

WESTERN HEALTH RESEARCH REPORT

2017/2018

OUR VISION

Together, caring for the West, our patients, staff, community and environment

OUR PURPOSE

Leading the delivery of a connected and consistent patient experience and providing the best care to save and improve the lives of *those most in need in our community*.

OUR VALUES

Compassion Consistently acting with empathy and integrity

Accountability Taking responsibility for our decisions and actions

Respect Respect for the rights, beliefs and choices of every individual

Excellence Inspiring and motivating, innovating and achieving

Safety Prioritising safety as an essential part of everyday practice

Acknowledgment of Traditional Owners

Western Health respectfully acknowledges the traditional owners of the land on which its sites stand as the Boon Wurrung and the Wurundjeri people of the greater Kulin Nation.

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RESEARCH



Western Health

FOREWORD

Our Western Health Research Roadmap 2015–2020 sets out our strategic direction for research:

‘To become a leader in translational and health services research, having impact locally and sharing our learnings globally.’

We are pleased to say that we have expanded our research efforts in 2017 and 2018 in pursuit of this and the overall strategic direction of our health service.

Achievements highlighted throughout the year underscore the role of research in delivering best care to our patients, culminating in Research Week in October 2017 and 2018. Features included a keynote address by Professors Grant McArthur (Executive Director VCCC) and Andrew Roberts (VCCC and the Walter and Eliza Hall Institute), oral presentations of the best 10 posters, competitive interviews for the short listed grant applicants, updates by the previous year’s seed grant recipients, and multiple sessions. The best publication and session prize winners, along with the grants awarded, were also announced.

In 2018 we also saw the inauguration of the Western Health Research Club, through which ongoing research is shared with a wide range of staff throughout the year. The Clinical Research Investigators Group holds regular events to connect younger researchers with each other and more experienced professionals. Our Best Care Forum also showcased many increasingly sophisticated projects aimed at improving patient care through novel approaches, the implementation of evidence and evaluation. All of these activities aim to **change the landscape to better care, underpinned by enhanced knowledge and systems.**

Recruitment of our large and diverse patient population into clinical trials, including investigator-initiated trials, has been enhanced to provide greater access to new treatments. For example, in 2018 the IMPROVE-GAP trial was completed. Within 12 months it had recruited more than 800 inpatients with community-acquired pneumonia into a study of a new optimised model of care. The study featured patient-reported outcome measures. This reflects our emphasis on clinical research and its translation into every day practice.

We have continued to build our research capacities through productive collaborations with our university partners, including recent academic appointments in Nursing and Physiotherapy to facilitate participation in research projects at the MD, Masters and PhD levels. Through the Western Health Chronic Disease Alliance we have extended our research to engage general practices and the community. The Alliance focuses on better detection of early chronic kidney disease and diabetes, and the shared risk factors leading to these conditions, as well as to cardiovascular disease and stroke. The CD-IMPACT project has engaged 19 General Practices and is nearing completion, with plans in place to upscale to state wide and to test newer technologies.

Our research partnerships engage many other organisations, including the Victorian Comprehensive Cancer Centre and the Murdoch Children’s Research Institute, with whom we will study the health of newborns in Victoria in 2020 and 2021 in the Gen V project.

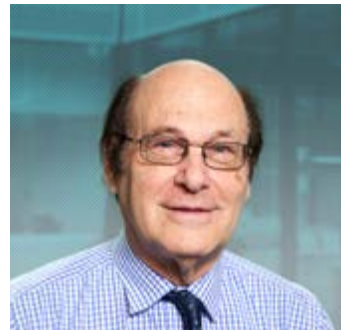
The new Joan Kirner Women’s and Children’s Hospital is on track for completion in 2019, and is set to enable more women and families in Melbourne’s West to give birth and access children’s services closer to home. Our ongoing research studies have focussed on gestational diabetes and improving birthing outcomes.

This report covers the publications, presentations and projects we are undertaking and features profiles of a number of our researchers. We trust you will enjoy reading about them.



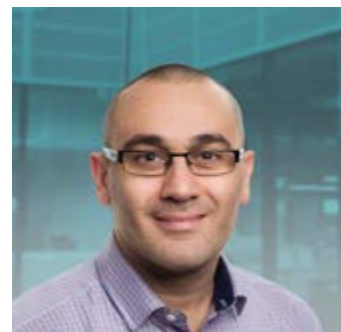
Russell Harrison

Chief Executive, Western Health



Prof Edward Janus

Director of Research, Western Health



Dr Paul Eleftheriou

Chief Medical Officer, Western Health

RESEARCH 2017

172

NEW PROJECTS
APPROVED

488

JOURNAL ARTICLES

606

TOTAL ACTIVE
PROJECTS

\$43.77M

RESEARCH GRANTS
AWARDED OR HELD

8

BOOK CHAPTERS

71

PROCEEDINGS

RESEARCH 2018

757

TOTAL ACTIVE
PROJECTS

201

NEW PROJECTS
APPROVED

\$40.58M

RESEARCH GRANTS
AWARDED OR HELD

564

JOURNAL ARTICLES

95

PROCEEDINGS

21

BOOK CHAPTERS

RESEARCH AT A GLANCE 2017

ALLIED HEALTH

- ▲ New projects **24**
- ▲ Total projects **94**
- ▲ Grants **\$3.325 M**
- ▲ Publications **11**
- ▲ Book chapters **1**
- ▲ Proceedings **17**

DRUG HEALTH SERVICES

- ▲ New projects **3**
- ▲ Total projects **9**
- ▲ Publications **2**

GENERAL INTERN MEDICINE

- ▲ New projects **1**
- ▲ Total projects **6**
- ▲ Grants **\$300 K**
- ▲ Publications **7**

ANAESTHESIA AND PAIN MANAGEMENT

- ▲ New projects **1**
- ▲ Total projects **11**
- ▲ Grants **\$88 K**
- ▲ Publications **9**

ENDOCRINOLOGY AND DIABETES

- ▲ New projects **5**
- ▲ Total projects **15**
- ▲ Grants **\$175 K**
- ▲ Publications **13**
- ▲ Book chapters **1**
- ▲ Proceedings **1**

INFECTIOUS DISEASES

- ▲ New projects **1**
- ▲ Total projects **4**
- ▲ Publications **2**
- ▲ Book chapters **1**

AUSTRALIAN INSTITUTE OF MUSCULO-SKELETAL SCIENCE (AIMSS)

- ▲ Grants supported **20**
- ▲ Total value **\$45 K**

GASTRO-ENTEROLOGY ENDOSCOPY

- ▲ New projects **9**
- ▲ Total projects **4**
- ▲ Grants **\$29 K**
- ▲ Publications **8**
- ▲ Proceedings **7**

JOSEPH EPSTEIN CENTRE FOR EMERGENCY MEDICINE RESEARCH (JECMR)

- ▲ New projects **6**
- ▲ Total projects **13**
- ▲ Publications **13**

CARDIOLOGY

- ▲ New projects **10**
- ▲ Total projects **30**
- ▲ Grants **\$100 K**
- ▲ Publications **4**

NEUROLOGY

- ▲ New projects **1**
- ▲ Total projects **27**
- ▲ Publications **19**

INTENSIVE CARE

- ▲ New projects **6**
- ▲ Total projects **22**
- ▲ Publications **13**
- ▲ Book chapters **1**

MELBOURNE NEURO- PSYCHIATRY CENTRE

Grants	\$23.1 M
Publications	57
Proceedings	4

PAEDIATRIC EMERGENCY MEDICINE

New projects	4
Total projects	13
Publications	13
Proceedings	3

SURGERY

New projects	23
Total projects	69
Grants	\$112 K
Publications	31

NEPHROLOGY

New projects	1
Total projects	17
Grants	\$3.35 M
Publications	7

PHARMACY

New projects	2
Total projects	3
Grants	\$3 K
Publications	1

UNIVERSITY OF MELBOURNE Department of Medicine

Grants	\$10.5 M
Publications	167
Book chapters	2
Proceedings	30

NURSING AND MIDWIFERY

New projects	9
Total projects	19
Grants	\$333 K
Publications	7
Book chapters	1
Proceedings	1

RHEUMATOLOGY

New projects	4
Total projects	10
Publications	4

VICTORIA UNIVERSITY BIOMEDICINE

Grants	\$300 K
Publications	34
Book chapters	1
Proceedings	4

ONCOLOGY HAEMATOLOGY

New projects	30
Total projects	109
Grants	\$885 K
Publications	24
Proceedings	1

SUB ACUTE AND AGED CARE

New projects	9
Total projects	16
Grants	\$78 K
Publications	8
Proceedings	3

WOMEN'S AND CHILDREN'S

New projects	11
Total projects	36
Grants	\$1.017 M
Publications	6

RESEARCH AT A GLANCE 2018

ALLIED HEALTH

- ✓ New projects **30**
- ✓ Total projects **124**
- ✓ Grants **\$3.41 M**
- ✓ Publications **17**
- ✓ Book chapters **2**
- ✓ Proceedings **2**

DRUG HEALTH SERVICES

- ✓ Total projects **9**
- ✓ Publications **2**

INFECTIOUS DISEASES

- ✓ New projects **3**
- ✓ Total projects **7**
- ✓ Publications **7**

ANAESTHESIA AND PAIN MANAGEMENT

- ✓ New projects **11**
- ✓ Total projects **18**
- ✓ Grants **\$88 K**

ENDO-CRINOLOGY AND DIABETES

- ✓ New projects **4**
- ✓ Total projects **19**
- ✓ Grants **\$175 K**
- ✓ Publications **21**
- ✓ Book chapters **1**
- ✓ Proceedings **14**

JOSEPH EPSTEIN CENTRE FOR EMERGENCY MEDICINE RESEARCH (JECMR)

- ✓ New projects **5**
- ✓ Total projects **18**
- ✓ Publications **11**
- ✓ Book chapters **4**

AUSTRALIAN INSTITUTE OF MUSCULO-SKELETAL SCIENCE (AIMSS)

- ✓ Grants supported **4**
- ✓ Total value **\$45 K**

GASTRO-ENTEROLOGY ENDOSCOPY

- ✓ New projects **9**
- ✓ Total projects **53**
- ✓ Grants **\$29 K**
- ✓ Publications **8**
- ✓ Proceedings **13**

INTENSIVE CARE

- ✓ New projects **12**
- ✓ Total projects **23**
- ✓ Publications **27**
- ✓ Book chapters **1**

CARDIOLOGY

- ✓ New projects **7**
- ✓ Total projects **34**
- ✓ Grants **\$95 K**
- ✓ Publications **7**

GENERAL INTERN MEDICINE

- ✓ New projects **3**
- ✓ Total projects **9**
- ✓ Grants **\$96 K**
- ✓ Publications **6**

MELBOURNE NEURO-PSYCHIATRY CENTRE

- ✓ Grants **\$13.92 M**
- ✓ Publications **34**
- ✓ Proceedings **8**

NEPHROLOGY

- ✓ New projects **7**
- ✓ Total projects **21**
- ✓ Grants **\$8.957 M**
- ✓ Publications **11**
- ✓ Proceedings **1**

PAEDIATRIC EMERGENCY MEDICINE

- ✓ New projects **1**
- ✓ Total projects **16**
- ✓ Publications **4**
- ✓ Proceedings **2**

SURGERY

- ✓ New projects **23**
- ✓ Total projects **88**
- ✓ Grants **\$110 K**
- ✓ Publications **45**
- ✓ Book chapters **1**

NEUROLOGY

- ✓ New projects **7**
- ✓ Total projects **29**
- ✓ Publications **9**

PHARMACY

- ✓ New projects **1**
- ✓ Total projects **5**
- ✓ Grants **\$3 K**

UNIVERSITY OF MELBOURNE Dept of Medicine

- ✓ Grants **\$11.15 M**
- ✓ Publications **198**
- ✓ Book chapters **6**
- ✓ Proceedings **21**

NURSING AND MIDWIFERY

- ✓ New projects **7**
- ✓ Total projects **25**
- ✓ Grants **\$383 K**
- ✓ Publications **8**
- ✓ Book chapters **3**

RHEUMATOLOGY

- ✓ New projects **2**
- ✓ Total projects **20**
- ✓ Publications

VICTORIA UNIVERSITY BIOMEDICINE

- ✓ Grants **\$541 K**
- ✓ Publications **41**
- ✓ Book chapters **3**
- ✓ Proceedings **3**

ONCOLOGY HAEMATOLOGY

- ✓ New projects **22**
- ✓ Total projects **123**
- ✓ Grants **\$1.35 M**
- ✓ Publications **40**
- ✓ Proceedings **1**

SUB ACUTE AND AGED CARE

- ✓ New projects **14**
- ✓ Total projects **26**
- ✓ Grants **\$237 K**
- ✓ Publications **15**
- ✓ Proceedings **6**

WOMEN'S AND CHILDREN'S

- ✓ New projects **17**
- ✓ Total projects **47**

OFFICE FOR RESEARCH

Research at Western Health has been steadily increasing in both quantity and quality. The research culture of the organisation has been progressively maturing, ensuring that the strategic objectives in the Research Roadmap are being fulfilled.



This advancement in research ethos and activity is best represented by the high quality of research abstract submissions and the calibre of guest speakers during Research Week. Western Health Research Week in both 2017 and 2018 were a great success, with an excellent array of research sessions throughout the week and internationally-renowned guest speakers as invited keynotes.

WH researchers are now able to be competitive and successful in securing substantive external funding either on their own or as part of multi-institutional collaborations. This is being reflected in the number of successful WH led projects being funded by the Melbourne Academic Centre for Health (MACH) and other funding sources. Of equal importance is the emerging confidence of our researchers to take a leading role in multi million dollar research projects.

To better support and coordinate research endeavours across the organisation, particularly in the chronic disease space, we formally

launched the Western Health Chronic Disease Alliance (WHCDA) in 2017. The WHCDA aims to act as the coordinating hub of all chronic disease research initiated by Western Health, ensuring that advocacy, support, integration and coordination of chronic disease research at Western Health is possible.

One WHCDA landmark project is CD-IMPACT. The CD-IMPACT project clearly demonstrates WH's ability to innovate and assume a lead role in a significant piece of research that involves a number of other academic and commercial partners. The CD-IMPACT project has amassed more than \$600,000 worth of funding from across various sources, including Better Care Victoria grants and philanthropic donations. The CD-IMPACT project aims to equip primary care with the essential tools for early identification, diagnosis and management of common chronic diseases, such as Heart disease, Stroke, Diabetes, Kidney disease and Familial Hypercholesterolemia.



The fundamental principles of the CD-IMPACT project were used for the establishment of the Future Health Today (FHT) project, in collaboration with the University of Melbourne. FHT aims to take the concepts of the CD-IMPACT project and scale them up for greater penetration and uptake. This project will help revolutionise how primary care manage chronic disease within the community.

AIMSS is also growing in strength from year to year, increasing its academic affiliations and advancing musculoskeletal science and education through its web lab research at the Western Centre for Health Research and Education (WCHRE) and also the Osteosarcopenia Roadshows which attract Continuous Medical Education (CME) points.

With the advent of greater and more sophisticated research activity, there is also a need for greater research oversight. In 2018 we formally launched the WH Code of Conduct. This document articulates all research conduct requirements for researchers, bringing into one document all relevant regulatory, legislative and organisational requirements.

With the new Joan Kirner Women's and Children's hospital due to open in 2019 and the promise of a new Footscray hospital, the future for research at Western Health looks bright. The intention in 2019 is to further support researchers through targeted training courses and essential research support capability to ensure that current and future potential is maximised.

RESEARCH WEEK AWARDS AND PRIZES

The impressive breadth and depth of research topics presented by Western Health researchers over the past two years shows that we are continuing to develop a vibrant and sophisticated research culture.



Awards and prize winners for 2017 were:

BEST ORAL RESEARCH POSTER PRIZE

Andrew Mulligan, Cardiology Advanced Trainee

A 'cardiogeriatric model' of care in acute decompensated heart failure: implementation of a multidisciplinary approach impacting 12 month readmissions in complex patients

ROBERT SMITH PRIZE — BEST CRITICAL CARE RESEARCH PRESENTATION

Christine Polmear, Clinical Risk and Data Manager, Quality, Safety and the Patient Experience.

The effect of Intensive Care Unit Admission on Smokers' Attitudes and their Likelihood of Quitting Smoking

KENDALL FRANCIS PRIZE — BEST SURGICAL RESEARCH PRESENTATION

Narelle Watson, Virtual Fracture Clinic Project lead

A randomized controlled trial comparing one, three or six weeks of immobilization on function and pain following open reduction and internal fixation for distal radius fractures in adults

BEST NURSING AND MIDWIFERY RESEARCH PRESENTATION PRIZE

Lana van Raay, Clinical Nurse Specialist

Exploring Hydration in Angiography patients: a pilot study

BEST PUBLISHED RESEARCH PAPER PRIZE

Phong Tran, Unit Head, Orthopaedics

Impact of adherence to local antibiotic prophylaxis guidelines on infection outcome after total hip or knee arthroplasty. Journal of Hospital Infection

BEST ALLIED HEALTH RESEARCH PRESENTATION PRIZE

Narelle Watson, Virtual Fracture Clinic Project lead

Patient interactions with the health service following wrist fracture, surgical repair and immobilisation: a qualitative study

NEVILLE YEOMANS PRIZE — BEST INTERNAL MEDICINE RESEARCH PRESENTATION

Christopher Preston, Basic Physician Trainee

Western Health Inpatient Diabetes Foot Service Patient Experience Survey

ROBERT HELME PRIZE — BEST NEUROSCIENCE RESEARCH PRESENTATION

Melissa Tang, Basic Physician Trainee

Does time of presentation affect door to needle time in patients presenting to a primary stroke centre with thrombolysis eligible acute ischaemic stroke?

BEST WOMEN'S AND CHILDREN'S RESEARCH PRESENTATION PRIZE

Iniyaval Thevathasan, MFM Senior Registrar

Potential risks of antenatal corticosteroid administration prior to elective caesarean section in women with gestational diabetes requiring insulin

AIMSS BEST POSTER AWARD

Danielle Debruin

Effects of vitamin D supplementation on skeletal muscle function and fatigue in sedentary and physically active mice

AIMSS ORAL PRESENTATION AWARD

Stephen Phu, Exercise Physiologist

Association between limits of stability and lower limb function, static balance and fear of falling in community dwelling older adults

MAVIS MITCHELL AWARD

Theresa Wilkie, Emergency ANUM

Implementation of and Evaluation of a Western Health Emergency Department Paediatric Pilot Program 2017-2018

SUBACUTE AND AGED CARE RESEARCH PRESENTATION

Sharon Neale, Occupational Therapist

Early Supported Discharge for Stroke Survivors Living in the West

SPONSORS

WE THANK OUR 2017 MAJOR SPONSOR MEDTRONIC FOR ITS SUPPORT, ALONG WITH THE SUPPORT OF:

- BankVic
- Dorevitch Pathology
- First State Super
- Marina TLC Aged Care
- Rotary Club of Footscray (Inc)
- The University of Melbourne Western Clinical School
- The Western Health Foundation



The awards and prize winners for 2018 were:

BEST ORAL RESEARCH POSTER PRIZE

Camilla Malmgren, Medical Student

Pre-eclampsia- predict the risks to prolong the pregnancy

BEST PUBLISHED RESEARCH PAPER PRIZE

Anne-Maree Kelly, Director JECEMR

Long Term Prognostic Value of a Negative Work-Up for Acute Coronary Disease in Emergency Department Chest Pain Patients Without Known Coronary Artery Disease: A Cohort Study. Journal:Heart, Lung & Circulation

BEST ALLIED HEALTH RESEARCH PRESENTATION PRIZE

Melanie Lloyd, PhD Student

Early Mobilisation in Practice: Feasibility, costs and outcomes in an elderly, multimorbid population hospitalised with community acquired-pneumonia.

NEVILLE YEOMANS PRIZE — BEST INTERNAL MEDICINE RESEARCH PRESENTATION

Donald Tran, Medical Student

Rationalising the diagnosis and treatment of Chronic Obstructive Pulmonary Disease with portable spirometry

ROBERT HELME PRIZE — BEST NEUROSCIENCE RESEARCH PRESENTATION

Nooi Hoay Ang, Geriatric Medicine Advanced Trainee

Parkinson's disease- reasons for non-elective hospital presentation, length of stay and hospital presentation in 6 months

SUB-ACUTE AND AGED CARE BEST RESEARCH PRESENTATION PRIZE

Katherine Miller, Registrar, HARP CDMP Community Services

Melatonin-An audit

ROBERT SMITH PRIZE — BEST CRITICAL CARE RESEARCH PRESENTATION

Kajal Patel, Emergency Medicine Registrar

External validation of the HOPPE score to predict low risk pulmonary embolism suitable for early discharge

KENDALL FRANCIS PRIZE FOR BEST SURGICAL RESEARCH PRESENTATION

Alexander Rahill,

The evolving usage of the internet by orthopaedic patients – 6 year comparison study

BEST NURSING AND MIDWIFERY RESEARCH PRESENTATION PRIZE

Lana Van Raay, Clinical Nurse Specialist

Exploring Hydration in Angiography patients: a pilot study

AIMSS ORAL PRESENTATION AWARD

Jason Talevski, PhD Student

Clinical care pathways and the recovery of quality of life and physical function after fragility fracture: A systematic review and meta-analysis

AIMSS BEST SCIENTIFIC POSTER PRESENTATION AWARD

Jesse Zanker, PhD student-Geriatrician

Current Evidence does not support VitD supplementation to improve post stroke outcomes

MAVIS MITCHELL AWARD

Marianne Phillips, Registered Nurse

End of Life Care in the acute setting

Elisa McDonald, Midwifery Educator

Severe perineal trauma during childbirth: Reducing the incidence at Western Health through training and education

SPONSORS

We thank our 2018 major sponsor Medtronic for its support, along with the support of:

- Canon
- Dorevitch Pathology
- Rotary Club of Footscray (Inc)
- TLC Aged Care
- Western Anaesthesia and Intensive Care Group
- The Western Health Foundation.

WESTERN HEALTH RESEARCH GRANTS

Western Health acknowledges the need to appropriately support early career researchers who are not always able to successfully compete for the highly competitive NHMRC and ARC grants.

To help them secure highly competitive grants, the Office for Research funds a number of projects during Research Week through the Western Health Grants initiative. Our aim is to provide early career researchers with financial support to conduct pilot or feasibility studies that are now a prerequisite for consideration for NHMRC and other external grants.

The Office for Research and the Office of the Chief Executive committed \$100,000 in grant funding, awarded through a competitive peer-reviewed process, to help early career researchers bring to life their innovative research ideas.

The calibre of research submissions has remained very high and consistent with previous years. Additional funding was also made available by the Western Health Nursing and Midwifery Division and Deakin University for a number of Nursing and Midwifery scholarships and grants.



2018 WESTERN HEALTH RESEARCH GRANT RECIPIENTS

- **Dr Forbes McGain:** Capturing Anaesthetic gases; an exploration of the capture and protein reuse of sevoflurane (\$18,000)
- **John Guinane & Esther Yap:** Prevention of Urinary Incontinence in Men: Impact of BPH relief on long term continence outcomes (\$5,000)
- **Dr Lata Jayaram:** High dose oral n-acetylcysteine in bronchiectasis: anti-inflammatory effects, safety and tolerability (\$30,000)
- **Melanie Lloyd:** Pilot evaluation of a new model of care to optimise evidence-based management of peripheral vertigo in the acute hospital setting (\$20,000)
- **Dileep Mangira:** Cold snare polypectomy (CSP) Study (\$29,000)

2018 DEAKIN UNIVERSITY / WESTERN HEALTH NURSING AND MIDWIFERY SCHOLARSHIPS

- **Elizabeth Mackey:** Scholarship for healthcare workforce development and service delivery: Implementing a nurse-led ward round in an Acute Stroke Unit (\$5000)
- **Michele Noronha:** Scholarship for healthcare workforce development and service delivery: Development of a suite of tools for evaluating translation of theory to clinical practice within education programs (\$5000)
- **Penelope Ealem:** Scholarship for patient care and experience research: Body Mass Index (BMI) is an indication for vascular access when treating patients for cellulitis (\$5000)

2018 DENISE PATTERSON NURSING AND MIDWIFERY AWARD

- **Gary Blackburn:** Nurses' and midwives' experience of pro-active rounding by the Rapid Response Team/ICU Liaison service at Western Health.

2019 WESTERN HEALTH RESEARCH GRANT RECIPIENTS

- **Erin Bicknell:** PoStFatigue: How do stroke survivors experience fatigue during community based rehabilitation? (\$22,000)
- **Jeffrey Sanderson:** Splinting for proliferative phase digital fracture malalignment - A pilot study based rehabilitation? (\$15,000)
- **Fiona Pazsa:** Excellence in Bariatric Care - Using barriers and enablers to inform best care (\$15,000)
- **Michaela Barron:** Inter and Intra reliability of assessment of transdermal foot temperatures using two different methods (\$7000)

2019 DEAKIN UNIVERSITY / WESTERN HEALTH NURSING AND MIDWIFERY GRANT

- **Emma Heard:** Evaluation of the active management of third stage of labour quality improvement initiative (\$11,000)
- **Shelley Ryan:** Excellence in Bariatric Care - Using barriers and enablers to inform best care (\$10,000)

2019 DENISE PATTERSON NURSING AND MIDWIFERY AWARD

- **Vanessa Watkins:** Antenatal education and support programs for women giving birth at Western Health: Identifying women's needs and preferences for content and format, and service needs from the perspective of midwives (\$9000)



MEDICAL DOCTORATE RESEARCH PROJECTS

The Medical Doctorate Research Project (MDRP) is completed during the third and fourth year of the Doctor of Medicine (MD) course at The University of Melbourne. Students complete a research project in a field related to medicine, broadening their experience of healthcare and research often in off-campus settings.

In undertaking the MDRP, students also learn the theory behind evidence and research, and experience it first-hand while appreciating the challenges and limitations. They interact with researchers, are able to better appreciate the background work and processes involved in advancing medicine, and develop skills in the acquisition, evaluation and application of information (evidence).



2017 MDRP PROJECTS

The following projects were undertaken by MD students during their time at Western Health.

- **Annika Berglund:** Cervical spine imaging in children and young adults following trauma. An audit of computed tomography and plain X-Rays
- **Karen Bourns:** Patient reported outcomes in Orthopaedic Surgery
- **Bing Jian Chang:** Building bone from blood: The Circulating Osteo Progenitors (COP) Stud
- **Amanda Chong-Halliday:** Adipocytes as weapons of bone destruction: The bone as a war zone
- **Lucy Desmond:** Quantifying Prevalence Of Human Herpes Viruses In Patients Immunocompromised Due To Therapy With Oral Ulceration
- **Konrad Gunter:** Uptake of pertussis and influenza vaccination during pregnancy
- **David Heelan:** Community opioids following acute surgical care: a multicenter study
- **Tsz Yan Charis Kho:** Outcome measures in osteoarthritis of the knee
- **Ade Kurniawan:** Intrathecal morphine (ITM) for hepatobiliary surgery. A systematic review with meta-analysis and trial sequential analysis
- **Ronnie Chun Ting Lau:** The environmental footprint of septic shock in the ICU
- **Michael Marazita:** Changes in circulating osteoprogenitors (COP) cells in osteosarcopenic obese older individuals
- **Timothy Mason:** Emergency department presentations from residential aged care facilities
- **Samuel Maxwell:** Patient reported outcomes in orthopaedic surgery
- **Mohamed (Nusry) Nazeem:** Efficacy and feasibility of a pedometer guided physical activity intervention in overweight pregnant women – A pilot study
- **Jing Qiao:** Radiological progression in RA and AS
- **Callan Rauchfuss:** Diagnostic accuracy of fine needle aspiration in thyroid nodules
- **Matthew Redmond:** Changes in circulating osteoprogenitors (COP) cells in osteosarcopenic obese older individuals
- **David Sahhar:** Patient reported outcomes in orthopaedic surgery
- **Ian Teh:** Radiological progression in RA and AS
- **Andrew Wang:** Efficacy and feasibility of a pedometer guided physical activity intervention in overweight pregnant women – A pilot study
- **Norman Weber:** Western Health COPD Readmission Project
- **Zheyi Zhou:** Outcome measures in osteoarthritis of the knee

2018 MDRP PROJECTS

- **Phu Ha:** Oral N-acetyl cysteine in bronchiectasis
- **Priya Goyal:** Socioeconomic factors and pro-inflammatory cytokines in children, adolescents, and young adults: A systematic review
- **Joanne May Ling Tay:** Associations between health literacy and sarcopenia in older men participating in the Sons of the West
- **Aleksandra Djordjevic:** Nutritional and body composition assessments in GI cancer patients undergoing surgery
- **Bede Mahon:** Are PROMs after colorectal cancer surgery related to patient demographics including communication, patient knowledge or ethnicity?
- **Ibrahim Shahid:** The development of a student centred surgical teaching platform and methods of teaching delivery assessment
- **Reuben Schmidt:** The development of a student centred surgical teaching platform and methods of teaching delivery assessment
- **Shashank Murali:** STEMI and PCI Research
- **Reinetta Tanujaya:** Cervical spine imaging in children and young adults following trauma. An audit of computed tomography and plain X-Rays
- **Daming Pan:** How accurate do commonly used methods estimate children's weight in emergency departments?
- **Morgan Berman:** Testing the Effect of Non-Weight Bearing in Post Hip Fracture Older Persons
- **Sanne Norden:** What is the role of point of care ultrasound in managing pregnancies complicated by change in fetal movements?
- **Chan Min Choi:** Evaluation of palliative treatments in unresectable pancreatic cancer
- **Tina Le:** The influence of standardised morbidity and mortality review processes of clinician's awareness of medical errors
- **Joyce Lee:** The effects of antenatal corticosteroids on the amniotic fluid metabolic profile



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WESTERN HEALTH CHRONIC DISEASE ALLIANCE (WHCDA)



WESTERN HEALTH
CHRONIC DISEASE
ALLIANCE

WESTERN
HEALTH
CHRONIC
DISEASE
ALLIANCE



Chronic disease has a far reaching impact. Current statistics indicate an alarming incidence of chronic disease amongst the Australian population, with even greater prevalence among the community of Western Melbourne.

Nationally at least **1 in 4 (29%)** Australian adults (an estimated **\$4.9** million) have chronic kidney disease (CKD), cardiovascular disease (CVD) and/or Type 2 diabetes (T2DM).



This increases to **2 in 3** Australians (**69%**) for those older than **65**

Combined they cost **\$17.5** billion annually to manage and account for 36% of all hospital admissions

CKD, CVD and T2DM share common risk factors such as smoking, obesity, hypertension and impaired glucose regulation

It is estimated that almost all adults have a risk factor for one or more of these diseases and 2 in 3 adults have 3 or more risk factors

The Western Health Chronic Disease Alliance (WHCDA) aims to address these chronic disease burdens by targeted research and other initiatives across a number of clinical disciplines. This will ultimately improve the quality and length of life of the community of Western Melbourne.

The alliance, led by Western Health's Director of Nephrology, A/Prof Craig Nelson, is an evolving partnership between disease specialists and other experts at Western Health.

A/Prof Nelson says it is important that researchers and clinicians across major areas of chronic disease, including kidney disease, cardiovascular disease, obesity and diabetes join forces.

"We should all be singing with one voice, rather than individual silos, because by ignoring one of the specialties you're not doing justice to the patient,"

"It's becoming clearer that people don't have just one chronic disease. It's more common now to have multiple chronic diseases than a single disease alone."

A/Prof Nelson hopes that the alliance model will ultimately expand over time to also include a much broader range of chronic disease disciplines and expertise such as respiratory medicine, osteoporosis, mental health, surgery, women's and children's, nursing, allied health and drug and alcohol issues.

WHCDA's first project was the e-MAP CKD which was published in 2018 through Oxford University Press, followed by Chronic Disease IMPACT (Chronic Disease early detection and Improved Management in Primary Care Project). This is funded by Better Care Victoria and the outgoing Macedon Ranges North Western Melbourne Medicare Local.

Employing a multipronged approach to address the growing burden of chronic disease, several WH disease specialists and WH's GP integration team are working together with the Chronic Disease IMPACT project team to design and deliver the pilot project across 19 general practices in metropolitan and rural locations.

WH nephrologist Dr Julia Jones is currently undertaking doctoral studies via The University of Melbourne to evaluate the program alongside WH statistician Dr Koen Simons.

Wider community partners include Kidney Health Australia, Heart Foundation, North Western Melbourne PHN, Murray PHN, Diabetes Victoria, Stroke Foundation, Deakin University, Victoria University, and The University of Melbourne.

Western HealthLinks, another WHCDA initiative, is a three-year pilot program funded by the Victorian Department of Health and Human Services (DHHS) to improve health outcomes for people living with chronic disease. The program also aims to reduce unplanned hospital readmissions, and to improve our capacity to provide care outside of the inpatient hospital setting.

“It’s more common now to have multiple chronic diseases than a single disease alone”

Since its commencement in November 2016 more than 4,000 patients have been enrolled for the Western HealthLinks program, and more than 500 have received active support following an admission to hospital.

Officially launched in December 2017, the WHCDA has formalised its governance with the setup of the WHCDA Steering committee which meets quarterly. It is chaired by Chief Medical Officer Dr Paul Eleftheriou and has representation from disease specialists, the Executive of WH, the WH Foundation and the Office for Research as well as a consumer representative.

Since its launch in 2017 the WHCDA has been successful in securing a number of government grants to initiate important research projects. More recently, in collaboration with The University of Melbourne significant philanthropic funding has also been secured to further support research programs into chronic disease prevention, diagnosis and management.

More information about the WHCDA and the research programs it supports can be found on its website <https://whcda.wh.org.au/about/>.

RESEARCH AT WORK





A portrait of A/Prof Justin Yeung, a man with dark hair and glasses, wearing a blue blazer over a blue and white checkered shirt. He is smiling slightly. The background is a vibrant, abstract pattern of red, green, and yellow dots.

**A/PROF
JUSTIN
YEUNG**

**Clinical research
sets Western Health
apart**

**\$83K WCMIS
Grant**

'BIG DATA' IMPROVING OUTCOMES FOR CANCER PATIENTS

WHEN A/Prof Justin Yeung started at Western Health in 2017, he knew that 'big data' had the potential to vastly improve the outcomes for cancer patients.

But first, he needed to establish his research vision for the department of surgery, and identify any gaps. "In my first two to three months, I made sure that I spoke to as many people as possible – doctors, nursing staff, allied health members as well as patients," said A/Prof Yeung, Consultant Colorectal Surgeon, A/Prof of Surgery and Head of the Department of Surgery, University of Melbourne at Western Health. "It allowed me to get an overview of the experiences of our staff, as well as work out what innovative research was required in order to help our patients."

He discovered patients needed more support in their journey, and could benefit from a more collaborative system amongst nurses, allied health staff and clinicians.

The observations sparked plans for a number of projects aimed at gathering more data, with an over-arching focus on cancer treatment outcomes.

"I knew that having 'big data' was an important step in identifying risk factors that were linked to poorer cancer outcomes," said A/Prof Yeung, who has a background in cancer research in Australia and the UK.

In one of the projects, he is developing a registry of gastrointestinal cancer patients, collecting information like nutritional assessments, ethnic backgrounds and education with the help of junior clinicians, research fellows and University of Melbourne medical students.

Another study has also been launched into how clinicians can optimise patient care in the perioperative period, in a bid to better manage complex medical problems that have a significant impact on survival.

After speaking to patients, A/Prof Yeung realised that many were finding it difficult to deal with psychosocial aspects associated with their cancer treatment. As an example, some were experiencing body image issues after having a stoma.

"Unfortunately, there's no nurse specialist attached to our colorectal or upper GI unit, like

there are with some other cancer specialities," he said.

"Currently it is very hard for patients to access a network of support. They simply don't know who to turn to, whether it's financial or dietary issues, or mental health problems – issues that patients often find that they are unable to ask their surgeon about and will ultimately have an impact on the patient's quality of life."

He said there was a similar feeling among clinicians: "Many would say that they found it difficult to know how to identify these problems". To address this, A/Prof Yeung has introduced a feasibility study using Patient Reported Outcome Measures (PROMs), when they undergo colorectal cancer treatment. He hopes this information can be used to help clinicians better identify quality of life issues that may affect these patients.

He has also recently received a Western and Central Melbourne Integrated Cancer Service (WCMICS) \$83,000 grant to support a joint research project with the Peter MacCallum Cancer Centre to investigate ways to introduce PROMs into the non-English speaking population.

"Although our patients come from a large culturally and linguistically diverse background, there is very little research which involve them, or helps address problems these vulnerable patients face," he said. In the long term, he wants to use the information to help identify groups at risk, so they can be referred to the correct support groups.

"As an institution we need to do a lot more to try and find out whether our patients are getting the best treatment," he said. "It is no longer enough to say that patients are having treatment for their condition.

"Patients deserve a right to have tailored therapy for them, which includes consideration of their physical, psychosocial, and cultural backgrounds.

A/Prof Yeung said he made an early decision to focus on clinical rather than laboratory-based research at Western Health, harnessing the strengths of the service.

"It was quite obvious to me that we should use the expertise of our clinicians as well as the generosity of our engaging patients to develop a clinical research program," he said.

"This is what sets Western Health apart from other institutions – the collaborative and comprehensive approach to patient cancer treatment. I am glad that I am part of this community."

A portrait of Dr. Lucy Desmond, a woman with long brown hair, smiling. She is wearing a grey button-down shirt and a name tag that says "Lucy". The background is a colorful, abstract pattern with green, blue, and purple hues.

DR LUCY DESMOND

▲ CAP is the
second leading
cause of hospital
admissions

▲ Rapid PCR
test allows most
contagious patients
to be quarantined

IMPROVE-GAP MANAGING COMMUNITY ACQUIRED PNEUMONIA - DETECTING VIRUSES THAT IMPACT ON PATIENT CARE

DR Lucy Desmond's desire to contribute to research had already been piqued when she began an internship at Western Health.

And when she won the Western Health Student Research Prize for her work defining the aetiology and symptomatology of Community-Acquired Pneumonia in 2017, Dr Desmond knew she wanted to make research a career focus.

"Since then I have been trying to get involved in as many projects as possible, learning about research from the ground up – data entry, data analysis and screening articles for systematic review," she said.

"I would love to direct my own large-scale research projects in the future to answer the questions that I am passionate about in medicine."

The IMPROVE-GAP (Improving outcomes in Community Acquired Pneumonia in 800 patients) project, which was led by A/Prof Harin Karunjeewa, Prof Edward Janus and Physiotherapist Melanie Lloyd, has involved evaluating a new model of care for managing community acquired pneumonia and addressing the gap between evidence and practice.

As a research assistant for eight months in her fourth year of medical school, she collected data by swabbing 70 of these patients and testing for viruses.

The findings, she said, were disturbing. Only four per cent of those with a highly transmissible virus were being placed on droplet precautions, meaning the virus was potentially being spread to other patients and staff at an alarming rate.

In a speech to the MD student conference at the University of Melbourne in 2017, she said Community Acquired Pneumonia (CAP) was the second leading cause of hospital admission, and the sixth leading cause of death in Australia.

"Current management is targeted towards bacterial pathogens, since historically they were identified as important causative agents," she told the conference.

"However, the epidemiology of infectious diseases is not static and requires regular re-evaluation. This explains why overall rates

have not significantly declined despite the introduction of vaccines, improved living conditions, and the availability of a broad range of antibiotics."

"While conventional diagnostics target bacteria well, detection of viruses and atypical bacteria is extremely poor. In fact, current routine tests fail to detect a pathogen in more than 60 per cent of CAP cases."

In her presentation, for which she won the People's Choice Award 3-Minute Thesis (3MT), she said the project came about as it was time to "scrutinize the archaic management of CAP".

"We utilised PCR, which is a rapid test that is highly sensitive and specific for the detection of viruses," she said.

"Astoundingly, we detected a virus in one-third of CAP patients we swabbed. The majority were picornaviruses including rhinovirus or the "common cold". But a number of Influenza A and RSV were detected - which have serious complications for infection control."

Western Health has since introduced a rapid PCR test, allowing the most contagious patients to be quarantined.

The lack of availability of negative pressure rooms has meant a reluctance to use PCR tests in the past.

But she said implementing rapid PCR routinely has the potential to reduce antibiotic use, ensure targeted treatment is received and prevent the spread of infection.

Dr Desmond said it was an exciting project to work on in the infancy of her career.

"I'm now trying to build up my tool box and increase my skills in different areas of research so I can find out what my passion is," she said.

"The research at Western Health is the foundation of patient care and better outcomes for the community into the future. To be able to contribute to carefully thought out research projects and have the opportunity to work in world-class facilities has to be one of the best things about my work."

ADAM STEWARD



▲ **20-50%**
Reduction in
radiation dose

▲ **14 Projects** are
being undertaken

GROUND-BREAKING DISCOVERY IMPROVING THE SAFETY OF IMAGING FOR PATIENTS

→ WHEN Adam Steward started Western Health's first radiography research program, his main aim was to fill a gap in clinical research in the field.

But he never expected the team would make a ground-breaking discovery that could hold the key to improving the safety of imaging for patients globally.

In the department's most important study to date, the team found that the level of radiation exposure can be reduced for patients, without compromising image quality.

The research, conducted in 2016 on phantom abdomens and torsos, tested the theory that utilising a higher tube potential when using new direct digital technology would result in minimal degradation of image quality.

It revealed that the radiation dose could be reduced by between 20–50 per cent, lessening the risk of cancers and radiation-induced side effects – with little alteration to the standard of images.

Mr Steward said the study has already changed the way exposures are set at Western Health and engaged understanding into exposure selection by radiographers outside the service.

The pilot study formed the basis of the team's first paper, which was published in the May/June 2018 edition of Radiologic Technology.

A follow-up study in 2018 using data from radiographic examinations at Western Health proved even more valuable, revealing that the higher tube potential actually improved image quality.

He said the "unexpected result" could impact the service delivery for patients around the world.

"It allows for the best use of modern technology, and contradicts conventional practice," he said.

"Our department is now leading the way in this method of exposure selection, which is really exciting."

The success of the studies has spurred the team to build their body of research work, with 14 projects being undertaken in areas including protocols and radiographic projections, radiographic auditing, radiographic education practices and a new general radiographic technology called Digital Tomosynthesis.

"We are one of few radiography departments across Australia to be actively participating in clinical research," he said.

"There's never been a strong history of clinical-based research in this area. Most research is done through universities at an academic level and doesn't necessarily transfer across clinically.

"Most of us are still in the learning phase, and understanding how research works.

"But there's a real need for more clinical radiography literature. We are trying to ensure we are meeting the needs of patients and providing the appropriate images."

Mr Steward, who has been a clinical radiographer with Western Health for 23 years, said no radiography research had been conducted at Western Health when he took up the role.

He began the research program in 2012 as a way to assist fourth year radiography students with their academic requirements, provide modern insights into imaging techniques, improve patient outcomes, and ensure the radiography being practiced at the health service was evidence-based.

PROF BODIL RASMUSSEN



▲ Endorsed by the
**Australian Diabetes
Educators Assoc.**

▲ Rolled out on Denmark's
National e-Health Portal for
10 + chronic conditions

NEW TECHNOLOGIES HELPING BRIDGE DISTANCE AND ENHANCE SELF-MANAGEMENT FOR PEOPLE WITH CHRONIC CONDITIONS

PROF Bodil Rasmussen is a firm believer in the potential of technology like iPads and iPhones to help reduce the burden of chronic conditions.

It's an ethos that has shaped a series of innovative research projects she's leading in her role as Chair in Nursing at Western Health Partnership – one of which is gaining national recognition.

Prof Rasmussen has developed and piloted an online interactive version of an evidence-based self-management program called Guided Self Determination, aimed at helping people with type 1 diabetes live a better life.

The program targets a cohort of young adults aged 18–25 years who have lost motivation, and involves a series of seven structured video conversations with diabetes educators.

Developed in partnership with Deakin University and Copenhagen University, the tool has been endorsed by the Australian Diabetes Educators Association and adopted by the Danish Government's national eHealth Portal.

Prof Rasmussen says she was inspired during academic leave in 2012 in her home country of Denmark.

"The program had been used in a face-to-face context in Copenhagen for quite a while and I thought 'Why couldn't we use it in the same way?'," said Prof Rasmussen, a former nurse who has worked in Australia for 30 years, and at Western Health since 2016.

"I then thought that we could put it online, to use when we don't have the ability to see people in person for a follow-up, particularly when they live in regional and rural areas."

She says "in a clinical setting, health professionals aren't always able to get to the root of a person's issues."

"You might not find out what's really going on with the person," she said.

"They might have had a relationship breakdown, obesity or body image issues which are affecting their ability to manage their condition. So, we go through a set of guided conversations in a certain area identified by the young adult to try and solve that issue and improve their life. It's a problem-solving mission really."

She says under the program, a diabetes educator and the patient are connected on a Skype-like program called Zoom, and make a contract and identify an issue they want to address.

As an example, she cites a young person who is embarrassed about their weight, so much so it is affecting their mental health and work.

The pre-determined list of questions would explore what impacts their weight issue is having physically, socially and psychologically, what's holding them back from losing weight and what would enable them to make the changes they need.

"There's a special exercise in value clarification, we don't only talk about strategies but the beliefs a person has in terms of changing," she said.

"That's the hardest – changing behaviour. So the next step is changing attitudes, and taking baby steps."

A feasibility study last year involving linking diabetes educators with two patients was a great success.

"Patients loved it, they didn't have to take time off work, it's accessible, and doesn't cost anything," she said.

"It's about empowering them in their self-management to prioritise the areas they want to work on. Evidence shows it changes their quality of life. It empowers people to manage better, change their mindset and lifestyle. Once they've learned it, they might come back with a different problem. It's particularly good for people who have lost motivation. Western Health is really leading the country in this project."

She says it has broader applications for all chronic conditions, including schizophrenia, obesity, heart disease and cancer.

So much so, Denmark has rolled it out for more than 10 conditions on their National Health Portal. The partnership is part of a growing relationship between Western Health and Copenhagen University, with Prof Rasmussen supporting several visits from Danish researchers to Sunshine Hospital in recent years.

"I hope our research will be able to contribute to making life with chronic conditions easier for people," she said.

"Chronic conditions and multi-morbidity are major issues challenging our health system, so working in multidisciplinary team and using technology I can see is part of the solution to meet those challenges."

On a local level, she is also passionate about building capacity by engaging nurses and midwives in research and further education, to ensure patients get the best care possible.

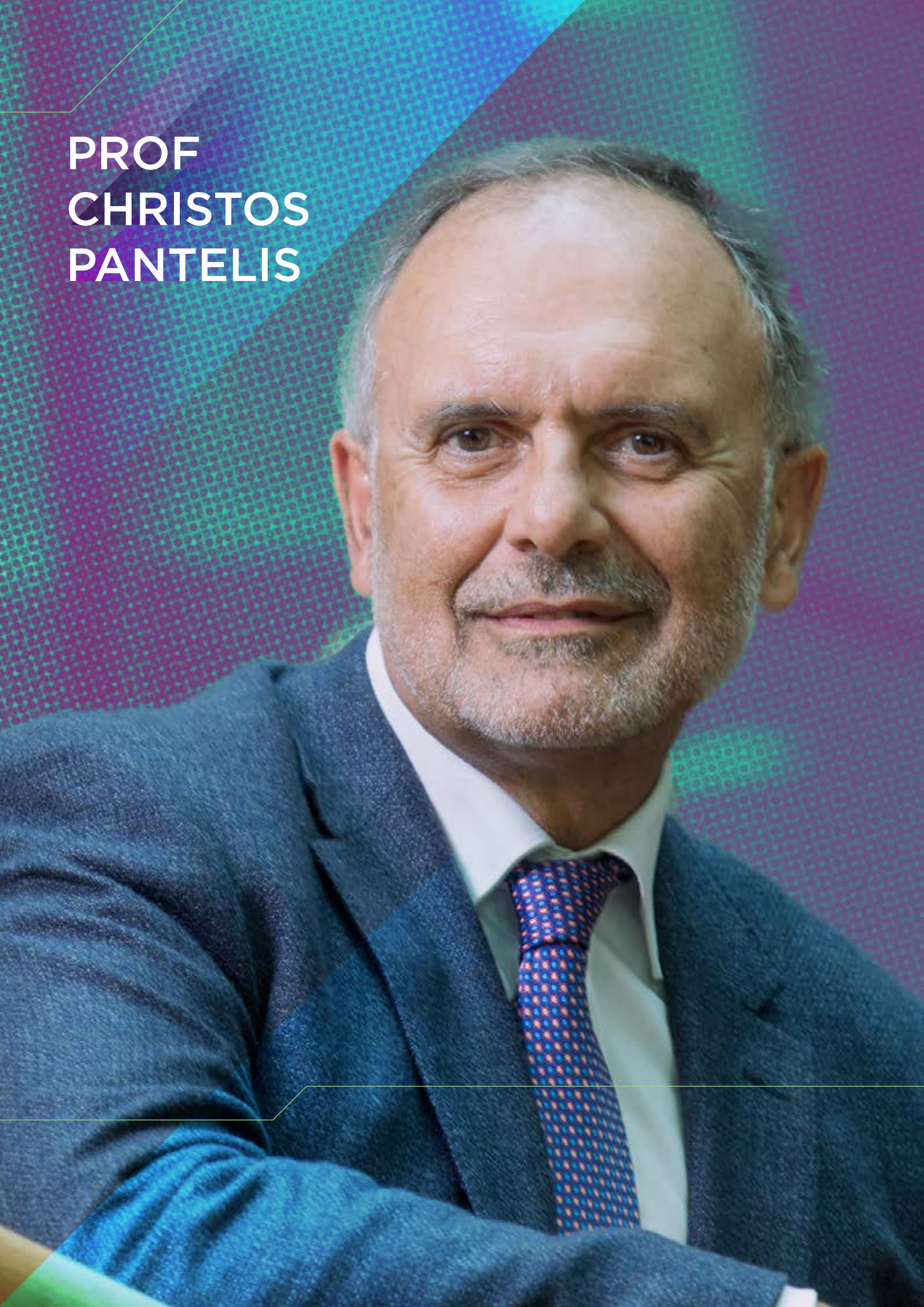
She says her role is to facilitate the connection between academia and the clinical world.

"It's very hard as a nurse on a ward to know where to start," she said.

"I help them identify the issues they confront, and give them advice on how to take it further in a research capacity. For nurses and midwives to know about the latest evidence in their field means patients get safe and high-quality care. It's not only about evidence-based procedures, but for nurses to reflect on why they do the things they do. Sometimes we just do things because it's how they've always been done."



**PROF
CHRISTOS
PANTELIS**



INVESTIGATIONS INTO THE NEUROBIOLOGY OF PSYCHOTIC DISORDERS

→ AS a child, Prof Christos Pantelis was profoundly affected by his aunt's battle with schizophrenia.

He watched her flit between loving relative to tormented soul, struggling to understand the delusional episodes that would overwhelm her.

"She lived next door to my parents in the early part of my life and was quite paranoid, at times it became quite severe," he recalled.

"Seeing her distress up close and the impact it had on my parents certainly influenced my decision to do psychiatry. I wanted to try and improve our understanding of the illness and improve outcomes for those affected."

That desire would become his life's work. Prof Pantelis, an international leader in neuropsychology and neuroimaging studies, has dedicated more than three decades to studying schizophrenia, his CV packed with world-first research projects, breakthroughs and accolades.

The often-stigmatised and misunderstood mental illness affects between 150-200,000 Australians, but no single cause has been identified by researchers.

Prof Pantelis is determined to fill the gaps in knowledge of the brain changes that occur in schizophrenia patients, in a bid to develop treatments to prevent the illness.

In his work with Western Health and The University of Melbourne, he is currently heading up investigations into the neurobiology of psychotic disorders, especially schizophrenia, and childhood developmental disorders.

Understanding the processes of brain growth and maturation can deliver important clues about schizophrenia and other severe mental disorders, he said.

In one key study, started at Sunshine Hospital, he is working with patients aged eight to 10 requiring treatment for schizotypal features, which in some cases are mistaken for autism.

"What distinguishes the schizotypal children from those with autism is their preoccupation with internal fantasies," he said.

"They spend much of their time focussed internally rather than attending to their daily activities, including school and play with other children."

"While this can be very creative, it becomes a problem when they tend to focus on their fantasy world and disengage from school, family and friends."

"Importantly, a small proportion go on to develop schizophrenia. But most often these children are diagnosed with autism because of their challenging behaviours and withdrawal."

He said the team was analysing the brain functions of a small number of patients who had completed brain scans in an effort to understand why children with schizotypy spent inordinate amounts of time preoccupied with imaginary worlds.

Initial results pointed to differences in the development of key brain circuits and networks involved in attention and thoughts, with more children now being recruited for assessment.

The work has been conducted in close collaboration with autism experts Dr Renee Testa and Emeritus Professor Bruce Tonge, who initially identified the young patients.

The study has already recruited 68 children with schizotypal features or autism, as well as 32 mentally healthy children, with two papers published on different aspects of the research.

He said schizophrenia typically struck at an important period in a young person's life, in their late teens and early 20s, which is why the team's work has focussed on adolescence and early adulthood.

"Mental disorders, like schizophrenia, develop during this very active period of brain development, at a time when young people should be at their most productive," said Prof Pantelis.

“When we try to understand what’s going on with the brain in schizophrenia, we need to understand what’s going on normally in the developing brain. If you can understand that, you can start to think about ways to treat these changes in behaviour at critical points in their development, and how to modify the trajectories when they go awry.”

The work follows on from a seminal paper published by his research group in *The Lancet* in 2003, the first to identify that the brain’s grey matter was diminishing faster than it should during the onset of psychosis.

He said this affected key brain regions linked to higher mental abilities, memory and emotion, areas that are still developing in adolescence, the 20s and even 30s.

The brain’s frontal and temporal lobes were particularly impacted by the illness.

But it’s not just the early stages of the disorder that he is interested in.

In his role as Clinical Director of the Adult Mental Health Rehabilitation Unit at Sunshine Hospital, he is involved in another long-term project involving chronic patients who are resistant to most schizophrenia treatments.

The clinical team is collecting brain scans and functional measures of in-patients and those living in the community, and re-evaluating their illness from the early symptoms through to diagnosis and treatment.

They have mapped the brain changes in schizophrenia in detail, and are now examining why the changes occurred, and how they could be reversed.

“These are patients at the most severe end of the spectrum and understanding how the brain is affected at this chronic stage will guide us about how to intervene early, with the aim of reducing the impact of the illness, or even preventing poor outcomes,” he said.

He’s also excited to be working on the treatment end of the disorder in 2019 after winning a new \$9.5 Million National Health and Medical Research Council (NHMRC) Program Grant.

Prof Pantelis is collaborating with other highly-cited researchers at the Monash Institute of Pharmaceutical Sciences, Prof Arthur Christopoulos and Prof Patrick Sexton, and Prof Rob Parton at the University of Queensland, to develop new treatments to target brain changes and alter the trajectory of the illness.

And on a more personal note, he’s determined to ensure his aunt’s legacy lives on.

With his wife Kimberley, he recently established the Nikolaos and Dimitra Pantelis Travelling Scholarship, to assist students of schizophrenia research present their work at international conferences.

“The scholarship was established after her death at the age of 90, in honour of my parents who supported her through much of her life,” he said.

A portrait of A/Prof David Krieser, a middle-aged man with short grey hair, wearing black-rimmed glasses and a red and white checkered button-down shirt. He is smiling slightly. The background is a light blue and white halftone pattern. There are decorative geometric shapes in the corners: a cyan triangle in the top-left, a magenta triangle in the top-right, and a cyan triangle in the bottom-left.

A/PROF DAVID KRIESER

▲ **15%** of 280 children
needed to have a
second image taken

▲ Repeat X-rays
double the dose
of radiation

UNDERSTANDING ISSUES HANDLING PAEDIATRIC X-RAYS IN EMERGENCY DEPARTMENTS

WHETHER it's broken bones from playground mishaps or suspected respiratory illnesses, X-rays are a common diagnostic tool for young patients at Sunshine Hospital's Emergency Department.

But Western Health's Paediatric Emergency Physician, A/Prof David Krieser, had a sense that these images were being repeated in hospitals too often for young patients, due to difficulties accessing results from external providers. A research project proved him right.

A/Prof Krieser says over time he had become concerned about the number of times doctors in the emergency department were unable to see X-rays and other forms of medical imaging done by imaging services in the local community.

"Say you have a child who fell over at school and has a sore arm, and they go to the GP who sends them for an X-ray near the clinic. The X-ray shows the GP that it's a broken arm, and that they need to go to hospital," he said.

"When the child gets to the emergency department, the staff may not have those images to work from. As a result they can repeat the X-ray, which doubles the dose of radiation, slows the process down, and increases the cost to the health system.

"They could also attempt to treat without an X-ray. This may be poor practice and can be almost impossible depending on how bad the case is."

He decided to embark on a small-scale research project in the department in a bid to see if children were being unnecessarily exposed to radiation and a longer stay in the Emergency Department (ED).

The ED investigated 280 children from June 2017 to March 2018 who were presenting after having images taken, and what proportion could be accessed.

About 15 per cent needed to undergo imaging for a second time, which sparked plans for a wider study.

"To be fair, it seemed like less than I thought," he said.

"But when I thought more about it, if the same thing is happening at EDs across the country, that's a huge number of images repeated, at great cost to the health service, and to the patients with additional radiation and longer treatment times.

"The problem is that every X-ray provider in the local area has their own system. Images may not be available to us unless they are sent as hard copy films, or CDs; or the imaging provider grants us access to their website, which needs a special password".

He says they only have access to the online details for two out of approximately 20 providers in the catchment.

He plans to expand the project across multiple sites to ascertain how widespread the problem is.

"I imagine it would be the same in the adult system," he said.

"The issue could be solved if every imaging provider in the country had to provide a safe and confidential system that is accessible to other services, with clinicians being given a unique identifier."

Ultimately, he hopes the study will lead to a more streamlined system to improve patient outcomes and reduce the burden on the public hospital system.

A/Prof David Krieser is also working on a collaborative study with the Murdoch Children's Research Institute investigating a large increase in mental health presentations among children to paediatric emergency departments.

The study is exploring issues including: carers' knowledge of the mental health system and services, why they came to the ED and what their experiences in the ED was like.

"We are trying to get a picture of these issues," he said.

"We are asking, 'Where have you gone for assistance with children who have anxiety and depression? Why have you come to the emergency department?'"

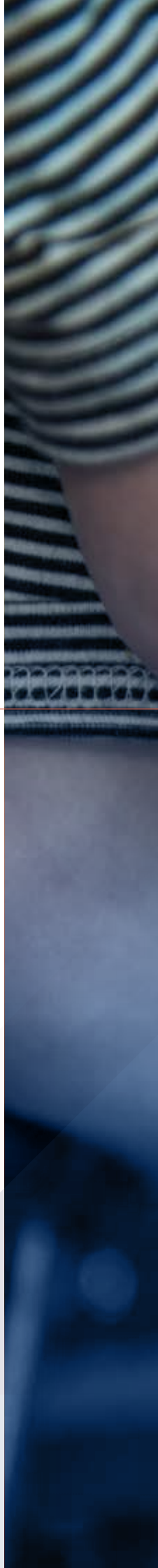
"The ED is not a great place for an anxious child. It's loud, busy and actually makes most kids more anxious as a result. These families may not need an emergency department, but they need an acute mental health service. Such services are very limited and hopefully this work will increase our understanding of what type of service is required. That's part of the motivation to do the study."

Along with respiratory disease, gastroenteritis and minor injuries like fractures, burns and wounds, he says mental health is one of the most common disease burdens challenging emergency departments.

A/Prof Krieser has worked at Western Health for 16 years, and was a co-winner in The University of Melbourne, Western Clinical School Teaching Award in 2017.

Looking ahead, he would like to see the development of a larger paediatric emergency department including a short stay observation unit.

His vision is to embed education, simulation and research into an expanded department as "the key to sustained high quality paediatric emergency medicine is the education and continuing professional engagement of staff".





A portrait of Dr. Georgina Imberger, a woman with long, wavy brown hair and blue eyes, smiling. She is wearing a light-colored jacket over a dark top, a thin necklace, and hoop earrings. The background is a vibrant, abstract pattern of yellow, orange, and purple with a halftone dot effect.

DR GEORGINA IMBERGER

Meta-research
improves how
research is conducted

Interest sparked
doing PhD with
Copenhagen University

META-RESEARCH FOCUS TO IMPROVE THE QUALITY OF SCIENTIFIC STUDIES

NO research is perfect. Just ask Dr Georgina Imberger. Whether it's the methodology, or how findings are interpreted, Dr Imberger says all studies have limitations – and it's something she's striving to address.

When she's not working as a full-time anaesthetist at Western Health, Dr Imberger is focussing on an emerging field called "meta-research", which aims to improve how research is conducted.

"Meta-research is commonly referred to as 'research on research'," she explained. "Broadly speaking, the goal of the meta-research is to examine and hopefully transform research practices in order to improve the quality of scientific studies.

"When limitations are avoidable, it is important to take a critical and systematic approach to improvement."

"When they are inevitable, it is equally important to clearly communicate the associated uncertainty."

The field is the focus of a new centre at Stanford University – called METRICS (Meta Research Innovation Centre at Stamford) – which is providing a more specific definition and range, including phases of designing and conducting, communicating, evaluating, verifying and rewarding research.

Dr Imberger's interest in meta-research began when she undertook her PhD at Copenhagen University, working with the Copenhagen Trial Unit to analyse issues associated with type 1 error in cumulative meta-analysis.

Her thesis explored how random errors were being assessed in the setting of systematic review, and whether the methods and interpretations were resulting in accurate and appropriate communication of uncertainty.

"And the overall findings were that they were not – in systematic reviews with meta-analysis, conclusions frequently communicate a quantity of certainty that I consider unjustified," she said.

Her current projects in meta-research include supervising a colleague, Dr Simon Chong, in his DMedSc project at The University of Melbourne, titled 'Publication bias and the effect of

mandatory trial registration in anaesthesia literature'. She has also embarked on a narrative review of multiplicity issues in medical research, including a proposed categorisation which separates sequential from parallel multiplicity.

"In medical research, it is common to do many statistical comparisons from a single set of data," she said. "This multiplicity might increase yield from the data. However, it also increases the risk of type 1 error, meaning that there is an increased chance that the conclusions are wrong." "There are many different sources of multiplicity – across outcomes, across groups, over time – and many different approaches and opinions about it. "This project aims to propose a nomenclature for the different types of multiplicity in medical research, to hopefully aid communication in this complex area."

Dr Imberger, who sits on the Human Research Ethics Committee (HREC) at Melbourne Health, is also collaborating on a number of systematic reviews.

They include flow rates for sevoflurane and adverse clinical outcomes, intravenous iron therapy for non-anaemic iron deficient adults and intrathecal morphine in major abdominal surgery.

Another project involves setting up an open-access database for prospective registration of protocols for meta-research with The Centre for Integrated Critical Care (CICC) at The University of Melbourne, called 'International Register of Meta-Research' (IRMR).

"The importance of prospective registration is a given in clinical research," she said.

"The principles behind this hold true for any planned experiment – a protocol should be a priority and transparent. Despite being accepted as best practice in clinical research, prospective registration is still often lacking and the study of this absence, its affect and how to remedy it, falls under the realm of meta-research. Interestingly then, many of the meta-research studies highlighting the absence of prospective protocol registration have not being prospectively registered themselves."

Until now, there was no central, international open-source register dedicated to protocols in meta-research, she said.

But the IRMR hopes to remedy this, providing an easy, free system to encourage the prospective registration of protocols in meta-research and "hopefully improve the validity and visibility of this important area of research".

A portrait of Dr. Oliver Daly, a man with short brown hair and glasses, wearing a blue suit, a light blue striped shirt, and a yellow patterned tie. The background is a vibrant, abstract pattern of purple, pink, and green dots.

DR OLIVER DALY

1 in 5—1 in 10
women severely
affected by vaginal
birth trauma

A range of
reasons contribute
to the rates
of birth trauma

OPTIMISING PATIENT CARE FOR WOMEN THROUGH THEIR BIRTH JOURNEY

IMPROVING the outcomes of women throughout their birth journey is a major priority for Dr Oliver Daly.

Whether it's investigating vaginal birth trauma, urinary incontinence or apps to assist culturally and linguistically diverse women, Dr Daly is conducting research on multiple fronts to optimise patient care.

His main research interest lies in vaginal birth trauma, which severely affects between one in five to one in ten women and can lead to longer term problems like urinary incontinence, prolapse and bowel symptoms

He started his PhD on Obstetric Anal Sphincter Injuries (OASIS) in 2017, looking at trauma that occurs in more than 6000 Australian women each year, with an increasing annual incidence.

The impact for these women includes severe perineal pain, anal incontinence, urinary retention and sexual dysfunction. These can be complicated by infection, wound breakdown and fistula that can take months or years to treat, with additional consequences for social, psychological and emotional wellbeing.

Specifically he is investigating why rates differ between hospitals, assessing the contributing factors, prevention, quality of care and the development of a core outcome set.

“Eventually we would like to develop a system that provides feedback to hospitals, to help them identify the issues and introduce interventions to reduce the rates of trauma,” he said.

“This is a long standing interest of mine and the focus of my sub-speciality research project. I think it's a significant cause of pregnancy-associated morbidity with opportunities to improve care. We know the evidence-based preventative measures and ways to manage such trauma, but why are they not being implemented?” He believes a range of reasons contribute to the rates of trauma, including the management of the perineum when a woman is pushing, how and when to perform episiotomies, the use of forceps, patient cultural

issues and the support and training provided to clinicians.

The research involves the Monash Partners Academic Health Science Centre, and the Monash, Eastern Health and Peninsula Health clinical sites, with a smaller, localised study called the Perineum Project being conducted at Western Health.

Other research includes a number of continence management initiatives between urology, continence service and urogynaecology as part of the Western Health Continence Collaborative, and comparing patient attitudes to three modes of anaesthesia for the insertion of midurethral slings to treat women with stress urinary incontinence.

Dr Daly also headed up the WeHELP project (Western e-Health patient information portal for Pregnancy) project, which involved the development of an app to meet the cultural and language needs of patients and standardise the information provided to pregnant women.

He is also the clinician lead for gynaecology, collaborating to develop a registry of patients with transvaginal mesh implants with Monash University to ensure the devices are registered and patient outcomes can be monitored.

“We are engaging with the various stakeholders about how we proceed, to systematically collect data so we know what procedures we are doing and what the outcomes are, to maximise the benefits and minimise the risks for women,” he said. “My main goal is improving how we routinely collect data to improve quality of care in a hospital setting, and translating evidence-based research into clinical practice.”

Ultimately, he wants to see better tracking of patients and says Western Health's Electronic Medical Records system has great potential to do this. To support his research, he has received numerous scholarships and grants from the RANZCOG, CFA, UGSA and the Medical Research Future Fund.

“While there is a lot of research activity at Western Health, it is conducted with very minimal resources which may impact on output, so we look forward to investigating opportunities to increase research infrastructure/support including collaboration with external institutions such as the Melbourne Academic Centre for Health,” he said.

RUBEN
RUOLLE



▲ 60 referrals
across Victoria for
20 beds before
opening

▲ Filling a gap
in care and
empowering clients

ONE OF THE FIRST DUAL DIAGNOSIS UNITS IN AUSTRALIA

IN an unassuming building behind Sunshine Hospital, a dual diagnosis unit is set to change the lives of patients experiencing addiction and mental health issues. But its true impact, clinicians hope, will extend much further.

Western Health's Director of Drug Health Services Ruben Ruolle said Westside Lodge and its ground-breaking model of care has the potential to provide important insights for researchers, clinicians and health services around the country.

Westside Lodge, a 20-bed mixed gender residential rehabilitation facility offering a three-month-long therapeutic program, is one of the first of its types in Australia. This model, of helping clients afflicted with substance abuse and mental health issues, provides a middle ground between existing acute psychiatric services and community based drug and alcohol services. It is hoped that this model of care will empower clients, provide the autonomy they need, relieve and allow them to recover from their presenting symptoms and give them a fighting chance to be drug-free and mentally fit when they are discharged from treatment.

After opening in October 2018, de-identified patient data has been collected using a range of validated tools pre-admission, at admission, during treatment and following discharge, to glean an overview of their journey and outcomes. Such data will be utilised to answer important research questions, particularly around the effectiveness of the program and how it can be improved in the future.

It will allow Western Health Drug Health Services to test the efficiency of interventions in a multi-disciplinary approach and make any necessary adjustments to service delivery. Mr Ruolle said Westside Lodge filled a gap in care for people dealing with problematic drug or alcohol use, as well as mental health issues. "This is unlike any facility in Australia, let alone Victoria," he said. "In terms of understanding the efficiencies and effectiveness of the new service, we are collecting data to look at the outcomes and outputs in terms of a framework that we need to adhere to."

"The research is pertinent in informing us about what's working and what's not working, as this is such a new service. Research will allow us to further develop the current model, but also in the future we hope this will contribute to the research base and form a crucial source

of information and insights for other services, academics and clinicians working in this field."

He said "there was a lack of research in relation to residential rehabilitation and its effectiveness in the treatment of co-morbid drug and alcohol misuse and mental health issues, so there was much to learn from the unit."

Even before opening, the unit had received 60 referrals from across the state for just 20 beds, highlighting the level of demand for the service. Marginalised groups in the community, such as Aboriginal patients and people who identify as lesbian, gay, transgender and intersex, were among the groups the service aims to help. This client-centred recovery program is tailored for adults with stable mental health symptoms, who are beyond the acute phase of their illness and have completed a substance detoxification program.

The voluntary residential rehabilitation program involves a raft of approaches including yoga, pet therapy, art therapy, mindfulness, stress management, anger management, life skills, relapse management (for both substance use and mental health), exercise and nutrition.

The tight community environment that Westside Lodge creates for clients can at times produce an intense environment for both staff and patients, with staff having to be proficient at conflict resolution. Mr Ruolle said historically, a lack of resources has restricted the amount of research they have been able to carry out in the drug and alcohol space.

But while research projects are only in their infancy, he hopes this will change in future.

One of the main projects underway in Western Health's Drug Health Services is an investigation into how clinicians engage in complex ethical decision-making processes, such as resource allocation and patient prioritisation in the face of high demand for beds in the withdrawal unit.

"As an example, how does a clinician make a decision when a patient has no other bed to go to, but another patient's risk profile is higher?," he said.

"And where do you find the criteria to make decisions? The research is being carried out by a PhD candidate."

A portrait of A/Prof Shane Hamblin, a middle-aged man with light brown hair, smiling. He is wearing a light blue and white striped shirt and a dark blue patterned tie. The background is a blue and white halftone pattern.

A/PROF SHANE HAMBLIN

▲ **80,000 people**
registered with type
2 diabetes in north-
western suburbs

▲ **16 GP clinics**
are trialling an early
detection 'artificial
intelligence' program

REVOLUTIONISING DIABETES DETECTION ACROSS VICTORIA

A/PROF Shane Hamblin likens the growing epidemic of diabetes to a “tsunami”, with a public health system racing to stop the tide.

And in his role as Western Health’s Head of Endocrinology and Diabetes, he says it’s crucial to look at innovative new ways to address, manage and, ultimately, slow rates of the disease.

The Western suburbs are one of Australia’s biggest hotspots for diabetes, and the figures make for sober reading.

One third of all Western Health inpatients are affected.

Rates of the disease in Melton and Brimbank are higher than the national average of 5.1 per cent, sitting at 7 per cent and 6.5 per cent respectively.

Demand at Western Health’s Diabetes Clinic soared from 510 in 2012-13 to 901 in 2016-17 and with population growth, the burden is only expected to rise.

About 60 per cent of patients on dialysis for kidney failure have diabetes, 20 per cent higher than the national average.

A/Prof Hamblin believes the key to stemming the tidal wave of cases is collaboration and a community-wide approach.

“Our health system can withstand high tides but the diabetes epidemic is more like a tsunami and we are all going to be struggling when it hits,” he said.

“Things are improving in some areas; GPs for example have taken up a lot of things specialists used to do.”

“But we have to look at a whole of society response. Do we have enough public transport, bike paths, awareness education, should we introduce a sugar tax? There are so many areas to look at, and one thing alone is not going to be sufficient. It needs a multi-pronged approach to research, to look at how we can actually change as a society. And we have to have collaborative research, and collaborative treatment approaches.”

His department has built partnerships with institutions including Deakin University and Diabetes Australia, and is currently involved in at least 12 diabetes studies.

Areas of investigation include depression and diabetes distress in recurrent diabetic ketoacidosis, discharging wisely to increase capacity, and assessing evidence-based, web- and phone-delivered healthy eating programs for people with type 2 diabetes.

One of the most innovative projects is a revolutionary Western Health program dubbed ‘artificial intelligence’ for GPs, which is improving the detection of diabetes across the state.

Western Health Chronic Disease Alliance (WHCDA) researchers created the screening software to enable the early detection of patients at high risk of diabetes, or those unknowingly living with the disease.

The program, pioneered by Head of Nephrology A/Prof Craig Nelson, called CD IMPACT (Chronic Disease early detection and Improved Management in Primary Care Project), has been trialled at more than 16 GP clinics in metropolitan and regional areas, and alerts doctors to patients with abnormally high blood glucose levels.

"This software program sits behind the scenes and prompts GPs to recognise that someone has diabetes. It brings it to the GP's attention when they are often dealing with a lot of information, and, down the track, can help them build up a picture of how many patients have diabetes in that clinic. If in three, six, or nine months' time, they discover it was more than they thought, they can ask themselves if the patients are being managed according to best practice guidelines."

He said it was hoped the program would be adopted by GP clinics around Australia for a range of chronic diseases.

If not caught early, type 1 and 2 diabetes can have serious impacts including amputations, heart attacks, kidney disease and stroke.

The program, a collaboration between Western Health, Victoria University and The University of Melbourne, was initially focussed on detecting kidney disease and has been broadened to a range of other chronic diseases.

He says the reason for the high prevalence of type 2 diabetes is not necessarily lifestyles in the western suburbs, but the region's rich cultural diversity.

National Diabetes Services Scheme data shows there are about 80,000 people registered with type 2 diabetes in the north-western suburbs of Melbourne.

"Type 2 is a major issue in the western suburbs, it often gets labelled the lifestyle condition," he said.

"But it's predominantly due to genetics. A lot of the countries that people come from like Vietnam, China and India, have a higher likelihood of being predisposed to it."

He acknowledged that sedentary lifestyles and obesity were a problem in the western suburbs, with less access to public transport and parks, for example.

One of the main challenges for health services is resourcing, he says, with up to a 12-month wait for patients to see specialists like endocrinologists in outer areas of the west.

But research out of the US is offering signs of hope that finally, the public is getting the message.

Data from the Centre for Disease Control and Prevention reveals the levels of overweight adolescents and adults plateauing, although obesity in adults is still rising slightly.

"Obesity trends usually track well with type 2 diabetes, so hopefully diabetes diagnoses will start to level off in another five years or so," he said.

"Australia tends to follow the US on these trends."



ABOUT WESTERN HEALTH

Western Health provides comprehensive health services to those living in western Melbourne. Covering a population of more than 800,000 our services are a combination of hospital and community-based services to newborn babies, children, adults and the elderly.

With an annual operating budget of more than \$650 million dollars, we provide acute tertiary services in areas of emergency medicine, intensive care, medical and surgical services, as well as sub-acute care and specialist ambulatory clinics.

We are responsible for managing three acute public hospitals - Footscray, Sunshine and Williamstown, a day hospital at Sunbury, a transition care facility at Williamstown and a drug health service in Footscray.

As a community health service we are committed to improving the health and wellbeing outcomes for the culturally diverse and dynamic community of western Melbourne. Transforming the health and wellbeing of our catchment is a core priority of our health service.

Together, caring for the West

westernhealth.org.au

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SUNSHINE HOSPITAL

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WESTERN CENTRE FOR HEALTH RESEARCH AND EDUCATION

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SUNBURY DAY HOSPITAL

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WILLIAMSTOWN HOSPITAL

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Western Health