up and preventative therapy.

A study by Accredited Trainee and 2022 Avant Early Career Research Program grant recipient, Dr Monica Ng is using cutting edge molecular technologies to discover new methods of identifying early the people most at risk of kidney failure.

"I am investigating nanoparticles in the urine, known as extracellular vesicles or EVs, as a potential marker for risk of progressing to CKD or kidney failure after AKI. I aim to develop a non-invasive test that can be used in the clinic, or at the bedside, to identify patients most at risk of adverse outcomes so we can treat them early and prevent kidney failure," she explains.

The study will also determine the feasibility and sample size required for a large-scale study to prospectively validate urinary EV profiling to predict AKI to CKD transition.

Preliminary findings pave the way for future clinical trial and integration into clinical practice

The research is conducted at the Royal Brisbane and Women's Hospital, under the supervision of pre-eminent Nephrologist, Associate Professor Helen Healy and Senior Research Scientist, Dr Andrew Kassianos. Dr Ng's study expands their work into the diagnostics' field, developing a hypothesis generated from her previous studies.

"Our pre-clinical results support the hypothesis that the cargo carried by urinary EVs varies depending on kidney disease state. The results will provide preliminary data for a clinical trial to validate the sensitivity and specificity of urinary EVs for AKI prognostication. Urinary EVs have potential biomarker functions, identifying patients at high risk of AKI to CKD transition in the clinical setting," she says.



My research fills a gap by developing a non-invasive test to predict patients' risk of poor outcomes after an episode of acute kidney injury so we can personalise their care."

Support for research is foundational to skills development and future studies

Dr Ng will use the Avant funding to purchase equipment and hire research staff.

"It is fantastic to see interest in my work and recognition of its potential to impact diagnostic testing in kidney disease," she says. "The Early Career Research Program provides an excellent opportunity for junior doctors to undertake research while completing their clinical training."

In 2023, Dr Ng will undertake her final year of advanced training in nephrology to become a kidney specialist, and continue her postdoctoral work, supported by the Avant grant.



Dr Al-Rahim Habib
Doctor in Training Research
Scholarship recipient 2021,
Early Career Research
Program grant recipient 2022

Using artificial intelligence to beat ear disease in Indigenous children



Dr Al-Rahim Habib, unaccredited ear, nose and throat registrar

An innovative artificial intelligence (AI) tool shown to accurately triage ear disease in rural and remote Indigenous children, was developed with the support of a 2021 Avant Doctor in Training Research award. The project team is now building on its initial findings, supported by further funding from Avant.

The idea for the algorithm, DrumBeat.ai, was conceived by otolaryngology registrar, Dr Al-Rahim Habib, in conjunction with senior ENT mentors during his internship in the Northern Territory, where he observed the challenges Aboriginal and Torres Strait Islander children face accessing tertiary ENT services. In fact, rural and remote-dwelling Indigenous Australian children experience the highest rates of ear disease in the world.

A shortage of rural and remote area ENT specialists and the limitations of telehealth can lead to delays in triage and early treatment, increasing the risk of detrimental hearing loss, and adversely affecting language development, academic performance and quality of life.

"The overarching purpose of DrumBeat.ai is to enhance the capacity of frontline healthcare workers in rural and remote areas to quickly identify ear disease, inform judgment, and improve clinical decision-making," Dr Habib explains. "This project has the potential to profoundly improve the daily life, academic performance and future employment prospects for Aboriginal children living in these areas."

World-first database of eardrum images improves early detection and action

DrumBeat.ai is the first tool of its kind and is comparable to ENT experts at recognising normal and abnormal eardrums and detecting hearing loss. Using the tool, healthcare workers can identify children who need to see a specialist, and predict high-risk children needing urgent treatment to prevent infection or permanent hearing loss.

With this award, Dr Habib and his team developed an algorithm using more than 10,000 otoscopic eardrum images from over 4,000 Aboriginal and Torres Strait Islander children, from more than 100 rural and remote communities in the Northern Territory and Queensland.

The DrumBeat.ai project is a collaboration between Indigenous community leaders and healthcare professionals, including the Deadly Ears Program, the departments of Otolaryngology – Head and Neck Surgery at the Royal Darwin Hospital and Westmead Hospital, University of Sydney, University of Queensland, Griffith University, and Microsoft's AI for Good Lab.

Further funding will help research team explore integration into clinical practice

Benefiting from further funding from Avant in 2022 through the Early Career Research Program will allow Dr Habib and his team to progress his research – something they could not do otherwise.

"I am grateful to Avant for supporting our research two years in a row. This grant provided me the opportunity to explore an area of research which I am passionate about and to continue my clinical role," Dr Habib reflects. "Avant's support last year granted us an incredible opportunity to refine our existing models and explore how they could be applied in Australia and abroad. Our team published two manuscripts in international peer-reviewed scientific journals. I was able to present our findings at national and international scientific conferences and share our research with the public through news articles, radio and online interviews. We now have the opportunity to expand our research questions and work towards revolutionising telehealth services by integrating AI into existing clinical workflows."

The next stage of Dr Habib's research moves from lab-based simulations to real-world testing in 2023, building on the success of the initial project.

"Our previous research demonstrated substantial performance in virtual training environments," Dr Habib says. "This year, we are exploring how we can integrate the algorithm into daily clinical practice, to improve efficiency and time-to-treatment, and reduce costs by focusing resources on children who need specialist care. We anticipate that successful completion of this project will lead to real-world translation in the near future."



Dr Kevin Jang, radiation oncology registrar

Improving imaging analysis of metastatic brain tumours for personalised treatment strategies

Brain metastases are the most common type of brain tumour in adults, affecting up to 20% of patients with cancer. Aggressive treatment with high-dose radiotherapy improves survival with excellent local control. However, irradiated brain tissue can yield ambiguous imaging features, leading to significant treatment dilemmas during the follow-up period.

Research by Radiation Oncology Registrar and 2022 Avant Early Career Research Program grant recipient, Dr Kevin Jang, will explore using artificial intelligence to accurately distinguish radiation necrosis from recurrent brain metastases.

The study is being conducted at Dr Jang's current workplace, Nepean Cancer Care Centre.

"The aim of our research is to develop a radiomics-based machine learning model that can be applied to post-treatment imaging of patients with brain metastases to distinguish regions of tumour progression from radiation necrosis," Dr Jang explains.

Differentiating radiation necrosis from tumour progression is essential in the follow-up period, as management of these two entities differs substantially. An incorrect diagnosis of progressive disease prompting further surgery, re-irradiation or change in systemic therapy can lead to unnecessary morbidity. Whereas a delayed diagnosis of tumour recurrence may lead to worse patient outcomes, such as more extensive surgical resection.

"At present, no clear guideline exists for imaging patients with suspected radiation necrosis. Thus, a reliable and non-invasive method to distinguish tumour progression from radiation necrosis could help individualise treatment strategies and monitoring of therapeutic response," Dr Jang says.

Research builds on prior study's promising findings

Dr Jang's project builds on emerging techniques to quantify brain tumour features on MRI. Preliminary studies have shown that multiparametric radiomics may serve as a valuable tool in accurately differentiating true tumour progression from treatment-induced changes in the brain.

A team from five medical specialties will collaborate with the Faculty of Computer Science, University of Sydney, to translate the study's findings and integrate the radiomics analyses into the clinical workflow.

Avant funding enhances research quality

Receiving the Avant Early Career Research Program grant was validation for Dr Jang of the quality of his research.

"Knowing the calibre of research funded by Avant, I was excited to be supported by an organisation that prioritises the growth of young doctors," Dr Jang says. "Avant's support for junior clinicians exemplifies their commitment to improving the way medicine is practised in Australia. With the landscape of medical practice becoming increasingly complex, Avant provides young doctors a vision for the future."

Dr Jang will use the grant funds to acquire basic hardware and computational tools for the radiomics analyses, along with software for image processing and model development.

In 2023, he will commence five years of Radiation Oncology Advanced Training through the Royal Australian and New Zealand College of Radiologists, and undertake a PhD to further investigate the role of radiomics in cancer imaging.

"The resources gathered for this project will allow further radiomics research throughout my training. The opportunity to partake in collaborative research will shape my future commitment to bridging gaps in understanding and treatment of cancer," Dr Jang says. "My overarching goal is to extend our radiomics research into other tumour sites, developing reproducible imaging biomarkers for all cancer patients. Through this award, I aim to dedicate my career to precision cancer medicine."

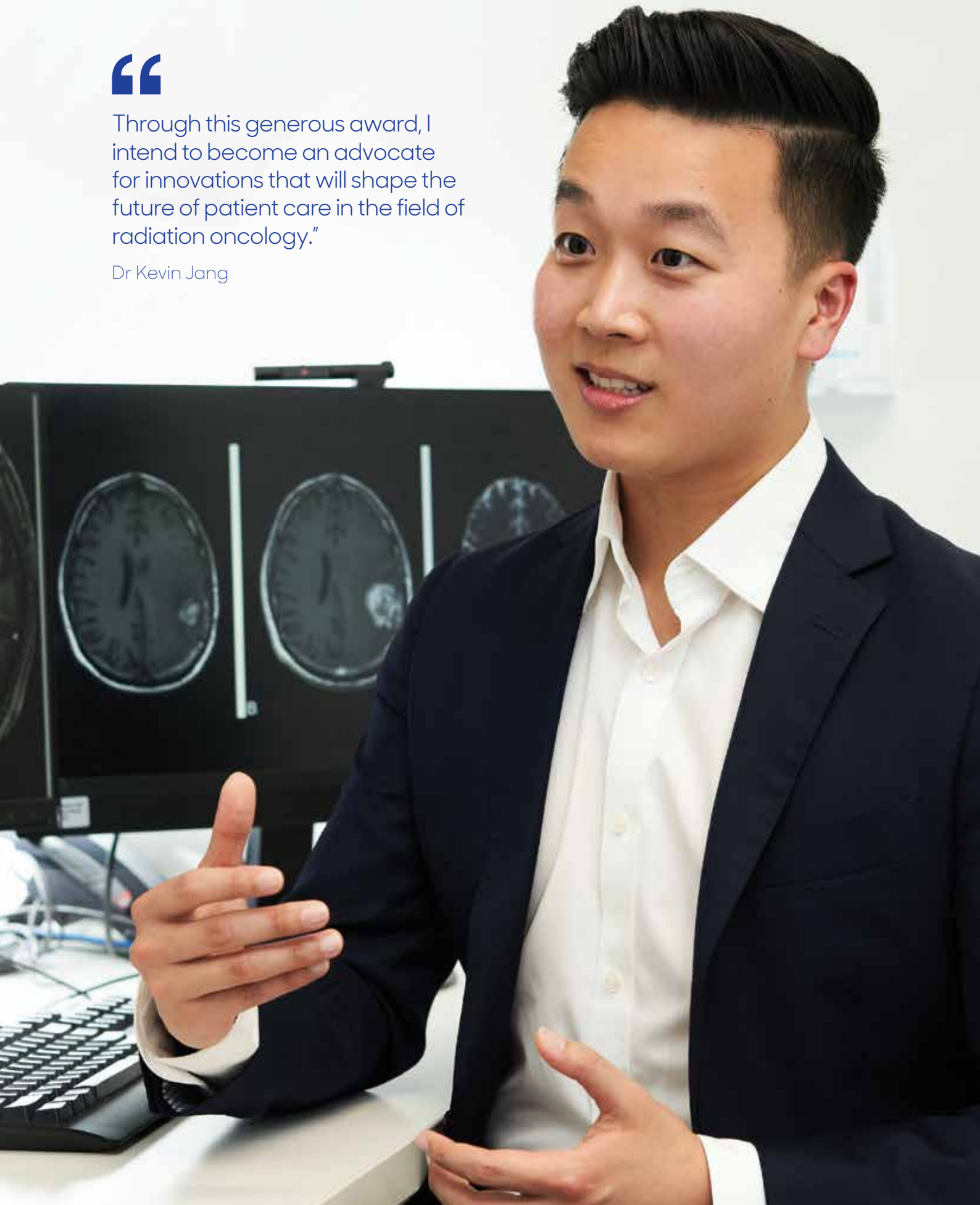


Visit avantdifference.org.au for application information.

“

Through this generous award, I intend to become an advocate for innovations that will shape the future of patient care in the field of radiation oncology.”

Dr Kevin Jang





Dr Shejil Kumar,
endocrinologist trainee

ROmosozumab Loaded with EXercise-DUal effects on bone and muscle in Osteoporosis (ROLEX-DUO)

Investigating the best approach of multidisciplinary care for older Australians with osteoporosis by combining drug and exercise treatment

Osteoporosis is a state of increased bone fragility where affected individuals are more prone to fractures. A fragility fracture is a fracture resulting from a fall from standing height (or less). Given our aging population, and the devastating health impacts a fracture can have, innovative ways to optimise the treatment of osteoporosis are needed.

Romosozumab is an anti-sclerostin monoclonal antibody which increases bone formation and has been shown to be effective in treating osteoporosis. Romosozumab may also have clinically important effects on muscle health. Exercise and romosozumab both promote bone formation through similar mechanisms and simultaneous treatment may provide additive benefits.

"No randomised controlled trial (RCT) has ever investigated the combination of drug and exercise therapy in people with osteoporosis. Harnessing effects of the most effective osteoporosis drug (romosozumab) with a safe exercise program shown to increase bone strength could result in more effective osteoporosis treatment and much needed reduction in fractures in our ageing population."

"Our study will be the first to investigate effects of romosozumab on muscle and physical performance in humans and the first RCT to investigate this for any osteoporosis drug. This is relevant for people with osteoporosis as improvements in muscle and physical performance may reduce the risk of falls," says Dr Kumar.

How is this study being conducted

The study is a multi-centre RCT in women with post-menopausal osteoporosis to determine whether bone-strengthening exercise can increase the effects of the bone-building drug romosozumab in improving bone mass over 12 months. The researchers will also assess whether romosozumab can improve muscle mass, strength and physical function, which may reduce risk of falls.

"The primary aim of the study is to determine if combining romosozumab with high-intensity exercise promotes greater improvements in bone mineral density (BMD) than romosozumab with low-intensity exercise in postmenopausal women with osteoporosis," explains Dr Kumar.

BMD is a well-established marker for risk of fragility fractures in postmenopausal women with osteoporosis, a chronic debilitating condition with significant economic and health burden in Australia. Implementing this combination of bone-building exercise and medication has never been studied and may represent the most effective strategy to improve BMD in people with osteoporosis.

Looking ahead

"Results of the study will help clinicians determine if they should prescribe bone-building exercise with romosozumab to enhance the treatment response," says Dr Kumar.

Longer-term aims are increased global interest in investigating the combination of exercise with osteoporosis medication. The researchers also envision a future with enhanced collaboration between osteoporosis doctors, general practitioners, exercise physiologists and physiotherapists to deliver the best multidisciplinary care for older Australians with osteoporosis.

Dr Shejil Kumar is an Early Career Research Program award recipient, and is currently enrolled in a PhD program with the University of Sydney and is training to become an Endocrinologist.

“

No randomised controlled trial (RCT) has ever investigated the combination of drug and exercise therapy in people with osteoporosis."

Reflectance confocal microscopy: a pre-implementation study for skin cancer diagnostic accuracy



Dr Genevieve Ho,
dermatology registrar

Australia has one of the highest rates of skin cancer in the world. As one of the most expensive cancers this costs the Australian health economy approximately \$1.7 billion a year¹.

However, the majority of skin cancers are avoidable and curable, which is why primary prevention of skin cancers should remain high on the public health agenda.

Introducing a model of remote imaging

Reflectance confocal microscopy (RCM) is an evidence-based, cost-effective and accurate diagnostic technology, which uses laser technology to visualise skin on a cellular level, both in-vivo and non-invasively.

"We are analysing a model of imaging for diagnosis of skin cancers," explains Dr Ho. "Currently the use of RCM is limited to tertiary referral centres, so my study will analyse if images captured by a technician can be then transmitted via a cloud-based platform for interpretation and diagnosis."

Remote imaging would fill one of the gaps that currently exist, which is the limitation of access to referral centres.

"In Australia, limitations to RCM accessibility are due to the lack of trained specialists and machines. Currently, there are only specialist referral centres with RCM machines in Sydney, Melbourne and Brisbane," says Dr Ho.

Overcoming barriers

"General population skin cancer screening is currently not recommended, partly due to the variable diagnostic accuracy of subjective clinical examinations and the lack of cost-effectiveness stemming from unnecessary biopsy of benign lesions," explains Dr Ho.

The current diagnosis for skin cancer requires surgery and invasive modalities. Access to RCM may also potentially save patients from unnecessary biopsies, which will reduce morbidity and associated costs.

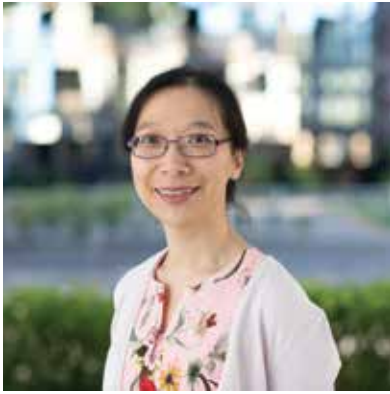
Although RCM is being used widely overseas, Australia has been slower to follow. With any new technology or service provision, it is important to assess how it can be implemented. This study will not only analyse the diagnostic accuracy of a remote model of RCM, but it will also look at implementation outcomes from the perspectives of patients and clinicians involved.

Dr Genevieve Ho is an Early Career Research Program award recipient and has recently completed a Master of Philosophy at the University of Sydney.



Diagnostics and implementation are an area of huge potential, considering the ongoing emergence of new technologies such as RCM and artificial intelligence. It is an exciting time to be in the field!"

¹ Gordon LG, Shih S, Watts C, Goldsbury D, Green AC. *The economics of skin cancer prevention with implications for Australia and New Zealand: where are we now?* Public Health Res Pract. 2022;32(1):e31502119. 22 Dec 2021. www.phrp.com.au/issues/march-2022-volume-32-issue-1/skin-cancer-economics



Associate Professor Rhea Liang,
consultant general and breast surgeon

Avant grants update

Game-changing study on women leaving surgical training prompts further research into broader attitudes to diversity

Consultant General and Breast Surgeon, Associate Professor Rhea Liang was awarded an Avant grant two years running – in 2018 and 2019. The 2018 grant helped fund her game-changing research into why women leave surgical training, which was published in *The Lancet*.

After that publication, Associate Professor Liang was contacted by numerous surgeons and trainees about two linked areas. "There were those who reported 'near misses' of almost leaving training, and others who felt that the phenomena I had described in women also occurred across a range of diversity characteristics such as race, age, sexual and gender diversity, rural location and so on."

Lived experience inspires the urge to create change

Associate Professor Liang's interest in this area goes back to when she started her own training in the 1990s. She has been on the receiving end of gender discrimination and watched as attitudes to diversity changed over the years, using her influence to inspire change.

"It was hard to ignore gender disparity in surgery; the consultant workforce was about 93% male when I started training. However, something that was simply accepted for decades as 'the way things are' is now increasingly recognised as problematic."

Broader diversity study resumes after pandemic interruption

Shortly after Associate Professor Liang was awarded her second Avant grant, the pandemic arrived, putting a halt to the research and prompting a change of strategy.

"We took the unavoidable downtime as an opportunity to split the original project in two. During the pandemic, we looked specifically at microaggressions experienced by all diversity characteristics in a local cohort, and that work is now being prepared for publication," Associate Professor Liang says.

"The research hasn't just affected my practice; it has informed policies and actions in multiple organisations, through the positions I hold in various universities, hospital systems and the Royal Australasian College of Surgeons."

Avant support confirms importance of diversity and equity research

For Associate Professor Liang, being awarded an Avant grant in two consecutive years is especially meaningful, because her area of research is historically under-recognised as a contributor to poor workplace culture. In fact, she says some people considered her diversity research a niche interest, "Something not as 'real' or important as my conventional clinical research in breast cancer. I was thrilled to be supported by Avant, because they distinguish themselves from other funders in not just being a funder. They really give every opportunity for applicants to make their case, are willing to look outside the

square, take a real interest in each application and provide a lot of support during the life of the grant as well".

With her second diversity study currently underway, Associate Professor Liang also has an exciting new academic role, as Clinical Sub-Dean at Bond University Medical School in Queensland. In addition, she plans to maintain her clinical role as a general and breast surgeon and an after-hours on-call acute general surgery commitment. And she will keep pushing for shifts in attitude.

"I am hopeful that I can incorporate my research interests into the Sub-Dean role, since medical school is where the seeds of future professional identity are sown, and where we really must stop telling students inequity-perpetuating myths such as, 'Surgery isn't a good career if you want children!'"



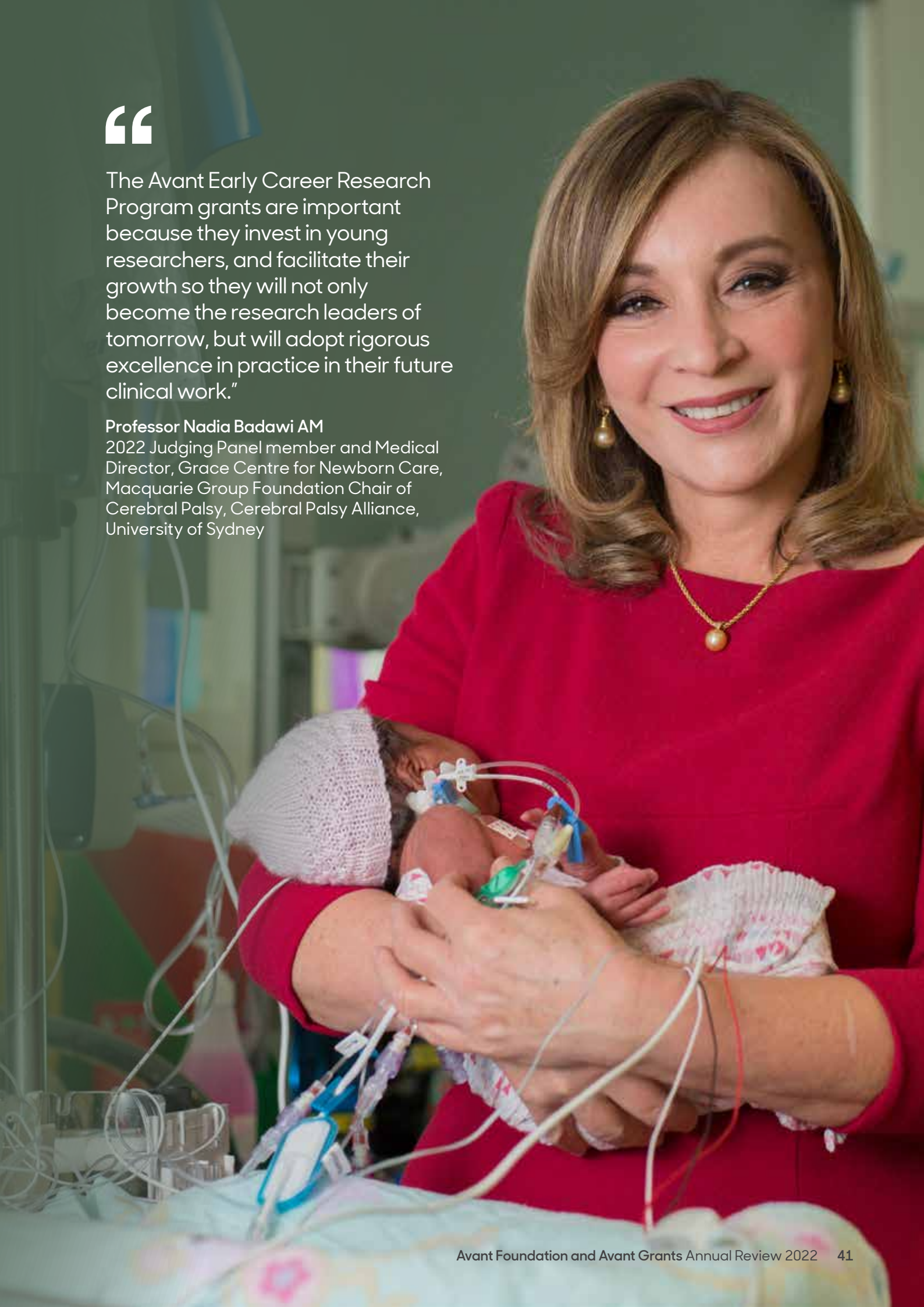
Apart from the actual dollar value of the grant making the research logistically possible, I think Avant also provided significant thought leadership through this grant, showing that they value diversity and equity research."

Associate Professor Rhea Liang

“

The Avant Early Career Research Program grants are important because they invest in young researchers, and facilitate their growth so they will not only become the research leaders of tomorrow, but will adopt rigorous excellence in practice in their future clinical work.”

Professor Nadia Badawi AM
2022 Judging Panel member and Medical Director, Grace Centre for Newborn Care, Macquarie Group Foundation Chair of Cerebral Palsy, Cerebral Palsy Alliance, University of Sydney



Avant Grants Judging Panel

The Avant Grants Judging Panel determines the allocation of all Avant-funded grants, including the Early Career Research Program grants. Since its launch in 2012, the Avant Early Career Research Program has funded 176 research projects worth nearly \$4.3 million. The judging panel is made up of experienced researchers and grant reviewers from across a wide range of specialties, including alumni of the program.



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