We can never say “it is enough”
Venerable Catherine McAuley,
Foundress of the Sisters of Mercy
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MESSAGE FROM THE 
GROUP CHIEF EXECUTIVE OFFICER

I am proud to present the 2017 Mercy Health Research and Development Report, a compendium of research projects and publications undertaken at Mercy Health over a busy 12-month period.

I continue to be inspired by our research teams whose fierce curiosity pushes the boundaries of what is possible in the laboratory and clinic. Whether you are the parent of a baby in the Neonatal Intensive Care Unit or a family member watching a loved one battling dementia, research gives you something precious and essential: hope. It is hope that drives our researchers to innovate and excel across myriad fields including fetal and newborn health, women’s health, paediatrics and aged care.

Our international perinatal centre of excellence, Mercy Perinatal, is going from strength to strength with groundbreaking research into stillbirth, ectopic pregnancy and preeclampsia. For millions of women and babies around the world, Mercy Perinatal is a beacon of hope as it continues to strive towards its goal of bringing mothers and babies safely home.

Mercy Health researchers continue to make great strides in their fields. PhD candidate Danielle Forster is investigating treatment protocols for babies at risk of brain damage; Professor Harry Georgiou’s Biomarker Discovery Group is making progress towards developing a predictive test for preterm labour; and our allied health researchers are making inroads in fields as diverse as pastoral care and falls prevention. Every line in this report — each citation, project and presentation — takes us closer to realising our mission to bring God’s mercy to those in need.

Adjunct Professor Stephen Cornelissen
Group Chief Executive Officer, Mercy Health
MESSAGE FROM THE CHIEF MEDICAL OFFICER

The 2017 Research and Development Report marks the 10th annual publication of our research achievements. The volume of research and journal publications at Mercy Health has increased significantly over the past decade.

We are grateful to all the funding bodies, donors and committees that have supported our research in the past, and those that continued to do so in 2017. I would like to especially acknowledge the Norman Beischer Medical Research Foundation, which has consistently supported Mercy research over many years.

The Mercy Health Human Research Ethics Committee also performs an important and much appreciated role. I thank the Chair, Tim O’Leary, and his team for their contribution. The Academic Research and Development Committee continues to approve small grants for start-up research and audits within Mercy Health. These seed grants are always gratefully received.

The University of Melbourne Department of Obstetrics and Gynaecology at Mercy Hospital for Women, Heidelberg, continues to produce the largest research output. We congratulate professors Sue Walker AO and Stephen Tong, along with the other university research leaders and teams, on consistently producing an excellent research output as well as many peer-reviewed journal publications.

Finally, I thank all the researchers in the many departments that have contributed to this report. We should all be proud of the achievements in our 10th year of reporting.

Associate Professor David Allen
Chief Medical Officer, Mercy Health
A good beginning is of great importance.

The Venerable Catherine McAuley
THANK YOU TO OUR SUPPORTERS AND PARTNERS

We acknowledge and celebrate the partnerships we have forged in 2017 and our shared vision for a better future through research and education.

Mercy Health gratefully acknowledges funding support from the following sources in 2017:

- Austin Medical Research Foundation
- Australia New Zealand Gynaecological Oncology Group
- Mercy Health Foundation
- National Health and Medical Research Council
- National Institute for Health Research, United Kingdom
- Norman Beischer Medical Research Foundation
- Stillbirth Foundation Australia
- Sylvia and Charles Viertel Charitable Foundation
- University of Melbourne.

We also extend our appreciation to our external research partners in 2017:

- La Trobe University
- University of Melbourne
- University of Notre Dame.
Each day should bring us nearer to that perfection to which we are bound to aspire.

_The Venerable Catherine McAuley_
These valuable grants are an essential source of funding for start-up research and audits at Mercy Health.

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WOMEN’S AND CHILDREN’S SERVICES

Mercy Health continues to pursue the dream of a safer motherhood and the best possible start to life.
Mercy Perinatal: the first 12 months

In the first 12 months since launching Mercy Perinatal, there has been exciting progress in each of the domains of clinical care, research and education.

The Maternal Fetal Medicine centre is the clinical arm of Mercy Perinatal. The multidisciplinary teams in our sub-specialist clinics continue to care for some of the highest-risk pregnancies in the state. We have sought to enable equitable access to tertiary services through initiatives such as our telemedicine clinic, which services areas as remote as Darwin, Northern Territory.

Mercy Perinatal continues to take a lead in perinatal education. Our Fetal Medicine at Twilight symposia has extended its reach via webinar to more than 80 sites across Australia. Our inaugural Perinatal Mental Health Symposium addressed assessment and management of perinatal mental health disorders. Mercy Perinatal also incorporated a new Ultrasound Course for Midwives, focussed on fetal surveillance in high-risk pregnancies. Our flagship conference, the Global Obstetric Update, sold out three months in advance and received glowing reviews from attendees.

Team

Mercy Perinatal remains focussed on leading an international research program. Co-directors Professor Stephen Tong (Head of the Translational Obstetrics Group) and Professor Sue Walker AO (Head of Perinatal Medicine) have continued to develop key concepts in the areas of stillbirth prevention, preeclampsia treatment and novel therapies for ectopic pregnancy. Key achievements in these three initiatives are summarised below and reflect a collaborative effort with scientists and clinicians across many disciplines and institutes. Our international collaborators include Stellenbosch University, South Africa; University of Edinburgh and University of Manchester, UK; and Universidad de los Andes, Chile.

Fostering the next generation of talented clinician-researchers is an important part of Mercy Perinatal’s mission. We were delighted to welcome the inaugural Mercy Perinatal Research Fellows to our department in 2017. Dr Fiona Brownfoot PhD and Dr Anthea Lindquist PhD have made major inroads in their areas of research interest: therapeutics for preeclampsia and perinatal epidemiology, respectively. We owe thanks to our funding bodies, our stellar research midwifery team, the Mercy Health Human Research Ethics Committee, and our patients who join with us in pursuing the dream of a safer motherhood and the best possible start to life. Without them, none of this would be possible.
Key projects

**Ectopic pregnancy**

Ectopic pregnancy affects 1–2 per cent of all pregnancies. Mercy Perinatal has been leading a comprehensive research effort to develop effective drug treatments to replace surgery as a treatment for ectopic pregnancies. If successful, it will mean safer, cheaper and more accessible treatment for this dangerous medical condition while also retaining the ability for future pregnancy.

The team has previously identified a promising drug combination of gefitinib and methotrexate, and this concept is currently being tested in a large multicentre clinical trial in the United Kingdom. In 2017, the group produced compelling laboratory data suggesting that vinorelbine has potential as another medical treatment. This concept will be studied in an international trial in Auckland, New Zealand, led by Dr Prathima Chowdary.

**Stillbirth**

Every day in Australia, six lives are lost to stillbirth. Babies who are experiencing fetal growth restriction are at 3–4 fold increased risk of stillbirth. By developing better ways of identifying the growth-restricted fetus, we could dramatically reduce the rate of stillbirth by offering closer surveillance and timely delivery to those affected. The Fetal Longitudinal Assessment of Growth (FLAG) study involves blood samples taken in late pregnancy from over 2,000 women. By examining the unique genetic and protein signatures in these blood samples, our scientific team has identified unique proteins that could form the basis of a future simple blood test to assess placental health in late pregnancy. If successful, this could transform pregnancy care.

**Preeclampsia**

Preeclampsia affects five per cent of women and claims the lives of about 70,000 women and half a million babies worldwide each year. Mercy Perinatal has set up a drug screening pipeline to discover novel preeclampsia treatments. Through our collaboration in South Africa, we have been able to fast-track the most promising candidates to clinical trials, led by our international Mercy Perinatal Research Fellow, Dr Cathy Cluver. In 2017, Dr Cluver completed the first treatment trial for preterm preeclampsia, well ahead of time and budget. The next trial is already underway.

Perinatal Research Group (Professor Sue Walker AO)

**Research team**

Professor Sue Walker AO  
Dr Alexis Shub  
Dr Elizabeth McCarthy  
Associate Professor Lisa Hui  
Dr Alison Fung  
Dr Alice Robinson  
Dr Teresa MacDonald  
Dr Fiona Brownfoot  
Dr Anthea Lindquist  
Mrs Nadia Bardien  
Mrs Gabrielle Pell  
Ms Anna Middleton.

**Projects and grants**

- **Advances in Prenatal Genomic Testing**  
  L Hui, A Lindquist  
  Collaborators: Professor Jane Halliday, Murdoch Children’s Research Institute

- **Diabetes and Obesity**  
  E McCarthy, A Shub, M Lappas  
  Collaborators: Dr Jane Wilcox, Deakin University

- **Fetal Growth Restriction and Stillbirth**  
  S Walker, T MacDonald, A Robinson, L Hui

- **Perinatal Sleep Research**  
  S Walker, A Fung, H Skrzypek  
  Collaborators: Dr Mark Howard and Ms Danielle Wilson, Institute for Breathing and Sleep, Austin Health

- **Perinatal Infectious Diseases**  
  L Hui, N Hannan  
  Collaborators: Professor Luc de Catte, UZ Leuven (Belgium), Royal Hospital for Women (NSW), Dr Antonia Shand, Randwick NSW

- **Australian Placental Transfusion Study**  
  S Walker  
  Funded by NHMRC

- **EPPI Trial — Enoxaparin for the Prevention of Preeclampsia and Intrauterine growth restriction**  
  S Walker  
  Funded by University of Auckland Faculty Research Development Fund; A+ Trust Auckland District Health Board Charitable Trust; Australasian Society of Thrombosis and Hemostasis Scientific and Education Trust; and the University of Auckland School of Medicine Performance Based Research Fund
MAGENTA trial: Magnesium Sulphate at 30–34 weeks’ gestational age: neuroprotection trial
S Walker
Funded by NHMRC

STRIDER Trial: a randomised controlled trial of Sildenafil in Dismal Prognosis Early-onset Intrauterine Growth Restriction.
S Walker
Funded by Health Research Council of New Zealand (HRC) and Cure Kids New Zealand

Improving the prediction and detection of contributors to term stillbirth
S Walker, S Tong, C Whitehead
Funded by NHMRC (2014–2016)

Fetal Longitudinal Assessment of Growth Study (FLAG)
S Walker (CIA)
Funded by Stillbirth Australia Foundation (2016–2017)

Developing potential biomarkers of fetal brain development after congenital cytomegalovirus infection
L Hui (CIA)

Noninvasive prenatal testing (NIPT) to detection Early Ovarian cancer (NEO study)
L Hui (CIA)
Funded by Norman Beischer Medical Research Foundation (2016–2017)

New ways to identify fetal macrosomia in late pregnancy
S Walker, T MacDonald, L Hui, S Tong
Funded by Norman Beischer Medical Research Foundation (2017)

Can circulating biomarkers predict the development of type 2 diabetes in women with a previous GDM pregnancy?
M Lappas, A Shub
Funded by Norman Beischer Medical Research Foundation (2016–2017)

Circulating cardiovascular biomarkers to predict the development of type 2 diabetes in women with a previous GDM pregnancy
M Lappas, A Shub
Funded by Norman Beischer Medical Research Foundation (2016–2017)

Does breastfeeding protect against the development of impaired glucose tolerance or type 2 diabetes?
A Shub, M Lappas
Funded by Norman Beischer Medical Research Foundation (2017).
Publications


Taryn and Andrew with baby Hannah

Mercy Health researchers are striving to dramatically reduce the rate of stillbirth, which claims six lives a day in Australia.


Academic achievements

Dr Teresa MacDonald received an oral presentation award and a people’s choice award at the inaugural University of Melbourne Department of Obstetrics and Gynaecology Research Student Symposium.

Dr Teresa MacDonald received the Illumina Trainee Women’s Health Award, Best Oral Presentation, RANZCOG trainees.

Dr Teresa MacDonald received the Austin LifeSciences ResearchFest Olivia Newton-John Cancer Research Institute Scholarship.

Dr Teresa MacDonald received the PSANZ-PRS Mont Liggins Early Career award which funded her travel to present her research at the Perinatal Research Society conference in Atlanta, USA.

Dr Teresa MacDonald was awarded the PSANZ New Investigator Award for best Oral Presentation in Obstetrics and Gynaecology.

Dr Teresa MacDonald received a PSANZ Early Career Research Travel Award.

Associate Professor Lisa Hui was awarded the University of Melbourne Ackman Travelling Scholarship to visit the Eunice Kennedy Shriver National Institute of Child Health and Development (NICHD) and attend BioTech Laboratory Workshops on Next Gen Sequencing at the National Institutes of Health, USA 2017–19 ($15,570).

Associate Professor Lisa Hui was an invited keynote speaker at the Circulating Nucleic Acids in Plasma and Serum scientific meeting in Montpellier, France in October 2017.

Associate Professor Lisa Hui was appointed to the editorial board of the scientific journal *Prenatal Diagnosis* in 2017.
Translational Obstetrics Group (Professor Stephen Tong)

In 2017, the Translational Obstetrics Group continued to pursue new therapeutics and diagnostics to treat major pregnancy complications.

Highlights of 2017

Of the many papers published by the team in 2017, one that appeared in the prestigious journal *Hypertension* generated significant media interest and subsequent citations. The paper identified the exciting possibility that proton pump inhibitors may be useful to treat or prevent preeclampsia.

Also in 2017, a clinical trial to test whether proton pump inhibitors can be used to treat preeclampsia completed recruitment in South Africa (in collaboration with Tygerberg Hospital).

The team also continued to collaborate in a major phase III clinical trial based in the United Kingdom, to test a new treatment for ectopic pregnancy. This is being undertaken in collaboration with Professor Andrew Horne in Edinburgh and it tests a concept developed by the Translational Obstetrics Group.

Another notable achievement of the year was by Dr Carole-Ann Whigham, who received the only New Investigator Award from the Society of Reproductive Biology satellite meeting in Edinburgh.
**Research team**
Professor Stephen Tong  
Dr Tu’uhevaha Kaitu’u-Lino  
Dr Natalie Hannan  
Dr Fiona Brownfoot  
Ms Roxanne Hastie  
Dr Carole-Anne Whigham  
Dr Teresa MacDonald  
Ms Natasha De Alwis  
Dr Natasha Pritchard  
Mrs Ping Cannon  
Ms Vi Nguyen  
Dr Natalie Binder  
Ms Sally Beard.

**Projects and grants**

From pathogenesis to therapeutics: targeting two signalling pathways as a therapeutic strategy to treat preeclampsia  
T Lino, S Tong, N Hannan  
Funded by NHMRC Project Grant (2017–2019)

New generation antiplatelet therapies to prevent preeclampsia  
N Hannan, S Tong, T Kaitu’u-Lino  
Funded by NHMRC Project Grant (2017–2019)

Fetal Longitudinal Assessment of Growth (FLAG) study — looking for new markers that can predict when a baby is small and at risk of stillbirth  
S Walker  
Funded by Stillbirth Australia Foundation (2016–2017)

Fetal Longitudinal Assessment of Growth (FLAG) study — looking for new markers that can predict if a mother is at risk for preeclampsia  
S Walker  
Funded by Stillbirth Australia Foundation (2016–2017)

Fetal Hypoxia Study (FOX) — development of a blood test to detect babies at risk of imminent stillbirth  
S Walker  
Funded by Stillbirth Australia Foundation (2016–2017)

Placental targeted nanomedicine to treat preeclampsia  
N Hannan, L Harris, S Tong  
Funded by NHMRC Project Grant (2017–2019)

Combination treatments to treat preeclampsia  
F Brownfoot, TJ Kaitu’u-Lino, SP Walker, S Tong  
Funded by Norman Beischer Medical Research Foundation

Identification of a new tablet-based therapy to treat ectopic pregnancy  
S Tong, A Horne, T Lino, E Lim  
Funded by NHMRC Project Grant (2017–2019)

Sulfasalazine as a treatment for preeclampsia, involving bench and bedside studies  
F Brownfoot, TJ Kaitu’u-Lino, SP Walker, S Tong  
Funded by Norman Beischer Medical Research Foundation

The effect of sildenafil on the antiangiogenic marker of preeclampsia sFlt-1  
S Tong

External funding

Systematic screening approach to identify new therapeutics for preeclampsia  
S Tong, T Lino, N Hannan  
Funded by NHMRC (2016–2019)

From pathogenesis to therapeutics: targeting two signaling pathways as a therapeutic strategy to treat preeclampsia  
T Lino, S Tong, N Hannan  
Funded by NHMRC (2017–2019)

Development of vinorelbine as a tablet based therapy to cure ectopic pregnancies  
S Tong, A Horne, T Lino, E Lim  
Funded by NHMRC (2017–2019)

New generation anti-platelet therapies to prevent preeclampsia  
N Hannan, S Tong, T Kaitu’u-Lino  
Funded by NHMRC (2017–2019)

Nanomedicine targeted delivery of therapeutics to the placenta to treat preeclampsia  
N Hannan, L Harris, S Tong  
Funded by NHMRC (2017–2019)

Identifying biomarkers for prediction of preeclampsia at 28 weeks’ gestation  
T Kaitu’u-Lino, T Macdonald, SP Walker, S Tong  
Funded by Norman Beischer Medical Research Foundation

Treating preterm preeclampsia with sulfasalazine: an early phase clinical trial  
F Brownfoot, TJ Kaitu’u-Lino, SP Walker, S Tong  
Funded by Norman Beischer Medical Research Foundation
New ways to identify fetal macrosomia in late pregnancy
SP Walker, T MacDonald, L Hui, S Tong
Funded by Norman Beischer Medical Research Foundation

A multi-centre double-blind randomised trial of a combination of methotrexate and gefitinib versus methotrexate alone as a treatment for ectopic pregnancy (GEM 3)
S Tong (Second principle investigator)
Funded by National Institute for Health Research, United Kingdom (2016–2018)

Investigating mechanisms of preeclampsia and developing novel therapeutics
N Hannan (CIA)
Funded by Veski Inspiring Women Fellowship (2016–2018)

Pharmacokinetics of sulfasalazine to treat preeclampsia
F Brownfoot
Funded by Society of Obstetric Medicine for Australia and New Zealand

Prevention and treatments for preeclampsia
F Brownfoot
Funded by a RANZCOG Early Career Research Grant

Combination sulfasalazine and metformin: a new therapy for preeclampsia
F Brownfoot
Funded by Austin Medical Research Foundation

Publications


Presentations

Kaitu’u-Lino TJ. Mitochondrial Regulation of sFlt-1 in preeclampsia. Pregnancy Research Group, Griffith University, Gold Coast

Kaitu’u-Lino TJ. Treating an age old disease. Australian Reproduction Update, Melbourne, November 2017

Hannan N. The embryo and pregnancy complications. Australian Reproduction Update, Melbourne, November 2017

De Alwis N. Hypoxia increases trophoblast and placental expression of candidate blood markers of severe fetal growth restriction. Australian Reproduction Update, Melbourne, November 2017

Hannan N. Treating placental dysfunction: pre-clinical strategies. International Federation of Placental Associations (IFPA) annual meeting, Manchester, UK, August/September 2017

Whigham C-A. Circulating endothelial transcription factor GATA2 is decreased in preeclampsia and may contribute to maternal endothelial dysfunction. IFPA annual meeting, Manchester, UK, August/September 2017

Hannan N. Targeted nanoparticle delivery of short interfering RNAs to treat preeclampsia. Society for Reproductive Investigation annual meeting, Orlando, USA, March 2017

Hastie R. New medical therapeutics for ectopic pregnancy. Society for Reproductive Investigation annual meeting, Orlando, USA, March 2017
Whigham C-A. Circulating endothelial transcription factor GATA2 is decreased in preeclampsia and may contribute to maternal endothelial dysfunction. Medical Research Centre/Society for Reproductive Investigation satellite meeting, Edinburgh, Scotland, August 2017

Hannan N. Targeted nanoparticle delivery of short interfering RNAs to treat preeclampsia. Frontiers in Reproduction Annual Symposium, Marine Biological Laboratories, Massachusetts USA

Hannan N. (Invited seminar) Novel approaches to treat preeclampsia: new drugs to new delivery. Centre for Reproductive Health, University of Edinburgh, Scotland, UK

Hannan N. (Invited seminar) Novel approaches to treat preeclampsia: new drugs to new delivery. University of California, San Francisco USA

Hannan N. (Invited speaker) Be BOLD for change. International Women’s Day Seminar, Mercy Hospital for Women, Melbourne

Tong S. (Invited plenary presentation) Developing new treatments for major pregnancy complications. JN De Villiers Lecture, Tygerberg Hospital, South Africa

Tong S. (Invited plenary presentation) Translating new treatments for preeclampsia and ectopic pregnancy, from preclinical discovery to clinical trials. Medical Research Centre/Society for Reproductive Investigation satellite meeting, Edinburgh, Scotland, August 2017

Tong S. (Invited speaker) Identifying and evaluating novel therapeutics to treat preeclampsia. IFPA annual meeting, Manchester, UK, August/September 2017

Tong S. (Invited speaker) Clinical cases on the management of fetal growth at term. IFPA annual meeting, Manchester, UK, August/September 2017

Tong S. (Invited speaker) Developing new therapeutics and diagnostics for major pregnancy complications. St Marys’ Hospital and University of Manchester, UK

Brownfoot F. (Invited speaker) Novel therapeutics for preeclampsia. University of Auckland, New Zealand

Brownfoot F. Novel treatments for preeclampsia. Growing Tall Poppies, Swinburne University

Hastie, R. Novel treatments for ectopic pregnancies. Growing Tall Poppies, Swinburne University.
Biomarker Discovery Group (Dr Harry Georgiou)

The Biomarker Discovery Group continues to study perinatal morbidity and mortality, with the aim of identifying better prognostic biomarkers of preterm labour and bringing these discoveries to commercial production and clinical application.

Research team
Dr Harry Georgiou
Associate Professor Megan Di Quinzio
Ms Gabrielle Pell
Ms Claire Grant
Ms Tal Amitay.

Project
Predicting preterm labour
H Georgiou, M Di Quinzio, G Pell, C Grant, T Amitay
Funded by Carmentix Singapore and the Norman Beischer Medical Research Foundation.

Publications


Presentations
Di Quinzio M. Predicting preterm delivery — current status and future directions (Part I). Australasian Association of Clinical Biochemists (AACB) 55th Annual Scientific Conference, Melbourne, Australia, September 2017

Georgiou H. Predicting preterm delivery — current status and future directions (Part II). AACB 55th Annual Scientific Conference, Melbourne, Australia, September 2017

Obstetrics, Nutrition and Endocrinology Group (Associate Professor Martha Lappas)

The Obstetrics, Nutrition and Endocrinology Group continues to research the cellular and molecular mechanisms that govern birth, as well maternal diabetes, obesity and fetal growth and development.

Research team

Associate Professor Martha Lappas
Dr Ratana Lim
Dr Stella Lioing
Mrs Gillian Barker
Ms Caitlyn Nguyen-Ngo
Ms Yasaswi Kaumadha Wijesuriya
Ms Priyanka Goradia
Ms Manisha Miranda.

Projects

Preterm birth

Preterm birth is one of the most significant healthcare issues globally. An effective medical therapy that could stop idiopathic preterm labour would be a major advance. Progress is made difficult by the fact that the human birth process is not completely understood. Over the past decade, our Obstetrics, Nutrition and Endocrinology Group has identified a number of ‘master regulators’ of the mechanisms that govern birth. The team is now in the process of targeting these pathways using both in vitro and in vivo models. This research promises to offer new insights into the development of therapeutics for the management of preterm birth.

Gestational diabetes

Gestational diabetes has an impact that extends well beyond pregnancy and childbirth, with the potential for lifelong morbidity or mortality for both mother and baby. Little progress, however, has been made with interventions aimed at prevention. Numerous epidemiological studies have linked fruit and vegetable consumption with a reduced risk of various diseases. Many of these beneficial properties have been attributed to phytochemicals such as the citrus flavones that are found in citrus fruits. In this research, we are assessing whether phytochemicals can prevent the development of gestational diabetes and improve fetal outcomes.

Projects and grants

The transmission of perinatal maternal mental health to preschool emotional disorders: Examining pathways and intervention points in the MPEWS study
M Galbally, A Lewis, P Boyce, M van IJzendoorn, T Oberlander, E van Rossum, M Lappas, J Ryan, M Mohebbi
Funded by NHMRC (2016–2020)

Understanding and preventing complications of pregnancy
M Lappas
Funded by the University of Melbourne
Histidine as a novel therapy to prevent the development of gestational diabetes
M Lappas
Funded by Austin Medical Research Foundation
Research Fellowship
M Lappas
Funded by the University of Melbourne (2016–2017)
Sirtuin 1 – A key player in the pathogenesis of gestational diabetes mellitus?
M Lappas
Funded by Norman Beischer Medical Research Foundation (2016–2017)
Can circulating biomarkers predict the development of type 2 diabetes in women with a previous GDM pregnancy?
M Lappas, A Shub
Funded by Norman Beischer Medical Research Foundation
Circulating cardiovascular biomarkers to predict the development of type 2 diabetes in women with a previous GDM pregnancy
M Lappas, A Shub
Funded by Norman Beischer Medical Research Foundation (2016–2017)
Does breastfeeding protect against the development of impaired glucose tolerance or type 2 diabetes?
A Shub, M Lappas
Funded by Norman Beischer Medical Research Foundation (2016–2017)
Do women with GDM who have overweight offspring have increased leptin and decreased adiponectin levels?
A Shub, M Lappas
Funded by Norman Beischer Medical Research Foundation (2016–2017)
Publications


Awards and academic achievements

Ms Martha Lappas, 2013–17, NHMRC Career Development Fellowship, Level 2

Ms Martha Lappas, 2017, University of Melbourne Research Fellowship

Ms Martha Lappas, 2017–18, Preterm Birth International Collaborative (PREBIC) Australasian Board Director

Ms Caitlyn Nguyen-Ngo, 2017–20, Australian Government Research Training Program (RTP) Scholarship

Ms Yasaswi Kaumadha Wijesuriya, graduated Bachelor of Science (Honours) with a High Distinction

Ms Caitlyn Nguyen-Ngo, Australian Government Research Training Program (RTP) Scholarship (three-year PhD scholarship).

Presentations

Lappas M. (Invited speaker) Prevention of preterm birth: Novel targets of inflammation in the myometrium. 2017 Australian Physiological Society meeting, Melbourne, Australia, November 2017

Lappas M. (Invited speaker) Novel targets for preventing spontaneous preterm birth. Society for Reproductive Investigation (SRI) 64th Annual Scientific Meeting, Orlando, Florida, USA, March 2017

Lappas M. (Invited speaker) Novel targets for inhibition of inflammation for the prevention of PPROM. SRI 64th Annual Scientific Meeting, Orlando, Florida, USA, March 2017


This research promises to offer new insights into the development of therapeutics for the management of preterm birth.
Obstetric Research Group (Dr Alexis Shub)

The Obstetric Research Group led by Dr Alexis Shub continues to concentrate on research in the fields of gestational diabetes mellitus (GDM) and obesity in pregnancy. Predictive circulating biomarkers are also being explored.

Projects and grants

Can circulating biomarkers predict the development of type 2 diabetes in women with a previous GDM pregnancy?
M Lappas, A Shub
Norman Beischer Medical Research Foundation (2016–2017)

Circulating cardiovascular biomarkers to predict the development of type 2 diabetes in women with a previous GDM pregnancy
M Lappas, A Shub
Norman Beischer Medical Research Foundation (2016–2017)

Does breastfeeding protect against the development of impaired glucose tolerance or type 2 diabetes?
A Shub, M Lappas
Obstetric Research Group (Dr Elizabeth McCarthy)

Projects

Data collection: Audit of outcomes of diagnostic amniocentesis and chorionic villous sampling at Mercy Hospital for Women
T Carins, L Hui

Data collection: Audit of maternal pertussis immunization at The Northern Hospital
A J de Faria, P Howat, L Hui

Data collection: Commenced re-audit of term breech outcomes
S Ruff, L Hui

Data collection: Updated meta-analysis of maternal emotional outcomes following diet or lifestyle interventions in pregnancy
N Chisholm, L Hui

Data collection: Qualitative studies into pregnant women and medical staff’s perceptions of current and future, video-assisted methods for teaching medical students obstetric abdominal examination
D Wilson, L Hui

Data collection: Commenced retrospective review of mid-trimester loss at MHW, including the rates of antiphospholipid antibody positivity, negativity and lack of testing
R Taleb, L Hui

Data collection: Ethics approval obtained for audit of Early Pregnancy Assessment Clinic (EPAC) at MWH
M Overdevest, L Hui.
Many of the group’s research projects are part of national and international collaborations. Members of the department continue to present papers at both national and international meetings.

Research team

Associate Professor Peter Grant
Associate Professor David Allen
Dr Simon Hyde
Dr Julie Lamont
Dr Adam Pendlebury
Dr George Au Yeung
Dr Serene Foo
Associate Professor Linda Milishkin
Dr Kristen Moloney.

Projects and grants

Ovarian Cancer Prognosis and Lifestyle Study (OPAL)
P Webb, M Friedlander, P Grant, A Obermair, A deFazio
Funded by NHMRC

PARAGON – Phase 2 study of aromatase inhibitors in women with potentially hormone responsive recurrent/metastatic gynaecological neoplasms
P Grant, S Hyde, L Milishkin
Funded by ANZGOG

ARIEL 2. A Phase 2, Open-Label Study of Rucaparib in Patients with Platinum-Sensitive, Relapsed, High-Grade Epithelial Ovarian, Fallopian Tube or Primary Peritoneal Cancer
P Grant, L Milishkin, D Rischin, S Hyde, J Lamont, D Allen, S Foo
Funded by Clovis Oncology

Cascade. A cancer tissue collection after death (cascade) programme to improve our understanding of the progression from primary stage cancer to metastatic disease
D Bowtell, P Grant, J Lamont, S Hyde, L Milishkin, G Au Yeung

Ovarian ctDNA study. Circulating Tumour DNA as a Marker of Residual Disease and Response to Adjuvant Chemotherapy in Stage I-III Optimally Debulked Epithelial Ovarian, Fallopian Tube and Primary Peritoneal Cancer
S Ananda, L Milishkin, G Au Yeung, P Grant, S Hyde, S Foo, J Lamont, A Pendlebury

Phaedra. A Phase 2 Trial of Durvalumab in Advanced Endometrial Cancer
L Milishkin, G Au Yeung, P Grant, S Hyde, S Foo, J Lamont
Funded by ANZGOG

National Gynaecological Oncology Registry (NGOR): Ovarian Registry Pilot project
P Grant
In collaboration with Monash University, the Royal Women’s Hospital, Monash Health and Epworth HealthCare.
Publications


Presentations

Allen D. Challenges in Australia with Colposcopy and Cervical Cancer Screening. (Session Chair) International Federation of Cervical Pathology and Colposcopy (IFCPC), 2017 World Congress, Orlando, Florida, April 2017

Allen D. Primary HPV Screening — Current state of the science in Australia. IFCPC, 2017 World Congress, Orlando, Florida, April 2017

Allen D. Changing colposcopy practice and the introduction of quality assurance monitoring. IFCPC, 2017 World Congress, Orlando, Florida, April 2017

DEPARTMENT OF PAEDIATRICS,
MERCY HOSPITAL FOR WOMEN

The research activity of the Department of Paediatrics is centred on a number of core themes: respiratory management and the prevention of chronic lung disease; nutrition; brain injury; infection and immunity; and long-term neurodevelopmental outcomes.

The Department of Paediatrics team often collaborates in large multinational research studies and we have presented research outcomes at national and international conferences.

The team’s cardio-respiratory research spans the research spectrum from laboratory work to clinical trials and collaboration with industry to develop respiratory equipment. In this space, the Mercy Hospital for Women Neonatal Unit is a leader in the research and development of respiratory support via high-flow nasal cannulae. Meanwhile, researchers are also collaborating in the Melbourne Infant Study: BCG for allergy and infection reduction (MISBAIR). This is a randomised controlled trial investigating whether administration of BCG vaccine to term infants soon after birth can decrease the risk of infection and allergies.

The Department is also involved in the Victorian Infant Collaborative Study (VICS), which tracks the neurodevelopmental outcomes of infants at various stages. Mercy Hospital for Women infants enrolled in the 2016–17 cohort will be the first to investigate the use of a smartphone app to monitor movement, which may provide an early alert of the possibility of a child developing cerebral palsy.

For more information on Department research involving the Mercy Health Breastmilk Bank see page 32 and for research into brain injury see page 34.

Research team
Dr Clare Collins
Dr Jim Holberton
Ms Danielle Forster
Dr Dan Casalaz
Dr Ajit Aiyappan
Dr Gillian Opie
Dr Ashwanthna Enjapoori
Dr Sri Ponraj.

Projects and grants
Comparison of cerebral haemodynamics in preterm infants receiving Nasal Continuous Positive Airway Pressure and High Flow Nasal Therapy
C Collins
OCHIE Study
D Forster
OPTIMIST Study
A Aiyappan
Funded by NHMRC
VICS Study. Victorian Infant Collaborative Support Group
G Opie
Betacagomorphins in Human Breast Milk
G Opie, A Enjapoori
Funded by Deakin University
Investigation of a novel method of pasteurisation for Human Expressed Breast Milk
G Opie, S Ponraj
Funded by Deakin University
Comparison of the Pharyngeal Pressures in two high-flow nasal cannulae devices
C Collins, J Holberton
Funded by the Norman Beischer Medical Research Foundation
Developmental Outcomes at 2-3 Years of Age for Premature Infants Extubated to Either High Flow Nasal Cannulae or Nasal Continuous Positive Airway Pressure
C Collins
Funded by the Norman Beischer Medical Research Foundation
MISBAIR Study
Dan Casalaz
Funded by NHMRC.
Publications


Presentation

Each year, the Mercy Health Breastmilk Bank provides sick and vulnerable babies at Mercy Hospital for Women with access to pasteurised donated breastmilk when their mothers experience difficulty with their own supply. As a result, the team is regularly approached by laboratory scientists wanting to evaluate particular aspects of human milk.

“Our knowledge about human breastmilk is still very limited compared to what we know about cows’ milk,” Mercy Health Breastmilk Bank Founder and Head of Unit Dr Gillian Opie explains. “Any work we can do to help support scientists give us a better understanding of how unique each mother’s milk is — is really important.”

In 2017, the Mercy Health Human Research Ethics Committee (HREC) approved two independent projects for postdoctoral scientists from Deakin University, Dr Ashwantha Enjapoori and Dr Sri Ponraj.

Dr Enjapoori is investigating beta-casomorphins (BCMs) — a group of very small milk proteins. BCMs are thought to exert analgesic, antioxidant and satiety functions in newborn babies and may also regulate immune functions. However, most of what is known about BCMs is from studying cows’ milk.

“We will be asking our breastmilk donors if they would like to be involved (in this study) and if they do we will be collecting a breastmilk sample from them each month,” Dr Opie says.

Meanwhile, Dr Ponraj has developed a novel method of pasteurising cows’ milk using plasma technology. Dr Ponraj found that shooting microscopic plasma bubbles through cows’ milk could be an alternative to pasteurisation. Now, he wants to explore how this could be used to pasteurise human milk.

“This technology has the advantage of reducing bacterial contamination without impacting essential human proteins and antibodies,” Dr Opie explains.

“This is very preliminary research but it may form a foundation for more sophisticated pasteurisation and ultimately better infant feeding in the future when a mother is not able to feed her own baby.”

The Mercy Health Breastmilk Bank also continues to audit its practices to see how it can refine and improve its processes.

Expansion plans for the breastmilk bank were finalised with the Department of Health and Human Services in 2017, and these will be a key focus for the team in 2018.

The Mercy Health Breastmilk Bank will collaborate with the Royal Women’s Hospital, Monash Medical Centre and the Royal Children’s Hospital to establish satellite sites. This is expected to triple the number of breastmilk donors and recipients in Victoria.

“I am excited that very premature and sick babies in other Victorian nurseries will soon be able to have the benefit of pasteurised donor breastmilk in circumstances when their own mother is not able to supply sufficient breastmilk,” Dr Opie says.
RESEARCHING SOME OF OUR SICKEST BABIES

Ms Danielle Forster, PHD candidate and voluntary researcher at University of Melbourne and Mercy Hospital for Women.

Nestled among many wires, tubes and beeping machines, the subjects of Ms Danielle Forster’s research are among the sickest babies in the Mercy Hospital for Women Neonatal Intensive Care Unit. The babies in her study experienced a reduction in oxygen supply around the time of birth, placing them at risk of developing a condition called Hypoxic Ischemic Encephalopathy (HIE). In about 65 per cent of babies, HIE leads to significant neurological disability or death.

The current treatment protocol for HIE is to cool the baby’s body temperature down to 33.5 degrees within six hours of birth for exactly 72 hours. This cooling treatment has been shown in several large studies to reduce the risk of disability or death to 55 per cent. It is most effective in babies that have experienced mild to moderate hypoxia (reduced oxygen supply).

“That’s where I came into it,” explains Ms Forster, a biomedical engineer who specialised in clinical engineering and has undertaken her research at Mercy Hospital for Women under the supervision of Dr James Holberton and Dr Virginia Saxton and the University of Melbourne’s Dr Emmanuel Koumoundouros. “The accepted practice for deciding whether or not an infant has had an hypoxic incident was to use ultrasound to calculate the resistive index (RI) in the cerebral artery. This resistance is lowered after a hypoxic event due to the ‘brain-sparing effect’, a physiological effect that preferentially redirects blood flow to the brain when oxygen reserves are low. My research looked at whether RI is a reliable measure or if there is a better marker that can be used to measure severity, which could improve treatment protocols.”

So how reliable is the RI measurement? In order to research the 18 babies in her study, Ms Forster learned how to perform cranial ultrasounds herself and set up a protocol for the babies’ RI to be measured once a day and every two hours during the 12-hour re-warming period. Although the RI provides a general indication of whether or not an hypoxic event has occurred, it does not reflect the subtleties of severity. Moreover, it is a one-off measurement requiring a skilled operator, thereby its usefulness is limited.

That is why a new measure is needed to help researchers better understand cerebral perfusion (how much blood there is in the brain) and cerebral blood-flow, and how these are altered in HIE. There is potentially more to discover. To that end, Ms Forster was fortunate to secure a very special frequency-domain Near Infrared Spectrometer (NIRS) for the hospital — the first of its kind in Australia. NIRS sensors applied to a baby’s head give Ms Forster absolute measurements of Oxyhaemoglobin and De-Oxyhaemoglobin in the brain tissue continuously whilst the infant is cooled. Ms Forster is aware these sensors attached to the baby’s head may be an added encumbrance for the child and parents, however she is confident the data will benefit other families in future. “Many parents just want to help, even if it’s not going to have a direct impact on their own baby,” she says. Early results have been encouraging insofar as they support Ms Forster’s hypotheses.

Ms Forster is beginning to link her data to developmental outcomes of the very first infants tested. This will help improve early categorisation of infants, enabling paediatricians to individualise treatment in the future — most likely by adapting the duration of the HIE cooling treatment. “We’d like to be able to wait until we can say this infant is ready to be rewarmed, thus giving them a better chance,” Ms Forster says. “That’s the ultimate goal.”

Many parents just want to help, even if it’s not going to have a direct impact on their own baby.

Ms Danielle Forster
Ms Danielle Forster with the department’s new Near Infrared Spectrometer (NIRS) machine
DEPARTMENT OF UROGYNAECOLOGY,
MERCY HOSPITAL FOR WOMEN

Women with disorders of the bladder and pelvic floor are referred to the Department of Urogynaecology for specialist care.

Apart from providing clinical services to patients, the department also conducts research and collaborates with international colleagues.

Research team
Dr Lin Li Ow
Dr Debjyoti Karmakar
Dr Payam Nikpoor
Professor Peter Dwyer
Dr Yik Lim
Dr Lore Schierlitz
Mrs Christine Murray
Ms Elizabeth Thomas.

Projects
Randomised controlled pilot study to compare TVT and Monarc suburethral sling procedure in women with urodynamic stress incontinence and intrinsic sphincter deficiency
L Schierlitz

Non-invasive transcutaneous tibial and sacral nerve stimulation as a treatment for overactive bladder: A pilot study
L Schierlitz

RCT of vaginal extraperitoneal uterosacral ligament suspension (VEULS) with anterior mesh versus sacrocolpopexy — four-year outcome
LL Ow

Long-term follow up of extraperitoneal vault suspension for post-hysterectomy vault prolapse
D Karmakar

Long-term comparison of Burch colposuspension versus TVT for stress urinary incontinence
D Karmakar

Pilot project to develop a patient-reported scale for emptying of bladder after pelvic floor surgery
D Karmakar and P Nikpoor

Association of pregnancy and mode of delivery on urinary incontinence: a prospective population-based study
P Nikpoor

A prospective longitudinal analysis of sexual function and the mode of delivery: five years post partum
P Nikpoor

A review on recurrent cystitis
P Nikpoor

Voiding dysfunction: a review
P Nikpoor.

Publications
Dwyer PL, Karmakar D. Transvaginal excision of complete vaginal septum with hysterectomy in a nulliparous woman with uterus didelphys. Int Urogynecol J. 2017 May;28(5):795–96


Karmakar D. Urogynaecology digest. Int Urogynecol J. 2017;28(9):1757. DOI: 10.1007/s00192-017-3397-1


Intrinsic Sphincter Disorder (ISD) is a severe form of urinary incontinence which affects 20 per cent of all women with urinary stress incontinence. Currently, surgical treatment for ISD involves placing a mid-urethral sling which restores continence by supporting the middle urethra and prevents involuntary urethral opening during coughing and exertion. Mercy Hospital for Women Researcher and Urogynaecology Consultant Dr Lin Li Ow has been investigating the effectiveness of two of the three types of slings: the retropubic sling versus the mini-sling.

“The retropubic sling has been around since 1996 and has an 80-90 per cent success rate in the long term. However, it does carry a risk of injury to the bladder or bowel and developing pelvic haematoma or de novo urgency [a new type of incontinence]. There is also a possibility that it can cause voiding dysfunction,” Dr Ow explains.

Studies show that mini-slings are as effective as the transobturator sling. Mini-slings are shorter slings with a safer mechanism of installation compared to the longer slings, which traverse the whole length of the pubic bone. The mini-slings involve a shorter operative time and hospital stay, are associated with fewer complications, carry less risk of injury to the bladder and less postoperative pain. The focus of Dr Ow’s research is to determine whether the mini-sling is as effective as the retropubic sling in treating stress incontinence and ISD.

The retropubic versus mini-sling trial is an ongoing, multi-site study involving the Mercy Health Urogynaecology Unit and Monash University. Dr Ow’s aim is to recruit 152 subjects, of which 58 have already signed up.

Despite the recent negative press coverage about the adverse effects of vaginal mesh in some patients, Dr Ow believes that this trial is important as it will help to provide evidence-based decisions for the treatment of stress urinary incontinence associated with ISD. Currently, there is very little data comparing the mini-slings with the retropubic sling.

The use of vaginal mesh has come under scrutiny in recent times. “Everyone is very cautious about vaginal mesh which can be used to treat patients with pelvic organ prolapse and it can also be used as a sling to treat urinary incontinence,” Dr Ow says. “However, they are separate treatments for two different conditions. We are seeing good long-term results with the retropubic sling and all of the sling operations are minimally invasive to the patient.”

Dr Ow’s work builds on an existing body of research produced by the Mercy Hospital for Women Department of Urogynaecology, headed by Professor Peter Dwyer. Peter’s department is involved in many research trials which have lead the way in treating stress urinary incontinence and regularly publishes its findings in prestigious journals.

We are seeing good long-term results with the retropubic sling and all of the sling operations are minimally invasive to the patient.

Dr Lin Li Ow
Within the Department of Gynaecology, the Plenty gynaecology team led by Professor Sonia Grover has continued to achieve an excellent research output.

Plenty gynaecology team:
Professor Sonia Grover
Dr Claire Peterson
Dr Charlotte Elder
Dr Kent Kuswanto
Dr Deepti Rampal
Ms Alex McCutchan
Ms Nimita Origanti.

Pelvic pain and adolescent gynaecology research teams:
Professor Sonia Grover
Dr Samantha Mooney
Professor Peter Maher (Endosurgery A unit)
Dr Amy Fitzgerald
Dr Siana Madden
Dr Kelly Mirowska-Allen
Dr Megan Sewell
Ms Sarah Maxwell.

Projects
Resources needs of young people with disorders of sex development
R Mortimer, S Grover, et al

Resource needs and utilisation of parents of children with disorders of sex development
G Tonkin-Hill, S Grover, et al

Long-term follow-up of girls who have labial adhesions
J Norris, C Elder, D Rampal, S Grover.

Publication

Presentations
Grover SR. Premature ovarian insufficiency: new genetic perspectives. ALOGIA (Latin American Society Paediatric and Adolescent Gynaecology), Montevideo, Uruguay, May 2017

Grover SR. Cyclic non-gynaecological symptoms. ALOGIA (Latin American Society Paediatric and Adolescent Gynaecology), Montevideo, Uruguay, May 2017

Rampal D, Dunford A, Elder C, Grover SR. Cyclical non-gynaecological symptoms — do they help us to better understand dysmenorrhea and endometriosis-associated pain? World Endometriosis Congress, Vancouver, Canada, May 2017

Abu Bakar M, Ong YC, Grover SR. Successful medical management of significant adolescent dysmenorrhoea appears to make severe endometriosis a preventable disease. World Endometriosis Congress, Vancouver, Canada, May 2017

You should remember that not to advance is to go back.  
*The Venerable Catherine McAuley*
Hutchinson B, Yoo MJ, Grover SR. Does altered uterine pressure play a part in the development of adenomyosis? A cohort study suggesting it may. World Endometriosis Congress, Vancouver, Canada, May 2017


SR Grover. Non contraceptive uses of the ocp, complex patients and parental attitudes. European Association of Paediatric and Adolescent Gynaecology, Vilnius, Lithuania, June 2017

SR Grover. Long-term outcomes in disorders of sex development. European Association of Paediatric and Adolescent Gynaecology, Vilnius, Lithuania, June 2017

Rampal D, Dunford A, Elder C, Grover SR. Menstrual events requiring intensive care admission. European Association of Paediatric and Adolescent Gynaecology, Vilnius, Lithuania, June 2017

Dunford S, Rampal D, Keilly M, Grover SR. Vulvodynia in a paediatric and adolescent population: a case series. European Association of Paediatric and Adolescent Gynaecology, Vilnius, Lithuania, June 2017


Hanna C, O’Connell MA, Grover SR. The clinical coordinator of services for patients with differences of sex development, an Australian first. International Symposium on Disorders of Sex Development, Copenhagen, Denmark, June 2017


DEPARTMENT OF ENDO SURGERY, MERCY HOSPITAL FOR WOMEN

The Department maintains a special interest in the management of cases of severe pelvic endometriosis and works closely with the Austin Health colorectal team. The team also maintains an active research interest, nationally and internationally.

**Research team**

Professor Peter Maher  
Dr Emma Readman  
Dr Prathima Chowdary  
Dr Lenore Ellet  
Dr Janine Mainwaring  
Dr Kate McIlwaine  
Dr Melissa Druitt  
Dr Tony Ma  
Dr Melissa Cameron  
Dr Marsali Newman.

**Projects**

*Whole genome sequencing for the diagnosis of leiomyosarcoma*
Chowdary P, Ellet L, Maher P

*Treatment of endometrial polyps with levonorgestrel intrauterine device*

*The use of a multimedia module to aid the informed consent process in junior doctors consenting patients for laparoscopic surgery — a pilot study*
Chowdary P, Ellet L, Maher P

*Retrospective imaging review of patients with severe endometriosis and suspected bowel involvement and the development of a e-scoring system to predict those requiring bowel resection*

**Publications**


**Presentations**

Readman E. Do we really need to learn that much surgery. AGES Annual Scientific Meeting, Sydney, Australia, March 2017

Readman E. Hysteroscopic workshop. Mongolia, June 2017


The Department of Endosurgery specialises in the management of women’s health using keyhole surgery.
Chowdary C, M Newman, Ma T, Ellett L, Cameron M, Maher P, Readman E. Pilot study to assess the possible role of the Mirena Intrauterine Device (IUD) in the management of endometrial polyps. AGES Annual Scientific Meeting, Sydney, Australia, March 2017


Poon C, Chowdary P, Manwaring J, Maher P. Laparoscopic management of a left interstitial ectopic pregnancy. AGES Annual Scientific Meeting, Sydney, Australia, March 2017


Utama D, Chowdary P, Readman E. The travelling Mirena: a case review. AGES Annual Scientific Meeting, Sydney, Australia, March 2017

McGauran M, Chowdary P, Morison S, Readman E. Gynaecologist’s guide to examination for chronic pelvic and sexual pain. RANZCOG Provincial Fellows Annual Scientific Meeting 2017

DeBortoli J, Chowdary P, Readman E. Perineal cysts and abscesses: a review of classification systems and management options. RANZCOG Annual Scientific Meeting, Auckland, New Zealand, 2017

A successful partnership between these two units means staff are supported to be leaders in innovation, education, clinical care and research.

The team encourages and mentors research initiated by midwives and nurses. Midwives and nurses also have access to higher learning in their areas of expertise and clinical interest, which in turn results in publications and presentations at health forums and conferences.

### Research team

- Professor Sue McDonald
- Ms Mary McCarthy
- Ms Gillian Evans
- Associate Prof Scott Simmons
- Ms Sharon Olivier
- Ms Maggie Pliszka
- Ms Caroline Carr
- Ms Andrea Vassallo
- Ms Helen Patterson
- Ms Julie Kane.

### Projects

**Development and implementation of an obstetric triage decision aid (OTDA) to provide structured and standardised triage of pregnant and postpartum women who present unscheduled to hospital with obstetric and non-obstetric conditions**

M McCarthy, S Simmons, S McDonald, S Olivier, W Pollock

Funded by Better Care Victoria

**Innovative team approach to the reduction (prevention) of first caesarean section (InTACT)**

S McDonald, M Pliszka, C Carr, A Vassallo, J Kane

Funded by Mercy Health Foundation and Mercy Health

**Quality of information and psychological support for women who present to Werribee Mercy Hospital and Mercy Hospital for Women emergency departments following early pregnancy loss**

M McCarthy, S McDonald, W Pollock, L O’Neill

Funded by Mercy Health Academic Research and Development Committee

**The ‘Connect’ (comparison of nasal continuous positive airway pressure — nCPAP — in tertiary and non-tertiary centres) project: a multi-centre retrospective review of the management of nCPAP in neonates >32 weeks gestation presenting with respiratory distress in the first 24 hours of age**

H Patterson, W Pollock

Funded by the Ella Lowe Research Grant from the Nurses Board Victoria Legacy Limited.

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We support staff to be leaders in innovation, education, clinical care and research.
Publications

Abstracts and presentations
Bassett T, McDonald SJ, Dodd A, Harrison K, Johnstone M. Documentation including a Track and Trigger indicator on Partogram; Improving intrapartum outcomes. Proceedings from the 31st International Confederation of Midwives (ICM) Triennial Congress, Toronto, Canada, June 2017
Pidd D, McDonald SJ. Bumps, Birth and Beyond: A waiting room video series enhancing person centred care. Proceedings from the 31st ICM Triennial Congress, Toronto, Canada, June 2017
Pidd D, McDonald SJ. Comprehensive initial antenatal assessment and physical examination: An advanced education program enhancing midwives autonomy. Proceedings from the 31st ICM Triennial Congress, Toronto, Canada, June 2017
McCarthy M, McDonald SJ. Improving recognition and management of perinatal sepsis. Proceedings from the 31st ICM Triennial Congress, Toronto, Canada, June 2017

McCarthy M, McDonald SJ. Supporting women who have experienced early pregnancy loss. Proceedings from the 31st ICM Triennial Congress, Toronto, Canada, June 2017

Harrison K, McDonald SJ. Transition to a caseload model of care: a two-year evaluation of outcomes, collaboration and satisfaction. Proceedings from the 31st ICM Triennial Congress, Toronto, Canada, June 2017

Middlemiss W, Stevens H, Ridgway L, Koussa M, McDonald SJ. No Need to Make Babies Cry: Responding to infant sleep cues increases infants’ total sleep time. Society for Research in Child Development Biennial Meeting, Austin, USA, April 2017


Flood M, McDonald SJ, Pollock W, Davey M-A. Midwives are key to high quality perinatal data. Proceedings from the 31st ICM Triennial Congress, Toronto, Canada, June 2017.

Flood M, McDonald SJ, Pollock W, Davey M-A. Midwives are key to high quality perinatal data. Proceedings from the 31st ICM Triennial Congress, Toronto, Canada, June 2017.

Middlemiss W, Stevens H, Ridgway L, Koussa M, McDonald SJ. No Need to Make Babies Cry: Responding to infant sleep cues increases infants’ total sleep time. Society for Research in Child Development Biennial Meeting, Austin, USA, April 2017


Mercy Hospital for Women midwife Tegan Bassett speaking to Abbey
AMBULATORY, COMMUNITY AND ALLIED HEALTH SERVICES

Allied Health includes dietetics, occupational therapy, pastoral care, pharmacy, physiotherapy, radiography, social work, sonography and speech pathology.
ALLIED HEALTH

The Department of Allied Health provides specialist clinical services to support patient care and optimise patient health outcomes.

Allied Health staff work within multidisciplinary teams and departments across a range of clinical specialty areas, with inpatients and outpatients. Allied Health is committed to improving patient care through research and projects focussed on evaluating current practice and implementing new service initiatives. This work is achieved through collaboration with our internal partners and also with external organisations such as universities.

Research team
Ms Jane Middleton
Ms Anne Harrison
Mr Umesh Baskaran
Ms Mary Klasen
Sr Trudy Keur
Ms Amy Steventon
Ms Elise Fraser
Ms Rebecca Maguire
Ms Skye Spencer
Mr Praveen Mulinti
Mr Andrew Beveridge
Ms Rebecca Hardman
Ms Susan Grabsch
Ms Bridget Moore
Ms Erica Clifford
Mrs Kim Tardio
Ms Suzanne Chia
Ms Cindy Chan
Ms Leah Dowling
Ms Tara Southgate
Ms Natalija Nesvadba.

Mercy Health Allied Health team
Projects and grants

Move baby move: A qualitative exploratory study of attitudes barriers and enablers to physical activity in women with gestational diabetes mellitus
A Harrison
Funded by Mercy Health

Sensory dysfunction in carpal tunnel syndrome: relationship between static touch/pressure threshold, texture discrimination and hand dexterity in carpal tunnel syndrome
U Baskaran, L Carey
Funded by Mercy Health

What are the benefits of pastoral care to hospital patients and aged care residents?
M Klasen, T Keur, in collaboration with Australian Catholic University

Transcutaneous tibial nerve stimulation for overactive bladder
A Steventon, E Fraser, R Maguire

Pregnant, parenting and a long way from home: International students in Victoria accessing maternity, paediatric and early parenting care
J Middleton
Funded by Mercy Health

Meet me in nursery
S Spencer

Modified safe recovery program: a falls prevention education program
P Mulinti, A Beveridge

Improving access to outpatient physiotherapy at Mercy Hospital for Women
R Maguire

TeleHealth: streamline ongoing care for lymphoedema patients
R Hardman, S Grabsch

Healthy choices: implementing healthy food and drink vending machines at Werribee Mercy Hospital
B Moore, E Clifford

Improving falls risk screening in Werribee Mercy Hospital physiotherapy outpatients
K Tardio, S Chia, C Chan

Cultural foods for GDM: developing educational tools for culturally diverse women with gestational diabetes mellitus
L Dowling, T Southgate, N Nesvadba

Caring for bereaved families: a review of clinical processes in caring for families bereaved due to perinatal loss
M Klasen, A Olsson

Changing clinical demographics: Mercy Lymphoedema Clinic — the past 10 years
R Hardman, S Grabsch

Publications


Presentations

Harrison A. Exercise improves glycaemic control in women with gestational diabetes mellitus. Victorian Allied Health Research Conference, Melbourne, Australia, March 2017

Mulinti P. Safe recovery falls prevention. Victorian Allied Health Research Conference, Melbourne, Australia, March 2017

Harrison A. Move baby move. Exercise improves glycaemic control in women with gestational diabetes mellitus: a systematic review. Australian Physiotherapy Association Conference, Sydney, Australia, October 2017
Harrison A. Attitudes, barriers and enablers to physical activity in pregnant women: a systematic review. Australian Physiotherapy Association Conference, Sydney, Australia, October 2017


Swaby M. Adaptive allied health leadership: Cultivating resilience to thrive and survive. National Allied Health Conference, Sydney, Australia, August 2017

Klasen M, Olsson A. When the mosaic shatters: Pastoral care with families experiencing the death of a baby. Spiritual Care Australia Conference, Newcastle, Australia, May 2017

Musarra L. Establishing Allied Health within community palliative care. Occupational Therapy Australia National Conference, Perth, Australia, July 2017


PHARMACY

Research team
Mr James Dwyer
Ms Misha Lodin.

Publication
SURGICAL AND SPECIALIST SERVICES

The program involves general surgical and surgical sub-specialist services, including the anaesthetic service at Mercy Hospital for Women and Werribee Mercy Hospital.
The Department of Anaesthesia, Perioperative and Pain Medicine’s major research theme involves the use of transthoracic echocardiographic (TTE) assessment of cardiac output in pregnancy.

In 2017, the department added to this theme with a newly approved study evaluating cardiovascular changes at different gestations in pregnant women. This work will continue in 2018. The department also developed and initiated a number of audits of its clinical practice, leveraging its access to a large number of patients within the maternity service.

A new Research Administrative Assistant position has proven to be highly successful. The role assists with report writing, facilitation of ethics submissions and various aspects of research project development and implementation.

**Research team**

Clinical Associate Professor Scott Simmons  
Dr Richard Hiscock  
Dr Patricia Newell  
Dr Paul McMackin  
Dr Ian Letson  
Dr Lucinda Verco  
Ms Rachel Murdoch  
Dr Nick Jegathesan  
Dr Catherine Pease  
Dr Frank Parker  
Dr Heather Loane,  
Dr Michelle Nguyen  
Dr Heidi Liesegang  
Dr Jennifer Fu.

**Projects**

*Comparative incidence of epidural blood patch between spinal and epidural neuraxial technology in an obstetric population — a retrospective study*
S Simmons, R Hiscock, P Newell, P McMackin

*A prospective observational study of maternal supine hypotension by serial transthoracic echocardiography studies over the course of pregnancy in healthy women*
S Simmons, I Letson, R Hiscock, L Verco, R Murdoch

*Code white at Mercy Hospital for Women — a four-year audit (2013–2017)*
N Jegathesan, S Simmons, C Pease, F Parker

*EpiCCS — Australasia: Epidemiology of critical care provision after surgery*
S Simmons, R Hiscock, H Loane, I Letson, M Nguyen

*Anaesthetic management and role of Sugammadex in a patient with Churg-Strauss Syndrome — Case study*
S Simmons, H Liesegang, J Fu

*Transthoracic echocardiographic assessment of cardiac output in healthy women at elective caesarean section under spinal anaesthesia with Ephedrine and Metaraminol hypotension prophylaxis: An observational cohort study*
S Simmons, R Hiscock, S Ilyas, E Casey, S MacColgain, L Cardoso

*Clinical audit of epidural labour analgesia — 10 years’ experience from 2006 to 2015*
S Simmons, R Hiscock

*Clinical audit of category 1 including Code Green caesarean sections at Mercy Hospital for Women from 2011 to 2015*
S Simmons, R Hiscock, G Paulsen, S MacColgain
General Anaesthesia for caesarean section at Mercy Hospital for Women (2011–2015)
I Letson, S Simmons, J McGuire

ROTEM
S Simmons, R Hiscock, A Iliov

Management of ectopic pregnancies requiring surgical care — a 3 year audit
S Simmons, H Loane

Pregabalin for the management of post-dural puncture headache after unintentional dural puncture in obstetrics patients: A randomised, double-blind, placebo-controlled trial
S Simmons, P Newell.

Publications


Presentations


Simmons, S. (Chair) Communication in anaesthesia SIG: Thinking big — when less is more. ANZCA Annual Scientific Meeting, Brisbane, Australia, May 2017.
Werribee Mercy Hospital staff member Ayesha D’Souza
MERCY MENTAL HEALTH

Mercy Mental Health serves a diverse population in Victoria’s rapidly expanding western suburbs.
DEPARTMENT OF PERINATAL MENTAL HEALTH

The Department of Perinatal Mental Health at Mercy Hospital for Women provides clinical care for women who may be suffering from symptoms of mental illness during and after pregnancy.

Growing awareness of the perinatal period as a time of increased maternal vulnerability to mental illness, as well as a critical period of human development, drives the ongoing research and education activities of this department.

Specialty services are provided to vulnerable populations, including women with major mental illnesses such as Bipolar Affective Disorder and Schizophrenia, women with substance abuse issues, younger mothers, and those identifying as Aboriginal and/or Torres Strait Islander.

The department maintains active involvement in teaching at all levels. Dr Gaynor Blankley delivers lectures within the Master of Psychiatry course for psychiatry trainees by the University of Melbourne. Medical students also attend during their psychiatry rotation. This year also marked the inaugural Perinatal Mental Health Symposium held in conjunction with Mercy Perinatal. The symposium was a great success, with 300 delegates from a range of disciplines attending a day of presentations on the theme of perinatal mental health.

Projects

Mercy Pregnancy and Emotional Wellbeing Study (MPEWS)

Professor Megan Galbally, now based in Perth where she is Foundation Chair of Perinatal Psychiatry at Murdoch University, continues to oversee this longitudinal study of the effect of perinatal depression and its treatment on women and their children. The original Mercy Health-based cohort of 282 women is currently undertaking wave six assessment at four years postpartum and a further 200 women have been recruited.

MPEWS is a national and international interdisciplinary collaboration with data collected from early pregnancy onwards. The scope of the project encompasses biological, social and psychological measures to comprehensively assess the complex ramifications of perinatal depression.

The Melbourne-based cohort assessments are coordinated by Tina Vaiano. Dr Gaynor Blankley continues as an investigator on the project and Dr Josephine Power is undertaking a PhD examining child outcomes in the original cohort.

Grant

Dr Josephine Power was awarded the Pat & Toni Kinsman Research Scholarship by the Royal Australian and New Zealand College of Psychiatrists. The grant will be used to examine the relationship between maternal oxytocin levels during pregnancy and the subsequent attachment between mother and infant.

Publication

Presentations

Snellen M. Informed consent, pharmacology and pregnancy. Lecture, Northern Hospital, March 2017


Snellen M. Informed consent, pharmacology and pregnancy. Lecture, Monash University Kuala Lumpur Campus, Malaysia, May 2017

Snellen M. What is postnatal depression and what to do about it. Lecture, Monash University Johur Bahru Campus, Malaysia, May 2017

Snellen M. Management of major mental illness in pregnancy. RANZCOG Revision Series, June 2017

Snellen M. How to ensure informed consent when prescribing for pregnant and breastfeeding women. Perinatal Mental Health Symposium, August 2017

Snellen M. Challenging patients: bipolar disorder in the perinatal period. Perinatal Mental Health Symposium, August 2017

Snellen M. The process of obtaining informed consent when prescribing psychotropics in pregnancy. Lecture, Department of Psychiatry, National Taiwan University Hospital, December 2017

Snellen M, Thompson G, Murdoch N. A psychiatrist’s role in times of doubt. ANCIPS, Raipur, India, January 2017

A RICH FIELD FOR FUTURE RESEARCH

Werribee Mercy Hospital received more than $34 million in capital funding in 2014 that has enabled the expansion of our adult mental health program. As we strive to meet demand, our mental health teams are also seeing the impact of a changing cultural landscape in Melbourne’s west.

“The area has seen wave after wave of different migrating and refugee communities contributing to a more diverse community,” says Mercy Mental Health outgoing Program Director Mario Blandin de Chalain. “Different cultural groups may have other ways of thinking about mental health. They may not be the traditional western ways, such as medication or going to health professionals. Some groups may seek support from religious leaders, for example.”

Some communities may be more prone to mental illness because of relocation or past trauma, and access is an issue across the board due to language barriers. In response, Mercy Mental Health has sought to increase the number of bicultural workers whose clinical role extends to engaging with communities to improve awareness and access to our services.

While our primary goal is to manage clinical demand, Mercy Mental Health Clinical Services Director Dean Stevenson sees the possibility of more focus on quality improvement and evaluation going forward. One area for evaluation might be the introduction of a dialectical behaviour therapy (DBT) program in early 2018, for people with borderline personality disorders.

Another could involve evaluation of treatment pathways, helping establish a typical journey through our services. “This gives you a standard against which you can measure treatment and gives patients and families a clearer idea of what to expect at the start of their journey,” Associate Professor Stevenson says.

Another area that may lend itself to research is the evolution of peer support workers across Victoria, including at Mercy Mental Health. These are workers who have experience of mental illness themselves or as a family member or carer. Anecdotally, families have reported feeling more supported and clients have reported feeling more understood because they are speaking to a person who has ‘been there before’.

However, the many unknowns of the program include how a peer support worker might feel going back to a setting in which they may have been an involuntary patient. “It could either be very stressful for the worker or very helpful for the patient — an example of someone who has come through the other end, an example of hope,” Mr Blandin de Chalain says. “We could be asking: what are the benefits, how can we replicate it and is there some way to quantify it. It is a potentially very rich field of research.”

“We have incredibly passionate people within the program who, given the opportunity, will come up with brilliant ideas for research,” Mr Blandin de Chalain says. The challenge for the Mercy Mental Health team is to carve a space for research projects and to blossom and secure the required philanthropic support while managing the service demands of a booming population.

“It is a potentially very rich field of research.”

Outgoing Mercy Mental Health Program Director
Mario Blandin de Chalain
AGED CARE

Research in this field is gaining momentum and will help drive improvements in care for our ageing population.
PROGRESSING OUR RESEARCH

Research in aged care is less advanced than health services within Mercy Health and Australia more broadly. Over the past decade, Mercy Health has been attempting to build our research capacity in this critical area with the generous support of donors.

Affiliations with a number of universities — specifically Australian Catholic University and more recently the University of Notre Dame — have been pivotal in helping us work towards this goal. While still in its infancy, our body of research in aged care is gaining momentum and results are starting to impact both care and education.

Consumer Directed Care in Residential Aged Care

Collaboration with Australian Catholic University

Funded by Mercy Health Foundation, Dementia Collaborative Research Centres and Illawarra Retirement Trust

Publication

Older and wiser: Putting the consumer’s voice at the centre of residential aged care. Australian Catholic University, Institute for Health and Ageing

Consumer directed care (CDC) empowers aged care residents with dementia to choose how their care is delivered, so they can enjoy the best possible quality of life. In residential aged care homes, CDC depends on an effective partnership between residents, staff and families. Australia currently has no evidence-based training platform to develop or sustain these partnerships.

The Older and Wiser project trialled a new approach to training. It measured the direct impact of the training on quality of life and satisfaction with care for residents with dementia. It also evaluated job satisfaction, relationships with residents and the cost-effectiveness of CDC in aged care homes. The evaluation showed that training staff in CDC has a positive impact on resident wellbeing.

Talk2me Technology

Collaboration with National Ageing Research Institute

Funded by the Australian Government Department of Health

The Talk2me project involves development of a tablet-based app that will allow people with dementia from culturally and linguistically diverse (CALD) backgrounds to easily communicate with carers who do not speak the same language. People from CALD backgrounds who have dementia and live at home do not always receive care from ethno-specific organisations or from people who speak the same language. Yet effective communication relating to everyday issues is essential for older people — particularly those with dementia — to support orientation, safety and essential care needs. It also gives them the confidence they need to remain at home for as long as possible.

Process and outcome evaluation will be conducted at several stages throughout the project. This will inform the effectiveness of the design, the validity of the technology for translating everyday communication and the usefulness of the technology.

Mercy Place Montrose residents Tony and Beryl
Home & Community Care market research

Collaboration with Colmar Brunton

Funded by Mercy Health

In September 2016, Mercy Health Home & Community Care engaged external market research company Colmar Brunton to research clients’ experiences of our services. Conducted three times a year, the market research tracks the impact of Mercy Health at key interactions. It helps Mercy Health understand which elements of the client and family member experience drive satisfaction and impact on loyalty.

Wave 1 took place in September/October 2016. Wave 2 took place in November/December 2017 and included Southern Cross Care (Vic), which had recently merged with Mercy Health. Wave 3 will take place in 2018. The specific research objectives include client engagement, client wellbeing, client and family decision-maker expectations; effort in engaging with Mercy Health; satisfaction; and advocacy. By looking at client satisfaction, needs met effort and brand advocacy, Colmar Brunton can provide insights into and recommendations regarding how to optimise Mercy Health’s ongoing service delivery and performance.

Umps Health Project

Collaboration with Umps Health

Funded by Equity Trustees and supported by The Australian Centre for Social Innovation

Mercy Health Foundation and Mercy Aged and Community Care have partnered with technology start-up Umps Health to work towards a future in which technology supports older people with diverse care needs to age in their home, and improves the quality of formal and informal care.

The Umps Health project involves using non-invasive, passive sensors to detect how and when people interact with their everyday household appliances like their kettle, TV and microwave. Patterns of interactions with devices are mapped to each individual. Umps Health analyses these patterns of behaviour to detect subtle abnormalities in clients’ routines with the aim of predicting when an incident, like a fall, might occur. It also provides reassurance to family members that their loved one is maintaining their usual routine at home. This information is presented to family members in the form of a dashboard accessible by mobile, tablet and computer.

The program will evaluate whether remotely monitoring a person’s wellbeing can help sustain the informal carer relationship and relieve stress and anxiety associated with being a carer. The pilot program will run from November 2017 to April 2018, and involve up to 20 households. The findings will be published.
Program to Enhance Adjustment to Residential Care (PEARL)
Collaboration with Swinburne University (initial project with Australian Catholic University)
Funded by National Health and Medical Research Council

Residents who have just moved into aged care are at greater risk of experiencing depression. This research project seizes on that transition period as an opportunity for early intervention. The project is a cluster randomised controlled trial of a psychological intervention, made up of five individual sessions with residents. Staff are supported to tailor care to residents’ needs, interests, aptitudes and backgrounds. The sessions aim to support residents’ adjustment to permanent residential aged care, improving new residents’ quality of life and reducing the severity and incidence of depression.

The project will evaluate the efficacy of the PEARL intervention in reducing symptoms of depression among newly admitted aged care residents. The study will determine whether PEARL plus usual care (intervention group) is superior to usual care alone (control group).

We will also evaluate whether exposure to indoor and outdoor greenery within the residential care environment is protective to mental health, quality of life and wellbeing of new residents.

Socio-Spatial Analysis of the Design and Lived Experiences of Residential Aged Care Models: A Qualitative Study of Traditional and Small Household Typologies
Collaboration with University of Notre Dame (WA)
Funded by Mercy Health Foundation, Mercy Health and the University of Notre Dame

The objective of this research project is to reveal the socio-spatial factors within case study buildings that may enhance or inhibit quality of care and contribute to residents’ quality of life.

The project aims to:
• document, analyse and interpret the design, layout and lived experiences of Residential Aged Care design models against key social-spatial themes
• compare the architecture, layout and lived experiences of traditional and small household living approaches through a socio-spatial lens
• improve our understanding of the key attributes and backgrounds of our best aged care employees.

The project will use standard tools and practices that are in common usage within the architectural and qualitative research sector. The research will support Mercy Health to understand the different building types and how these impact on care. It will influence the briefing and design requirements of proposed capital building investment.
Werribee Mercy Hospital Emergency Department (ED) Registrar Dr Simon Leckenby and ED nurse Ms Tayla Fanning

PROJECTS APPROVED BY MERCY HEALTH HUMAN RESEARCH ETHICS COMMITTEE 2017
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<td>Dr Elizabeth McCarthy and Ms Megan Overdevest, University of Melbourne, Mercy Hospital for Women</td>
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<td>Glucose-lowering effect of walking breaks in pregnancy study (GLOW in pregnancy)</td>
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<td>Ms Anna Mascitti, North Eastern Melbourne Integrated Cancer Services (NEMICS), and Associate Professor Peter Grant, Department of Gynaecological Oncology, Mercy Hospital for Women</td>
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<td>Evaluation of the implementation of a digital dictation system in a large</td>
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<td>Evaluation of group antenatal and postnatal care for refugee-background</td>
<td>Dr Elisha Riggs, Healthy Mothers Healthy Families, Murdoch Children’s Research Institute, and Ms Natalija Nesvadba, Multicultural Services, Mercy Hospitals Victoria Ltd</td>
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<td>ENDIA — Early environmental determinants of pancreatic islet autoimmunity:</td>
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<td>Patients suffering from substance dependence and their use of the emergency department</td>
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<td>Breastmilk as a pharmaceutical ingredient for life-saving paediatric medicines</td>
<td>Professor Ben Boyd, Monash University, and Dr Gillian Opie, Mercy Health Breastmilk Bank</td>
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<td>Audit of epidural analgesia and anaesthesia in parturient women</td>
<td>Dr Ibrahim Yacoub, Werribee Mercy Hospital</td>
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<td>Dr Fiona Brownfoot, University of Melbourne and Mercy Perinatal, Mercy Hospital for Women</td>
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Danielle Maas with baby Zali, born at Mercy Hospital for Women.