



ST VINCENT'S
HOSPITAL
MELBOURNE



St Vincent's
**RESEARCH
REPORT
2017**

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Message from the **CHIEF EXECUTIVE OFFICER**



St Vincent's has a well-deserved reputation for always striving for something greater as we care for our patients. Research is an integral part of this Mission, with many of our clinicians seeking answers to conditions that affect their patients.

The Hospital has a highly active research community, which is recognised internationally for translational research. In the 2017 St Vincent's Research Report, you will meet seven gifted clinicians who have begun leading their own clinical research on campus, searching for evidence that will help to influence the future delivery of patient care.

Biomedical engineering is one of the core capabilities of St Vincent's and, in collaboration with our partners in this burgeoning field, SVHM researchers are on the path to revolutionise the future solutions to chronic health problems.

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The planned Aikenhead Centre for Medical Discovery (ACMD), Australia's first bio-engineering research and education centre situated on a hospital campus, is a key enabler for our ambitious translational research agenda and advancing treatments through new technology.

While plans progress to build the new, state of the art ACMD at our Fitzroy campus, the purpose-built BioFab3D facility continues to foster interaction and collaboration with the very clinicians who work directly with patients.

I am extremely proud of our community of researchers for their commitment to providing hope for our patients, the foundation upon which we have been serving our Mission for the past 125 years.

Angela Nolan
Chief Executive Officer
St Vincent's Hospital Melbourne

Message from the **DIRECTOR OF RESEARCH**

All health and medical research is ultimately aimed at improving the health care provided to our community and it represents our commitment to building a healthy future. At St Vincent's Hospital Melbourne, research is a core component of providing health care excellence to all.

Each year we undertake and collaborate in a broad spectrum of research spanning basic science to bedside implementation and clinician-led innovation, and the Annual Research Report brings together this wonderful work to showcase the dedication and determination of our researchers.

In the 2017 Research Report, we have focused on the new generation of clinician researchers who are building their portfolios at St Vincent's and helping lead new projects in emerging areas within their own specialities.

Funding to seed and commence new research projects is always in demand. We are excited that many of these young researchers have received support for their projects through the St Vincent's Hospital Melbourne Research Endowment Fund that distributed over \$960,000 to support St Vincent's-based research in 2017 and over \$1 million dollars for the current year. By providing this early funding support, young clinician researchers can develop their projects to compete for larger competitive funding grants at national and international levels.

ACMD Research Week continues to grow, bringing together researchers across the 10 partners and beyond to celebrate, showcase, challenge and learn from outstanding plenary speakers, local and national visitors and each other in a week of focus on research at St Vincent's Hospital Melbourne.

Finally, 2017 has been a year of increased engagement for our researchers and Research Directorate staff locally, nationally and globally. We have joined with academic and industry groups to ensure that health and medical research continues to grow across Australia, and met with international colleagues to promote research opportunities in Australia and Victoria.

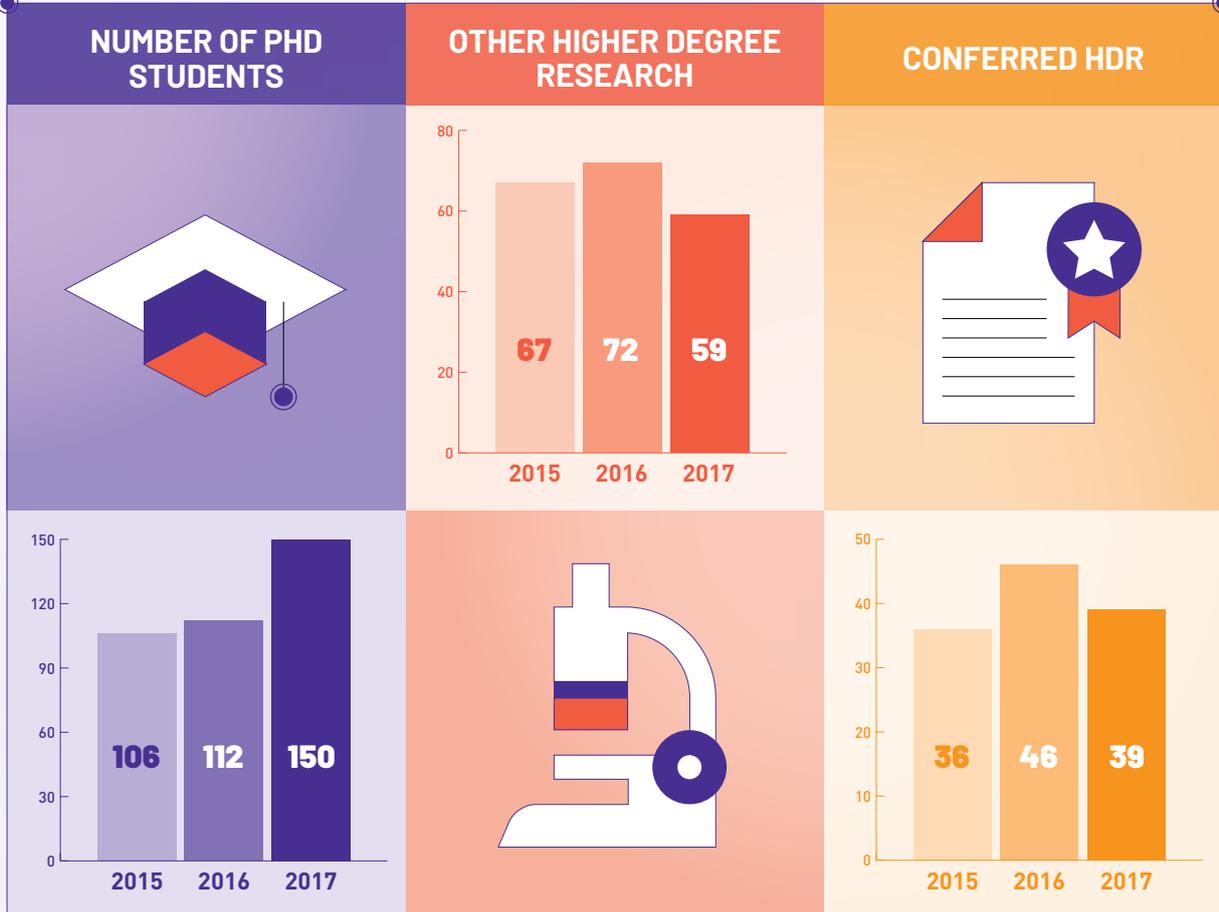
Welcome to the 2017 St Vincent's Hospital Melbourne Research Report: I hope you enjoy hearing the stories, and are inspired by the advances made by our talented teams.

Dr Megan Robertson
Director of Research
St Vincent's Hospital Melbourne

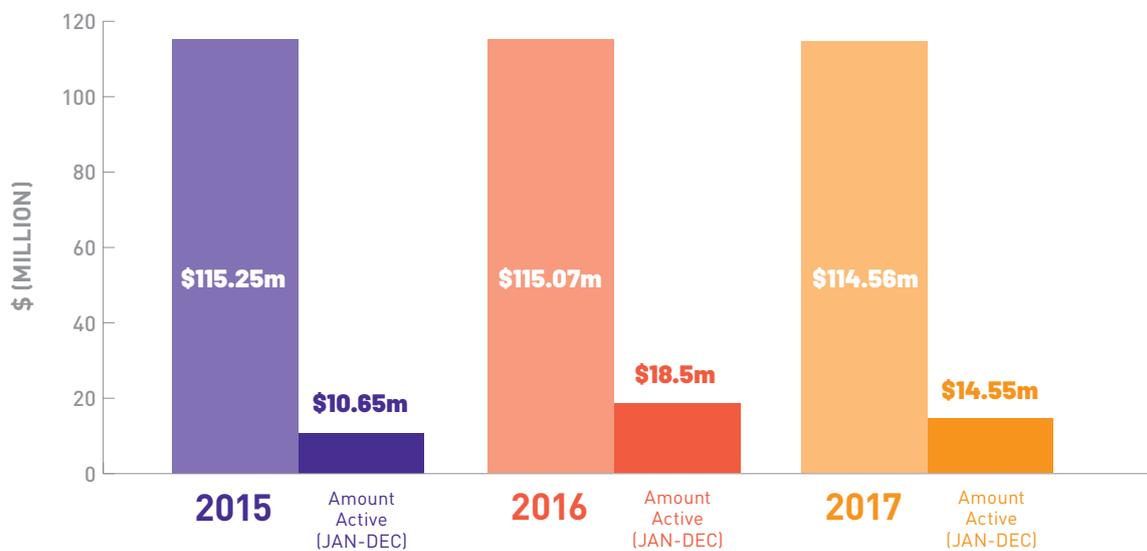


RESEARCH

at a glance



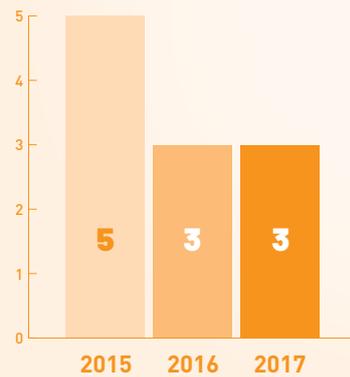
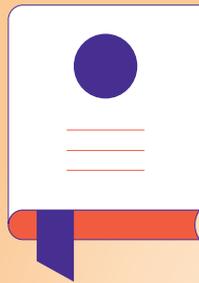
RESEARCH INCOME RECEIVED



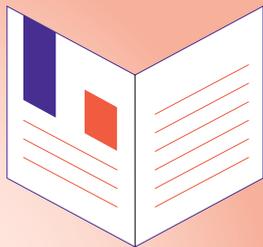
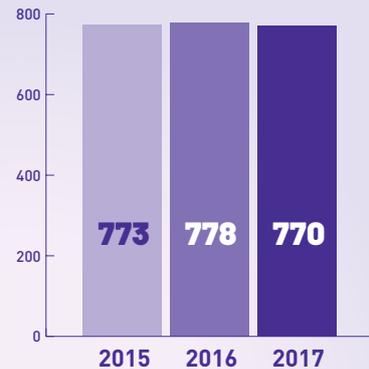
BOOK CHAPTERS PUBLISHED



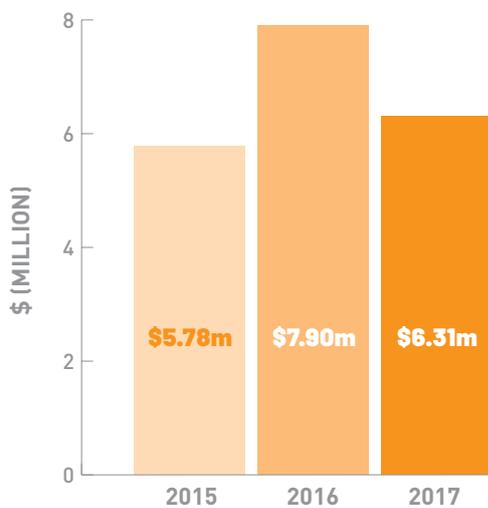
BOOKS PUBLISHED



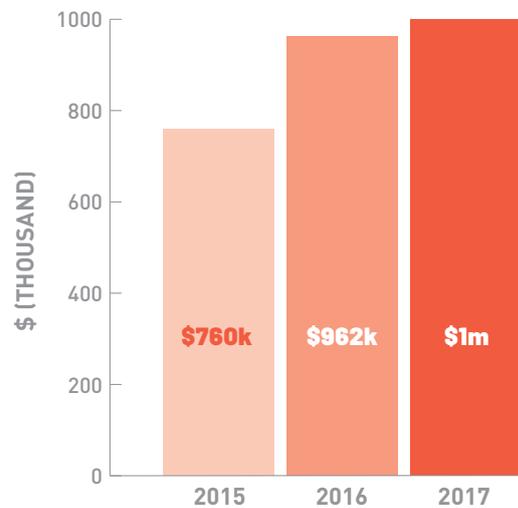
NUMBER OF PUBLICATIONS (JOURNAL ARTICLES)



NHMRC AND ARC GRANTS (active Jan-Dec 2017)



RESEARCH ENDOWMENT FUND (Total amount)



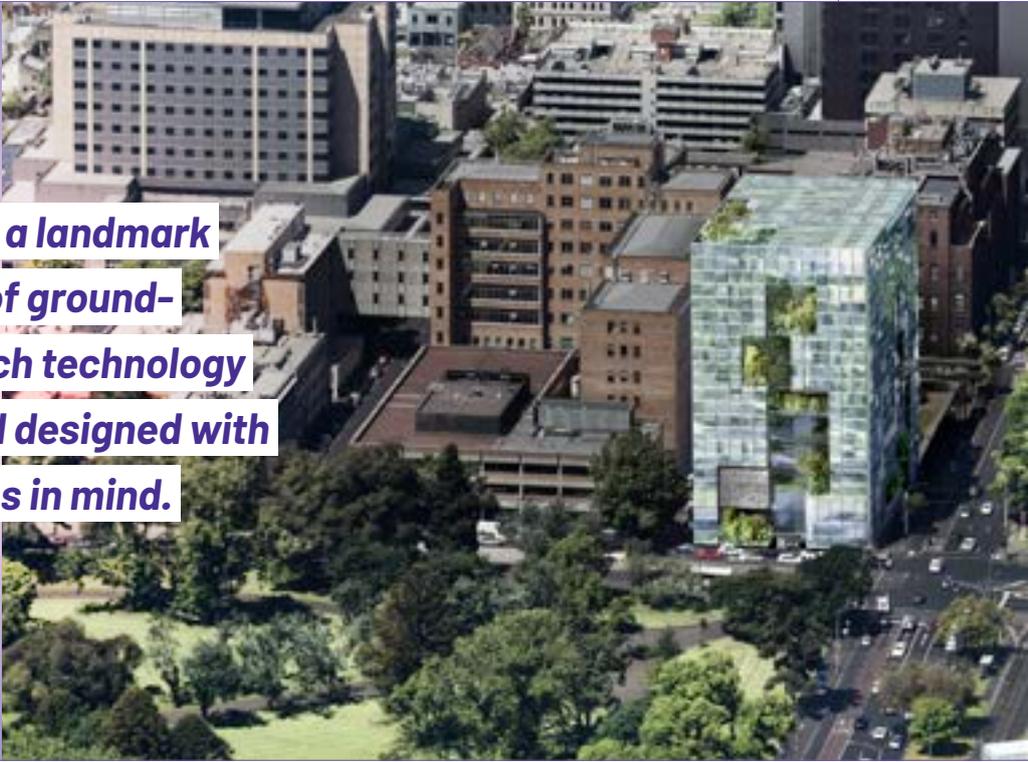
The **AIKENHEAD CENTRE FOR MEDICAL DISCOVERY**

Innovation at the intersection of Clinical Practice,
Engineering, Technology and Industry

The Aikenhead Centre for Medical Discovery will be Australia's first hospital-based bio-engineering innovation hub.

Located at St Vincent's Hospital Melbourne within a tertiary university health care service, the ACMD will be a landmark facility of ground-breaking research, technology and solutions, all designed with patient outcomes in mind.

Aligning the diverse clinical and research strengths of St Vincent's, five internationally recognised universities and four renowned medical research institutes in a purpose built centre, the ACMD will drive healthcare innovation to improve patient outcomes and reduce the burden of chronic disease – while also focusing on the cost-effectiveness of healthcare service delivery.



***the ACMD will be a landmark
medical centre of ground-
breaking research technology
and solutions, all designed with
patient outcomes in mind.***

ACMD Research Partners





Biopen

Researchers are working to prevent the onset of osteoarthritis using 3D printing technology to repair damage to bones, muscles, tendons and tissue in organs.

The 'Biopen' contains a gel made of stem cells taken from the patient before surgery and can print live cells to repair damage to cartilage, bones and muscle. The goal is to repair certain injuries such as cartilage injuries that at the moment are impossible to repair completely.

The Biopen has been successfully tested on sheep to repair knee injuries, and human trials will start in the near future.

The minder – 'fitbit' for the brain

Researchers have developed a 'fitbit for the brain', an implantable device to monitor epileptic seizures and warn patients when seizures are likely.

The device is inserted behind the ear, and detects brain wave patterns that are then sent to a smartphone or computer. By reading the unique 'weather patterns' of brain waves, the device learns when a seizure is imminent, and sends an alert to the patient, doctor and carer.

Other possible future applications could include monitoring electrical changes during sleep, measuring whether soldiers are conscious on the battlefield, and detecting changes in unconscious head trauma patients.



Innovation in action

Just in time implants

Collaborators are using combined 3D printing, robotic surgery and advanced manufacturing to create tailored implants for patients with bone cancer, dramatically improving patient and healthcare outcomes.

The project aims to bring this technology to the theatre. While patients are having their cancer removed in the operating theatre, in the next room, an implant could be custom printed to precisely fill the space left after removal of the diseased bone.

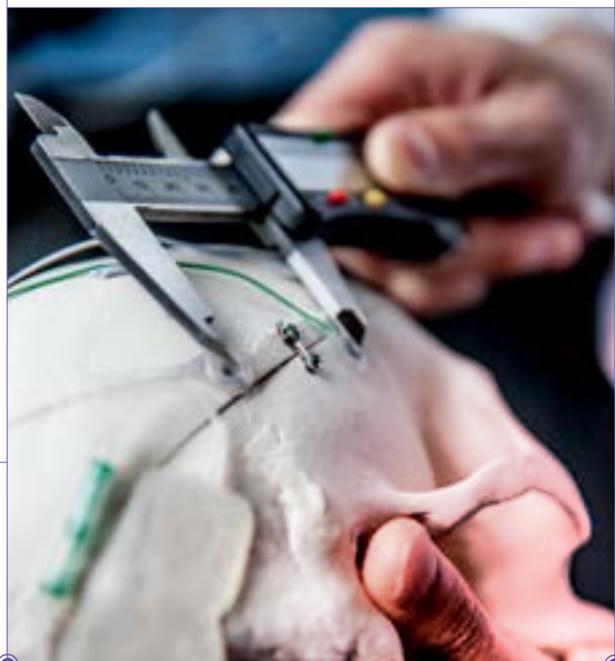
Just-in-time implants will transform the delivery of care for people with bone cancer. This process will expand the surgical options available to patients and surgeons and increase the potential for limb saving surgery.

Liver in a dish

In a world-first, scientists are using a combination of human cells in an ambitious bid to grow liver tissue for transplants.

The tiny experimental organs — developed from cells donated by cancer patients — will be used to test drugs and eventually treat disease. The team is using a novel combination of three types of human cells, a human derived liver gel and a biodegradable scaffold to create the mini livers.

Development of the organoid technology would form the cornerstone of generating 'new' liver tissue for transplants, to treat a wide variety of end-stage liver disease.



Research **DIRECTORATE REPORT**

For 125 years, St Vincent's Hospital Melbourne (SVHM) has been providing the highest standards of care driven by our concern for others, especially those in need.

In addition to diagnosing, treating and caring for patients across the entire health spectrum, St Vincent's is a world-leading clinical research hospital.

St Vincent's is part of Australia's largest not-for-profit Catholic health care provider, St Vincent's Health Australia, and research is undertaken in accordance with Catholic ethos and principles.

**St Vincent's is a
world-leading clinical
research hospital.**

The team

The work of the Research Directorate is led by the Director of Research, Dr Megan Robertson. The Research Directorate comprises the Research Facilitation and Research Governance units, the Experimental and Surgical Unit, the Hospital Library Service and the research facilities in the BioResources Centre.

Our role is to:

- Provide leadership to the SVHM research community
- Facilitate research through the provision of appropriately coordinated research activities and infrastructure
- Provide advice, assistance and encouragement to all staff wishing to pursue clinical research activities
- Liaise with our associated research institute
- Assist in the establishment of the Aikenhead Centre for Medical Discovery (ACMD)



Right: Research Directorate team

St Vincent's Hospital Melbourne Research Valet® Service

The Research Valet® Service at St Vincent's Hospital Melbourne has proven an agent of disruptive change for clinical trials in Australia.

For the past three years, the Research Valet® Service has been providing fast, facilitated Human Research Ethics Committee (HREC) submission preparation and liaison throughout the HREC submission and consideration process, with final ethical review outcome within 30 calendar days. And business is booming, with local and global CROs and sponsors utilising the service.

Valet Service Manager Dr Wade Kruger has over 10 years' experience in biomedical research and project management, and is supported by a skilled team of submission and HREC specialists, who provide a smooth submission process and highly competitive timeline for ethical review. Alex Christov, Brenda Ly and Trixie Schinkel work with Wade to ensure close personal communication with sponsors and researchers at each step of the submission and review process.

Valet Service Manager
Dr Wade Kruger has over
10 years' experience in
biomedical research and
project management



The Research Valet® Service links to the SVHM HREC which is credentialed for National Mutual Acceptance through the NHMRC and the Victorian Department of Health and Human Services (DHHS). This means that SVHM HREC review is accepted across Australia in all jurisdictions except the Northern Territory, and also in most private health facilities.

The Research Valet® Service provides services for all types of clinical trials, from first-in-man, Phase 1 through to Phase 4, and across pharmaceutical, diagnostics and med-tech trials. In particular, SVHM has specific expertise in medical device research and this unique experience has been included in our Valet Service, where the team can help guide seasoned research teams or start-ups to get fast trial review and commencement.

Importantly, SVHM does not need to be a participating trial site for a trial to be managed through the Research Valet Service.

In the past 12 months, the Valet® Service has also included optional post-approval management with facilitated preparation and submission of amendments, HREC communications and reports.

The Research Valet®
Service facilitates
HREC ethical review
outcome within

30 DAYS



Our unique Research Valet®
Service is recognised as a

**SECTOR LEADER
IN AUSTRALIA**



The Research Valet®
Service provides
services for all types of
CLINICAL TRIALS

Below: Dr Tam Nguyen, Executive Officer of Research

Consumer and Community Engagement



Dr Tam Nguyen is an experienced research administrator with previous clinical research experience at numerous teaching hospitals and medical research institutes. He is responsible for research strategy, administration and business development. Dr Nguyen has a double degree in Biomedical Engineering, a PhD in Biomechanics and an MBA in general management.

In 2018, Dr Nguyen continues to serve on the DHHS Working Group, Improving Cancer Outcomes for Aboriginal Communities Working Group - Participation in Clinical Research.

Proactive engagement with our consumers and community has been one of the key focuses for the Research Directorate in 2017.

We believe that the consumer and the community have the right to be involved in research that affects them and we are committed to facilitating their participation in all our research activities.

Dr Tam Nguyen, Executive Officer of Research, received the VCCC Scholarship to complete the Graduate Certificate in Consumer and Community Engagement in early 2017. Since then he has been active in driving the engagement agenda with activities including:

- Participating on the DHHS Working Group, Improving Cancer Outcomes for Aboriginal Communities Working Group - Participation in Clinical Research
- Presenting a Poster on 'Barriers and Enablers to clinical research participation in Aboriginal Australian population – A stakeholder analysis' at the 6th Annual NHMRC Symposium on Research Translation, co-hosted by the National Health and Medical Research Council and the Lowitja Institute
- Hosting the Inaugural Public Debate, 'Why Clinical Trials Matter', on International Day of Clinical Trials in May in collaboration with the Convergence Science Network
- Recruiting three lay members to the Human Research Ethics Committee from Aboriginal Torres Strait Islander and Culturally and Linguistically Diverse backgrounds
- Annual Public Lecture, title 'Opinion vs Evidence: Is Fake News Threatening Science?'
- BioFab3D Centre Tour in collaboration with the Convergence Science Network's Opening the Vault series

As part of the annual ACMD Research Week, the Research Directorate continues to facilitate public engagement in science and research through the activities:

We believe that the consumer and the community have the right to be involved in research that affects them and we are committed to facilitating their participation in all our research activities.

ACMD Research Week

The 2017 Aikenhead Centre for Medical Discovery (ACMD) Research Week in August was a wonderful celebration of research activity across the campus.

The week was officially opened by the Hon. Frank McGuire, Parliamentary Secretary for Medical Research and Dr Amanda Caples, Victoria's Lead Scientist with numerous high profile speakers during the week including:

- Professor Anne Kelso AO, CEO of NHMRC
- Professor Julie Bernhardt, Head of the Stroke Division at The Florey Institute of Neuroscience and Mental Health
- Sue MacLeman, Managing Director and CEO MTPConnect
- Professor Grant McArthur, Executive Director of the Victorian Comprehensive Cancer Centre

The Inclusive Health Innovation Fund Symposium was featured for the first time in 2017, with guest speaker Professor Alan Cass, Director Menzies School of Health Research, followed by researchers receiving the Inclusive Health Innovation Fund research grants providing updates on their research.

Our medical students were also included in the program both at the poster sessions and moderated oral presentation sessions and for the first time at their own '3 Minute Thesis Competition', which aims to cultivate our students' academic, presentation and research communication skills.

The public lecture, 'Opinion vs fact: Will the demise of quality news kill science?' was moderated by award winning journalist Dr Gael Jennings with panellists including Michelle Gallaher, Co-Founder & Director The Social Science, Misha Ketchell, Editor – The Conversation, Professor David Karoly, School of Earth Sciences (University of Melbourne), Eric Beecher, owner Private Media and comedian Rod Quantock.

**The Inclusive Health
Innovation Fund Symposium was
featured for the first time in 2017**





2017 ACMD Research Week **TJ MARTIN MEDAL**

Dr Prerak Trivedi

'Targeting CD8+T Cells to Protect Beta Cells in Type 1 Diabetes'

Dr Brian Liddicoat

2016

Previous TJ Martin
Medal recipients

Dr Jibrán Abdul Wali

2015

Dr Caroline Jung

2012

Dr David Ascher

2014

Dr Andre La Gerche

2011

Dr Eugene Estella

2008

Dr Sabine Jurado

2013

Dr Lorien Parker

2010

Dr Kim Connelly

2007

Dr Hitesh Peshavariya

2009

Dr Carolyn McInnes

2006

Dr Hilton Gock

2005

Research Endowment Fund – Reaching the \$1 million milestone

The annual St Vincent's Hospital Melbourne Research Endowment Fund (REF) grants provide funding for clinician researchers and seed funding for campus-based research projects. This year we received almost 100 applications which is a significant increase in comparison to previous years.

A total of over \$1 million in funding was provided to support research excellence and collaboration across campus. The annual Research Endowment Fund Lecture and Awards Ceremony was a great event, with Dr C. Glenn Begley, CEO of BioCurate, presenting a fantastic keynote on leadership and what academia can learn from industry.

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A total of over

\$1 MILLION

IN FUNDING WAS PROVIDED TO SUPPORT RESEARCH EXCELLENCE AND COLLABORATION ACROSS CAMPUS

AWARDS

Congratulations to our St Vincent's and partner researchers who have been recognised for contributions to their research field in the past 12 months.

Cardiology

Dr Heath Adams

Geoff Mews Memorial Prize Finalist, Salvage of the Unsalvageable: V-A ECMO Bridging the Treatment of Acute Stent Thrombosis of the Left Main in a 28-year old male. Heart Lung Circ 2017; 26:e125-126.

A/Prof Andre LaGerche

Best Research Abstract, 2017 Pulmonary Hypertension Society of Australia and New Zealand Annual Scientific Meeting

Endocrinology

Prof Alicia Jenkins

NHMRC Practitioner Fellowship level 1 (2017-2021)

Dr Sybil McAuley

Early-Career Patient-Orientated Diabetes Research Award (2017-2022), Junior Diabetes Research Foundation

Travel Award, Australian Diabetes Society

Senior Medical Staff Association Award, Best Poster Presentation Prize Clinical, SVHA ACMD Research Week 2017

Dr Melissa Lee

Travel Grant for oral presentation, Australian Diabetes Society Conference 2017

President's Clinical Young Investigator Award Finalist, Australian Diabetes Society 2017

Dr Barbora Paldus

Sheppard M Lowe Scholarship Randal and Louisa Alcock Scholarship

Alwyn Stewart Memorial Scholarship John and Allan Gilmour Research Award

Elizabeth Mary Sweet Scholarship

PhD top up Scholarship, Junior Diabetes Research Foundation

Roche ASM Registration Assistance Grant

Gastroenterology

Dr Emily Wright

Deans Award for Excellence in a PhD Thesis, University of Melbourne, Faculty of Medicine: 'Clinical and scientific features of post-operative Crohn's disease recurrence' (Supervisors: Michael Kamm, Paul Desmond)

Dr Darren Wong

Young Investigator Bursary 2017, European Association for the Study of the Liver (Supervisors: Alex Thompson, Stephen Locarnini, and Paul Desmond)

Haematology

Dr Hang Quach

Teaching award, St Vincent's Clinical School

Immunology

Dr Doreen Fang

Young Investigator Award, The Thoracic Society of Australia and New Zealand

President's Prize finalist, The Thoracic Society of Australia and New Zealand

Junior Investigator oral presentation finalist, ACMD Research Week 2017

Basic Science Award finalist, Australian and New Zealand Society of Nephrolog

Dr Matthew Choy

Olympus St Mark's Hospital (London) Endoscopy Fellowship, The Gastroenterological Society of Australia

Neuroscience

Prof Stephen Bowden

Elected Fellow of the National Academy of Neuropsychology of North America, October 2017

Nursing

Prof Karen-Leigh Edward

International Award-Best poster, Australasian Neuroscience Nursing Association, 'Building Bridges, Making Connections'

Finalist Senior Researcher Category, ACMD Research Week 2017

Nutrition

Elizabeth Doyle

Senior Medical Staff Association Best Poster Presentation Prize Allied Health, ACMD Research Week 2017

Occupational Therapy

Dr Tamara Tse

Occupational Therapy Australia Research Foundation Grant

Below:
Dr Sybil McAuley

Oncology

Dr Katherine Geddes

Best New Concept Award, Australasian Gastrointestinal Trials Group ASM 2017, 'The prevalence and significance of sarcopenia with operable adenocarcinoma of the stomach or GOJ undergoing treatment with curative intent and the impact of altered body composition on chemotherapy delivery'

Palliative Medicine

Dr Beth Russell

Ian Maddocks Guest Lecture, awarded to the best abstract submitted to a person under the age of 40, Palliative Care Australia National Conference

Podiatry

Michelle Kaminski

Best paper award, Journal of Foot and Ankle Research

Rheumatology

Dr Kathleen Morrisroe

Junior Investigator best podium abstract presentation, ACMD Research Week 2017

Surgery

Foundation for Surgery John Lowenthal Project Grant, Royal Australian College of Surgeons

ARC Training Centre for Additive Manufacturing Grant

Dr Serena Duchi

Best Poster Award, European Orthopaedic Research Society (EORS) 24th Annual Meeting, 'Mesenchymal Stromal Cells and innovative nanoparticles as multimodal therapy for osteosarcoma treatment'

Best Poster Award, Gruppo Italiano Staminali Mesenchimali Annual Meeting, 'Mesenchymal Stromal Cells and innovative nanoparticles as multimodal therapy for osteosarcoma treatment'



Dr Genni Newnham

Oncology Consultant



Dr Newnham is investigating the risk factor profile of prison patients

Funding for this research was provided by St Vincent's

**INCLUSIVE
HEALTH
INNOVATION
FUND**

RESEARCHER PROFILE

Dr Genni Newnham

Oncology Consultant

Dr Newnham has often been frustrated by the lack of research around the healthcare outcomes of Victoria's prison population. She is now conducting patient experience research looking at prisoners with cancer.

Prisoners are among the most marginalised groups in society. The Victorian prison population is increasing, and although prisoners overall are mostly young men, there is a rapidly growing group of older prisoners, who bring with them a unique set of health problems.

Risk factors such as higher rates of smoking, illicit drug and alcohol use than the general population, as well as higher rates of comorbidity, mean there is an increased need for the provision of cancer care among this disadvantaged and vulnerable group.

Oncologist Dr Genni Newnham provides specialist care for all cancer patients in Victorian prisons as part of St Vincent's cancer care team. Dr Newnham is now conducting patient experience research, looking at cancer outcomes in the prison population.

'Prisoners are often difficult to treat for a number of reasons,' Dr Newnham says. 'They have poorer outcomes than other groups and often don't receive optimal care. These patients frequently refuse to come to appointments, and as a clinician I never really understood why.'

Dr Newnham is analysing demographic, risk factor and cancer specific data for all incarcerated patients with a cancer diagnosis treated at St Vincent's

'What we are learning now is that there are priorities for these patients that are perceived by them to be more important than their healthcare. Concerns for their own safety, or the consequences of leaving their home prison, such as losing their cell or job, even for an outpatient appointment, lead some to refuse medical appointments, investigations or treatment.'

Dr Newnham is analysing demographic, risk factor and cancer specific data for all incarcerated patients with a cancer diagnosis treated at St Vincent's over a 15 year time frame, in the hope of gaining a better understanding of this patient population.

In addition, a more detailed analysis of prisoners with cancer in the last six years is being undertaken to determine if optimal care pathways have been followed for these patients. The research will explore potential changes in hospital practice to improve prisoner compliance and outcomes.

Dr Newnham wants to know more about the risk factor profile of prison patients, better understand the types and stage of cancers occurring in these patients, the mode of presentation, and the types of treatment.

Finding these patients for continuing care once they have been released from prison is also a major issue. Many previously incarcerated patients are lost to follow up once they are released. In many cases it is not until they re-offend that these patients re-enter the healthcare system, often in much poorer condition.

'Our ultimate goal is to develop a prison oncology program together with supportive programs for post discharge follow up, to ensure equitable access and health outcomes.'

'We are hoping that once we analyse all the data, we can identify two or three main trends which contribute to poorer outcomes and come up with some strategies for improvement.'

Changes already introduced include an increase in the use of telehealth consultations in cases where a patient doesn't need intravenous treatment.

The prison population is not an attractive group for research and there is little published literature about cancer in Australian prisoners. It is difficult to get subject interest or engagement, and security policies in prisons often mean research is a low priority.

However according to Dr Newnham, the fact that this group is consistently overlooked is what contributes to substandard healthcare in these patients overall.

Dr Newnham has been able to undertake this much needed research due to funding from St Vincent's Hospital Melbourne Inclusive Health Innovation fund, allocated as part of the Research Endowment Fund, which provides resources to engage and support clinician driven projects for St Vincent's staff passionate about improving outcomes for the poor and vulnerable.

'As a clinician trying to undertake research it can be extremely difficult to allocate sufficient time due to competing/conflicting demands. For most of us, there are increasing clinical and administrative demands with finite resources and time. The Inclusive Health Innovation Fund grant provides protected time away from clinical demands to facilitate the intended research.'

'It is fair to say that if this funding wasn't available, this research would not get off the ground.'

Dr Adam Pastor

Addiction Medicine
Consultant



Dr Pastor is using a new
technology called

FLASH GLUCOSE MONITORING

Dr Pastor is conducting
interviews with

16 PATIENTS
AND MONITORING
BLOOD GLUCOSE
LEVELS FOR A PERIOD
OF SIX WEEKS

RESEARCHER PROFILE

Dr Adam Pastor

Addiction Medicine
Consultant

Dr Pastor is studying the alcohol and substance use of young adults with type 1 diabetes, in an attempt to understand more about their experiences and how alcohol and illicit drug use can affect blood glucose levels.

For young adults living with type 1 diabetes, getting the balance right between leading a safe lifestyle and keeping up with their peers can be a challenge.

On average, people with type 1 diabetes die younger than their peers. This increased mortality rate is not just related to difficult to control blood glucose, but also trauma and psychiatric complications, and there is growing evidence to suggest that alcohol and substance use may contribute as well.

St Vincent's Addiction Medicine Consultant Dr Adam Pastor is undertaking a PhD looking at the alcohol and illicit drug use of adults aged 18 - 35 years with type 1 diabetes. He is conducting interviews with 16 patients and monitoring the blood glucose levels of a further 20 for a period of six weeks, in an attempt to shed some light on their particular experiences.

'There is no evidence to suggest that young people with type 1 diabetes will use alcohol or other substances any less than their peer group. For the vast majority, it sits at about the same levels as most of their peers,' Dr Pastor says.

Dr Pastor believes that clinicians can build on being more empathetic in order to build trust with this young group.

Dr Pastor's research, funded by the St Vincent's Hospital Melbourne Research Endowment Fund (REF), is looking at the ways this cohort keep themselves safe during these experiences and the sort of interactions they have with clinicians, while encouraging them to open up and share their experiences.

Dr Pastor is using a new technology called flash glucose monitoring, a small disk-like sensor that sits on the outer upper arm, and uses near frequency communication to allow the patient to look at their blood glucose, while continuously measuring it. Subjects are given devices to record their substance use as well as other major factors contributing to blood glucose control.

'The reality for most young people is they are far more influenced by their peer groups than by anyone else. As treatment for type 1 diabetes has improved over time, there's a tendency for everyone to test the boundaries a little bit. In our society it is alcohol, and in some peer groups, other substances as well.'

'While the best thing to do may be to avoid risk taking behaviour, that's not a real or practical solution for many people. If we put our heads in the sand, our young adults won't talk to us about it, they won't listen to advice.'

'Many of the people I have spoken to have had close calls, where family and friends have intervened and if they hadn't been there to intervene, the young person could have had a dangerous episode of hypoglycaemia or they may have needed to attend hospital.'

Interestingly, subjects understand the concerns, and a number have developed harm reduction techniques.

'We are finding that there is an added risk but they are doing things and learning things to mitigate that risk. Having that in the public domain gives people things to talk about and allows us to share that information to hopefully reduce what is a rare but catastrophic risk.'

Dr Pastor believes that clinicians can build on being more empathetic in order to build trust with this young group.

'There's a strange sort of paradox in that while they rarely discuss these issues with their clinicians, they still consider clinicians to be the most trustworthy source of information. While they might go to the internet or use peer support groups for information, young people considered these to be less trustworthy than their doctor, with whom they may not broach these topics.'

'I have received feedback from many participants who tell me, 'young people are going to do this.' Currently, the information about drugs and alcohol can be unhelpful, as it lacks an acknowledgment that these things are going to happen.'

The study of substance use in all young adults is not well researched, and while those with type 1 diabetes is one area of interest, Dr Pastor believes that there are other health disciplines that could benefit from further study.

'Another aspect in the longer term could be to look at other chronic medical conditions affecting young adults, such as epilepsy, inflammatory bowel conditions, cystic fibrosis or asthma,' Dr Pastor says. 'We know that they are just as likely to be influenced by the same peer groups.'

Dr Nik Ding

Gastroenterology Consultant

As a gastroenterologist specialising in inflammatory bowel disease (IBD) such as Crohn's and ulcerative colitis, Dr Nik Ding sees many patients who suffer from this debilitating and life altering chronic disease.

'The question for me is, 'how can I improve a patient's life by undertaking research that might change the way we manage IBD patients?' he says. Dr Ding went to London and completed his data analysis for his PhD at St Mark's Hospital, one of the most renowned centres for gastrointestinal diseases in the world, under the guidance of top gastroenterologist Professor Ailsa Hart. Prof Hart introduced him to the world leading IBD drug therapy research being undertaken at Imperial College.

During his time abroad, Dr Ding was appointed to the committee of the world's largest IBD organisation, the European Crohn's and Colitis Organisation (ECCO), becoming one of the first Australians to be a committee member.

Dr Ding is also Principal Investigator of IBD Clinical Trials at St Vincent's, and through the ECCO network has brought to Australia an international clinical trial looking at the cessation of medications in patients with Crohn's disease.

This study, called SPARE/BIOCYCLE, has over €20 million of funding and will now open up at 10 major IBD centres in Australia, with Dr Ding as the lead investigator.

'Because we are a world-renowned centre at St Vincent's we can offer patients access to a lot of these new agents that aren't on PBS and not accessible to the public.'

Dr Ding commenced his research by reviewing factors that alter effectiveness of anti-tumour necrosis factors (anti-TNFs), a group of drugs that form the backbone of IBD treatment. Anti-TNFs are critical drugs, used in most patients that have moderate to severe Crohn's disease and ulcerative colitis.

'Anti-TNF drugs are very expensive and one of the biggest expenditures in terms of healthcare dollars, so it is important that they are used effectively and efficiently. Up to 30 per cent of patients do not respond to anti-TNFs and this is difficult to predict until after a number of doses and thousands of dollars.'

'I was interested in knowing how to use anti-TNFs in the best possible way and in the right conditions.'

The research was in done in two parts. Dr Ding first looked at big data, using a large cohort database of 50,000 patients to determine how effectively the drugs work and any factors that may predict drug response. The second part involved the chemical profiling of IBD patients and comparing them to healthy controls.

'Crohn's patients had really significant chemical signatures in their bloodstream, faeces and urine, which differed from healthy controls. We are hoping we can develop a simple bench marker to predict whether patients will respond to anti-TNF drugs.'

Anti-TNFs have been around for at least 10 years and have significant side-effects, including blocking parts of the body's immune system functionality. As Principal Investigator for IBD clinical trials at St Vincent's, Dr Ding is seeing great results from newer agents. Some of these drugs are theoretically "cleaner" with less side-effects because they actually target the gut lining itself.

'I was interested in knowing how to use anti-TNFs in the best possible way and in the right conditions.'

'Once we lose the response to a particular drug, the second drug is not going to be as effective. If we know that anti-TNFs are not going to work, we can look at using alternative treatments from the beginning.'

Dr Ding has already published work looking at personalising anti-TNF therapy, particularly in regards to body composition.

'By taking a cross section of a CT scan and assessing muscle and fat parameters, we can understand more about our patients, as well as how these parameters might impact on how each patient responds to drug therapies.'

'Interestingly we found that the low muscle patients would be less likely to respond to the anti-TNF drugs.'

RESEARCHER PROFILE

Dr Nik Ding

Gastroenterology
Consultant

Dr Ding is Principal Investigator of IBD Clinical Trials at St Vincent's and a committee member of ECCO, the world's largest IBD organisation. Dr Ding has brought to Australia an international clinical trial looking at the cessation of medications in patients with Crohn's disease.

Dr Ding analysed a
database of

**50,000
PATIENTS**

to determine drug
effectiveness



Dr Ding is the lead
investigator of a new
study called

SPARE/BIOCYCLE



Dr Beth Russell

Palliative Care Consultant

St Vincent's Palliative Medicine Consultant Dr Beth Russell has found that triage in palliative care can be a real clinical problem. Dr Russell is now leading a project as part of her PhD to ensure that the sickest patients in the healthcare system are treated in the most appropriate way.

'If you have only got one bed left on the palliative care ward, or if you have got time to do only one home visit for the day, but you have got lots of referrals, who should you see first?' Dr Russell asks.

'Should you see the person who is imminently dying with a stroke? Should you see the person who has cancer with out of control pain? Should you see the person who is deteriorating with heart failure at home and not able to walk to the bathroom anymore? Or should you see the person who has high care needs and their carer is unable to cope?'

Currently, there is no systematic way of comparing one palliative care patient's needs against another anywhere in the world, but that's about to change. Dr Russell has spent the last three years developing a world-leading palliative care decision-making triage tool.

'The tool will ensure that we are transparent, equitable and efficient, as we make every effort to ensure that the person who has the most urgent palliative care needs gets seen first,' Dr Russell says.

The research was done with a qualitative study involving focus groups and interviews with palliative care clinicians, bereaved carers and consumer representatives. From that, the team identified seven factors that are important when assessing the urgency of patient needs.

Over 800 clinicians from all over the world also participated in an online experiment, which Dr Russell says reflects how important clinicians consider the issue of palliative care triage to be. The results from the study led to complex statistical analysis and helped to generate a scoring system.

Doctors now have a tool that easily gives each patient a score which can be compared with another patient to determine the urgency of their need.

'We think it will change palliative care practice across Australia and worldwide,' Dr Russell says. 'Facilitating equitable access to care is in line with St Vincent's Mission and we're very confident that this will improve access to palliative care for all people depending on their need.'

Dr Russell has been a consultant at St Vincent's Hospital Melbourne for five years and was drawn to the hospital due to its strong focus on palliative care research and support for clinician researchers. The Centre for Palliative Care (CPC) and the Victorian Comprehensive Cancer Centre (VCCC) Palliative Medicine Research Group, two research think tanks situated on campus, provide opportunities for clinicians to participate in and conduct high quality clinical research in palliative care. Studies range from health care systems research to psychosocial care, patient and carer experiences, and clinical trials of treatments for symptom control.

'With the CPC and the VCCC Palliative Medicine Research Group both situated at St Vincent's, we are lucky to have a large group of palliative care clinicians who are really interested in being academically rigorous. They are not just interested in having research inform their practice, but also want to be involved in research.'

Dr Russell is a strong advocate of palliative care research, which can often be quite challenging.

'It is often hard to conduct research in palliative care, as our patients are very unwell and things can change quickly for them. It is quite an upsetting time for their families and carers, so you can feel like you're burdening them.'

'However what we often find is patients really want to contribute, they want something good to come out of their experience. They want to access treatments that they sometimes otherwise wouldn't get access to, and they want to contribute in a positive way to make it easier for future patients.'



Dr Russell has developed a world-leading palliative care decision-making triage tool

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RESEARCHER PROFILE

Dr Beth Russell

Palliative Care
Consultant

Dr Russell has spent the last three years leading a project developing a world-leading palliative care decision-making tool, to ensure that the sickest patients in the healthcare system are treated in the most appropriate way.



Dr Sharon Ford

Nephrology Consultant



Dr Ford is collecting patient samples to create a

BIO-BANK

Dr Ford has established a database of all patients seen with vasculitis over the last

20 YEARS

RESEARCHER PROFILE

Dr Sharon Ford

Nephrology Consultant

Dr Ford has a keen interest in kidney vasculitis, an extremely rare immune disease, and is collecting patient samples to create a bio-bank that will look at different immune markers of vasculitis to hopefully one day individualise treatment based on genetics.

Dr Sharon Ford remembers vividly the moment as a junior nephrology registrar she met an incredibly sick young woman who had been struck down by vasculitis.

'She was one of the sickest patients I had ever seen,' Dr Ford says. 'Unfortunately she died within six months, however I became interested in and intrigued by this disease that had caused this fit and well woman to become so unwell.'

Vasculitis is a very rare immune disease that affects the kidney of one in every one million people. Only about 30 new cases are diagnosed each year. Small blood vessels in the kidneys become damaged, which can cause blood to appear in the urine and can lead to kidney failure in severe cases. Untreated, this condition has an 80 percent mortality rate, while many patients also die of complications arising from immunotherapy.

'Without treatment, most patients will die. Some patients, despite early presentation, still progress to end stage kidney disease no matter what treatment we use.'

With the help of a St Vincent's Hospital Melbourne Research Endowment Fund (REF) grant, Dr Ford has established a database of all patients seen with vasculitis at St Vincent's over the last 20 years. She is now collecting patient samples to create a bio-bank that will look at different immune markers of vasculitis.

'Vasculitis is a group of diseases that have been lumped together for some time. We are finding that we probably shouldn't treat them all the same, instead we should individualise them based on genetics and the different immune markers we see in patients' blood.'

'I'm currently looking at human samples and correlating what I'm doing with animal models with what I'm seeing in biopsies of blood or urine of actual patients. Of particular interest are innate immune markers, which are receptors that occur on white blood cells, that respond to infection in a non-specific way. Potentially these immune markers could be one of the links between infection and developing one of these auto-immune conditions.'

Dr Ford eventually hopes to establish a dedicated vasculitis clinic at St Vincent's to further embed her research on campus.

'The biggest problem with the disease is that the current treatment is just general immunosuppressant medication,' Dr Ford says. 'We use these non-specific treatments that suppress the immune system and as a result the patients have significant side effects.'

Dr Ford says that since she started undertaking clinical and laboratory research, she has taken a slightly different approach to treating her patients.

'Research has changed the way I think about diseases and their management and has focused me more on what evidence there is for the treatments that we routinely prescribe.'

Dr Ford eventually hopes to establish a dedicated vasculitis clinic at St Vincent's to further embed her research on campus.

'Rather than just prescribing and administering treatment, I've begun critically appraising evidence differently. Are there better ways for administering these treatments to minimise side effects?'

'It's not just our goal as clinicians to manage the immediate group of patients that are sitting in front of us. It's important that we advance the science as well. You want a patient to present today with a certain number of options but a patient that presents next year or in five years to have more or better options, that are less toxic, more effective and more targeted.'

'Sometimes there's a disconnect between laboratory research and clinical practice, and how you integrate the two and translate discoveries. That's where the role of being a clinician researcher becomes so important – being able to think a bit more about how we approach medical problems and how we investigate them.'

Mr Michael Hii

Gastroenterological surgeon

Upper-gastrointestinal surgeon Mr Michael Hii predominantly sees two groups of patients; those suffering from oesophageal and stomach cancer; and those who require weight loss surgery. They share one important element – the body composition of these patients is an important determinant in terms of their overall prognosis.

‘The effect of body composition on long term outcomes and the effect of treatment on body composition are both similar and contrasting in these two groups of patients, which makes evaluation of this effect really interesting,’ says Mr Hii.

‘Both groups of patients usually present with a relative sarcopaenia – a reduction in percentage of skeletal muscle mass – and after intervention, this change can be exaggerated with ongoing skeletal muscle loss occurring in order to prevent fat loss. We think that greater rates of muscle loss are associated with poorer long term outcomes.’

Mr Hii and his team are conducting research on changes to body composition in relation to surgical intervention, with a particular focus on ways to minimise the loss of muscle mass and skeletal bone density in upper-GI surgical patients.

‘We have a lot of early baseline patient demographic and clinical data, such as how they progress through the surgical journey and their outcomes, such as length of stay, morbidity and mortality.’

The team collaborates with the St Vincent’s department of radiology to combine this data with their dual x-ray absorptiometry (DXA) scanning technology to find out more about what is happening to the body composition of surgical patients.

‘We are using DXA scans to look at body composition, body mass, skeletal composition – basically using x-ray to tell what is muscle, fat and bone,’ Mr Hii says. ‘We track these measurements through the patient journey and up to five years following surgery.’

In studying this body composition data, Mr Hii has found that for obesity patients aiming for significant weight loss, patients are losing a large amount of muscle prior to surgery.

A lot of our patients have to go on a pre-operative diet, to shrink their liver, in order to safely have surgery. We’ve found that in this cohort, patients have a huge amount of muscle and healthy tissue loss, and post-operatively that may continue.

This may have effects in terms of further muscle and weight loss and we would like to know how this impacts long term quality of life and longevity for these patients.’

Patients undergoing surgery to remove cancer also suffer from muscle loss, becoming weak and frail. ‘Oesophageal cancer patients at baseline have a 35-40% rate of suffering from sarcopenia.’

‘It becomes harder for these patients to receive chemotherapy, they recover from surgery slower, and they probably suffer more complications from surgery, and they have worse outcomes. We are looking at ways to maximise muscle gain at a time when there is an assault on their body.’

The aim is to work out what kind of physical activity best maximises fat loss and minimises loss of healthy tissue for patients undergoing both cancer and obesity procedures. The Upper GI team are looking at ways to create personalised exercise regimens for patients about to undergo surgery.’

We are about to begin a study to utilise High Intensity Interval Training (HIIT) along the patient journey in order to see if we can intervene to minimise that muscle loss.’

Mr Hii believes that being involved in clinical research improves his ability to work as a clinician.

‘Clinical research apart from being an end to itself, also allows the opportunity for facilitate quality assurance and service improvement and also to build the right team of people around you to best care for patients.’

‘Research forces you to question your beliefs, forces you to reinforce the evidence with which you treat patients, and stops you falling into that rut of doing the same thing over and over again, of getting good results but not really achieving the best results for your patients.’

RESEARCHER PROFILE

Mr Michael Hii

Gastroenterological surgeon

Mr Hii is studying the body composition of cancer and bariatric surgery patients, with a focus on how minimising the loss of muscle mass and skeletal bone density for both of these groups can have a major effect on outcomes.



Mr Hii and his team are conducting research on changes to body composition in relation to surgical intervention

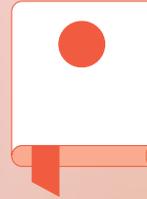
Oesophageal cancer patients have a

**35-40%
CHANCE
OF SUFFERING
SARCOPENIA**



Dr Tamara Tse

*Occupational
Therapist*



In 2016 there were

12 PUBLICATIONS

ACROSS SIX ALLIED
HEALTH DISCIPLINES

In 2017 there were

21 PUBLICATIONS

ACROSS EIGHT ALLIED
HEALTH DISCIPLINES

RESEARCHER PROFILE

Dr Tamara Tse

Occupational Therapist

Dr Tse is leading a project seeking to increase activity engagement for patients in the Geriatric Evaluation & Management (GEM) ward.

Ever since Occupational Therapist (OT) Dr Tamara Tse began working as a clinician, she had a hunger to learn more and contribute to the body of knowledge in allied health research. This led Dr Tse to complete a Master of Gerontology and then a PhD.

'Right from the get go, I wanted to know why we were doing what we were doing and to feel confident that what we were doing was the right thing for patients,' Dr Tse says.

'Doing the best thing for each patient is at the essence of being a clinician. This is especially true as an OT, when we are thinking about improving our patients' everyday life.'

With a wealth of experience as an OT across many healthcare settings, Dr Tse now leads her own research projects, as well as providing valuable support to other allied health clinicians in their research.

Dr Tse has received funding from the St Vincent's Hospital Melbourne Research Endowment Fund for a new project that will look to increase activity engagement for patients in the Geriatric Evaluation & Management (GEM) ward.

'In 2016 we conducted a mapping project that looked at how much activity patients on the GEM ward were doing during a normal work day. What we found was that between 8:00am and 4:30pm patients spend 60% of their time alone and 38% asleep or not engaged in any activity, in other words doing nothing.'

'Doing the best thing for each patient is at the essence of being a clinician. This is especially true as an OT, when we are thinking about improving our patients' everyday life.'

That finding came as no surprise to Dr Tse and other OTs. 'Observation and experience tells us that patients are not very active while in hospital. However research has found that if patients are more active it can improve outcomes.'

'Deconditioning due to inactivity, bed rest and sedentary behaviour can contribute to functional decline and reduced ability to perform everyday life activities. However, it has also been found that more active patients tend to have a shorter hospital stay.'

The first stage of the new project is to understand patient, family and staff perspectives, through qualitative interviews. The second stage will involve implementing environmental enrichment strategies – individualised activities that patients will be able to have close by to encourage them to become more active.

'We will compile a toolkit containing many different activities. Patients will be screened by OTs upon admission to find out what they are interested in and will then be provided with activities that are of interest to them.'

'We will then conduct further mapping to measure activity. Hopefully we will find patients are more active, and are sleeping and being alone less during the day.'

Dr Tse also plays a pivotal leadership role, encouraging and supporting allied health research. Dr Tse and a number of her colleagues across other allied health disciplines are developing a strategic plan for allied health research to drive research capacity across the St Vincent's campus.

Dr Tse believes that research in allied health differs from other medical research, and provides its own unique challenges.

'The type of work that we do is multidimensional and complex. We must consider each patient individually, their capacity and their current skills, their interests and motivations. We also need to consider their environmental context, such as the ward they are currently in, and the support the patient has such as their family members, the community and the resources available including staffing and funding.'

'It is really important that we work together. Working in a multidisciplinary team helps us to cater to the diverse and specific needs of our patients and enables us to make the biggest difference in peoples lives.'

Last year, St Vincent's Hospital Melbourne received funding from the Victorian Department of Health and Human Services (DHHS) for an allied health translational research position. This full-time position will assist with the research work that other clinicians are undertaking, ensuring there is an interdisciplinary link and a focus on quality research. Dr Tse believes that there is already evidence that research is growing in allied health.

'In 2016, there were 12 publications from across six allied health disciplines. In 2017, that had increased to 21 publications across eight disciplines, so we are definitely seeing results.'

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St Vincent's

acknowledges the traditional
owners of the land, the members
of the Kulin nations.

We pay our respects to their Elders, past and present. St Vincent's continues to develop our relationship with the Aboriginal and Torres Strait Islander community and are proud to be acknowledged as a centre of excellence for health care for Indigenous Australians.