Mercy Health

Care first

Research and Development Report **2015**

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Mercy Health

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Contents

4 Message from Group Chief Executive and Chairman, Mercy Health

5 Message from Chairman, Academic Research and Development Committee

6 Academic Research and Development Committee: small grants 2015

7 Women's and Children's Services

26 Nursing and Midwifery

30 Surgical and Specialist Services

41 Medical, Subacute and Palliative Care Services

44 Ambulatory, Allied Health and Community Services

47 Mental Health Services

50 Human Research Ethics Committee: new projects approved in 2015

55 In print and online

Message from the **Group Chief Executive Officer**

In Australia's rapidly changing public health landscape, one challenge remains constant: to advance care for the most vulnerable in our society.

Research is central to Mercy Health's mission and vision to deliver better outcomes for people at the very beginning and end of life, and those facing significant disadvantage.

Our special focus on new frontiers in the care of women and babies has driven remarkable endeavour across our health services this year, including the formal launch of Mercy Perinatal. This landmark project seeks to bring together research, clinical application and teaching to change the future for at-risk mothers and infants. In keeping a firm focus on creating lasting change, Mercy Perinatal epitomises our response to the needs of the vulnerable.

Responsive care cannot be delivered without research, and research cannot be sustained without the support of our community. I wish to thank Mercy Health Foundation and the many external partners and funding bodies who empower our researchers to improve care. They are investing in a better health future for all Australians.

Adjunct Professor Stephen Cornelissen

Message from the **Chairman, Academic Research and Development Committee**

Welcome to the *2015 Mercy Health Research and Development Report*. This year has witnessed an impressive volume and quality of research output across our health services.

Our University Department has again produced outstanding work in perinatal, oncological, paediatric, gynaecological, midwifery and pharmacological research, while other areas including infection control and diabetes education have also flourished.

It is especially pleasing to note an increase in sociological research, highlighting the often unseen but life changing impacts of our work in complex care. I wish to congratulate our research staff and all who support them, particularly the patients and clients who generously agree to participate in our studies, and the funding bodies and donors without whom none of this work would be possible.

I also wish to thank those who have contributed to this report, and hope you find it as inspiring as I have.

Associate Professor David Allen

Academic Research and Development Committee: small grants 2015

TITLE	PRINCIPAL INVESTIGATOR	AMOUNT
Risk factors and efficacy of early testing for GDM	Dr Alexis Shub	$2,500
Developing a blood test to predict miscarriage among women with bleeding in early pregnancy	Prof Stephen Tong	$2,500
Molecular mechanisms controlling pregnancy and labour (tissues)	Dr Martha Lappas	$2,500
Identification of novel biomarkers to predict preterm labour	Dr Megan Di Quinzio	$1,000
The Gestational Diabetes Follow-Up Project: Screening for early markers of Type 2 Diabetes in an at-risk population	Dr Harry Georgiou	$2,000
Mercy Pregnancy Emotional and Wellbeing Study (MPEWS)	Dr Megan Galbally	$2,340
The experience of music and music therapy for paediatric palliative care patients and their parents, who come from diverse cultural backgrounds: a grounded theory study	Ms Lucy Forrest	$779
Sleep-disordered breathing in gestational hypertension and pre-eclampsia: Impact on maternal and fetal outcomes	Prof Sue Walker	$975
The impact of sleep disordered breathing on overnight fetal heart rate patterns in pregnancies complicated by preterm intrauterine growth restriction	Prof Sue Walker	$1,000
Amniotic fluid cell-free RNA: Developing methods of detecting potential biomarkers of fetal development	Dr Lisa Hui	$2,500

Women's and Children's Services

University of Melbourne Department

Mercy Hospital for Women

Professor Sue Walker Research Group

The vision of the group, led by Sheila Handbury Chair of Maternal Fetal Medicine Professor Sue Walker, is to integrate the three professional domains of clinical care, education and research to improve perinatal outcomes for women and babies.

Current projects

Non Invasive Prenatal Testing (NIPT) to detect early stage ovarian cancer (NEO study)
Hui L, Cohen P, Pertile M, Hannan N, Tong S

Circulating cell-free DNA in pregnant women with autoimmune disease
Hui L, Hayes L, Paizis K, Walker SP

Measuring amniotic fluid cell-free fetal RNA: a potential biomarker for predicting fetal development (RNA AF study)
Hui L, Norris F, Tong S

Evaluating clinical implementation of 2013 hepatitis B virus Clinical Practice Guidelines for the Mercy Hospital for Women
Hui L, Bergin H, Wood G

Infection in pregnancy – a survey of maternal health providers
Hui L, Burgmann M, Luk W, Rawlinson W, Nassar N, Dwyer K, Shand A

Perinatal Record Linkage Study (PeRL study) (Murdoch Children's Research Unit)
Hutchinson B, Hui L, Halliday J

Sleep Health and Pregnancy Hypertension
Wilson D, Howard M, Walker SP

Sleep and Fetal Oxygenation Study: The SOX Study
Howard M, Fung A, Bardien N, Tong S, Walker SP

Improving Prediction and Detection of Pregnancies at Increased Risk of Stillbirth: the Fetal Longitudinal Assessment of Growth (FLAG) Study
MacDonald T, Robinson A, Dane K, Hui L, Kaitu'ulino T, Tong S, Walker SP

Outcomes of Women with Cardiac Disease in Pregnancy
Heland S, Sleeman M, de Challis A, Fung A, Johns J, Walker SP

Assessment of Fetal Arrhythmias using the Monica AN 24 Fetal Heart Rate Monitoring Device
Edwards L, Fung A, Walker SP

MCA surveillance in Diabetic Pregnancy
O'Brien C, Shub A

Transvaginal assessment of cervical length and amniotic fluid sludge in the mid-trimester of pregnancy
Truong T, McDonald S, Fung A, Hui L

Risk factors for early diagnosis of GDM
Shub A, Houlihan C, Templeton A, Chee T

Efficacy of early GTT for diagnosing early GDM
Shub A, Houlihan C, Templeton A, Chee T

Clinicians' compliance with guidelines for early GDM testing
Shub A, Houlihan C, Templeton A, Chee T

Projects completed in 2015

Invasive prenatal diagnostic procedures: a survey of current practice
Hui L, McCarthy E, The S, Walker SP

National decline in invasive diagnostic procedures in association with combined first trimester and cell-free DNA-based aneuploidy screening
Robson S, Hui L

Population-based trends in prenatal screening and diagnosis for aneuploidy
Hui L, Muggli E, Halliday J

Noninvasive prenatal testing for fetal aneuploidy in Australia and New Zealand – a survey of obstetric sonologists
Hui L, Teoh M, Piessens S, Walker SP

Pregnancy outcomes before and after institution of a specialised Twins Clinic
Henry A, Lees N, Bein KJ, Hall B, Lim V, Chen KQ, Welsh AW, Hui L, Shand AW

Assessing the fetal effects of maternal obesity via transcriptomic analysis of cord blood
Edlow A, Hui L, Wick H, Fried I, Bianchi D

Comparison of functional analysis tools for interpretation of fetal transcriptomic datasets
Edlow A, Slonim D, Wick H, Hui L, Bianchi D

Slowing of Fetal Growth in Late Pregnancy as a Risk Factor for Stillbirth
Bardien N, MacDonald S, Tong S, Walker SP

Randomised Controlled Trial Evaluating the efficacy of a Telehealth Program for Management of Asthma in Pregnancy
Zairina E, Abramson MJ, McDonald CF, Li J, Dharmasiri T, Stewart K, Walker SP, Paul E, George

Effectiveness and safety of 1 vs 4 h blood pressure profile with clinical and laboratory assessment for the exclusion of gestational hypertension and pre-eclampsia: a retrospective study in a university affiliated maternity hospital
McCarthy E A, Cairns T A, Hannigan Y, Bardien N, Shub A, Walker SP

Self-weighing and simple dietary advice for overweight and obese pregnant women to reduce obstetric complications without impact on quality of life: a randomised controlled trial.
McCarthy EA, Lappas M, Ugoni A, Walker SP, Shub A

Members of the Maternal Fetal Medicine Group: Sue Walker, Teresa MacDonald, Kirsten Dane, representatives from CosMed, Lisa Hui and Gabrielle Pell

Grants

Translating advances in cell-free fetal nucleic acids into better perinatal care
Hui L
National Health and Medical Research Council Early Career Fellowships Grant, Health Professional Research Fellowship (Part Time) – Clinical (50%) administered by University of Melbourne

Clinical Investigatorship: Developing novel methods of monitoring human brain development using amniotic fluid
Hui L
The Sylvia and Charles Viertel Charitable Foundation $85,000

Noninvasive prenatal testing (NIPT) to detect Early stage Ovarian cancer (the NEO study)
Hui L
Norman Beischer Medical Research Foundation for Women and Babies $55,879

Measuring amniotic fluid cell-free fetal RNA: a potential biomarker for predicting fetal development
Hui L
Academic Research and Development Committee, Mercy Hospital for Women $2500

Improving the Prediction and Detection of Contributors to Term Stillbirth
National Health and Medical Research Council
Walker SP, Tong S, Whitehead C, Howard M
Project grant APP1065854 $551,111.30

Measuring hypoxia induced mRNA in maternal blood to monitor wellbeing of growth-restricted fetuses
Tong S, Walker SP, Said J.
National Health and Medical Research Council Project Grant APP1028521 $407,405

Genomics and Pregnancy Study
Halliday J, Walker SP et al.
National Health and Medical Research Council Project Grant APP 1059993 $504,251

The pre-eclampsia intervention with esomeprazole (PIE) trial
Walker SP, Tong S, Cluver C
Norman Beischer Medical Research Foundation $50,000

Protein biomarkers to predict stillbirth
Kaitu'u-Lino T, MacDonald T, Walker SP
Norman Beischer Medical Research Foundation $43,800

The pre-eclampsia intervention with esomeprazole (PIE) trial
Walker SP, Tong S, Cluver C
Kilvington Trust $100,000

Improving predictors of term stillbirth
MacDonald T, Walker SP
Stillbirth Foundation

Improving the prediction and prevention of late pregnancy stillbirth
MacDonald T, Walker SP
RANZCOG $20,000

Alex Tighe, patient of Prof Sue Walker

"In 2012, our family was eagerly awaiting the arrival of our third child. But our lives were changed forever when our son, John (Jack) Benedict Tighe, was unexpectedly born prematurely and died at birth.

"Often, as was the case for us, there is no explanation as to why things went wrong, which only compounds our loss.

"We then suffered multiple miscarriages before I fell pregnant again. We were overjoyed to celebrate the safe arrival of our daughter Isabelle in December 2015.

"I have been fortunate to meet some amazing health professionals, like Professor Sue Walker, who are working hard at saving precious lives and to give families like mine hope, when previously there was no hope."

Dr Lisa Hui

Professor Sue Walker Research Group, Mercy Hospital for Women

While celebrating her recently received National Health and Medical Research Council Early Career Fellowship, Dr Lisa Hiu has been researching the rapidly growing field of non-invasive prenatal testing (NIPT). NIPT is a maternal blood test that can detect chromosome abnormalities in a fetus by counting fragments of DNA in the pregnant woman's plasma.

In 2015, Lisa published the results of a national survey and audit of NIPT use during its early phase of clinical implementation in Australia. The study highlighted important ethical and clinical issues associated with the rapid uptake of this powerful new technology in Australia.

Previous forms of prenatal screening for chromosome conditions were less accurate and more frequently categorised women with normal pregnancies as 'high risk'. Invasive tests including amniocentesis and chorionic villus sampling (CVS) carry a small risk of miscarriage. While an

abnormal result on NIPT still requires confirmation with amniocentesis or CVS, the number of women being offered invasive testing has declined dramatically.

In 2015, Lisa also examined the impact of NIPT on the numbers of amniocentesis and CVS being undertaken. Her analysis of Victorian data sounded a warning: "We are at the lowest level of invasive testing in 25 years thanks to the introduction of NIPT," Lisa notes. "But we need to maintain our skills and make sure the new generation of sub-specialists has adequate training in invasive testing where NIPT isn't available or applicable."

Lisa is also interested in the newly reported phenomenon of undiagnosed cancers detected by NIPT in pregnant women. In late 2015 with support from the Norman Beischer Medical Research Foundation for Women and Babies, Lisa began the NEO study (NIPT to diagnosis Early Ovarian cancer) with the Translational Obstetrics Group and collaborators from Western Australia and the Victorian Clinical Genetics Service. This exciting project may uncover a new non-invasive way to detect ovarian cancer at an early stage, when a cure is possible.

Lisa's 2016 research plans include building on her PhD research on amniotic fluid. She believes amniotic fluid cell-free fetal ribonucleic acid (RNA), which sheds light on fetal gene expression, is the key to discovering more about neurodevelopment. "Amniotic fluid is produced by the lungs and kidneys, it comes through the baby's skin in the second trimester, and the baby swallows it," Lisa says. "So it gives us information about multiple organs."

Lisa is particularly interested in whether amniotic RNA can help determine neurodevelopmental implications of cytomegalovirus (CMV). Complications of CMV include hearing impairment, visual problems, seizures and even microcephaly. By the time current testing picks up a structural change, the infection is already well progressed. "We want to become better at predicting outcomes, with a view to developing treatments or interventions with those at increased risk," Lisa says.

Translational Obstetrics Group

Led by Professor Stephen Tong, the Translational Obstetrics Group (TOG) unites dedicated clinicians-scientists and scientists to pursue scientific discoveries that directly improve bedside care of pregnant women.

Current projects

Pravastatin as a potential therapeutic for preeclampsia
Brownfoot F, Tong S, Kaitu'u-Lino T

YC-1 as a potential therapeutic for preeclampsia
Brownfoot F, Tong S, Kaitu'u-Lino T

Metformin as potential therapeutic for preeclampsia
Brownfoot F, Tong S, Kaitu'u-Lino T

Sulfasalazine as a potential therapeutic for preeclampsia
Brownfoot F, Tong S, Kaitu'u-Lino T

Proton pump inhibitors as potential therapeutics for preeclampsia
Hannan N, Tong S

Clopidogrel as potential therapeutics for preeclampsia
Hannan N, Tong S

The role of epidermal growth factor receptor in preeclampsia
Kaitu'u-Lino T, Tong S

Development of mouse model of preeclampsia
Hannan N, Tong S

The role of the molecule Akt in preeclampsia
Kaitu'u-Lino T, Tong S

Role of the molecule ATF3 in preeclampsia
Kaitu'u-Lino T, Tong S

CORIN/AMP and its role in early pregnancy and preeclampsia
Hannan N, Tong S

Role of JMJD6 in preeclampsia
Palmer K, Kaitu'u-LinoT, Tong S

Role presence of Necropoptosis (Programmed cell death) in preeclampsia and fetal growth restriction
Hannan N, Tong S

Placental Microbiome in preterm birth
Hannan N, Tong S, Stock O

Identifying new medical therapeutics to treat ectopic pregnancy
Kaitu'u-LinoT, Tong S

Fetal oxygenation study (FOX)
Stock O, Hannan N, Walker S, Tong S

Grants

Systematic screening approach to identify new therapeutics for preeclampsia
Tong S, Kaitu'u-Lino T, Hannan N, Parry L
National Health and Medical Research Council of Australia $727,526

GEM3: A multi-centre double-blind randomised trial of a combination of methotrexate and gefitinib versus methotrexate alone as a treatment for ectopic pregnancy
Horne AW, Tong S, Duncan WC, Mol B, Bhattacharya S, Daniels J, Coomaraswamy A, Jorkovic D, Bourne T, Bottomley C, Peace-Gadsby A
National Institute of Health Research, United Kingdom GBP£999,811 (AUD$2,048,849)

Clinical Research Training Fellowship to support Lisa Campbell
Horne AW, Gray N, Tong S
Welcome Trust (United Kingdom) GBP£237,550 (AUD$487,259)

Noninvasive detection of early stage ovarian cancer study
Hui L, Cohen P, Tong S, Hannan NJ, Whitehead CL
Norman Beischer Medical Research Foundation for Women and Babies $55,879

Identifying protein biomarkers to improve the prediction and detection of term stillbirth
Kaitu'u-Lino T, Walker S, MacDonald T
Norman Beischer Medical Research Foundation $43,800

Vinorelbine, a novel therapeutic for the treatment of ectopic pregnancy
Kaitu'u-Lino T, Tong S
Austin Medical Research Foundation $15,000

Sulfasalazine, a potential therapeutic for preeclampsia
Kaitu'u-Lino T, Tong S, Brownfoot F
Norman Beischer Medical Research Foundation for Women and Babies $24,500

Combination of promising candidate therapeutics to treat preeclampsia
Kaitu'u-Lino T, Hannan N, Brownfoot F
Norman Beischer Medical Research Foundation for Women and Babies $37,780

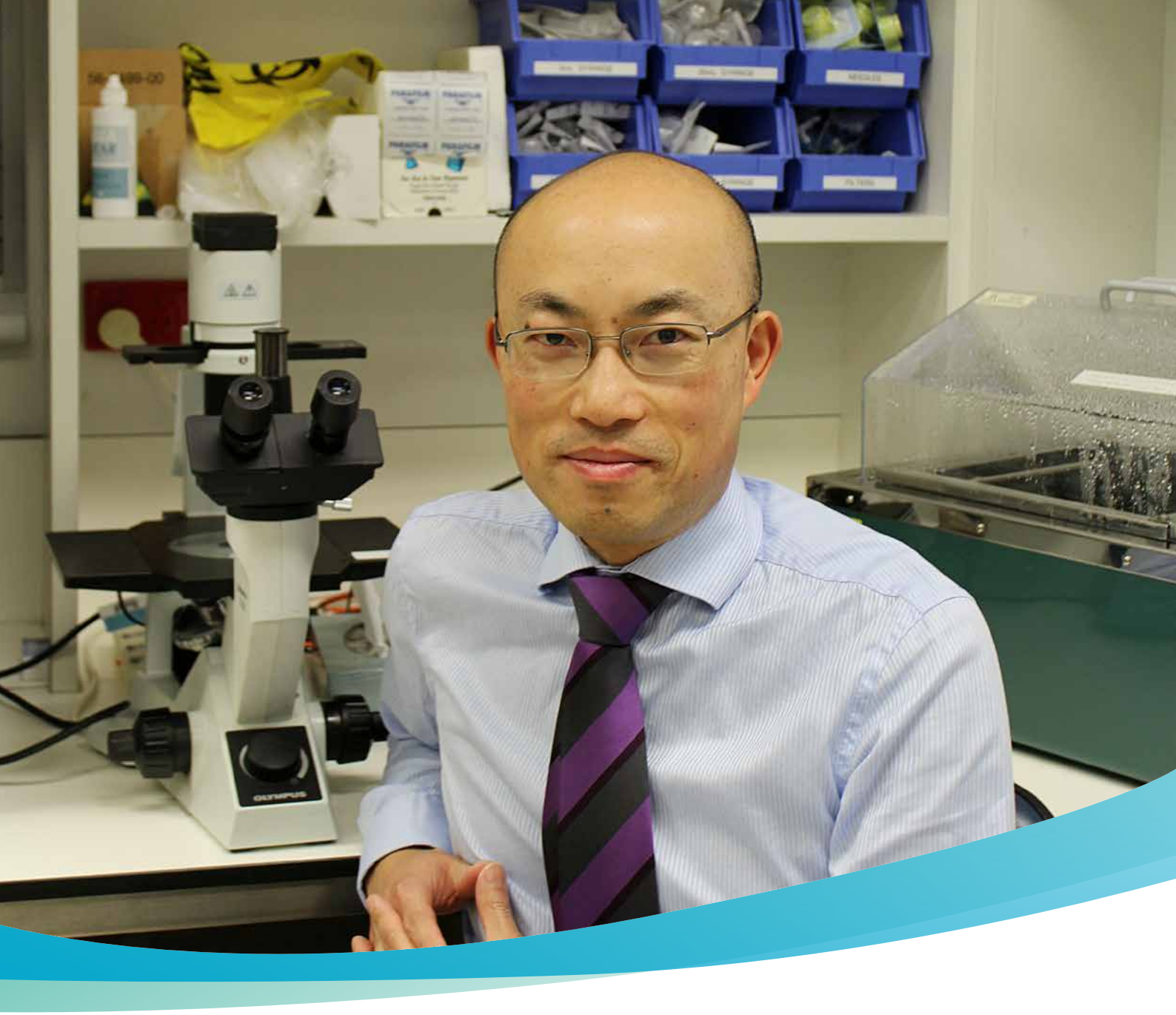
C R Roper Research Fellow
Hannan N
The University of Melbourne, $433,000

The Translational Obstetric Group 2015/16: Standing L-R Roxanne Hastie, Teresa MacDonald, Stephen Tong, Ping Cannon, Owen Stock, Minh Deo, Sally Beard. Sitting: Natalie Hannan, Tu'uhevaha Kaitu'u-Lino

Luke Proposch Scholarship
Hannan N
RANZCOG Foundation $20,000

The University of Melbourne Research Grant Support Scheme
Hannan N
The University of Melbourne, $42,000

Inspiring Women Fellowship
Hannan N
VESKI $165,000



Professor Stephen Tong

Head of Translational Obstetrics Group (TOG), Mercy Hospital for Women

"The TOG has been active since 2009, focusing on three streams of research," Stephen says. "The first is working to develop a medication to treat ectopic pregnancy; the second is working on a blood test to identify babies at risk of stillbirth so we can deliver them before a loss happens; and the third is to develop a medical treatment for preeclampsia."

Ectopic pregnancy treatment

Ectopic pregnancy is both emotionally devastating and potentially lethal. "Unfortunately, these pregnancies that occur outside the womb cannot ever be viable, and can rupture the mother's blood vessels and cause death," Stephen explains.

"Currently most women need surgery which can mean losing their fallopian tube, damaging their fertility. So we've been trying to develop a potent, medication-based approach to resolve ectopic pregnancies, allowing women to avoid surgery.

"We anticipate great benefits: it will make ectopic pregnancies less dangerous with better outcomes for

women; it will be much more cost effective than surgery; and it will be much more accessible in the developing world, where access to surgery can be limited and there is huge loss of life from ectopic pregnancies.

"We began to explore combining a tablet called gefitinib, which blocks a molecule the placenta needs to grow and survive, with an injection of methotrexate. We found they were far more effective used together than individually.

"Then in collaboration with Professor Andrew Horne from the University of Edinburgh we ran a phase one trial of the combined treatment across two sites, in Melbourne and Edinburgh. These patients' pregnancies resolved up to 34 per cent faster compared to women who only had methotrexate.

"The NHMRC then funded a phase two clinical trial targeting advanced ectopic pregnancies, many of which would have definitely required surgery. We were excited to find the combined treatment was very often successful."

A larger study was the next logical step. "We've now been funded for around one million pounds to run a large clinical trial that will recruit across 25 hospitals in the UK and will recruit 328 affected women," Stephen confirms.

However, the TOG's quest for a new standard of ectopic pregnancy care won't end there. "We've also continued to screen other drugs likely to act even faster; Dr Tu'uhevaha Kaitu'u-Lino and her team have identified a particularly potent candidate which may be several hundred times more effective. This discovery has got us very excited".

Preeclampsia treatment

It's estimated close to 70,000 lives are lost globally each year to this serious pregnancy complication. The diseased placenta produces a surfeit of anti-blood vessel factors, causing severe damage to both mother and baby's organs, and nervous and haematological systems. "There is no treatment except to deliver the baby, which may expose them to all the complications of prematurity," Stephen says. "Developing a drug which lowers these anti-blood vessel factors could quench the disease and its effects, allowing the pregnancy to progress and protecting both mother and baby.

"We have identified a number of drugs as promising; one is metformin, used to control sugars in gestational diabetes but never considered previously for preeclampsia. Dr Fiona Brownfoot, one of the clinician-scientists in our team, discovered metformin can do two amazing things: it decreases the production of anti-blood vessel factors; and it protects the mother's blood vessels. After Fiona's preclinical study was published, more evidence emerged to support its efficacy."

Another exciting candidate is a proton pump inhibitor, commonly and safely used in pregnancy for gastric reflux. The team is now testing its potency on the global stage. "Mercy Health Foundation sourced a very generous philanthropic grant from Geoff Handbury, as well as the Norman Beischer Medical Research Foundation, to set up a phase two clinical trial in South Africa," Stephen confirms. "The trial is being run within South Africa by Dr Cathy Cluver, who worked with Professor Sue Walker's team in 2013 at Mercy Hospital for Women. It's a very exciting step as we know a disproportionately large number of babies are lost to preeclampsia in the developing world." The trial is being led by Stephen and Sue.

Stillbirth prevention

Every year, about 1 in every 130 pregnancies ends in stillbirth — a much higher incidence than that of Sudden Infant Death Syndrome. For the last two decades that figure has not changed, a challenge the TOG team is determined to overcome. "2016 will be a significant year for our stillbirth research because we're wrapping up two very large studies," Stephen says. "The FOX (fetal oxygen) study, led by Dr Owen Stock, builds on TOG researcher Dr Clare Whitehead's discovery of RNA molecules, released from the mother's placenta when her baby is very low in oxygen. That was the first step towards a blood test to detect babies at increased risk of stillbirth. We are analysing RNA levels in blood samples from 140 cases of severe preterm growth restriction across eight sites. If the outcomes are conclusive, it will be immensely exciting.

"The FLAG study looks at a different group of at-risk babies: those who are not meeting their growth targets, but are not underweight enough to be considered very small. These are babies who, if delivered early enough, are likely to be healthy, so we hope to develop a blood test to detect growth restriction in time to deliver them safely."

"We were very fortunate to source a vital piece of equipment through Mercy Health Foundation, the PeaPod, which has enabled us to extend the FLAG study beyond using weight as the gold standard of predicting growth restriction. The Foundation has been absolutely fantastic in supporting us." (See page 16 for more on this study).

Both the FOX and FLAG studies are being co-led by Stephen and Prof Sue Walker at Mercy Hospital for Women and have the potential to produce the first blood tests that could decrease stillbirth rates globally.

Teresa (left) with Research Midwife Anna Middleton

Teresa MacDonald

Translational Obstetric Group, Mercy Hospital for Women

Improving Prediction and Detection of Pregnancies at Increased Risk of Stillbirth: the Fetal Longitudinal Assessment of Growth (FLAG) Study.

"We know that small babies are at much higher risk of stillbirth; we also know we're not good at detecting them," says Obstetrics and Gynaecology registrar Teresa MacDonald. Joining the FLAG study is her opportunity to help reshape the future for at-risk babies.

"There are two broad parts to this project: the first is trying to find a biomarker to detect babies who are small for gestational age at term," Teresa explains. "Current methods detect only a fraction of all growth restricted babies.

"We're trying a new approach which is to look at genes from the placenta, which are turned on and off during pregnancy. Small transcripts from that process leak into the maternal blood, which we can measure. We're collecting blood from 2000 women and we suspect that 200 of those will have small-for-gestational-age babies at term. Then we'll compare samples from both groups to see which genes are different in the small baby group.

"We could deliver babies if we knew they were small for gestational age, and they'd survive. So our hope is to develop a blood test more sensitive than any method used in the past to detect growth restriction."

The second part of this study aims to develop a way to detect appropriately grown babies that might be at risk of stillbirth. "About 40 per cent of babies that are stillborn are of normal growth," Teresa says. "When mothers ask 'Why did my baby die?' we don't have an answer. We suspect babies are falling off their own growth trajectory, but don't necessarily fall into the smallest 10 per cent. So in this study, we scan women at 28 and 36 weeks, and then compare the measurements with their babies' birth weight at term. We

suspect babies who have fallen more than 30 percentiles across the pregnancy potentially do worse."

A new piece of equipment funded by Mercy Health Foundation is allowing Teresa and her fellow researchers to deepen their findings. "In both studies we're using the PeaPod to calculate body composition, which may be a better indicator of health than weight alone," she explains. "The PeaPod is relatively new technology — this is the first one in Victoria — and the sky's the limit in terms of what it could tell us.

"It uses algorithms to calculate the baby's body fat percentage. We expect to see differences in babies whose percentile has dropped during pregnancy, which could enable us to define an optimal body fat percentage based on babies who manage to keep their growth trajectory constant.

"We started 'PeaPodding' in September 2015, and we've already measured more than 100 babies. By the end of the year we'll have a huge amount of data. It adds a whole new dimension to the study."

Obstetrics, Nutrition and Endocrinology Research Group

Led by Associate Professor Martha Lappas, this team has spent more than a decade researching the causes of preterm birth, one of the most significant health care issues globally. The 2015 research team includes Dr Ratana Lim, Dr Stella Liong, Mrs. Gillian Barker, Ms Ha Tran, Ms Stephanie Quak, and Ms Ramona Sarkis.

Projects

Novel therapeutics to prevent preterm birth
Finding an effective medical therapeutic that can stop preterm birth would be a major advance in combatting this major global health issue. Over the last decade, the group's studies have identified a number of "master regulators" that govern labour and birth. This research promises new insights into the development of therapeutics to manage preterm birth.

Dietary phytophenols to prevent the development of 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. Numerous studies have linked fruit and vegetable consumption with a reduced risk of various diseases. Many of these beneficial properties have been attributed to phytophenols such as those found in citrus fruits. In this research, we are assessing whether phytophenols can prevent the development of gestational diabetes and improve fetal outcomes.

Grants

The effect of supplemental progesterone on the expression of known CVF biomarkers predictive of preterm birth
Georgiou HM, Di Quinzio MKW
Medical Research Foundation for Women and Babies
$12,500

Identification of novel biomarkers to predict preterm labour
Di Quinzio MKW, Pell G, Georgiou HM
Mercy Health Academic Research and Development Committee $1,000

Gestational diabetes mellitus follow-up program: Recruitment of participants
Georgiou HM
Norman Beischer Medical Research Foundation for Women and Babies $55,000

Gestational diabetes mellitus follow-up program: Screening for early markers of type 2 diabetes in an at-risk population
Georgiou HM, Jinks D
Mercy Health Academic Research and Development Committee $2,000

Dietary polyphenols as novel therapeutics for the treatment of gestational diabetes
Lappas M
Norman Beischer Medical Research Foundation for Women and Babies $100,000

Citrus fruits as a novel therapeutic to prevent the development of gestational diabetes
Lappas M, Liong S
Austin Medical Research Foundation $20,000

Can dietary phytophenols prevent the development of gestational diabetes?
Liong S
RANZCOG $60,000

Assoc Prof Martha Lappas (centre) with honours student Ramona Sarkis (left) and postdoctoral fellow Dr Stella Liong

Assoc Professor Martha Lappas

NHMRC Career Development Fellow, Department of Obstetrics & Gynaecology

Almost two decades after joining Mercy Hospital for Women as a PhD student, Associate Professor Martha Lappas' remains determined to understand the pathways between infection and preterm birth, and to develop a therapy to prevent this potentially lethal event.

"Preterm birth is a leading cause of neonatal morbidity and mortality, with one million babies dying every year because they were born too early," Martha says. "Those who do survive often suffer long-term adverse outcomes, including learning disabilities, cerebral palsy and overall poor quality of life."

Studies show infection is the leading cause of preterm birth, triggering the pathways to labour. Martha's research involves looking upstream at the 'regulators' that mediate these pathways.

Martha discovered two master regulators during her PhD, including one called NF-kappaB that some researchers believe is the key to regulating downstream pathways. But since her Phd, she has found regulators even further upstream, including some that regulate NF-kappaB itself.

"The further upstream we look, the more likely we will be able to arrest the process of preterm birth," Martha says.

In laboratory trials, Martha and her team discovered that a protein called SIRT1 regulates NF-kappaB and all the downstream pathways involved in preterm birth. The common drug used to target SIRT1 is resveratrol, which is sourced from the skin of red grapes. The team is now testing its use on mice to help prevent preterm birth.

"The mice trials involve injecting them with an infection to initiate preterm birth and observing if the drug prevents it by reducing inflammation," Martha explains. "The next steps would be to refine the dosage and timing, and monitor the pups. Some drugs may reduce inflammation in the mother but have no effect on the pup; we want to improve short and long-term neonatal outcomes as well."

Dr Harry Georgiou and Dr Megan di Quinzio Research Group

Led by Dr Harry Georgiou and Dr Megan di Quinzio, working with Associate Professor Martha Lappas, Professor Michael Permezel and Ms Debra Jinks, the group continues to investigate the causes of preterm labour and gestational diabetes, with a view to developing preventative therapies.

Projects and grants

The effect of supplemental progesterone on the expression of known CVF biomarkers predictive of preterm birth
Georgiou HM, Di Quinzio MKW
Norman Beischer Medical Research Foundation for Women and Babies $12,500

Identification of novel biomarkers to predict preterm labour
Di Quinzio MKW, Pell G, Georgiou HM
Mercy Health Academic Research and Development $1,000

Gestational diabetes mellitus follow-up program: recruitment of participants
Georgiou HM
Norman Beischer Medical Research Foundation for Women and Babies $55,000

Gestational diabetes mellitus follow-up program: Screening for early markers of type 2 diabetes in an at-risk population
Georgiou HM, Jinks D
Mercy Health Academic Research and Development Committee $2,000

Gestational diabetes mellitus follow-up program: Measurement of HbA1c
Lappas M
Norman Beischer Medical Research Foundation for Women and Babies $39,042

Long-term biochemical implications of GDM: Identifying women with early type 2 diabetes in a high-risk population?
Lappas M
Norman Beischer Medical Research Foundation for Women and Babies $200,000

Understanding the pathophysiology of GDM
Lappas M
Norman Beischer Medical Research Foundation for Women and Babies $400,000

Ms Gabrielle Pell, Dr Harry Georgiou, Dr Megan di Quinzio

Dr Megan di Quinzio

Obstetrician/Gynaecologist, Mercy Hospital for Women

New biomarkers for the prediction of spontaneous preterm labour in symptomatic pregnant women: a comparison with fetal fibronectin.

All too often, an anguished mother of a preterm baby turns to Dr Megan di Quinzio and asks: “Why did this happen to me?”

“At the moment, we just don’t know why,” says Megan, a practising obstetrician and gynaecologist at Mercy Hospital for Women.

Preterm birth is associated with significant perinatal morbidity and mortality. It affects 8.6 per cent of all Australian births annually, or more than 26,000 pregnancies. Among Aboriginal and Torres Strait Islander mothers, the rate stands even higher at 14 per cent.

Since 2003, Megan, researcher Dr Harry Georgiou and midwife Gabrielle Pell have been searching for a more

accurate way to predict preterm birth in women who are otherwise fit and healthy. The team has recruited more than 1000 pregnant women to participate in their search for a reliable test. The control group is healthy women with low risk pregnancies, who will have a vaginal swab once a week from about 36 weeks' gestation. The second 'symptomatic' group is pregnant women who present with abdominal pain, who have agreed to have a one-off swab. The third group is women with known risk factors for preterm birth such as a multi-fetal pregnancy, previous preterm birth, previous cervical surgery or heavy smoking.

Gabrielle says she is humbled by women's willingness to contribute. "I've had women call me during their second or third pregnancy and say, 'I'm pregnant again, what research can I be involved in?'" Gabrielle says. "It speaks volumes about how important the project is to women."

Gabrielle processes the samples and the team uses a technique—perfected by Megan in 2007—to separate proteins on a two-dimensional gel. The team then uses software to analyse how proteins change in labour. They are searching for a precise combination of biomarkers that indicate preterm labour.

"The labour process appears the same whether it's a term birth or a preterm birth," Megan says. "Biochemically there are the 'usual suspects', and although there are differences between subgroups they all tend to follow the same biochemical pathways. We just need to finesse how we detect it."

Already the team is leading its field, thanks to the large data set they have generated over the years. The next step is to confirm their outcomes in a larger population.

"If we can prove those findings in a huge number of women, it becomes a potentially marketable test," Harry says. "In Australia, the vast majority of infant deaths are the result of preterm birth. In developing countries, the rate is even higher. Fibronectin costs more than $100. Ultimately what we want to see is a $5 five-minute test that can be done in the field."

Amanda (right) with Research Nurse Gabrielle Pell

Mother of two – soon to be three – Amanda Augello is no stranger to preterm birth. Her sons Kye, 5, and Harley, 3, were born premature at Mercy Hospital for Women at 25.5 weeks and 28.4 weeks, respectively.

Amanda, who is now pregnant with her third son, says she was crippled with anxiety about making it past the 28-week mark.

"I'd just love to have a full-term baby," she says. "That's my goal."

Amanda has welcomed the opportunity to participate in the Mercy Health/University of Melbourne Prediction of Preterm Labour study as part of the at-risk group, coming in for a vaginal swab every four weeks.

"I would do anything to help other women who are going through the same experience," Amanda says.

Understanding diabetes: From gestational diabetes to type 2 diabetes mellitus.

Gestational diabetes mellitus (GDM) is a common disease, with some estimates reaching as many as one in five pregnant women. Its effects on both mother and child can be devastating, including complications in delivery, stillbirth, and long-term health problems.

Dr Harry Georgiou, Associate Professor Martha Lappas and Ms Debra Jinks are building on the work of late Emeritus Professor Norman Beischer, founder of the groundbreaking Gestational Diabetes Follow-Up Program. “We wanted to continue his legacy, and with the number of women affected we couldn’t afford not to,” Harry says.

The team is striving to understand GDM as a whole, from its onset in pregnancy to its transition to type 2 diabetes in some women.

One stream is searching for biomarkers that would enable GDM to be diagnosed earlier in pregnancy. Current tests only provide a reliable diagnosis at about 26-28 weeks’ gestation—well into the third trimester.

“Currently, when a woman has a positive oral glucose test and then sees an endocrinologist, her pregnancy is already quite advanced,” Harry says. “Her baby will already have some of the complications associated with GDM. Being able to diagnose GDM earlier would allow us to treat it earlier.”

Another stream uses blood samples from hundreds of women over the past decade to try to identify which mothers with GDM will develop type 2 diabetes. Mercy Health data reveals that a staggering 25 per cent of women will develop the disease within 15 years of their pregnancy.

The team celebrated a breakthrough last year after discovering a number of predictive lipid biomarkers in samples from 2003 and 2004. “In the women who went on to develop type 2 diabetes, we found that certain lipids stood out,” Martha says. “An international study of more than 5000 women discovered the same thing, which was great confirmation of our own research.”

If a test could be developed to accurately predict the future onset of type 2 diabetes, a therapy could be the next frontier. It could also usher in more frequent blood glucose testing for women considered high risk.

Discovering what causes GDM and how to prevent it is another branch of the project that keeps Martha awake at night. “I want to know what’s different between women who have it and women who don’t,” she says.

Vicki Freeman-Loughton has been part of the Gestational Diabetes Follow-Up Program since 1990, when she was diagnosed with GDM during her first pregnancy.

Vicki has been back to Mercy Hospital for Women 15 times in the past 26 years, and now visits once a year. She has three blood glucose tests each time, and a consultation with Debra Jinks about how to maintain a healthy lifestyle.

“I’ve been very happy to be part of the Program,” Vicki says. “The blood tests are non-invasive and have given me an ongoing measure of my blood sugar levels, which has been terrific.”

On seven occasions Vicki’s results have shown impaired glucose tolerance. So far, she has not developed type 2 diabetes. But there is a family history; her mother was diagnosed with late-onset type 2 diabetes at age 70.

Vicki with Research Nurse Debra Jinks

“The consultations have helped me stay on track with my health,” Vicki says. “This study has been a wake up call that I need to look after myself, which I am trying to do now.”

Department of Pediatrics

Mercy Hospital for Women

The Department's research activity centres on a number of core themes: respiratory management and the prevention of chronic lung disease, nutrition, brain injury, infection and immunity, palliative care and ethics and long term neurodevelopmental outcome.

Projects

Australian placental transfusion study
Holberton J
Examining the effect of delayed umbilical cord clamping in the delivery room.

HIPSTER Trial
Collins C
Examining the role of high-flow as a primary therapy infants >28 weeks of gestation.

High flow and primary support for respiratory distress
Collins C

Comparison of set and delivered gas flow by different high flow devices
Collins C, Holberton J

Comparison of the pharyngeal pressures in two high-flow nasal cannulae devices
Collins C, Holberton J

N3RO study
Opie G
Investigated whether including fish oil in infant feeds could reduce the risk of chronic lung disease (completed 2015).

PropremsNeuro study
Opie G
Investigated the effect of probiotics in infant feeds and neurodevelopmental outcomes (completed 2015).

OCHIE study
Forster D
Investigating optimal duration of therapeutic hypothermia in term infants with brain injury due to hypoxic ischaemic encephalopathy.

Melbourne Infant Study: BCG for allergy and infection reduction (MISBAIR)
Casalaz D
Investigating whether administration of BCG vaccine soon after birth to term infants can decrease the risk of infection and allergies (currently recruiting).

OPTIMIST trial
Aiyappan A
Investigating a minimally invasive technique to administer surfactant directly to the lungs in extremely preterm infants.

VICS study
Opie G

Dr Dan Casalaz, Department of Paediatrics

Dr Clare Collins

Neonatologist, Department of Paediatrics, Mercy Hospital for Women

Consultant Neonatologist Dr Clare Collins has witnessed a research-driven revolution in paediatric care during her 12 years at Mercy Hospital for Women.

"If you think back to mid-1960s, President Kennedy had a baby who died at 34 weeks' gestation; that baby would never die now," she observes. "That's through people pushing the boundaries of science to investigate how babies live and grow and how we can support that. Hand in hand with our obstetric colleagues, we have improved babies' survival phenomenally. But we can always do better."

Working in the heart of one of Australia's major tertiary neonatal centres, the team has led advances in the care of critically premature babies. "The development of non-invasive ventilation — in particular high flow nasal cannulae, a gentler alternative to CPAP — has been a huge step forward," Clare says. "We ran the first ever randomised controlled trial between conventional nasal CPAP and high flow as part of my PhD. It proved high flow is similar in effect but much more comfortable for babies.

"That led us to ask 'Could we use high flow as a first line treatment?' CPAP has been the standard treatment for 20 years, so there was concern high flow may not deliver the same level of respiratory support. The HIPSTER study has enabled us to measure pressure in the nasopharynx as a surrogate for lung pressure. We found four litres per minute is the minimum needed for respiratory support, which is now the threshold used by all major Victorian tertiary hospitals. So we have been guiding practice and clinical guidelines directly from our benchwork.

"The study included tiny babies for whom nothing else would fit. One little girl was born at 25 weeks weighing 500 grams, too small for CPAP; we put the high flow on her and she never needed intubation.

"A spin off study is looking at the sleep/wake cycle, which is essential in neurodevelopmental outcomes. We think that as high flow is more comfortable, babies may spend more time asleep. So we're trying to finesse other factors that may help babies' outcomes apart from simply how they breathe.

"Nutrition is another crucial factor, and our studies are part of very large randomised controlled trials with all the tertiary neonatal units in Australia and New Zealand contributing."

Team effort is at the heart of the unit's achievements. "None of this research would be possible without the support of the babies' families, our clinical staff, our research nurses — particularly Liz Noble — and grant funding bodies including Prof Norman Beischer's medical research fund."

Dr Andrew Watkins

Consultant Neonatologist, Department of Paediatrics, Mercy Hospital for Women

Death Talk: basic linguistic rules and communication in perinatal and paediatric end-of-life discussions.

"If I said to you: 'Your child's condition is not compatible with life', what would that mean to you, especially if English were your third language?" begins Dr Andrew Watkins, Consultant Neonatologist at Mercy Hospital for Women. "It could mean 'this condition will kill your baby' or it might mean 'we could treat the condition aggressively but we have to think about the burden of care for your baby.' Statements like that can mean a whole spectrum of things."

Andrew, who has "as much of a humanities brain as a scientific one", has long been interested in the interplay of psychology, ethics, culture and communication. His paper *Death Talk: Basic linguistic rules and communication in perinatal and paediatric end-of-life discussions*, employs linguistic theory to consider the challenges of communication between clinicians and parents at a tumultuous time of their lives.

Andrew recognises some clinicians know instinctively how to communicate honestly and compassionately with parents, giving them the information they need and want to be able to make a decision. Most other clinicians, he believes, can be taught. *Death Talk* aims to make the communication process explicit, outlining the formal skills needed to analyse discourse, psychology and what drives decisions.

Andrew stresses how important it is that a clinician can examine the "unconscious drivers of decision-making" in themselves as well as the parents. "We need to be able to conduct a conversation in such a way that gives the family the information they need in a form in which they can use it," he says.

Andrew uses the metaphor 'holding a space' for parents and families, in which they can decide what is best for them and their baby in the context of their own beliefs. "Clinically, our task is much more complex than just letting the cards fall where they will or deciding ourselves what is best for the baby," Andrew says. "'Holding a space' forces you to acknowledge you are not the only person in that space and that the important decisions must be made collaboratively. Parents must be empowered to advocate for their baby."

There is no masking the fact that some of the conversations Andrew and his colleagues must have are deeply confronting for families and clinicians. "But if our little bit of the task has allowed it to happen in a better way, we can take some comfort in the possibility that we have made a difference," Andrew says.

Nursing and Midwifery

Midwifery Professorial Unit

The Professorial and Professional Development & Research Units work in collaboration to promote an environment of learning through clinical training and research, leading to a highly skilled and knowledgeable workforce.

Projects and grants

Comparison of neonates receiving Nasal CPAP in a tertiary and non-tertiary centre
Patterson H, Anning J, Pollock W

2015 Ella Lowe Grant awarded by the Nurses Board of Victoria Legacy Limited $40,000

Midwives' knowledge, attitudes and practices to gender-based violence in Timor-Leste
Taft A, McDonald, Wild K
LTU THS Grant $48,950

Recipient of Rotary international Global Grant Vocational Training Teams in Timor Leste
Oats J, McDonald SJ
Recipient of Rotary international Global Grant Vocational Training Teams in Timor Leste $US110,000

Transition to a caseload model of care: a two-year evaluation of outcomes, collaboration and satisfaction
Harrison K

Special Care Nursery

Werribee Mercy Hospital

Comparison of neonates receiving nasal CPAP in a tertiary and non-tertiary centre.

When a newborn is facing severe respiratory complications, keeping them close to family and community can make a huge practical and emotional difference. Werribee Mercy Hospital's Special Care Nursery Neonatal Nurse Practitioner Helen Patterson, Nurse Unit Manager Jenny Anning and Dr Wendy Pollock are now finding hard data to support their direct observation on the value of providing intensive respiratory support in a level 2 hospital environment.

"Before level 2 hospitals introduced Continuous Positive Airway Pressure (CPAP), you would automatically have had to transfer babies out to a tertiary NICU bed," Helen explains. "That has a big impact on a family: separation from their baby; they might have other children to care for; they might not have transport; the mother might have had a caesarian. If we can keep families together in their local community and get a good medical outcome, that's a fantastic benefit."

The hospital's SCN has supported seriously ill babies for many years, but introducing CPAP elevated its care to new heights. "We started this study just after we had begun offering CPAP, so we wanted to ensure we were using it according to the recommended Newborn Emergency Transport Service guidelines and criteria," Jenny says.

"We audited all of our babies at Werribee over a three year period from 2011-2013, and found we were following the NETS recommendations," Helen continues. "Then our ethics committee suggested comparing our practices and outcomes with those in the tertiary setting of Mercy Hospital for Women's NICU and SCN.

"So we applied for and received the Ella Lowe research grant through the Nurses Board of Victoria Legacy Limited. Because of that generous funding, the scope grew into a true multicentre review, which is very exciting. It's unique in that we're looking at quality, as opposed to statistics only."

"There's a lot of interest from the three other Victorian SCNs who were randomly selected to take part in the study," Jenny confirms. "They're also using CPAP and haven't had an opportunity to compare outcomes with tertiary centres. We're using a 'one to two' comparison to reduce bias and ensure solid results: every baby who received CPAP in one of the four SCNs will be matched with two similar babies in one of the two participating tertiary hospitals.

"We aim to present outcomes next year. We already know level 2 SCNs are equally focused on ensuring babies receive the same high standard of care as they would in tertiary settings. We hope our study will provide quality evidence we're achieving that ideal."

Helen Patterson and Jenny Anning

Kym Harrison

Clinical Midwife Consultant, Maternity Group Practice, Mercy Hospital for Women

Transition to a caseload model of care: a two-year evaluation of outcomes, collaboration and satisfaction.

Now entering its third year at Mercy Hospital for Women, Maternity Group Practice (MGP) is proving a hugely popular maternity care option within the community. MGP Clinical Midwife Consultant Kym Harrison can now present evidence to reinforce the positive anecdotal feedback the model has received.

MGP offers mothers the benefits of receiving care from the same midwife throughout their pregnancy, baby's birth and the two weeks after birth.

"We've now got two full years of data, including clinical outcomes and feedback from women and the medical

team," Kym explains. "MGP is seen as the gold standard of midwifery care for women. Several studies of similar 'caseload models' have shown that continuity of care can produce better outcomes.

"MGP transitioned from our previous family birth centre model, under which up to 50 per cent of first time mothers had to be transferred out when their pregnancies became complicated." Regular qualitative as well as quantitative reviews of women's experiences have provided Kym with rich data. "When we started the program we surveyed the first three months' worth of women to understand any aspects we could improve," Kym says. "We've continued to survey women every four months, and feedback has remained very positive."

The data revealed a raft of benefits for women and babies. "In MGP, women are more able to receive continuity of care from their primary midwife, regardless of complications or the type of birth," Kym confirms. "Even if their risk profile changes, we can keep women in the model by collaborating with the medical team.

"We currently have 33 women per month coming through the program, or about 400 a year. About 85 per cent have their primary or direct backup midwife present at the time of birth.

"We have a high 'normal' birth rate compared with that of the general hospital population, a lower instrumental birth rate and a lower caesarean section rate, and we use less pharmacological analgesia.

"We also have a lower episiotomy rate without having an increased tear rate. Our rates of babies transferred to the Special Care Nursery or Neonatal Intensive Care Unit are similar to that of the general hospital population."

Kym can point to a range contributors to the model's success. "Our midwives practice a low-intervention philosophy and are a highly skilled group that can work across the full scope of practice, including antenatal, birth suite, postnatal and community/home visits. The women themselves are really well informed and motivated. The outcome is that both the women and midwives feel empowered and positive about their experience."

Kym says the model fosters a truly collaborative approach, with doctors, midwives and allied health professionals embracing the opportunity to develop closer working relationships.

"The model has given them greater appreciation of each other's skills sets and abilities. We are linked with and supported by the Darebin Unit, a group of doctors at Mercy Hospital for Women. We wouldn't have been able to achieve what we have without their support.

"Our midwifery professor Sue McDonald has also been incredibly supportive of MGP's implementation and ongoing evaluation."

Kimberly Rolfe, patient of Kym Harrison

"I didn't feel like I was in hospital; the model didn't have a 'medical' feel. While I had two midwives job sharing, I always knew who I was going to see which was very reassuring – especially with my first pregnancy.

It was also good to know that if I needed them, there were doctors available just around the corner. I really appreciated the convenience and lack of stress.

"I saw the same midwife with both of my children and she visited me at home. I was so pleased at having that continuity and consistency – they become a part of your life."

Infection Control

Maree Sommerville

Infection Control Coordinator, Mercy Hospital for Women

Victorian Health Incident Management System (VHIMs) versus Victorian Blood Exposure Surveillance (ViBES) or Victorian Healthcare Associated Infection Surveillance System (VICNISS).

One of Maree Sommerville's primary goals is to support Mercy Health staff when they have a needlestick or splash injury. She also investigates how each incident may have been prevented.

"Some people can carry on after an incident, but others feel stressed because of the risk and chastise themselves for a momentary lapse of judgement," Maree says. But to identify risks and improve safety, infection controllers need reliable, detailed data. Maree's current research project addresses that need.

Over the past two years, Maree, as chair of Victorian Blood Exposure Surveillance (ViBES) group, and epidemiologist Sandra Johnson from the Victorian Healthcare Associated Infection Surveillance System (VICNISS), have been comparing the two surveillance systems: the Victorian Health Incident Management System (VHIMS) and the ViBES system.

In 2011, the Victorian government provided public hospitals with an incident reporting system (Victorian Health Incident Management System [VHIMS]) to record all incidents including needlestick injuries and other occupational injuries. Many hospitals also choose to enter data into ViBES, a voluntary surveillance system established in 2004 and used by 27 of Victoria's largest hospitals. The resulting data sets should be identical. All too often, they are not.

"For our research, we asked health services to provide a snapshot of needlestick data on VHIMS and we compared it to ViBES data," Maree says. "In some instances there was twice as much ViBES data as there was VHIMS. ViBES paints a more accurate picture."

Maree's research also demonstrates ViBES data is more meaningful. "VHIMS data doesn't capture a denominator, which is what gives your data context," Maree says. "The most commonly used denominator is occupied bed days. If you are really busy with a high rate of occupied bed days, you might see an increase in exposures. That may not mean your exposure rate is increasing, it means you are busier. Viewing the data in context allows you to benchmark it against that of other health services."

ViBES also collects other detailed information such as a staff member's Hepatitis B vaccination status and the exact time of an incident, allowing Maree and her colleagues to detect trends such as night shift versus day shift incidents. "The ViBES data can help us identify risks and solutions," Maree says. "For example, if we discover that a diabetic needle left on a bedside table led to a needlestick injury, we can provide a sharps container."

Ultimately, Maree hopes her findings will give the Victorian Government an incentive to transfer management of ViBES to VICNISS. "VICNISS is well-positioned to manage ViBES for large public hospitals because they already do so for hospitals with fewer than 100 beds," Maree says.

"If we had a better understanding of what our risks were, it would open the door for us to build more safety into our health services and protect our staff."

Surgical and Specialist Services

Department of Gynaecology

Mercy Hospital for Women

Projects

Oral contraceptive pill – myths and misconceptions
Muscarra M

Polycystic ovarian syndrome: what do young women and their mothers know about this condition
Mahon J

Persistent pelvic pain pilot study
Mirowska-Allen K

Persistent pelvic pain pilot study: Is it time to reconsider the approach to persistent pelvic pain in women?
Sewell M

The use of bleeding scores to identify women with mild bleeding disorders
Boo J

Grants

Persistent pelvic pain: A pilot study
Mooney S, Maher P, Grover SR
Norman Beischer Medical Research Foundation for Women and Babies $14,500

L-R: (back) Professor Sonia Grover,
Jenny Porter, Megan Sewell, Sarah Maxwell
Front: Samantha Mooney, Kelly Mirowska-Allen

Professor Sonia Grover

Head of Plenty Gynaecology Unit, Mercy Hospital for Women

For the many thousands of women who live with chronic pelvic pain, early detection and treatment can be life changing.

"What matters is that we can help women to have a healthy body that allows them to enjoy life, work, family and that they can have happy relationships and enjoy their sexuality," says Professor Sonia Grover, who has made those goals her life's work as head of the Plenty Gynaecology Unit at Mercy Hospital for Women. Her team's current investigations into persistent pelvic pain aim to highlight the full spectrum of options women can use to manage a problem once blanketed in silence.

"All women who present to our clinic are offered the opportunity to participate," Sonia states. "No other pain study has picked women up this early, so the breadth of answers that we may be able to achieve is very significant.

"If we can identify problems more often and earlier, and look at them comprehensively, it may help women to avoid invasive treatment later. It's time we said 'Hang on – if you had a headache we wouldn't presume you need brain surgery as the first option.'

"So perhaps we can get smarter about identifying who does need surgery and who needs to change something else.

"We're very excited by the preliminary results, and we want to follow these women for the next three years."

Sonia's work and research over 20 plus years in gynaecology encompasses some of the most debilitating gynaecological conditions women and girls face, from excessive bleeding and fertility issues to polycystic ovarian syndrome. "I also work at the Royal Children's Hospital, so I get to see the rare and unusual cases from their earliest occurrence. They can include extreme menstruation-related issues associated with congenital anomalies, such as cyclic asthma and seizures, anaphylaxis, chronic fatigue, problems with diabetes control. As a gynaecologist I can influence their care.

"Many patients follow me to Mercy Hospital for Women because they have uncommon conditions, and if they see a new specialist they may not know how to manage it, or the women might have to explain again what their condition is and they often really hate that.

"That continuity of care also helps the women gain the self-confidence and skills to manage their conditions themselves.

"There's still so much women don't express and that we don't yet understand. I'm really proud to lead a fantastic team of research fellows and students who are equally passionate about creating enduring change for these women."

"I'm really proud to lead a fantastic team of research fellows and students who are equally passionate about creating enduring change for women"

Lauren Bull, patient of Prof Grover

Right from my first period I'd be physically sick with the pain and huge loss of blood. I couldn't sleep. We kept looking for options but nothing would help.

Initially doctors would say 'your blood test results are perfect, we can't find anything wrong.' Even into adulthood my periods would last up to 10 days with beyond-heavy bleeding, pain and vomiting. Some days I couldn't go to work.

When my younger sister Rachel began having the same issues, we started seeing Sonia to try to work out the cause. Both my mum and aunt had severe haemorrhaging after birth and surgeries. Sonia was the first person I'd seen who said, 'There's obviously a problem' instead of dismissing it. I walked out of that first appointment and cried, it was so good to be taken seriously.

Sonia started by putting me on a higher oestrogen pill. For the first time ever my periods were under control. Then we started looking at how we could reduce the bleeding and pain. Rachel and I were also seen by haematologist Dr Chris Barnes who works with Sonia. Between them they agreed on a treatment plan with a combination of medications to help our clotting factors. We have almost no pain now. It's been literally life changing for my sister and I.

Department of Gynaecological Oncology

Mercy Hospital for Women

The Gynaecological Oncology Unit continues to provide multidisciplinary care to women with gynaecological cancer which includes complex surgery, chemotherapy and all aspects of supportive care.

Staff include Assoc Prof Peter Grant, Gynaecological Oncologist, Assoc Prof David Allen, Gynaecological Oncologist, Dr Simon Hyde, Gynaecological Oncologist, Dr Julie Lamont, Gynaecological Oncologist, Assoc Prof Linda Milishkin, Visiting Medical Oncologist, Prof Danny Rischin, Visiting Medical Oncologist and Dr Serene Foo, Visiting Medical Oncologist.

> "This class of drugs is likely to become part of standard treatment within a very short time"

Projects

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

PARAGON- Phase 2 study of aromatase inhibitors in women with potentially hormone responsive recurrent/ metastatic gynaecological neoplasms: ANZGOG 0903.
Grant P

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.
Grant P (site PI), Milishkin L, Rischin D, Hyde S, Lamont J, Allen D, Foo S

SOLO 1. Phase 3 randomised trial of Olaparib vs placebo as maintenance treatment in patients with BRCA mutated advanced ovarian cancer following primary chemotherapy.
Investigators: Grant P, Allen D, Hyde S, Lamont J, Milishkin L, Rischin D, Foo S, Au-Yeung G

SOLO 2. Phase 3 randomised trial of Olaparib vs placebo in platinum sensitive relapsed BRCA mutated ovarian cancer.
Investigators: Grant P, Allen D, Hyde S, Lamont J, Milishkin L, Rischin D, Foo S, Au-Yeung G

ICON 8. Randomised phase III trial evaluating the safety and efficacy of dose-dense, dose-fractionated carboplatin-paclitaxel chemotherapy in the 1st line treatment advanced ovarian cancer (GCIG Trial).
Investigators: Milishkin L, Au-Yeung G, Grant P, Hyde S, Lamont J, Foo S, Rischin D

Associate Professor Peter Grant

Gynaecological Oncologist, Mercy Hospital for Women

A cure for ovarian cancer remains a holy grail of women's health, but Associate Professor Peter Grant's gynaecological oncology team at Mercy Hospital for Women is searching for decidedly pragmatic answers.

"The first paper we published in 2015 looked at the impact of Vitamin D supplementation on ovarian cancer," Peter confirms. "These were just standard doses that women might take as part of post-menopausal supplementation, as a way of potentially managing things like osteoporosis.

"This is part of the OPAL study which has been running for five years, looking at strategies women may routinely undertake as part of their own treatment of ovarian cancer. So what do women use that is not medically driven, that may impact their outcomes? We had allowed for a range of factors including physical activity, medications, nutrition and diet supplements which, were included in questionnaires women had filled out as part of their involvement in the study. It's revealed some relevant findings for women but it's very early; it's an epidemiological study that showing us certain trends suggesting that higher Vitamin D levels at diagnosis may be associated with better outcomes.

"The other paper we published recently was on adjuvant treatment of a rare type of uterine cancer; as a group, women with this cancer have poor outcomes. There has been ongoing controversy about the best way of managing it. This was an institutional study of what happened to these women in this hospital over a long period of time: how they were managed, did that change, and was there any intervention that seemed to make a difference to their outcomes?"

While work continues on investigating the impact of lifestyle factors and combined treatments, new horizons in medical options are another focus for Peter's team.

"We have opened the Ariel 2 trial looking at rucaparib, which specifically targets an abnormal genetically linked pathway related to some types of ovarian cancer. As part of an international trial we are looking at the efficacy of treating women with recurrent high grade ovarian cancer with this new drug. This class of drugs (PARP Inhibitors) is likely to become part of standard treatment for some women with ovarian cancer within a very short time."

Department of Endosurgery

Mercy Hospital for Women

The Department of Endosurgery was established to provide a service in minimally invasive gynaecological surgery.

The department is active in teaching and clinical research with a fellowship program, rotation of trainees and residents through the unit and courses throughout the year.

Projects

Comparison between transvaginal sonography and magnetic resonance imaging for the diagnosis of deep infiltrating endometriosis and prediction of the need for colorectal team involvement
Ma T, Ellett L, Stone K, Yang N, Esler S, McIlwaine K, Manwaring J, Readman E, Maher P

Can narrowband imaging improve the laparoscopic identification of endometriosis
Ma T, Ellett L, McIlwaine K, Manwaring J, Readman E, Maher P

Pilot study to assess the role of mirena intrauterine device in the management of endometrial polyps
Ma T, Ellett L, McIlwaine K, Manwaring J, Maher P, Readman E

Dr Kate McIlwaine

Endosurgeon, Mercy Hospital for Women

Endometriosis affects 10-15 per cent of women of reproductive age: a staggering figure on its own, but an even more loaded one when its impacts are considered.

"It certainly impacts women's lives in terms of pain and their ability to hold down a career or relationship, as well as their plans for childbearing," Endosurgeon Dr Kate McIlwaine affirms. "As a unit we specialise in treating the disease as well as its consequences. Women may present with pelvic pain, painful periods, pain during intercourse,

or ovarian cysts. Up to 40 per cent of women who present with infertility also have endometriosis as a coexisting issue; they may even have bowel issues. We're a tertiary referral centre so we'll often see the more severe cases where it has extended into the bowel or bladder."

Despite its prevalence, diagnosis and treatment can be complex and a permanent cure remains elusive. Kate and her team are working on several leads that could change that landscape. "At the moment, laparoscopy, which is an invasive procedure, is still the gold standard for diagnosing and treating endometriosis," Kate says. "In the recent past, endometrial nerve fibres were showing promise as an indicator of disease, but no conclusive evidence has been found that they could offer a less invasive way to predict it than laparoscopy.

"This year we plan to collaborate on a study looking at non-invasively measuring cells in endometrial fluid as a marker of disease.

"We are focusing on imaging as well, using specialist pelvic ultrasound and MRI to predict invasive disease prior to surgery. It's enabling us to mobilise our multidisciplinary team to plan for more radical surgery, and to optimise resources in the public system to deal with it. We're also more able to define who has the markers of disease and needs surgery, and who could be managed at least initially with hormonal methods such as the contraceptive pill or Mirena IUD.

> "This year we plan to look at noninvasively measuring cells in endometrial fluid as a marker of disease"

"It has a significant recurrence rate even after surgical excision of up to 45 per cent at five years. It's important that women are seen by doctors who are experienced in managing endometriosis, and can assist them with strategies to manage it long term, including timely specialist referral for any secondary complications like infertility, pelvic floor issues or chronic pelvic pain.

"I think a proportion of our patients have had their symptoms 'normalised' for them. But overall, women are becoming better educated about endometriosis; they are more prepared to ask what's available. In past it's been poorly recognised and understood and even now we've got a way to go, but at least with the team here at Mercy, women are being managed very well through our multidisciplinary approach."

Jodie Wagner, patient of Kate McIlwaine

I had been trying to get pregnant for four years. I'd been treated for cervical cancer previously, then we waited for 12 months but still nothing was happening. So my oncologist referred me to Kate; I had a laparoscopy which freed up the blockages caused by scarring from my cancer treatment.

Then we put in a cervical stitch to help promote a successful pregnancy. We're hoping that will happen soon.

I think the technology they have now is amazing compared with even ten years ago. It's not so taboo either anymore to talk about endometriosis or cancer. If I wasn't receiving the care I have now we'd have no chance to start a family.

Department of Urogynaecology

Mercy Hospital for Women

The Urogynaecology Department has a national and international reputation for research and the management of disorders of pelvic floor dysfunction.

This includes the common problems of female urinary incontinence and uterovaginal prolapse.

The department is also involved in research so we can better understand and manage these disorders.

Dr Lore Schierlitz

Urogynaecologist, Department of Urogynaecology

While pregnancy and childbirth are two of life's greatest joys, the urogynaecological changes that can occur for women may be less positive. Stress urinary incontinence, prolapse and sexual dysfunction are some of the conditions faced postpartum. Mercy Hospital for Women urogynaecologist Dr Lore Schierlitz and her colleagues are researching these all-too-common issues in women's health to improve understanding and treatment options.

"The population of women we treat have participated willingly in research projects," Lore confirms. "Questions exploring how aspects of pregnancy and childbirth affect urogenital health and can lead to problems such as incontinence, sexual dysfunction and prolapse in our older patient population have been asked.

"I'm especially interested in the long-term effects of surgical treatments for incontinence and prolapse. In the short term, at six months or 12 months, patients are often very happy with the results of their surgery. But the benefits may not be sustained at three, five or more than 10 years. That's important information for counselling women about their treatment choices and their activities later in life."

Lore began conducting two large randomised controlled trials in 2003, when she took up a fellowship in urogynaecology under Professor Peter Dwyer at Mercy Hospital for Women. "The first trial compared two midurethral slings for surgical management of urinary stress incontinence. Women with severe incontinence form a urethral sphincter deficiency were recruited," Lore explains. "The study was designed to find out if a retropubic sling was more or less effective than a transobdurator sling which was newer on the market. There was limited information available when we began the study.

"We ran a randomised controlled trial with 80 women in each arm comparing the two different slings for side effects and efficacy. The results were published as an abstract at the 2014 International Urogynecological Association and were well received. We are now working on writing up results of six to eight years' follow up, depending on when patients were recruited to the trial. The long-term follow up has clearly showed the traditional retropubic midurethral sling is far superior to the transobturator sling. Those results have changed how severe stress urinary incontinence is treated surgically worldwide in women.

"The second study is a long-term project evaluating the use of midurethral slings in women who have a significant prolapse requiring surgery but no signs of urinary leakage. When examined by their doctor or with bladder testing, leakage becomes obvious. There has been a worldwide trend to perform a prophylactic sling to prevent post operative stress in this group, but there is conflicting data on long-term outcomes. So we ran a randomised controlled trial comparing women with prolapsed surgery with a midurethral sling to those women who did not have a sling.

"The first paper was published in 2014 on two year data. The results showed that six TVT slings would have to be placed to prevent one woman from developing stress incontinence following her prolapse operation. Now we're working on publishing the six year results."

Lore has also contributed to a major study led by Dr Alison DeSouza on sexual health in pregnancy and after delivery. "As a team we have an interest in how women are travelling with their urogenital health," Lore says. "That includes sexual function as well as urinary symptoms. We have recently secured a new grant to conduct further long-term follow up.

"Participants in this study completed quality of life questionnaires, detailing sexual health and any prolapse or incontinence issues, at the end of their first trimester, at 28 weeks and at six and 12 months postpartum. This enabled us to see if any changes were due to the mode of delivery, perineal injury, or to the pregnancy itself.

"The results were published in the *British Journal of Obstetrics and Gynaecology* in 2015. We had found that at 12 months postpartum, sexual function had returned to early pregnancy levels, irrespective of mode of delivery or perineal injury."

Improving quality of life is the consistent thread that runs throughout the unit's work. "If we can offer effective early assessment and interventions, either conservative or surgical, that help women regain their quality of life, we've succeeded," Lore says.

> "Those results have changed how severe stress urinary incontinence is treated surgically worldwide"

Medical, Subacute & Palliative Care Services

Health Independence Program

Werribee Mercy Hospital

The Health Independence Program (HIP) offers community based programs designed to help clients improve their health. Services include the Complex Care Program (formerly HARP) Community Based Rehabilitation, Residential in-Reach and two SACS Specialist clinics: Continence and Falls and Balance.

In 2014, Werribee Mercy Hospital amalgamated services that previously worked independently to form the Health Independence Program (HIP). The services included the Complex Care Program (formerly known as HARP) Community Based Rehabilitation, Residential in-Reach plus two SACS Specialist clinics – Continence and Falls and Balance.

The amalgamated model aims to provide a responsive and flexible approach to promoting health independence by linking acute health services with community and social support services.

Project

Caring, enabling, achieving together – that's HIP!
Mulcahy B, Grant B, Bradford Flege J, Pollit C, Dick W, Stafford J

Bernadette (right) with Care Coordinator and co-researcher Colleen Pollitt

Bernadette Mulcahy

MACN, Health Independence Program

Caring, enabling, achieving together – that's HIP!

"HIP's goal is to be client-centred, increasing healthy behaviours and improving the health status of clients attending the service, while reducing health service use," explains HIP Care Coordinator Bernadette Mulcahy. "We are a mixed allied health and nursing team, and each service has a very different area of expertise. If a client identifies more needs than initially recognised, they can access the knowledge of the entire team. There is plenty of broad-based evidence to show that a multidisciplinary approach is best practice for client-centred care."

However, the HIP model's innovative structure demanded more specific proof of its positive impact on clients. "HIP had been amalgamated for not quite a year when I first started at Mercy Health," Bernadette says. "My manager Brigitte Grant and I had been discussing 'How do we know we're making a difference?' We had an opportunity to present at a major conference, so we thought a formal evaluation was a good way to bring our own evidence together."

The HIP model required a research method tailored to capture direct client feedback about their experiences at home, as well as clinical outcomes recorded during their time with HIP, to show its full impact on client wellbeing. The team performed an evaluation using file audits, which detailed outcomes pre and post HIP amalgamation, combined with a narrative evaluation using the Most Significant Change (MSC) tool and quantitative data collection.

"We asked clients directly what they felt was their most significant change since attending HIP. Our evaluation captured a lot of information of which even we weren't previously aware. They were telling us the changes we saw

> “Clients were telling us the changes we saw during their time in the program had made a big impact on how they felt”

during their time in the program had made a big impact on how they felt; they’d had that public health change that we aim for. We knew then that our amalgamated model had made a difference.”

The MSC questionnaire enabled each client to identify what they saw as a health achievement. 29 of the 30 clients described profound changes in health outcomes that staff did not always anticipate after the client’s clinical assessment. (See the breakout box for examples).

The MSC data were backed by statistics on patterns of referral and service use, including a doubling of referrals to HIP over the 12 months to June 2015 and dramatically reduced costs for single admissions to the program, showing clients did not need to return multiple times for care.

For Bernadette, the findings validate decades of observation on the ground in community nursing. “I see subacute care as a transition; you’ve had an acute episode, but we’re trying to see what’s happening afterwards around the social determinants of health. You need to put in the framework to support clients at home to make behavioural change sustainable.

“We need to return our clients’ health to a level which enables them to stay at home, while trying to prevent deterioration in our ageing population. That’s where the Health Independence Program has significant value. That’s also why the opportunity to evaluate periodically is so important, so we can be sure we continue to make a difference.”

In their own words: client feedback on HIP

Themes

- Education: “learnt more”
- Improved management: “back on track”
- Reduced isolation
- Increased confidence/feeling safer
- Received help
- Capable of doing more
- Challenged.

Comments

“They have restored some of my earlier confidence in myself and my ability to work my body more than I have for a few years. I have bipolar but it’s under control now and I’m very proud of that.”

“I’ve gained confidence in myself. I’m now able to shower myself.”

“I was frightened of returning to addiction; I feel better now that I have things in place.”

“I feel really good. I no longer have to rely on my wheelchair. We went to the zoo the other day. I pushed my grandchildren in my wheelchair instead of them pushing me. I’m really pleased with that!”

Ambulatory, Allied Health and Community Services

Allied Health provides specialist clinical services to support patient care and optimise their health outcomes. Staff work with a range of multidisciplinary teams and departments. Disciplines include dietetics, occupational therapy, pastoral care, physiotherapy, social work and speech pathology.

Projects

Testing the feasibility of a mobile technology intervention promoting healthy weight gain in pregnant women (txt4two) – a randomised controlled trial protocol'
Moshonas N
Deakin University, Mercy Hospital for Women, University of Melbourne collaboration.

Iron carboxymaltose infusion in a pregnant population: a clinical review of safety and efficacy
Whatley C, Hui L, Dwyer J

Chloe Watley

Clinical Pharmacist, Department of Pharmacy

Iron carboxymaltose infusion in a pregnant population: a clinical review of safety and efficacy.

For pregnant women, iron deficiency carries a higher risk of premature delivery, maternal infection and even postnatal depression. But the previous solution, an iron polymaltose infusion, bore its own risk of adverse reaction. Mercy Hospital for Women introduced a new treatment in late 2014: iron carboxymaltose infusion, commonly known as Ferinject.

“We changed because there’s potentially less risk of infusion reaction, which can include full-blown anaphylaxis,” Clinical Pharmacist Chloe Whatley says. “In pregnant women, that’s the last thing you want to happen.”

Chloe, who is also working with the hospital’s Medication Safety Committee, undertook a pilot study into the safety and efficacy of Ferinject in pregnant women. “As with most products there wasn’t much available data on the use of Ferinject during pregnancy,” Chloe says. “We wanted to generate data to make sure there weren’t any risks associated with this new treatment.”

Chloe, who presented her research at the Society of Hospital Pharmacists of Australia conference in 2015, looked at a small cohort of 45 pregnant women for three months before and after the introduction of Ferinject. Chloe believes the treatment is not only safe and effective, but also time and cost effective.

“The haemoglobin rise was comparable between the two agents, meaning the therapeutic effect will be much the same as with the previous formulation,” Chloe says. “And while the product itself is more expensive, the cost analysis is promising. Unlike the previous treatment, which took 10-12 hours, this treatment takes just 30 minutes. So it requires less time from staff as well as patients.”

Cath McNamara (right) with Senior Aboriginal Hospital Liaison Officer Jo Pappas

Outpatients Department, Diabetes Education

Cath McNamara

Certified Diabetes Educator, Mercy Hospital for Women

Bridging the gap for diabetes in pregnancy 'Feltmum™' – An educational tool.

A new tool developed by Mercy Hospital for Women Certified Diabetes Educator Cath McNamara in conjunction with Diabetes Victoria and VACCHO is responding to an urgent need to close the gap on diabetes in Aboriginal mothers.

"Diabetes is a critical issue for the Aboriginal community at all life stages because of the impact it has on shortening lifespan and maintaining the health gap," Cath explains.

"Aboriginal and Torres Strait Islander communities have a huge interest in improving their health. They also have highly visual and auditory ways of learning; storytelling is central. That's why offering appropriate tools for teaching and learning is essential. Women in Indigenous cultures are such strong, influential people generally, so empowering them with appropriate knowledge about diabetes is crucial."

Feltmum™ is a tactile, interactive response to this challenge: a felt diagram of a pregnant woman complete with 28- week sized baby, uterus, uterine artery and placenta and endocrine system. The tool allows educators, including those from a non-medical background, to clearly show how excess insulin released after sugar consumption travels through a mother's bloodstream to the baby's placenta, triggering weight gain.

"The goal of educating pregnant women about gestational diabetes mellitus (GDM) is to minimise their babies' weight gain," Cath says. "GDM primes babies to gain an extra layer of fat, which can cause problems during delivery.

"Long term, babies born weighing more than 4.5 kgs to mothers with GDM are more likely to have weight problems as children, and to develop type 2 diabetes later in life.

"Combined with a strong genetic predisposition to diabetes, the risk for Indigenous Peoples is even higher than in non-Indigenous populations. So dispelling common myths about what you can or can't do to control GDM can have massive long-term benefits."

"I have been using a felt diagram tool for many years and have demonstrated it at several international conferences. Diabetes Australia took up a similar idea in 2010, creating the Feltman™ primarily to teach Indigenous Peoples about diabetes.

"They received feedback that because Feltman™ didn't offer a way to talk about pregnancy and women's health, there was a need for a female-oriented version. They asked me to help adapt Feltman™ into Feltmum™."

Evaluation of the original Feltman tool was completed by Aboriginal Health Workers who were using the tool. The evaluation identified a need to expand the model to include female body parts and a foetus to explain about diabetes in pregnancy. A working group was formed including Aboriginal Health Workers and team members from Diabetes Victoria and VACCHO. Extra parts, including a baby and appropriate body parts as well as 'feminine' traits like long hair, were designed and Feltman™ morphed into Feltmum™.

Feltmum™ is currently being rolled out across community health providers including Mercy Hospital for Women's outpatients' clinic.

Mental Health Services

Perinatal Mental Health

Mercy Hospital for Women

Perinatal Mental Health provides clinical services to Mercy Hospital for Women and undertakes research through clinical affiliations in the hospital.

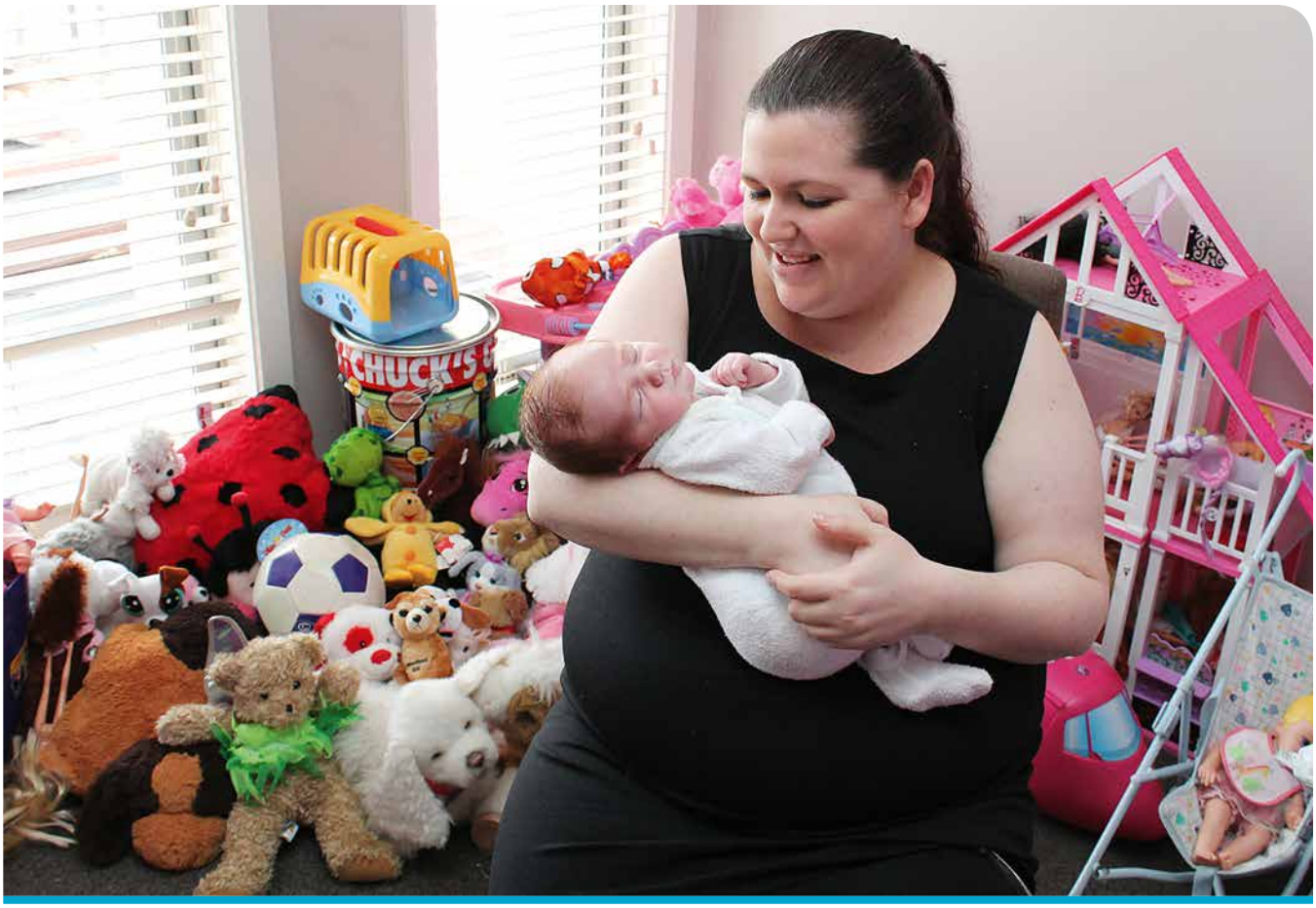
In 2015 Associate Professor Megan Galbally continued to head the MPEWS (Mercy Health Pregnancy & Emotional Wellbeing Study) and was successful in obtaining NH&MRC funding for a further five years of follow up.

Projects

Mercy Health Pregnancy & Emotional Wellbeing Study (MPEWS)
Galbally M

Management and outcomes in an antenatal clinic for women with Schizophrenia and Bipolar Affective Disorder
Snellen M, Power J, Blankley G, Galbally M

Pharmacological lactation suppression with D2 Agonists and risks of post-partum psychosis: a systematic review
Snellen M, Power J, Blankley G, Galbally M



Dr Gaynor Blankley

Head of Perinatal Mental Health, Mercy Hospital for Women

For some women with Borderline Personality Disorder (BPD), pregnancy presents an opportunity for change.

"Women don't want their child to suffer like they did, they want to work, they want to get better," says Dr Gaynor Blankley. But change is never easy, and for some women with BPD, the experience can be overwhelmingly difficult.

Gaynor and her team undertook a retrospective file review in 2015 of 42 women with BPD who gave birth at Mercy Hospital for Women over a two-year period. The pilot study revealed the mothers experienced higher rates of substance abuse, polypharmacy (taking multiple prescribed medications), early delivery, admission to the Special Care Nursery and referral to protective services.

"It's a disorder characterised by high levels of impulsivity, distrust and great difficulties in relationships," Gaynor says. "Women with BPD have a poor sense of 'self' and self-efficacy, and a high rate of deliberate self-harm and suicidality. They suffer from significant affective/mood dysregulation and anger.

"For example, if their baby is crying they may get angry or even just walk out on the baby," Gaynor explains. "In the moment, they can't manage their feelings. On the other hand, they may distrust the motives and intentions of healthcare providers or support workers, fearing their baby will be removed and becoming fiercely protective."

Gaynor, who hopes to conduct a larger follow-up study in future, believes the findings could be used to improve management guidelines for pregnant women and mothers with BPD. She stresses that any new guidelines must address polypharmacy, given a significant number of women in the study were on more than two prescribed medications. This is despite the fact that there is no specific pharmacological treatment for BPD—the most effective known treatment is long-term, structured psychotherapy together with social supports.

"People with BPD go to the doctor and they are so compellingly distressed that the doctor feels they need to do something, so they end up on multiple medications," Gaynor says.

"Ideally, the guidelines would see psychiatrists reviewing medications and women given information about BPD and recommended management strategies."

> "Women don't want their child to suffer like they did, they want to work, they want to get better"

Human Research Ethics Committee

In 2015 the Human Research Ethics Committee approved 50 new research proposals.

It was a rewarding year, says HREC Chair Professor John Ozolins. “With more research coming out of Werribee Mercy Hospital now, and a few from the aged care sector, there was increased diversity in research and that is a sign of more to come,” he reflects.

Research is vital in our pursuit of continued improvement in healthcare, John notes. “For example, in palliative care there is a lot to be learnt about pain management. And if we want continuous improvement in care, we need to consider treatment protocols. Are they efficacious? Are they doing what we think they are doing? Maybe there’s a better way.”

John is proud to note Mercy Health is leading the hospital sector in certain areas. “In neonatal care, there are techniques that Mercy Health is pioneering or is part of pioneering,” he says, adding that collaboration with other hospitals is vital to our progress.

“The work being done with premature babies in particular is quite exceptional, and it’s done with a great deal of care for those infants and their mothers. We are also heavily involved in cancer research and various obstetrics and gynaecological areas.

The purpose of the HREC is to make sure research data is used ethically. “When a proposal comes to the committee, it is usually because it is regarded as more than low-risk,” John says. “Typically these are big clinical trials, for example wanting to sample cord blood from baby in utero. Anything involving a mother and unborn child comes to us.

“The very reason HREC exists is to look after participants. Overall, our research applications are very good and straightforward, and we have very experienced researchers on our committee which is comforting for me as chair.”

Prof John Ozolins, Chair, Mercy Health Human Research Ethics Committee

SUMMARY OF RESEARCH PROJECT APPROVALS	2015	2014
New negligible and low risk research projects endorsed by HREC following approval by the Expedited Review Working Party	36	36
New research projects approved by HREC at its bi-monthly meetings	13	10
New research projects not approved by the year end period	3	2
New research projects still to be approved by HREC at year end period	8	9
New research approved but advised not to proceed after approval	1	0
Total of new research projects seen throughout the year	61	57

Research activity at a glance

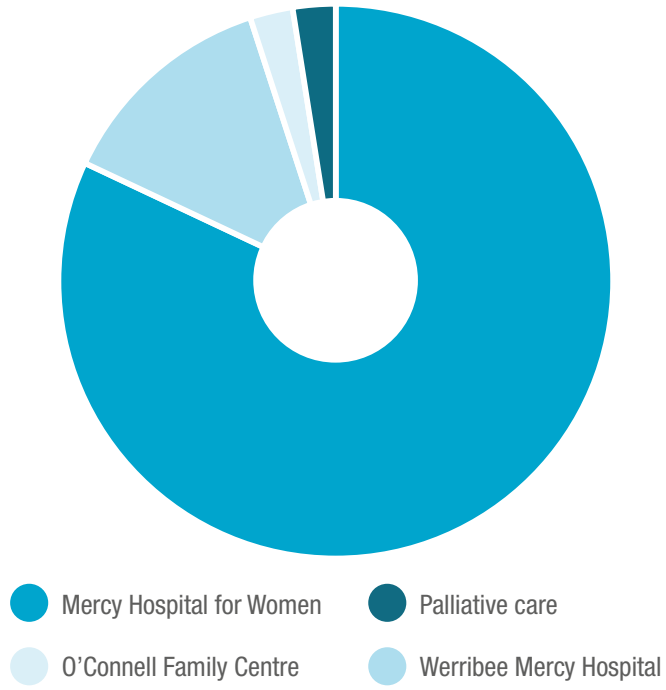


Fig. 1: 2015 research by faculty

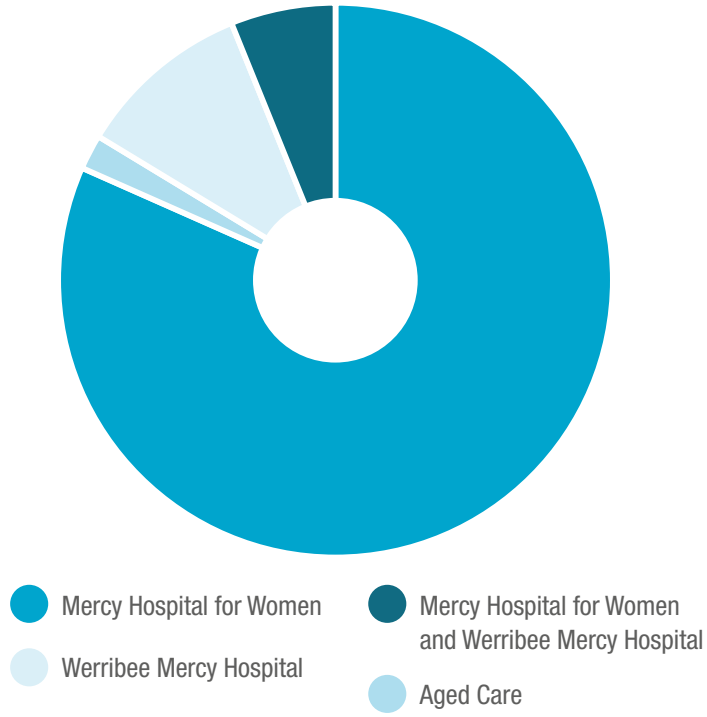


Fig. 2: 2015 research by Mercy Health site

Projects approved by Mercy Health HREC 2015

PROJECT TITLE	PRINCIPAL INVESTIGATOR
R15/19: *STRIDER (NZAus): A randomised Controlled Trial of Sildenafil Therapy in Dismal Prognosis Early – Onset Intrauterine Growth Restriction*	Dr Katie Groom, Department of Obstetrics & Gynaecology, University of Auckland
R15/30AC: *RCT of Analgesic Medications to modify behavioural & psychological symptoms of dementia*	Professor Stephen Gibson, Caulfield Pain Management & Research Centre
R15/31: Protocol CO-338-017: *A Phase 2, Open-label study of Rucaparib in patients with Platinum –sensitive, relapsed, high-grade Epithelial, Ovarian, Fallopian-Tube, or Peritoneal Cancer. (ARIEL2)*	A/Professor Peter Grant, Department of Gynaecological Oncology, Mercy Hospital for Women
R15/42: *Transthoracic echocardiographic assessment of cardiac output in healthy women at elective caesarean section under spinal anaesthesia with an ephedrine, metaraminol combination as hypotension prophylaxis. An observational cohort study*	Clinical A/Professor Scott Simmons, Head of Anaesthesia Department, Mercy Hospital for Women
R15/43: A *Cancer Tissue Collection After Death (CASCADE) programme to improve our understanding of the progression from Primary stage Cancer to Metastatic Disease*	A/Professor David Bowtell, Peter MacCallum Cancer Centre & A/Professor Peter Grant, Mercy Hospital for Women
R15/46: *Retrospective review of surgery for rectovaginal and vesicovaginal fistulas with quality of life and symptom follow up*	Dr Caroline Walsh, Urogynaecology, Fellow, Mercy Hospital for Women
R14/31: *A pilot study examining factors that influence outcomes in women presenting with persistent pelvic pain (PPP study)*	A/Professor Sonia Grover Department of Gynaecology, Mercy Hospital for Women
R14/32: *Efficacy and safety of one hour versus four hour blood pressure profile with clinical and laboratory assessment for the exclusion of gestational hypertension and pre-eclampsia: A retrospective study in a university affiliated maternity.*	Dr Elizabeth McCarthy, University of Melbourne/Perinatal Department, Mercy Hospital for Women
R14/33: *Pelvic Organ prolapse surgery with or without tension-free vaginal tape in women with occult or asymptomatic urodynamic stress incontinence: A Randomised Controlled Trial. (Long Term Follow Up of research R03/06)*	Dr Lore Schierlitz, Urogynaecology Department, Mercy Hospital for Women
R14/34: *Open Disclosure – A Qualitative Study*	Dr Karen Ng, Office of the Chief Medical Officer
R14/35: *How do Lactation Consultants support women who breastfeed?*	Ms Jenifer Hocking, PhD student, La Trobe University
R14/36: *The design of human milk protein digestibility for regulation of infant growth rate*	Dr Louise Bennett, CSIRO
R14/37: *Audit of Echocardiographic Data for Preterm infants compared with published reference ranges*	Dr Clare Collins, Department of Paediatrics, Mercy Hospital for Women
R14/38: *Comparison of the adverse drug reactions and efficacy of ferric polymaltose and ferric carboxymaltose in the 2nd and 3rd trimester pregnant patients*	Ms Chloe Whatley, Pharmacy Department, Mercy Hospital for Women
R15/01: *Invasive prenatal diagnostic procedures: A survey of current practice*	Professor Sue Walker, Director Perinatal Medicine, University of Melbourne Department, Mercy Hospital for Women

PROJECT TITLE	PRINCIPAL INVESTIGATOR
R15/02: A *long term study of Intravesical Dimethyl Sulfoxide (DMSO) / Heparin/Hydrocortisone Therapy for Interstitial Cystitis (IC)/ Bladder Pain Syndrome (BPS)*	Dr Yik N. Lim, Consultant Urogynaecologist, Mercy Hospital for Women
R15/03: *My Baby's Movements (MBM) Study*	A/Professor Vicki Flenady, Mater Research Institute, Brisbane
R15/04: *Lymphovascular space invasion in low stage endometrial cancer: Patterns of recurrence*	A/Professor David Allen, Chief Medical Officer, Mercy Hospital for Women
R15/05: *Are there regional differences in assessment and treatment of mastitis by Australian physiotherapists?*	Dr Leanda McKenna, Curtin University of Technology
R15/06: *Survey investigating staff perceptions and opinions of the clinical trial, "Using smell and taste of milk to improve milk tolerance and the growth of preterm infants" (i.e. R13/53: FLIP Trial)*	Dr Gillian Opie, Department of Paediatrics, Mercy Hospital for Women
R15/07: *Maternal and fetal outcomes in Type 1 and Type 2 Diabetes*	Dr Christine Houlihan, Consultant Obstetrician, Mercy Hospital for Women
R15-08: *Circulating cell-free DNA in pregnant women with autoimmune disease: A pilot study*	Dr Lisa Hui, Perinatal Medicine, Mercy Hospital for Women
R15/09: *Lifestyle and well-being in teenagers born <28 weeks/<1000g and at term />2499g (Follow-up of research R05/26).*	Dr Alice Burnett, Murdoch Childrens Research Institute
R15/10: *To report the incidence and type of epilepsy in children with cerebral palsy and white matter injury*	Dr Monica Cooper, Royal Children's Hospital
R15/11: *Risk Factors and efficacy of early testing for GDM*	Dr Alexis Shub, Obstetrician, Mercy Hospital for Women
R15/12W: *The impact of smoking on maternal and fetal outcomes*	Ms Shiju Mammen, University of Notre Dame, Melbourne Clinical School, Werribee
R15/13: *Laboratory project investigating pre-eclampsia and ectopic pregnancy, using samples obtained under Tissue Bank ethics*	Dr Tu'uhevaha Kaitu'u-Lino, University of Melbourne Department, Mercy Hospital for Women
R15/16: *Physical, social, psychological and cultural factors influencing breastfeeding intention and duration among women living with Type 1 and Type 2 Diabetes (T1DM &T2 DM) in Victoria*	A/Professor Bodil Rasmussen, Deakin University
R15/18W: *2015 VCCC and WCMICS Lung Cancer Audit*	Professor James Bishop, Victorian Comprehensive Cancer Centre
R15/21: *Respiratory morbidity requiring NICU admission in 28-36 week babies*	Dr Rosemarie Boland, Murdoch Children's Research Institute
R15/22: *Fetal Doppler Ultrasound in the diabetic mother and prediction of adverse outcomes.*	Ms Caitlin O'Brien, Fetal Monitoring & Perinatal Unit, Mercy Hospital for Women
R15/24: *Twin-to-twin Transfusion Syndrome (TTTS) Developmental Follow-up Study.*	Dr Christie Bolch, Murdoch Childrens Research Institute

PROJECT TITLE	PRINCIPAL INVESTIGATOR
R15/26W: *The impact of photo-ageing intervention on promoting smoking cessation among pregnant women or in postpartum women who are not breastfeeding.*	Ms Shiju Mammen, University of Notre Dame
R15/27: *Case Report of one patient from NICU with HNF4 alpha mutation*	Dr Natalie Duffy, Department of Paediatrics, Mercy Hospital for Women
R15/28: *Alcohol use in pregnancy and the National Maternity Data Development project. (NMDDP). What do maternity clinicians think?*	Professor Jane Halliday, Murdoch Childrens Research Institute
R15/29AC: *RedUse: Reducing the use of sedative medication in Aged Care facilities*	Dr Juanita Westbury, University of Tasmania
R15/32: *Transvaginal assessment of cervical length and amniotic fluid particles in the mid-trimester of pregnancy*	Ms Thanh Thuy Truong, La Trobe University
R15/33: *Infection in pregnancy – a survey of Maternal Health Providers*	Dr Lisa Hui, Maternal Fetal Medicine Specialist, Perinatal Medicine, Mercy Hospital for Women
R15/34: *Implementation and evaluation of Maternity Group Practice (MGP) in an Australian tertiary maternity unit*	Ms Kym Harrison, Clinical Midwife Consultant, Education & Research, Mercy Hospital for Women
R15/35W: *Improve Patterns of Care Surveys. Survey of Clinical Management in Victoria 2012-2013 (at Werribee Mercy Hospital HIS only)*	Professor Graham Giles, Cancer Council
R15/36: *Utility of pre- and post-extubation blood gases in predicting success of extubation in preterm infants*	Ms Jai Wei Audrey Lee, University of Melbourne
R15/37: *Understanding sexual health in survivors of gynaecological cancer*	Dr Tristan Snell & Ms Lara Dolling, Monash University
R15/39AC: *The Prevalence of Urinary Tract Infection, non-specific symptoms and antibiotic treatment in Nursing Home residents in an Australian Tropical Setting (Mercy Place Woree & Mercy Place Westcourt only)*	Mr Sean Mayne, James Cook University College of Medicine and Dentistry
R15/40: *Development of Fetal Alcohol Spectrum Disorders (FASD) Prevention & Health Promotion Resources*	Professor Sven Silburn, Menzies School of Health Research
R15/41: *Prenatal Testing (NIPT) to detect early stage Ovarian Cancer. (The Neo Study). A pilot study*	Dr Lisa Hui, Maternal Fetal Medicine Specialist, Perinatal Medicine, Mercy Hospital for Women
R15/45: *Comparison of the Pharyngeal Pressure provided by two heated humidified high flow cannulae devices in preterm infants*	Dr Clare Collins, Neonatologist, Department of Paediatrics, Mercy Hospital for Women
R15/47: *Outcomes at age 2 years of extremely preterm or extremely low birth weight infants in Victoria. The Victorian Infant Collaborative Study (VICS)*	A/Professor Jeanie Cheong, The Royal Women's Hospital
R15/48: *Evaluating the clinical implementation of the Mercy Hospital for Women 2013 Hepatitis B Clinical Practice Guidelines*	Dr Lisa Hui, Maternal Fetal Medicine Specialist, Perinatal Medicine, Mercy Hospital for Women
R15/14W: *HARP QA Activity. Review of effectiveness of ward staff referrals form Werribee Mercy Hospital to neighbouring HARP diabetes services*	Ms Jane Gilchrist, HARP Manager, Melbourne Health

In print and online

Women's and Children's Services

University of Melbourne Department

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Mercy Health acknowledges Aboriginal and Torres Strait Islander Peoples as the first Australians. We acknowledge the diversity of Indigenous Australia.

We respectfully recognise Elders both past and present.

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