

# THE WOMEN'S RESEARCH REPORT 2017

Building the Future of Women's  
and Newborn Health



the women's  
the royal women's hospital  
victoria australia

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Cover image (centre) Jessica  
Holland and baby Ziggy by David  
Caird, courtesy of Herald Sun.

## 2017 Snapshot

# 231

PUBLICATIONS

## \$18.9 million

RESEARCH  
GRANTS HELD

## \$6.5 million

RESEARCH GRANTS  
SPENT AT THE WOMEN'S

## \$8.6 million

NHMRC GRANTS HELD

## \$2.9 million

NHMRC GRANTS SPENT  
AT THE WOMEN'S

# 61

CLINICAL TRIALS

# 3,177

PATIENTS RECRUITED AT  
THE WOMEN'S

## 79

RESEARCH  
STUDENTS

## 26

COMPLETED  
OR PASSED

## 53

ONGOING

# A MESSAGE FROM THE WOMEN'S CHIEF EXECUTIVE AND RESEARCH DIRECTOR

We are delighted to present the 2017 Research Report for the Royal Women's Hospital.

This report highlights some of our many achievements in research in 2017, showcasing how our research findings are translated from the 'bench to the bedside', becoming everyday practice, not only at the Women's, but in hospitals all around the world. Most importantly, it clearly demonstrates how our research makes a difference to the lives of thousands of women and newborns.

This year, our theme is 'building the future of women's and newborns' health' and this reflects our vision to push the boundaries and continuously improve outcomes for women and newborns now and into the future. Research plays a fundamental role in the achievement of this vision and is key to finding new and better ways to care for our patients and save lives.

As one of Australia's leading specialist hospitals for women and newborns, and a member of the Melbourne Academic Centre for Health, we are in a unique position to advocate for funding and escalate the profile of research that benefits women and babies. We actively work to increase the profile of our research and promote women's and newborn health agendas at state and federal levels. It was gratifying to see the issue of endometriosis research and treatment receive considerable focus at the Federal Government level recently, and the Women's will continue to play a key role in 2018 in realising the goals of the endometriosis national action plan.

In 2017, the Women's 10 research centres were collectively awarded \$18.9 million in competitive grants. We published 231 peer-reviewed medical papers,

supervised 79 students, and conducted 61 clinical trials with more than 3100 patients participating. Many of these activities have led to further research projects, with a number of completed studies directly influencing clinical practice.

Our research is continually changing the way we care for our patients within our hospital, and at other hospitals and health facilities around the world.

We would like to congratulate all our researchers and the heads of each of our research centres for an excellent year. Their hard work, dedication and professionalism is a credit to them and our hospital.

In addition, we wish to acknowledge the very valuable fundraising support the Women's Foundation provides, and the many contributions from the broader academic and research community.

We sincerely thank all those who contribute in some way, the many different funding agencies, our research staff and collaborators, our non-research staff who support our research in so many ways, our dedicated Human Research and Ethics Committee members, and most importantly, the patients who contribute to our research effort through participation in clinical trials.

We hope you enjoy reading about our research and the impact it is having on the lives of women and newborns.



**Dr Sue Matthews**

Chief Executive, the Women's



**Professor Peter Rogers**

Director of Research



## Board Research Committee



**Professor David  
Coplov AO**

Board Director and  
Committee Chair



**Ms Sue Zablud**

Board Director (retired  
in November 2017)



**Dr Nicolas Radford**

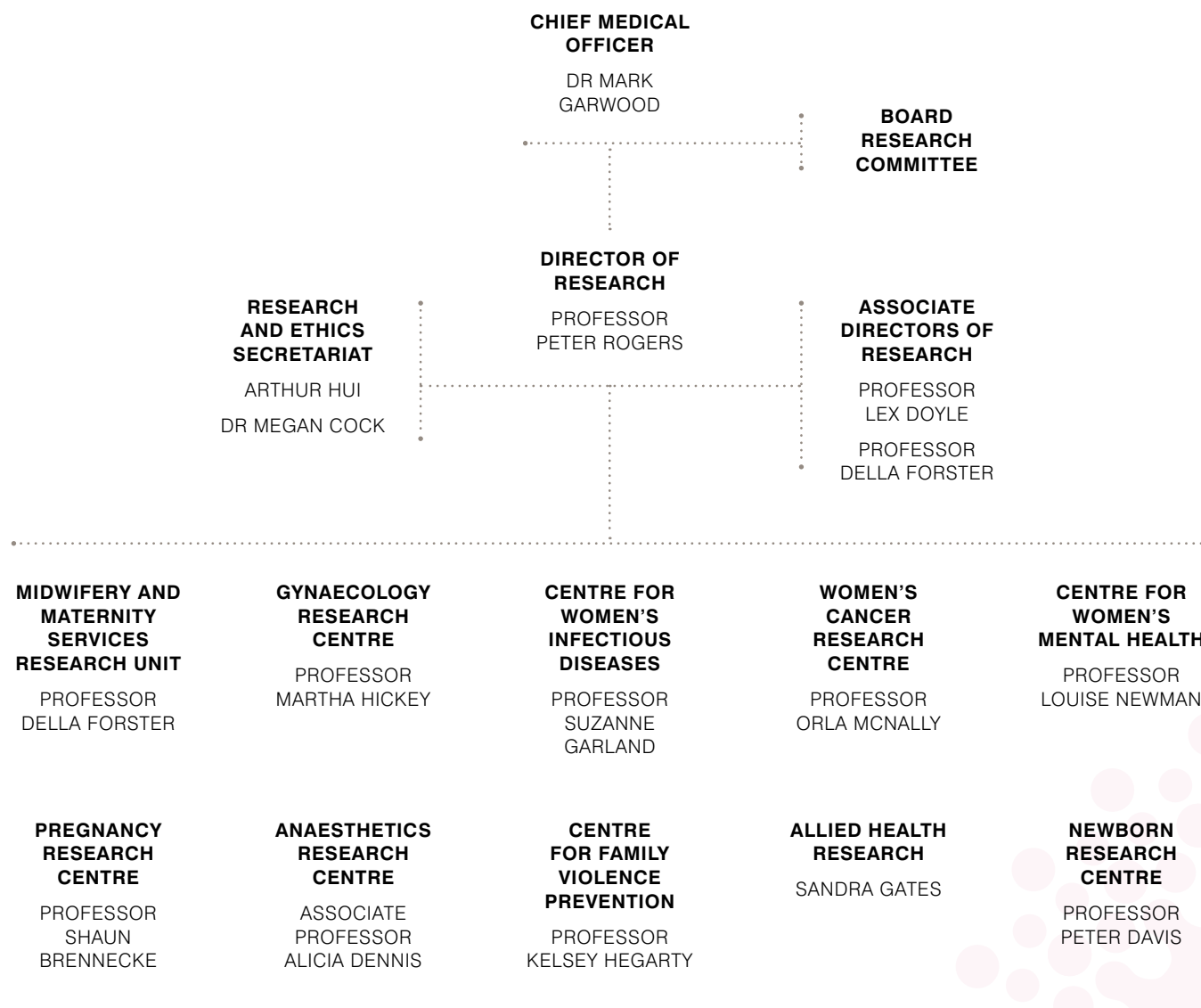
Board Director



**Professor Lisa  
McKenna**

Committee Member

## Organisational chart



# 2017 HIGHLIGHTS

## January

- A world-first study at the Women's, assessing the safety of skin-to-skin care for very preterm babies on breathing support, confirms the practice is safe and should be encouraged. The Women's immediately adopts this new practice encouraging skin-to-skin care in preterm babies as young as 29 weeks.

## February

- The Women's hosts 160 young students at our hospital to celebrate International Day for Women and Girls in Science, where they hear from four of our female researchers and two PhD students about their role in delivering world-leading advances in medical research and clinical care.
- Researchers at the Centre for Women's Mental Health launch the *Safe Mothers, Safe Babies* program, Australia's first trial of a psychological support program for women and infants at risk of family violence.

## April

- The Women's and Murdoch Children's Research Institute's longitudinal research, *La Prem* study, finds moderate-to-late premature babies face much higher rates of developmental and behavioural delays than previously thought.
- Researchers from the Women's Newborn Research Centre present the state of the art in neonatal ventilation and resuscitation in an invited series for *The Lancet*.

## May

- The Women's hosts a public seminar on World Pre-eclampsia Day to publicise the message that taking low-dose aspirin from early pregnancy reduces the

risk of developing pre-eclampsia later in pregnancy.

- The Women's launches its Miracle Mums appeal for Mother's Day to raise funds for the Women's ten research centres.
- The Women's Anaesthetics Research Centre presents at the Obstetric Anaesthetists Association in Brussels about a pioneering study looking at cardiovascular exercise testing in full-term pregnant women.

## June

- Ground-breaking research by the Women's, published in the *Australian and New Zealand Journal of Obstetrics and Gynaecology*, finds that over the past 10 years, women with a history of preterm labour and miscarriage referred to our specialist preterm labour clinic halved their risk of giving birth early.
- The Midwifery and Maternity Services Research Unit project 'Diabetes and Antenatal Milk Expression' (DAME) is published in *The Lancet*, and later wins the Victorian Public Healthcare Award for Clinical Research.



**PICTURED ABOVE:** DAME WINS THE VICTORIAN PUBLIC HEALTHCARE AWARD FOR CLINICAL RESEARCH.

## July

- Associate Professor Alicia Spittle, physiotherapist in the Women's Neonatal Allied Health Service and member of the Newborn Research team, receives the prestigious Gayle Arnold Award from the American Academy of Cerebral Palsy and Developmental Medicine in Montreal, Canada, for her presentation on an early preventative care program for very preterm infants.

## August

- In the largest study of its kind, researchers at the Women's and Victorian Cytology Service find up to 93 per cent of cervical cancers in Australia could be prevented by a new HPV vaccination.
- The Centre for Family Violence Prevention produces quality evidence of the benefit of a 'whole of hospital' model for identification and response to family violence, resulting in the roll out of a state-wide family violence program in Victoria's hospitals.

## September

- A ground-breaking study by the Women's Pregnancy Research Centre finds that a healthy diet alone can control gestational diabetes and does not put the mother at greater risk of having a big baby.



**PICTURED ABOVE:** PATIENT MARLOUKA VON EISENHART ROTHE ATTENDED THE WOMEN'S DIABETES CLINIC AFTER BEING DIAGNOSED WITH GESTATIONAL DIABETES.

## October

- The Women's Cancer Research Centre and Centre for Women's Infectious Diseases are named as part of the newly announced NHMRC Centre for Research Excellence for the Control of Cervical Cancer.

## November

- The Women's Cool Topics in Neonatology conference celebrates the career of one of the world's leading neonatal researchers, Professor Lex Doyle from the Women's Newborn Research Centre.
- The Women's hosts its 2017 Research Week showcasing the diverse range of clinical and translational research undertaken at the Women's by our own international experts, early career researchers, and research students.
- The Centre for Women's Infectious Diseases documents the rapid increase in antibiotic resistance in a common sexually-transmitted bacterial infection, *Mycoplasma genitalium*, and partners with biotechnology company SpeedX, to bring a new diagnostic test to market through a Government Innovation Grant.

## December

- As Federal Health Minister Greg Hunt apologises to Australian women for the lack of action on dealing with endometriosis, the Women's contributes as a key member of an advisory group that contributes to the development of a national action plan to improve the treatment, understanding and awareness of endometriosis, a disease that affects more than 600,000 Australian women.

# NEWBORN RESEARCH CENTRE

The Women's Newborn Research Centre conducts research into the care given to babies immediately after birth, throughout their time in hospital and during their first years at home. The centre is also working towards a better understanding of the long-term outcomes for tiny babies beyond the nursery, including into adulthood.

Research in the delivery room is a difficult task due to the often stressful environment. Nevertheless, the centre has demonstrated that it is possible to do high-quality studies and discover new ways of monitoring and treating newborn babies.

The motto of the Women's Newborn Research Centre is "Making the babies better". To achieve this, the team at the centre is working hard to give all babies, irrespective of their size and maturity at birth, the best chance of growing into healthy adults.



**Professor Peter Davis**

Director



**Dr Jennifer Dawson**

Deputy Director

## Research Summary

70

PUBLICATIONS

20

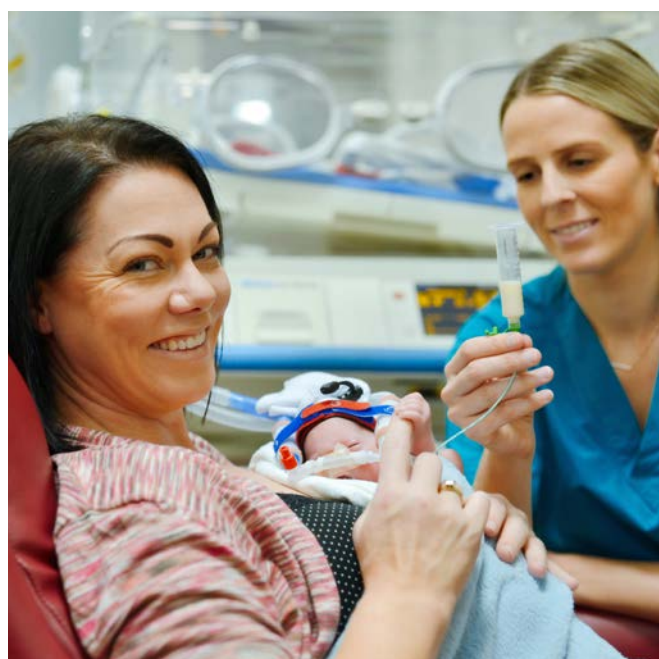
CLINICAL TRIALS

\$5,300,000

GRANT FUNDING HELD

\$1,700,000

GRANT FUNDING SPENT  
AT THE WOMEN'S





## Assessing potential developmental problems in moderate-to-late premature babies

**Lead researcher:** Associate Professor Jeanie Cheong

Moderate-to-late premature babies face much higher rates of developmental and behavioural delays than previously thought.

The La Prem study, led by Associate Professor Jeanie Chong and Published in *JAMA Pediatrics*, is the first time researchers have investigated the long-term health and development of premature babies born between 32 and 36 weeks.

As part of the study, the babies were assessed while at the Women's and followed up at two years of age. The study found these babies were:

- three times more likely to have delays in their language development and motor skills
- twice as likely to have delays in cognitive development
- more likely to have difficulty coping in different social settings

Associate Professor Jeanie Cheong, said the findings are important as traditionally, it had been thought that moderate-to-late premature babies did not experience significant long-term problems.

"While not all moderate-to-late preterm babies experience problems, with 21,000 children born between 32 and 36 weeks in Australia each year, even a small percentage of affected children will have significant implications," Associate Professor Cheong said.

"This research can assist parents in understanding why their child may be facing some additional challenges. But it is key that we undertake further research to understand whether these delays persist into school age and what early assistance can be provided."

First time mother Sophie Logie gave birth to baby Elliot at the Women's at 32 weeks gestation.

"This research doesn't mean that all premature babies will have delays. But if Elliot does, it means that we can get interventions early. It is a good thing in my mind to know potentially what lies ahead," said Sophie.

## Skin-to-skin care with parents is safe for tiniest newborns

**Lead researcher:** Dr Laila Lorenz

A world-first study assessing the safety of skin-to-skin care for very preterm babies on breathing support, has proved the practice is safe and should be encouraged.

Skin-to-skin care refers to the baby being placed on their mother or father's bare chest wearing only a nappy.

The study, led by paediatrician Dr Laila Lorenz, looked at the newborn's brain oxygen levels, and other vital signs such as heart rate and temperature, to determine whether babies were stable enough when removed from their incubator and placed on their parent's chest.

Dr Lorenz said previous research had shown this practice has great benefits for infant-parent bonding and breastfeeding in term babies, however it was important to prove it was safe for very premature babies on breathing support.

Dr Lorenz said the study, published in the *Archives of Disease and Childhood*, found brain oxygen levels in the baby remained unchanged, which means we now have solid evidence to confidently support the practice with very preterm babies on respiratory support.

"These results should reassure all centres caring for preterm babies that skin-to-skin care is safe and should be encouraged," said Dr Lorenz.

Mother Jessica Holland had an emergency caesarean at 29 weeks after experiencing potentially life-threatening pre-eclampsia. "I didn't know if it was good to take him out of his crib or whether it was going to harm him," she said. "This new research is reassuring."

"That first hold, I couldn't wipe the smile off my face. I think I laid here for hours. It was lovely."

# GYNAECOLOGY RESEARCH CENTRE

The Women's Gynaecology Research Centre brings together clinical, psychosocial and laboratory expertise to investigate common conditions affecting women of all ages.

The centre's research has directly improved patient care through prevention, diagnosis and management of a wide range of conditions affecting women's health.



**Professor Martha Hickey**

Director



**Professor Peter Rogers**

Deputy Director



## Research Summary

29

PUBLICATIONS

4

CLINICAL TRIALS

\$3,000,000

GRANT FUNDING HELD

\$1,100,000

GRANT FUNDING SPENT  
AT THE WOMEN'S

## Women's health after surgical menopause

**Lead researcher:** Professor Martha Hickey

Around one in every 400 women carry a gene mutation, which puts them at high risk of ovarian cancer, and around 20 per cent of ovarian cancers in women under age 50 are due to known gene mutations. Ovarian cancer carries a poor prognosis but with greater awareness and availability of gene testing, more women at high-risk of developing the disease are choosing to reduce this risk by surgical removal of their ovaries and fallopian tubes (risk-reducing bilateral salpingo-oophorectomy – or RRBSO).

"Whilst this procedure dramatically reduces ovarian cancer risk, removing ovaries prior to natural menopause may have adverse short and long-term health consequences," Professor Martha Hickey said.

"Currently, there is insufficient information about these health consequences to provide evidence-based advice and clinical care for women following RRBSO."

Women's Health After Surgical Menopause (WHAM) is a prospective, multi-centred, age-matched trial of RRBSO in premenopausal women run at the Women's by Professor Hickey.

WHAM is the largest prospective study of oophorectomy (removal of one or both ovaries) in premenopausal women, and can now report prospective data from 75 high-risk women who have undergone RRBSO and 55 controls. Data from the study shows that whilst hormone therapy reduces the menopausal and sexual consequence of RRBSO, it does not completely resolve these symptoms.

Women continue to have poorer sleep and menopause-related quality of life after RRBSO, despite the use of hormone therapy.

Our data also demonstrates a dramatic loss of bone density after RRBSO, which could not be fully reversed by hormone therapy.

"These data will inform counselling and management of high-risk women considering RRBSO to optimise their long-term physical and emotional health," Professor Hickey said.

## Understanding the genetic drivers of endometriosis risk

**Lead researchers:** Professor Peter Rogers, Dr Sarah Holdsworth-Carson, Dr Jacqueline Donoghue

Up to one in 10 women suffer from endometriosis; a gynaecological condition that can cause terrible menstrual pain, chronic pelvic pain and can affect fertility.

"There is an inherited component to endometriosis and our research uses genetic information collected from patients undergoing surgery at the Women's to investigate the biological mechanisms that increase a woman's risk of developing the disease," Professor Peter Rogers said.

In collaboration with colleagues at the University of Queensland, and published in *Human Reproduction*, researchers identified genetic differences that alter expression of selected genes in the endometrium (lining of the uterus).

"This work starts to explain the genetic factors that drive individual variability in uterine function. We are particularly interested in understanding how this genetic variability makes some women more susceptible to diseases like endometriosis, and have already identified candidate genes from this ongoing work," Professor Rogers said. "Ultimately, by understanding the drivers of this disease we may be able to develop treatments."

For Jessica Panetta, 32, who is involved in the research trial, endometriosis has had a significant impact on her life. "I have had eight surgeries to remove endometriosis and it hardly provides any relief. It is pretty much everywhere," she said.

Jessica tries her best to remain optimistic and hopes research will lead to a treatment that is effective in treating her endometriosis.

# CENTRE FOR WOMEN'S INFECTIOUS DISEASES

The Centre for Women's Infectious Diseases conducts clinical research, cutting-edge molecular diagnostics and geno-surveillance in the fields of neonatal and infectious diseases research, including reproductive and sexual health.

Key research areas include cervical cancer, sexual health and mother-to-baby infections, with emphasis on providing evidence for changes that may translate into clinical practice to support improved patient health.



**Professor Suzanne M. Garland**

Director



**Dr Gerald Murray**

Senior Scientist

## Research Summary

59

PUBLICATIONS

0

CLINICAL TRIALS

\$3,800,000

GRANT FUNDING HELD

\$1,200,000

GRANT FUNDING SPENT  
AT THE WOMEN'S



## New vaccine shown to slash cervical cancer rates

**Lead researcher:** Professor Suzanne Garland

The Women's took part in a large, global trial of a new human papillomavirus (HPV) vaccine, which has found it could cut the rate of cervical cancer by a further 23 per cent compared to the existing Gardasil vaccine.

Published in *The Lancet*, the global Phase 3 clinical trial involved more than 14,000 women in 18 countries, aged 16 to 26.

Researchers looked at the rate of pre-cancerous cell changes in the women six years later and found the new Gardasil 9 vaccine was far more effective, protecting an extra five of the most common strains of HPV.

Professor Suzanne Garland, Director of the Women's Centre for Infectious Diseases and lead Australian author, said the research showed the new Gardasil 9 vaccine was far more effective, preventing HPV strains that cause 93 per cent of cervical cancers, compared to the 70 per cent protection provided by Gardasil 4.

"The eradication of cervical cancer is now firmly within our sights," Professor Garland said. "It protects against 93 per cent of HPV that causes not only cervical, but vulvar, anal and vaginal cancers."

The research resulted in the Federal Health Minister expanding the Australian HPV vaccination program in Australian schools to ensure all 12 and 13 year olds received the new Gardasil 9 vaccine from 2018.

Cervical cancer is the second most common cancer in women living in less developed regions with an estimated 445,000 new cases in 2012 and approximately 270,000 deaths per year.



## Early signs of heart disease risk found in young women

**Lead researcher:** Dr Asvini Subasinghe

Victorian women as young as 16 are recording high blood pressure – an alarming early sign of heart disease and stroke risk.

New research, led by Dr Asvini Subasinghe and published in *The Journal of Human Hypertension*, involved 639 women aged 16-25. It showed that almost 30 per cent of those examined had elevated blood pressure so high, they may potentially be at risk of heart disease in the future. Around 30 per cent of participants were also either overweight or obese.

Dr Subasinghe, an Epidemiologist at the Centre for Women's Infectious Diseases, said the alarming results showed a positive association between inflammation and elevated blood pressure, potentially due to the levels of obesity in these young women.

The association was confirmed despite the absence of heart disease in the young women, meaning any lifestyle changes could prevent heart disease risk in the future.

"If elevated blood pressure remains undetected, it can drastically increase a person's risk of hypertension and heart disease. But if we can intervene early, at a young age, we can help reduce this risk in adulthood and hopefully prevent a raft of other cardiovascular diseases and stroke," said Dr Subasinghe.

Researchers also found that high physical activity was strongly associated with a reduced risk of elevated blood pressure.

This research forms part of Australia's two largest and most comprehensive ongoing studies to investigate young women's health, the Young Female Health Initiative (YFHI) and Safe-D (which explores ways to improve vitamin D status and related health in young women).

The YFHI study is a joint collaboration with Professor Suzanne Garland, from the Women's and University of Melbourne, and Professor John Wark, from the University of Melbourne and Melbourne Health.

# WOMEN'S CANCER RESEARCH CENTRE

Behind the work in the Women's Cancer Research Centre is the philosophy that every woman should be given the opportunity to take part in research at every stage of her care journey.

As a multidisciplinary team, research at the centre considers the different gynaecological cancers, uterine, ovarian/fallopian tube, cervical and vulval.

Researchers and clinicians also focus on the precancerous conditions, which may lead to these cancers, as well as the genetic variations, which put women at increased risk of gynaecological cancers. With this in mind, women are recruited where possible to clinical trials at the Women's, and collaboratively through the Victorian Comprehensive Cancer Centre (VCCC) Parkville Clinical Trials Unit, exploring all aspects of the clinical journey.



**Associate Professor Orla McNally**

Director Gynaecology Tumour Stream,  
Victorian Comprehensive Cancer Centre  
(VCCC)

## Research Summary

21

PUBLICATIONS

22

CLINICAL TRIALS

\$600,000

GRANT FUNDING HELD

\$450,000

GRANT FUNDING SPENT  
AT THE WOMEN'S

## DNA test for HPV virus more effective than Pap smear

**Study co-author:** Mr David Wrede

The Women's has participated in landmark research that has measured the effectiveness of DNA screening for the human papillomavirus (HPV), finding the method to be more effective in detecting pre-cancerous cells than the Pap-smear method.

The study was undertaken ahead of new DNA screening, which was introduced into Australia's national cervical cancer screening program in December 2017.

Researchers analysed samples from almost 5,000 Victorian women aged 25-64 who had either been screened through the trial with five-yearly HPV screening, or the two yearly cytology screening.

They found a tenfold increase in detection rate for high-grade precancerous cells in HPV-screened women compared to their counterparts (about 1.0 per cent compared to 0.1 per cent for cytology-screened women).

Mr David Wrede, a co-author of the study published in the journal *PLOS Medicine*, said the results were ground-breaking.

"Despite there having been studies showing the effectiveness of HPV testing for screening cervical cancer performed elsewhere, this trial is ground-breaking in that it demonstrates the effectiveness of the test when used in a mixed vaccinated and unvaccinated population," Mr Wrede said.

Australia was the first country to adopt a national, publicly funded HPV vaccination program. In December 2017, the national cervical screening program moved from two-yearly Pap tests to five-yearly HPV screening from age 25.

## New biomarker test predicts ovarian cancer

**Lead researcher:** Dr Nirmala Kampan

Researchers have identified a new biomarker test, which can predict aggressive ovarian cancers.

The test may also assist in prioritising patients with suspected ovarian cancer for referral for more expensive investigations to help diagnose the condition, such as a CT scan or MRI.

High-grade serous ovarian cancer (HGSOC) is



often diagnosed in the late stages. Patients face a poor survival prognosis and a high likelihood of relapse as the cancer becomes resistant to chemotherapy treatment.

There is currently no early diagnostic test for ovarian cancer and the disease is usually diagnosed after it has spread. Clinicians currently use the CA125 blood test (a protein in the blood), ultrasound, MRI or CT imaging to diagnose ovarian cancer.

HGSOC is associated with a mixture of immunosuppressive and inflammatory immune responses that correlate with the progression of the disease; however, it is not well understood.

This study investigated whether these immunosuppressive and inflammatory biomarkers could be used in diagnostic testing to help improve the ability of clinicians to predict ovarian malignancy. It involved the collection of blood prior to treatment to identify biomarkers associated with ovarian cancer risk, in 80 patients with suspected ovarian cancer.

Researchers found up to 20 fold higher levels of a protein involved in the body's inflammatory response in the blood of HGSOC patients compared to those with benign and normal ovaries.

"We also found this inflammatory protein was a good predictor in distinguishing between ovarian cancer and endometrioma," Dr Nirmala Kampan said.

The study provides evidence, for the first time, that the inclusion of an easy to detect inflammatory biomarker in blood would improve the prediction of ovarian cancer.

# THE CENTRE FOR WOMEN’S MENTAL HEALTH

The Centre for Women’s Mental Health was established in 2007 to provide clinical services, undertake research and provide education and training across the hospital. The centre’s research focuses on the psychological aspects of physical health issues, pregnancy and early parenting.

Specific areas of interest include support for women with a cancer diagnosis, promotion of healthy ageing and psychological interventions for women impacted by trauma. Programs in early parenting and postnatal mood disorder and anxiety are also being evaluated. The centre offers support where social factors such as family violence, substance misuse and refugee status impact wellbeing and psychological health.



**Professor Louise Newman**  
Director

**Research Summary**

22

PUBLICATIONS

1

CLINICAL TRIALS

\$800,000

GRANT FUNDING HELD

\$800,000

GRANT FUNDING SPENT  
AT THE WOMEN’S





## Mental health support for mothers and infants experiencing or at risk of family violence

**Centre Director:** Professor Louise Newman

Around 30 per cent of family violence begins during pregnancy and it has serious consequences for the woman and her baby, including on parenting and infant development.

The Centre for Women's Mental Health has introduced a new evidence-based program that aims to reduce this disturbing statistic by providing mental health support for at-risk women and infants.

"The 'Safe Mothers, Safe Babies' program not only supports women in protecting their own mental health and the health of their baby, it offers continuity of care pathways to tailor-made mental health support," said Professor Louise Newman, Director of the Centre.

"Through the Centre for Women's Mental Health we are uniquely placed to provide expert mental healthcare to women experiencing family violence with young infants. There is currently no standard approach to this and no designated early intervention service," said Professor Newman.

Safe Mothers, Safe Babies is being introduced in two stages. Stage 1 was undertaken as a trial in the antenatal setting. It looked at the best way to ask pregnant women if they are at risk of family violence, and

to identify concerns about parenting. Stage 2 will see the implementation of an intervention service to support these women. The intervention will be a 10-week group program to support women and babies, which begins one month after the baby is born.

"There is clear evidence that exposure to domestic violence is associated with stress and linked to PTSD and depression. This program breaks down the barriers these mothers experience; it provides mental health support and empowers these women with skills in parenting and relationship decision making," Professor Newman said.

The project will also help to build the evidence base for the care of women and babies experiencing or at risk of family violence.

Emma Gierschick first experienced violence from her partner during pregnancy. She sought counselling support and the assistance of midwives while pregnant, but said many women in her situation are too frightened to seek help.

"Screening for family violence is very important and the hospital can provide the necessary opportunity to access counselling support without raising the concern of a violent partner," Ms Gierschick said.

"I would have loved to have had access to a support group, to know that what I was experiencing wasn't unique and to receive advice on caring for my baby."

# PREGNANCY RESEARCH CENTRE

The focus of the Women's Pregnancy Research Centre is to better understand the causes of pregnancy disorders that compromise the health of mothers and their babies. Common pregnancy complications include miscarriage, pre-eclampsia, fetal growth restriction, gestational diabetes and preterm labour.

The centre's work on pregnancy and its disorders ranges from basic biomedical laboratory research through to clinical studies, treatment trials and public health initiatives, all designed to support evidence based clinical practice.

The mission of the centre is to apply contemporary research techniques to the investigation of clinically important problems in maternal and fetal medicine and related fields.



**Professor Shaun Brennecke**  
Director



**Dr Bill Kalionis**  
Deputy Head of Research

## Research Summary

24

PUBLICATIONS

4

CLINICAL TRIALS

\$780,000

GRANT FUNDING HELD

\$570,000

GRANT FUNDING SPENT  
AT THE WOMEN'S

## The Women's halves the risk of preterm labour amongst high-risk women

**Lead researcher:** Dr Penny Sheehan

New research has found that interventions during early pregnancy at the Women's Preterm Labour Clinic have significantly delayed preterm labours.

The research, published in *The Australian and New Zealand Journal of Obstetrics and Gynaecology*, showed that over the past decade, the clinic had halved the rate of preterm deliveries among its patients.

Dr Penny Sheehan is the Senior Clinical Research Fellow in the Pregnancy Research Centre and Head of the Preterm Labour Clinic.

"We are able to offer these women a range of specific treatment options that are individualised to each patient. We work incredibly hard to establish just what might happen to make each woman deliver early and try to intervene," said Dr Sheehan.

Dr Sheehan attributes part of the clinic's success to recently developed treatments (such as antibiotics and vaginal progesterone) which can help prevent early labour in certain cases.

Patient Louisa Chan had had four failed pregnancies and several rounds of IVF. In her fifth pregnancy, she was referred to the Preterm Labour Clinic and gave birth to daughter, Samantha.

"I just felt so positive because I was in safe hands. I told myself, I will leave my physical pregnancy to Dr Sheehan and my main task is to keep myself positive and to rest," Louisa said.

Dr Sheehan said Louisa's case was one of many that showed just how important a specialist preterm labour clinic that provided individualised care was in helping women carry their babies to a viable age.



## Doctors advise pregnant women at risk of preeclampsia to take low dose aspirin

**Lead researcher:** Professor Shaun Brennecke

Preeclampsia affects one in 20 pregnancies. It can be a very serious health risk for both mother and baby, and the only effective treatment once a woman develops the condition is to deliver the baby. This often means that babies are delivered pre-term, which can lead to significant health problems for the baby.

Professor Shaun Brennecke is the Director of the Women's Pregnancy Research Centre and lead researcher.

"Our laboratory research has recently found that low-dose aspirin changes the way placental cells function, correcting the abnormal production of proteins from the placenta that leads to the development of pre-eclampsia," said Professor Brennecke.

"Clinically, we know low-dose aspirin is safe for most pregnant women and that research studies to date suggest it has a benefit when commenced early in pregnancy in reducing the risk of developing pre-eclampsia."

To highlight these findings, the Pregnancy Research Centre hosted a public seminar, in May to coincide with World Pre-eclampsia Day, involving presentations by leading international and Australian pre-eclampsia researchers.

This piqued international interest, and was shared by media all over the world, further increasing the impact of this ground-breaking research, and helping more mothers to deliver healthy babies.

Emma Wells was 29 weeks pregnant when her first baby, Max, died before birth because of pre-eclampsia.

Having experienced pre-eclampsia, Emma was at higher risk of having the condition again in future pregnancies. But for her next two pregnancies, she was prescribed low-dose aspirin in the first trimester and happily delivered two healthy babies.

"I was desperately worried I might lose another baby to pre-eclampsia. Thanks to the Women's, I was confident going into my next pregnancy that I was going to deliver a healthy baby," said Emma.

# CENTRE FOR FAMILY VIOLENCE PREVENTION

Launched in September 2016, the Centre for Family Violence Prevention focuses on improving the safety, health and wellbeing of women and their families experiencing family violence. The centre brings together a team of interdisciplinary researchers including clinicians, social scientists, statisticians, early career researchers and students.

It aims to become a hub for the development of innovative interventions including identification tools, early intervention and therapeutic responses to assist women experiencing family violence. Novel technological responses to promote access to help for women, children and men are also being developed.



**Professor Kelsey Hegarty**  
Director

## Research Summary

10

PUBLICATIONS

0

CLINICAL TRIALS

\$3,400,000

GRANT FUNDING HELD

\$65,000

GRANT FUNDING SPENT  
AT THE WOMEN'S



## Women affected by family violence input into new model of care

**Lead researchers:** Professor Kelsey Hegarty and Dr Laura Tarzia

According to the Director of the Centre for Family Violence Prevention, Professor Kelsey Hegarty, there is a strong complex relationship between women's experiences of sexual and family violence and poor mental health. It requires collaboration between multiple sectors to provide effective care and while services often see the same women, there is commonly a lack of communication and cross-referrals.

The 'Women's input into trauma-informed systems model of care in health settings' (WITH) study aimed to explore more effective ways to deliver 'trauma-and-violence-informed-care' across a whole organisation, so that women experiencing sexual violence can be better supported.

Over two-and-a-half years, the centre conducted qualitative interviews with women, exploring their help-seeking experiences after sexual violence and mental health issues. It developed digital stories with survivors, and undertook extensive consultation with staff working at the Women's, a separate clinical mental health service, and three sexual assault centres.

Using the Women's as a case study, a 'health system implementation model' was developed to guide the implementation of trauma-and-violence-informed care in practice across hospitals.

A public exhibition of photos and practitioner and women's stories was held at the Women's in 2017, highlighting some of the challenges and benefits of doing this sensitive trauma work.

"[The interviewer] was a good listener. She was really respectful that way," said one of the study participants.

"She would just sit there and just listen. She was the first worker I've had who has done that and she wouldn't judge me."



## Tailoring responses to family violence for safer families

**Lead researcher:** Professor Kelsey Hegarty and Dr Laura Tarzia

In late 2016, the Women's Centre for Family Violence Prevention was announced as the lead organisation of the Safer Families Centre of Research Excellence (CRE) for the next five years.

Funded by the National Health and Medical Research Council, the Safer Families CRE is an international collaboration comprising researchers, families, communities, policy-makers, practitioners, community organisations and health, family and women's services.

The CRE generates evidence-based knowledge to assist health services to identify violence early and tailor effective responses to improve the safety, health and well-being of families.

The current focus of the Safer Families CRE is:

- exploring the dynamics of abuse and resilience and the effects on health
- testing early identification of abuse and first line responses by clinicians, including the use of technological tools
- developing and testing child, parent and carer programs exploring early intervention for children, young people and their parents, including in Aboriginal and Torres Strait Islander communities

The Safer Families CRE is also developing the capacity of early to mid-career researchers in this field.

# MIDWIFERY AND MATERNITY SERVICES RESEARCH UNIT

The Midwifery and Maternity Services Research Unit is dedicated to ensuring the care the Women's provides to patients in pregnancy and childbirth is evidence-based and of the highest possible quality.

The unit actively seeks the views of patients and staff on aspects of their experience to develop new approaches to care provision around areas such as models of care, how to improve breastfeeding outcomes, and how these can be tested in randomised controlled trials.

The unit also focuses on building research capacity among midwives, nurses and allied health clinicians.



**Professor Della Forster**

Director

## Research Summary

8

PUBLICATIONS

3

CLINICAL TRIALS

\$750,000

GRANT FUNDING HELD

\$500,000

GRANT FUNDING SPENT  
AT THE WOMEN'S

## Study finds breast milk expressing in pregnancy safe

**Lead researcher:** Professor Della Forster

A world-first study published in *The Lancet*, has found that women with diabetes in a low-risk pregnancy can safely express breast milk in late pregnancy, with the study dispelling concerns that the practice could cause harm to babies.

Two previous small studies into antenatal breast milk expressing (for women with diabetes in pregnancy) suggested it could increase admissions to the neonatal intensive or special care unit and the chance of early birth.

The findings in this much larger, and more robust study, have paved the way for clinicians to recommend that women who have diabetes in pregnancy and are at low risk of other pregnancy-related complications, express and store breast milk – if that is something they would like to do.

The milk can then be used to give to the newborn if the mother develops hypoglycaemia (low blood sugar levels) – a condition that can cause serious health problems in newborns.

Professor Della Forster said the ground-breaking research filled a gap in knowledge and provided much needed guidance for pregnant women.

“For the first time, we have evidence that shows in this low-risk population, antenatal expressing is safe and does not cause harm to babies,” she said.

More than 40 per cent of babies in the study developed low blood sugar levels soon after birth,

and many were able to receive the milk their mother expressed before birth, a positive outcome given that breast milk stabilises babies' blood sugar levels more effectively than infant formula.

Marie Villani, 30, had diabetes in pregnancy, and expressed milk late in her pregnancy. She was pleased to have been reassured that expressed milk was safe for her baby.

“This research made me feel confident that I was doing something that was going to be good for my baby and hopefully give her the best start,” she said.

## Mothers volunteer to support other mothers to breastfeed

**Lead researcher:** Professor Della Forster

In Australia, breastfeeding rates have increased but infants in low-income families are less likely to commence breastfeeding and likely to have a shorter duration when they do.

‘Ringing Up About Breastfeeding’ was a randomised controlled trial that explored whether telephone peer support for women who are breastfeeding helped boost breastfeeding rates.

The study tested a proactive telephone peer support program delivered during the postnatal period to see if it increased the proportion of infants breastfed at six months.

Researchers recruited 1152 women who were having their first baby, and who planned to breastfeed. These women from three public hospitals in Melbourne were randomised to either a ‘mother-to-mother (peer) support’ group or to ‘usual care’. Women allocated to peer support were assigned a peer volunteer, who called twice within the first week of giving birth, then weekly until twelve weeks, with ongoing contact up to six months.

Support was provided by 233 volunteers, to between one and 10 women each, making on average six calls to each woman.

“We believe that this type of proactive peer support is a sustainable model,” Professor Forster said.

At six months, 72 per cent of women allocated to peer support responded to a survey about their experiences. Women and volunteers found peer support to be very helpful and were satisfied with the experience.

The findings of the study are yet to be published.



# ANAESTHETICS RESEARCH CENTRE

The goal of the Anaesthetics Research Centre is to achieve optimal maternal health before, during and after birth, with the overall goal of reducing maternal suffering and death.

The centre’s work addresses the problems of high blood pressure in pregnant women, obstetric critical illness, and improving anaesthesia and analgesia for pregnant women.

Research at the centre aims to increase understanding of heart function and structure in pregnant women and the cause of pre-eclampsia. The centre’s recently published ‘unified theory of pre-eclampsia’ challenges a number of assumptions about the causes of pre-eclampsia and is a major focus of the centre’s work.

An internationally recognised clinical research program is being established within the centre, involving obstetric haemodynamics and cardiovascular medicine, heart ultrasound (transthoracic echocardiography) in pregnant women, and cardiac magnetic resonance.

## Research Summary

6

PUBLICATIONS

6

CLINICAL TRIALS

\$340,000

GRANT FUNDING HELD

\$70,000

GRANT FUNDING SPENT  
AT THE WOMEN’S



**Associate Professor Alicia Dennis**  
Director



## Overweight or obese pregnancies pose risks for mum and baby

**Lead researcher:** Associate Professor Alicia Dennis

Maternal obesity in Australia is a significant health issue associated with poorer outcomes for women and their babies.

The Women's Anaesthetic Research Centre is the lead Australian centre in the first large, prospective, multicentre study, which is investigating the associations between maternal body mass index and clinical, time and economic outcomes in women undergoing caesarean section.

The study of 1457 pregnant women undergoing caesarean section, published in *BMJ Open*, found that 55 per cent of the women were overweight, obese or super-obese.

An increased body mass index at delivery was associated with an increased risk of maternal intensive care unit admission, an increased total time in the operating theatre, increased surgical time and an increased anaesthetic time for caesarean section.

One in twenty women were super-obese, and had 27 per cent longer total theatre time, 20 per cent longer surgical time and 40 per cent longer anaesthetic time when compared to women with normal body mass indices.

The researchers also reported increased total hospital admission costs and theatre costs for women with increased maternal body mass indices.

"These findings have important implications for understanding clinical care of pregnant women, especially those women who are super-obese. Clinicians and health administrators should consider these clinical risks, time implications and financial costs when managing pregnant women," said lead researcher and head of the centre, Associate Professor Alicia Dennis.

## High flow humidified nasal oxygenation could improve safety for pregnant women during caesareans

**Lead investigator:** Dr Patrick Tan

Difficulty intubating the trachea or failure to oxygenate a pregnant woman during general anaesthesia is one of the most serious immediate complications of having a caesarean section.



The inability to manage the airway of obstetric patients can lead to reduced oxygen supply to the patient or hypoxia. This can result in serious health complications for the mother and baby.

The Women's Anaesthetic Fellow, Dr Patrick Tan, believes effective pre-oxygenation practice (the administration of oxygen to a patient prior to induction of anaesthesia) is an important safety measure.

Recently, high flow humidified nasal oxygen has taken favour in non-obstetric anaesthetic clinical practice. This technique can be used for pre-oxygenation and has the added benefit of extending the safe period between induction of anaesthesia and intubation, when a patient becomes apnoeic (suspension of breathing).

"We examined this new technique of pre-oxygenation using high flow humidified nasal oxygen in our 'HINOP' study. This study of 73 full-term pregnant women is the first of its kind examining the safety and efficacy of the pre-oxygenation strategy," said Dr Tan.

"This may help improve safety for pregnant women who require a general anaesthetic for caesarean section."

# ALLIED HEALTH RESEARCH

Allied health and clinical support services research makes up one of the newer research centres at the Women’s and is continuing to develop. Research in this area involves work relating to single allied health disciplines as well as collaboration with other Women’s research centres and services.

There are four major departments that contribute to allied health research. They are pharmacy, nutrition and dietetics, social work and physiotherapy. Each of these areas is concerned with exploring various clinical conditions and participates in clinical research to determine evidence based interventions and treatment for patients.

The Women’s pharmacy department and the Pauline Gandel Women’s Imaging Centre also play a pivotal role in research conducted by other services.



**Sandra Gates**  
Director

## Research Summary

17

PUBLICATIONS

0

CLINICAL TRIALS

18

CLINICAL TRIALS INVOLVED IN

\$0

GRANT FUNDING HELD

\$0

GRANT FUNDING SPENT AT THE WOMEN’S



## Investigating complementary and herbal supplement use in pregnancy

**Lead researcher:** Christine Gilmartin

The use of herbal, complementary or alternative medicines has been increasing in pregnant women worldwide, despite limited safety data in pregnancy. Due to the combined potential for harm to the fetus and lack of large clinical studies, healthcare professionals providing care to pregnant women must ensure that their advice relating to supplement use is based on the most robust evidence available.

Recently, the centre conducted a study with the aim of exploring the recommendations and information sources healthcare professionals use to determine the safety of non-prescribed supplements during pregnancy.

An electronic survey was distributed to doctors, midwives, pharmacists, dieticians, lactation consultants and physiotherapists caring for pregnant patients at the Women's.

Responses were received from 54 healthcare professionals and revealed a range of complementary and alternative supplements of interest, ranging from traditional (eg. raspberry leaf) to the non-traditional (eg. colloidal silver), with varied reported indications for use. Participants were keen for more safety data and information on complementary and alternative supplements to enable them to provide informed advice to their patients on the risks of taking them during pregnancy.

"While most maternity healthcare professionals expressed concern about the safety of patients' self-initiated complementary or herbal supplements in pregnancy, their recommendations and the quality of information sources varied," Research Pharmacist Christine Gilmartin said.

"It is clear that further education and access to unbiased safety information, including drug-interaction potential, is required to empower healthcare professionals to provide informed recommendations to pregnant patients."

## Attitudes of pregnant women regarding gestational weight monitoring

**Lead researcher:** Julia Zinga

The implications of excessive gestational weight gain for both mother and child are increasingly being recognised, including pre-eclampsia and gestational diabetes in the mother, and macrosomia in the baby (big baby), as well as increased risk of developing chronic disease later in life.

Research evidence shows that up to 75 per cent of Australian women experience excessive gestational weight gain (GWG) across all pre-pregnancy BMI categories. Furthermore, excessive GWG is associated with postpartum and inter-pregnancy weight retention, which has significant implications for long-term maternal health and wellbeing.

According to lead researcher and dietician, Julia Zinga, women need to be supported in a number of ways. "This research highlights the importance of weight monitoring during pregnancy, as well as provision of correct weight gain targets and encouragement of strategies to achieve them. However, the attitudes of pregnant women towards regular weight monitoring are generally poorly understood," she said.

The Women's initiated a cross-sectional observational study utilising a questionnaire, developed and validated by the allied health research team. Eligible participants in the study were English-speaking women with singleton pregnancies of varying gestational age, and of any pre-pregnancy BMI category, who attended the Women's antenatal clinics.

The primary objective of the yet to be completed study is to fill the knowledge gap about the attitudes of women towards regular weight monitoring during pregnancy. Data collection is complete and the results are currently being analysed.

"The results could assist maternity healthcare providers to have positive and constructive discussions about weight and weight gain during pregnancy, which has important benefits for mother and baby," Ms Zinga said.

# STUDENT COMPLETIONS

## DOCTOR OF PHILOSOPHY (PHD)

Buck M, PhD, La Trobe Uni. *Women's experiences of becoming a breastfeeding mother*. Supervisors: Amir L, McDonald K.

Callegari E, PhD, Uni Melb. *Vitamin D status and health in young women*. Supervisors: Wark J, Garland S, Reavley N.

Kampan N, PhD, Monash Uni. *Immunity and Ovarian Cancer*. Supervisors: Quinn M, McNally O, Plebanski M.

Kong F, PhD, Uni Melb. *Is the current treatment of genital chlamydia infection appropriate?* Supervisors: Hocking J, Tabrizi S.

Roberts C, PhD, Uni Melb. *High flow subnasal oxygen for respiratory distress*. Supervisors: Manley B, Davis P.

## DOCTOR OF MEDICAL SCIENCE

Kevat A, DMSc, Uni Melb. *The (NeoRate Project): Research on a digital stethoscope and smart device technology for the evaluation of neonatal chest sounds*. Supervisors: Kamlin O, Davis P.

## MASTERS OF PUBLIC HEALTH

Steele E, MPH, Uni Melb. *Exploring the unmet needs of women living with endometriosis*. Supervisors: Peate M, Girling J

Ven C, MPH, La Trobe Uni. *Use of formula in the postnatal ward for late preterm infants*. Supervisor: Amir L.

## MASTERS OF SCIENCE

Johnson J, MSc, Uni Melb. *The role of placenta-derived Mesenchymal Stem Cell exosomes in endothelial cell repair*. Supervisors: Kalionis B, Georgiou H, Brennecke S.

## BACHELOR (HONOURS)

Clarke E, BMedSci (Hons), Uni Notre Dame. *How useful is the early oral glucose tolerance test in women of high-risk of gestational diabetes?* Supervisors: Brennecke S, Cade T.

Clarke G, BSc (Hons), Uni Melb. *Managers views on the Workplace Support Program for family violence*. Supervisors: Hegarty K, McLindon E.

Kong K, BSc (Hons), Uni Melb. *The Effect of PAI-1 Inhibition in Decidual Mesenchymal Stem Cells from Term Human Placentae*. Supervisors: Kalionis B, Kokkinos M.

Leong J, BSc (Hons), Uni Melb. *Priorities and needs of women living with advanced cancer*. Supervisors: Marino J, Peate M.

Sandhu S, BSc (Hons), Uni Melb. *Exploring the needs and the development and pilot testing of a decision aid for women considering non-medical egg freezing*. Supervisors: Peate M, Hucker A, Lew R.

Wellington M, BSc (Hons), Uni Melb. *Health practitioner understandings and perceptions of reproductive coercion*. Supervisors: Tarzia L, Hegarty K, Marino J.

Kong K, BSc (Hons), Uni Melb. *The Effect of PAI-1 Inhibition in Decidual Mesenchymal Stem Cells from Term Human Placentae*. Supervisors: Kalionis B, Kokkinos M.

## MEDICAL DEGREE RESEARCH PROJECT

Baker J, MDRP, Uni Melb. *Awareness and knowledge of HPV and attitudes towards vaccination among young Australian men*. Supervisors: Machalek D, Garland S.

Block T, Medical Elective, Deakin Uni. *Perinatal pathology*. Supervisor: Brennecke S

Francis A, MDRP, Uni Melb. *The Six Minute Walk test in early pregnancy*. Supervisor: Dennis A.

Jones G, MDRP, Uni Melb. *Comparing the sFlt-1/PlGF Ratio with other Biomarkers as a Predictive Test for Preeclampsia: A Clinical Audit*. Supervisor: Brennecke S.

La Hood A, MDRP, Uni Melb. *The association between Type 1 diabetes, musculoskeletal health and body composition*. Supervisors: Wark J, Nankervis A, Garland S, Subasinghe A, Gorelik A.

Leong N, MDRP, Uni Melb. *Relationship between chronic back pain and mental health in young Australian women*. Supervisors: Wark J, Garland S, Subasinghe A, Gorelik A.

Park Y, MDRP, Uni Melb. *Relationship between hyponatremia and epilepsy in young Australian women*. Supervisors: Wark J, Garland S, Chiang C, Subasinghe A, Gorelik A.

Petruzzelli S, MDRP, Uni Melb. *A longitudinal study of blood pressure and associated dietary and lifestyle factors in 16-25 year old females*. Supervisors: Subasinghe A, Wark J, Garland S, Gorelik A.

## INTERNATIONAL MEDICAL STUDENTS

Flemmer S, MD Research Elective, Uni Regensburg, Germany. *Resuscitation and Stimulation*. Supervisors: Kamlin O, Davis P.

Gaertner V, MD Research Elective, Uni Regensburg, Germany. *Measuring the increase in exhaled carbon dioxide in spontaneous breathing infants at birth (The RISE in Exhaled CO2 Study)*. Supervisors: Kamlin O, Blank D.

# PUBLICATIONS

A total of 231 papers were published in peer reviewed medical journals by the Women's in 2017.

The publications below have been selected to highlight the quality of our research at a national and international level. The papers have been selected based on the quality of the journal in which they are published. The journals selected are in the top two per cent of journals, as is indicated by an 'impact factor' greater than 10. Impact factor (as determined by InCites Journal Citation Reports) is a measure of the frequency with which the 'average article' in a journal has been cited in a particular year or period.

A full list of 2017 publications is available for each research centre on the Women's website at [www.thewomens.org.au/research](http://www.thewomens.org.au/research).

## PUBLICATIONS

- Bennett EA, Newman L, Burnside JW, Phatarfod B, Thomas RM, Moodie AR, et al. Ending our shame: call for a fundamental reconsideration of Australian refugee policy. *Lancet*. 2017;390(10094):552.
- Canfell K, Caruana M, Gebiski V, Darlington-Brown J, Heley S, Brotherton J, et al. Cervical screening with primary HPV testing or cytology in a population of women in which those aged 33 years or younger had previously been offered HPV vaccination: Results of the Compass pilot randomised trial. *PLoS medicine*. 2017;14(9):e1002388.
- Cheong JL, Doyle LW, Burnett AC, Lee KJ, Walsh JM, Potter CR, et al. Association Between Moderate and Late Preterm Birth and Neurodevelopment and Social-Emotional Development at Age 2 Years. *JAMA Pediatr*. 2017;171(4):e164805.
- Cheong JLY, Doyle LW, Anderson PJ. Consistent Terminology Needed for Estimation of Outcomes of Prematurity-Reply. *JAMA Pediatr*. 2017;171(8):810-1.
- Chow EPF, Machalek DA, Tabrizi SN, Danielewski JA, Fehler G, Bradshaw CS, et al. Quadrivalent vaccine-targeted human papillomavirus genotypes in heterosexual men after the Australian female human papillomavirus vaccination programme: a retrospective observational study. *Lancet Infect Dis*. 2017;17(1):68-77.
- Collins CT, Makrides M, McPhee AJ, Sullivan TR, Davis PG, Thio M, et al. Docosahexaenoic Acid and Bronchopulmonary Dysplasia in Preterm Infants. *The New England journal of medicine*. 2017;376(13):1245-55.
- Crowther CA, Middleton PF, Voysey M, Askie L, Duley L, Pryde PG, et al. Assessing the neuroprotective benefits for babies of antenatal magnesium sulphate: An individual participant data meta-analysis. *PLoS medicine*. 2017;14(10):e1002398.
- Dennis AT, Griffiths JD. Tranexamic acid for post-partum haemorrhage in the WOMAN trial. *Lancet*. 2017;390(10102):1582.
- Doyle LW, Carse E, Adams AM, Ranganathan S, Opie G, Cheong JLY, et al. Ventilation in Extremely Preterm Infants and Respiratory Function at 8 Years. *The New England journal of medicine*. 2017;377(4):329-37.
- Doyle LW, Ranganathan S, Cheong JLY. Neonatal Caffeine Treatment and Respiratory Function at 11 Years in Children under 1,251 g at Birth. *American journal of respiratory and critical care medicine*. 2017;196(10):1318-24.
- Doyle LW, Ranganathan S, Cheong JLY. Ventilation in Preterm Infants and Lung Function at 8 Years. *The New England journal of medicine*. 2017;377(16):1601-2.
- Ferguson KN, Roberts CT, Manley BJ, Davis PG. Interventions to Improve Rates of Successful Extubation in Preterm Infants: A Systematic Review and Meta-analysis. *JAMA Pediatr*. 2017;171(2):165-74.
- Forster DA, Moorhead AM, Jacobs SE, Davis PG, Walker SP, McEgan KM, et al. Advising women with diabetes in pregnancy to express breastmilk in late pregnancy (Diabetes and Antenatal Milk Expressing [DAME]): a multicentre, unblinded, randomised controlled trial. *Lancet*. 2017;389(10085):2204-13.
- Hickey M, Szabo RA, Hunter MS. Non-hormonal treatments for menopausal symptoms. *BMJ*. 2017;359:j5101.
- Huh WK, Joura EA, Giuliano AR, Iversen OE, de Andrade RP, Ault KA, et al. Final efficacy, immunogenicity, and safety analyses of a nine-valent human papillomavirus vaccine in women aged 16-26 years: a randomised, double-blind trial. *Lancet*. 2017;390(10108):2143-59.
- Janda M, Gebiski V, Davies LC, Forder P, Brand A, Hogg R, et al. Effect of Total Laparoscopic Hysterectomy vs Total Abdominal Hysterectomy on Disease-Free Survival Among Women With Stage I Endometrial Cancer: A Randomized Clinical Trial. *Jama*. 2017;317(12):1224-33.
- Leary AF, Quinn M, Fujiwara K, Coleman RL, Kohn E, Sugiyama T, et al. Fifth Ovarian Cancer Consensus Conference of the Gynecologic Cancer InterGroup (GCIg): clinical trial design for rare ovarian tumours. *Annals of oncology : official journal of the European Society for Medical Oncology*. 2017;28(4):718-26.
- Manley BJ, Owen LS, Hooper SB, Jacobs SE, Cheong JLY, Doyle LW, et al. Towards evidence-based resuscitation of the newborn infant. *Lancet*. 2017;389(10079):1639-48.
- Muggli E, Matthews H, Penington A, Claes P, O'Leary C, Forster D, et al. Association Between Prenatal Alcohol Exposure and Craniofacial Shape of Children at 12 Months of Age. *JAMA Pediatr*. 2017;171(8):771-80.
- Novak I, Morgan C, Adde L, Blackman J, Boyd RN, Brunstrom-Hernandez J, et al. Early, Accurate Diagnosis and Early Intervention in Cerebral Palsy: Advances in Diagnosis and Treatment. *JAMA Pediatr*. 2017;171(9):897-907.
- Owen LS, Manley BJ, Davis PG, Doyle LW. The evolution of modern respiratory care for preterm infants. *Lancet*. 2017;389(10079):1649-59.
- Schmidt B, Roberts RS, Anderson PJ, Asztalos EV, Costantini L, Davis PG, et al. Academic Performance, Motor Function, and Behavior 11 Years After Neonatal Caffeine Citrate Therapy for Apnea of Prematurity: An 11-Year Follow-up of the CAP Randomized Clinical Trial. *JAMA Pediatr*. 2017;171(6):564-72.



# NATIONAL HEALTH AND MEDICAL RESEARCH COUNCIL (NHMRC) GRANTS 2017

## CENTRE FOR CLINICAL RESEARCH EXCELLENCE

Doyle LW, Davis P, Anderson P, Hunt R, Cheong J, Jacobs S, Roberts G, Spittle A, Thompson D, Dawson J. Centre for Research Excellence in Newborn Medicine. \$2,500,000; 2014-2018

Hegarty K, Brown S, Humphreys C, Taft A, Arabena K, Sanci L, MacMillan H, Feder G, Glover K, Anderson P. Centre for Research Excellence to promote Safer Families: tailoring early identification and novel interventions for intimate partner violence. \$2,497,801; Dec 2016-2021

## PARTNERSHIP GRANTS

McLachlan H, Forster D, Kildea S, Freemantle C, Browne J, Jacobs S, Oats J, Donath S, Newton M, Chamberlain C. Improving the health of Aboriginal mothers and babies through continuity of midwife care. \$1,496,531.75; Dec 2015-2020

Teede H, Butler R, Robinson M, Vincent A, Anderson J, Tregloan L, Hart R, Hickey M. Early menopause: Implementation research using the experiences and perspectives of women and health professionals to Translate evidence into practice. \$390,074; 2016-2018

## PROGRAM GRANTS

Hooper S, Davis P, Wallace E. Improving perinatal outcomes. \$6,115,355; 2017-2021

Kaldor J, Garland SM, Fairley C, Law M, Grulich A. Discovery & translation of interventions to control sexually transmitted infections and their consequences. \$10,000,000; 2015-2019

## PROJECT GRANTS

Brown S, Nicholson J, Hegarty K, Mensah F, Gartland D, Woolhouse H, Hiscock H. Turning points: breaking intergenerational cycles of intimate partner abuse and social adversity. \$1,267,769; 2013-2017

Brown S, Gartland D, Giallo R, Herrman H, Glover K, Riggs E, Yelland J, Mensah F, Hegarty K, Casey S. The Childhood Resilience Study: building the evidence to reduce health inequalities across the lifecourse. \$1,030,579; 2014-2017.

Cheong J, Doyle L, Wark J, Cheung M, Irving L, Burnett A. Impact of extreme prematurity or extreme low birthweight on young adult health and well-being: The Victorian Infant Collaborative Study (VICS) 1991-92 Longitudinal Cohort. \$725,496; 2016-2018

Dargaville P, Kamlin O, Davis P. Randomised controlled trial of minimally

invasive surfactant therapy in preterm infants 25-28 weeks gestation on continuous positive airway pressure. \$1,172,977; 2013-2017

Gunn J, Mihalopoulos C, Hegarty K, Williams A, Sterling L, Chondros P, Davidson S. A randomised trial of a clinical prediction tool for targeting depression care (Target-D). \$907,227; 2014-2017

Hickey M, Mitchell G, Wark J, Meisser B. What happens after surgical menopause (WHAM). \$495,335; 2013-2017.

Hooper S, Davis P, TePas A, Kitchen M. Optimising non-invasive ventilation at birth for preterm infants. \$735,912; 2016-2019

Hooper S, Wallace M, Polglase G, Kitchen M, Flemmer A, Thio M. Improving the neonatal transition in infants with a congenital diaphragmatic hernia. \$551,644; 2016-2018

Manley B, Buckmaster A, Davis P, Wright I, Owen L, Arnold G. Improving breathing support for newborn infants in non-tertiary centres: The HUNTER Trial. \$1,203,844; 2016-2019

Owen L, Manley B, Roberts C, Davis PG. Optimising early respiratory support for preterm infants: the HIPSTER trial. \$676,478.14; 2016-2018

Parkington H, Brennecke S. Failure-to-progress in human labour results from a profound electrical negativity of the uterine cells: targeting the ion channels involved. \$564,540; 2017-2019

Poynten M, Grulich A, Templeton D, Jin J, Tabrizi SN. Serological responses to anal HPV infection: Characterising the natural history of anal HPV. \$220,000; 2015-2017

Rogers P, Montgomery G, Girling J. Identification and function of genes that increase risk for endometriosis. \$1,180,912; 2016-2019

Spittle A, Anderson P, Doyle L, McGinley J, Clark R, Thompson D, Lee K, Cheong J. Motor trajectories of children born <30 weeks' gestation from birth to 5 years: early predictors and functional implications. \$668,387; 2016-2019

Vallely A, Castle P, Saville M, Brotherton J, Mola G, Lavu E, Kariwiga G, Kelly A, Cornall A, Simms K. Point-of-care HPV-DNA testing for cervical cancer screening in high-burden, low-resource settings. \$891,184.03; 2016-2019

## PERSONAL SUPPORT

Boland R. Career Development Award: Evaluating regionalised perinatal care in Victoria. \$132,667; 2015-2018

Davis PG. Practitioner Fellowship: Improving the health of newborn infants. \$551,432; 2014-2018

Dennis A. Early Career Fellowship. Myocardial structure and function in pre-eclampsia using cardiac magnetic resonance and echocardiography. \$187,322; 2016-2019

Hickey M. Practitioner Fellowship: Advancing and promoting midlife health for women. \$452,004; 2014-2018

Jacobs S. Early Career Fellowship: Neurodevelopmental outcomes after novel interventions in newborn infants. \$182,299; 2014-2017

Jayasinghe Y. TRIP Fellowship: Improving the quality of oncofertility care in children, adolescents and young adults with cancer: implementation of a novel fertility preservation decisional support tool to translate evidence into best practice. \$177,197; 2017-2018

Kamlin O. Early Career Fellowship: Improving neonatal transition for compromised infants and minimising lung injury. \$182,298; 2014-2017

Kane S. Postgraduate Scholarship: Maternal ophthalmic artery doppler waveform analysis in the assessment and management of pre-eclampsia. \$90,628; 2015-2017

Manley B. Early Career Fellowship: Breathing easier: optimising non-invasive ventilation of preterm infants. \$258,605; 2015-2018

Owen L. Early Career Fellowship: Right from the start: improving respiratory support for preterm infants from their first breath to independent breathing. \$258,605; 2015-2018

Rozen G. Postgraduate scholarship: Uterine function following radiotherapy. \$120,671; 2015-2017

Spittle AJ. Career Development Fellowship. Early detection and intervention for infants at high risk of motor impairments. \$419,180; 2016-2019

Thio M. Career Development Fellowship. Improving respiratory transition and outcomes of newborn infants. \$262,251; 2016-2019



# TURNING SCIENCE FICTION INTO SCIENCE FACT

*"I was 19 when I was diagnosed with ovarian cancer. I think the first thing that I asked after they took out my left ovary was, 'how will this affect my fertility?'"*

Left infertile from ovarian cancer treatment, Vali Creus had the world's first successful pregnancy from an ovarian tissue graft to her abdomen in 2013. She gave birth to twin girls Alexis and Kaia in November 2013.

The pioneering surgery was undertaken by the Women's and Melbourne IVF Head of Fertility Preservation Service, Associate Professor Kate Stern.

"At 24 the cancer came back and they took my second ovary out and I had chemotherapy. So that ended any hope of conceiving children. My surgeon at the time said he would preserve my remaining ovary because you never know how medicine will advance in the years to come."

"Losing who you thought you were going to be as a young woman was pretty hard," Vali said. "It completely changes your outlook on where you thought your life would go. I always wanted to have children."

Together with a committed team of scientists and clinicians, Associate Professor Kate Stern, head of the Fertility Preservation Service at the Women's and Melbourne IVF, was involved in the pioneering surgery and fertility treatment that led to Jodie and Vali's successful pregnancy.

The scientific breakthrough proved that a woman's ovarian tissue could be used to grow fertile eggs when placed into the abdomen, even after cancer treatment and the removal of her ovaries.

More than 100 women across the world have now had a successful pregnancy using the breakthrough procedure.

"It was a huge scientific achievement and was the first time it was proven that you can graft ovarian tissue to a place outside the ovary, well to anywhere, and you can make that tissue produce decent eggs," Associate Prof Stern said.

## **Still more work to do**

Associate Prof Stern said there were three key challenges she hoped to overcome in the future through scientific research to enable more women to access such treatment.

"We want to make the procedure work more reliably and we also want to work out ways to be able to grow the follicles outside the body," she said. "We get lots of little follicles in the tissue and it would be great to grow these follicles in vitro (in a laboratory) to make mature eggs."

"The third thing we want to do is to make sure the grafting of ovarian tissue is as safe as it can be, particularly for patients with leukaemia and lymphoma," Associate Prof Stern said.

"There is always the risk that you've got tumour cells in the tissue of these patients so we're currently undergoing some research to see if we can guarantee the safety of the ovarian tissue, free from disease. It will be another big step if we can achieve this.

"And most importantly, we need to make sure that all young women who need fertility preservation have equitable access to the technology and the specialised care required.

"When a young woman is faced with cancer, it is incredibly traumatic. And the one good thing they may hear about is the fact that when they are better, they're still going to be able to have children, we can help them with that. This is an unbelievably powerful tool."





**PICTURED:** VALI CREUS, WITH TWIN DAUGHTERS ALEXIS AND KAIA.

Achieving this will require more funding, something that the Royal Women's Hospital Foundation CEO Jan Chisolm is passionate about. "It's world-leading research like this that makes the Women's such an amazing place to be. With help from donors, we have supported \$3M of research over the past three years, which has made a huge difference to the women and newborns of Victoria, and made an impact across the globe."

**The Royal Women's Hospital Foundation** raises funds year-round for research projects such as this, ensuring the Women's can continue its ground-breaking research for the women and newborns of Victoria, and the world.

Your donation will help deliver advancements in health research, technology, programs and equipment.

If you would like to learn more, or donate to the Women's Foundation, please visit: [thewomens.org.au/support-us](http://thewomens.org.au/support-us)

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## Acknowledgement of traditional owners

The Royal Women's Hospital acknowledges and pays respect to the Kulin Nations, the traditional owners of the country on which our sites at Parkville and Sandringham stand.

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## Donating to the Women's

The Royal Women's Hospital Foundation raises funds to support the vital work of the Women's. Gifts to the Women's are an integral part of the research, innovation and leadership that brings advances in health care for women as described in this research report.

Your donation will support quality research at the Women's, now and into the future.

To donate or to find out more, please visit [www.thewomens.org.au/support-us](http://www.thewomens.org.au/support-us).



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