



THE UNIVERSITY OF
WESTERN AUSTRALIA | A CENTURY OF
ACHIEVEMENT
Achieve International Excellence 1913 - 2013



FACULTY OF MEDICINE, DENTISTRY AND HEALTH SCIENCES

Centre for Neonatal Research and Education

ANNUAL REPORT 2011-2012



ACHIEVE INTERNATIONAL EXCELLENCE

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About the Centre

Development of the Centre for Neonatal Research and Education commenced in 2010, with an application for research centre status submitted to the University in 2011. The Centre officially commenced on 1st April, 2011 and the Business Development Manager, Ms Diane Arnott, was appointed in October 2011.

Direction of the Centre is shared by Prof Jane Pillow and W/Prof Karen Simmer, with input from an Advisory Committee. In 2011-2012 administration of the Centre was coordinated by two Schools at The University of Western Australia: the School of Paediatrics and Child Health, and the School of Women's and Infants' Health. From 2013 onwards, the CNRE will be administered solely by the School of Paediatrics and Child Health.

The Centre is a joint initiative between The University of Western Australia and the Womens and Newborn Health Service. The CNRE main office is located at King Edward Memorial Hospital, where 95% of all high-risk deliveries in the state of Western Australia take place.

Our research is concentrated in five nodes:

- Respiratory physiology and ventilation
- Neonatal cardiology
- Nutrition, lactation and gastrointestinal disease
- Infection, inflammation and immunology
- Neurodevelopment and long term outcomes

We place a strong emphasis on education, offering workshops and symposia for a broad audience on such topics as neonatal nutrition, neonatal ventilation, and grant writing. Our staff run a state-wide neonatal resuscitation and stabilisation program, as well as a postgraduate coursework program in neonatal nursing through Curtin University. In addition, we have developed postgraduate coursework programs in neonatology for doctors through The University of Western Australia.

The Centre co-ordinates the academic activities of clinician, nursing and allied health staff working in the Neonatal Clinical Care Unit based at King Edward and Princess Margaret Hospitals. The diverse professional mix creates a vibrant atmosphere in which neonatal research and education thrives.



Directors' Report

2011–12 was a busy period with the formal establishment of the Centre within The University of Western Australia. Our driving motivation in setting up the Centre was to harness the immense knowledge and expertise of our colleagues to formalise and unify the strong research culture already present amongst our academic, clinical and paramedical staff.

Development of a cohesive research program, together with the support possibilities that a centralised leadership can offer further enhances the mentoring and support we can provide to existing and emerging researchers, many of whom are active as full-time clinicians. The CNRE also enhances our group's capacity to attract funding, and through education to translate research findings to achieve real improvements in the immediate, medium and long-term outcomes of newborn infants. Importantly, the CNRE also provides an avenue and an identity through which we will be able to communicate those medical advances to the general public and the academic community.

We were fortunate to secure funding from The University of Western Australia and the Women and Newborn Health Service to appoint Ms Diane Arnott as Business Development Manager for the Centre in October 2011. With Ms Arnott's assistance, the Centre has sought to establish a firm foundation for future success and development, including development of a community, visual and virtual identity for the CNRE.

In addition to significant funding success and awards recognising excellence of our members over the last two years, the CNRE has actively aimed to educate and assist members progression along the continuum from formulation



PROF JANE PILLOW

of a research question, through development of a research proposal, securing funding, and the conduct, analysis and publication of research. We are extremely proud of the successes that our members have achieved over this initial period, especially those of our early career researchers.

CNRE researchers achieved great success in competitive grant rounds in 2012, with over \$2.2 million awarded in research funding to commence in 2013. This includes an NHMRC Project Grant with Prof Pillow as CI-A, worth over \$1.3 million. This grant was one of two featured in the press release from Minister for Health the Hon Tanya Pliibersek MP announcing the results of this funding round. In addition, Asst Prof Peter Noble received an NHMRC Career Development Fellowship. Other successful applications included awards from the National Institutes of Health (USA), Ramaciotti Fund, AstraZeneca, Princess Margaret Hospital Foundation, and Telethon.



W/PROF KAREN SIMMER

Initially established as a Research Centre within two UWA Schools, the CNRE looks forward to its new future under the sole umbrella of the School of Paediatrics and Child Health. The next twelve months represents a key period in our development from a fledgling Centre to one that is highly productive and independent. The CNRE will take the first steps towards independence with an application for an NHMRC Centre of Research Excellence (CRE) submitted in early 2013. Central to the development of the NHMRC CRE proposal is the integration of the five major research themes to promote a more holistic inclusive approach to neonatal research and treatment, recognising the complexities and multi-system nature of neonatal disease. A second major initiative led by Prof Simmer as one of the Co-Directors in 2013 is the development of postgraduate courses in neonatal medicine, including a Graduate Diploma and a Masters of Neonatology.

Staff and Students

Directors

- Prof Jane Pillow BMedSci (Dist), MBBS, FRACP, PhD (Dist)
- W/Prof Karen Simmer MBBS, MRCP, MRCPC, FAICD, PhD, FRACP

Business Development Manager

- Ms Diane Arnott, MSc

Senior Research and Education Medical Staff

- Clinical Associate Professor Noel French FRACP
- Clinical Associate Professor Andy Gill FRACP
- Clinical Associate Professor Rolland Kohan FRACP
- Dr Emma Harris, FRACP
- Dr Corrado Minutillo MBBS, FRACP
- Clinical Professor Sanjay Patole MBBS, MD, DCH, FRACP, DrPH, MSc
- Clinical Associate Professor Shripada Rao FRACP
- Clinical Senior Lecturer David Baldwin PhD FRACP – Assistant Medical Director, Newborn Emergency Transport Service
- Dr Jean DuPlessis FRACP, MHPE
- Dr Kathy Martin FRACP
- Clinical Senior Lecturer Dr Mary Sharp, FRACP, Dip RACOG, M Med Sci
- Clinical Senior Lecturer Steven Resnick FRACP- Medical Director, Newborn Emergency Transport Service
- Clinical Senior Lecturer Tobias Strunk MD, PhD, FRACP
- Dr Deepika Waugh, FRACP

Research and Education Medical Staff Trainees

- Dr Gayatri Jape – Neonatal Fellow
- Dr Roland Berger – Neonatal Fellow
- Dr Suresh Birajdar – Neonatal Fellow
- Dr Mangesh Desmukh – Neonatal Fellow
- Dr Jason Tan – Neonatal Fellow
- Dr Rebecca Thomas – Neonatal Fellow

Research and Education Nursing Staff

- Clinical Lecturer Laurene Aydon – Neonatal Research Nurse
- Ms Debbie Chiffings – Nursing Director, NICU KEMH & PMH
- Clinical Lecturer Barbara Carter – Neonatal Medical Educator
- Ms Hilary Cross – Neonatal Nursing Educator
- Clinical Lecturer Yen Kok – Neonatal Research Nurse
- Ms Judith Kristensen- Neonatal Pharmacist
- Clinical Lecturer Linda McKean – Neonatal Nursing Education

Postdoctoral Scientists

- Dr Clare Berry PhD
- Clinical Senior Lecturer Catherine Campbell PhD
- Adjunct Associate Professor Andrew Currie PhD
- Senior Lecturer Ben Hartmann PhD – Manager, Perron Rotary Express Milk Bank
- Clinical Senior Lecturer Gemma McLeod PhD
- Dr Suzanne Meldrum PhD
- Research Assistant Professor Peter Noble PhD
- Research Assistant Professor Yong Song MD, PhD

Research Officer

- Ms Tina Lavin

PhD Students

- Ms Emma DeJong
- Ms Alexandra Heaton
- Ms Kana Karisnan
- Ms Sharon Perrella
- Ms Victoria Reynolds
- Ms Stephanie Trend

Degrees Awarded



Doctor of Philosophy

Dr Gemma McLeod

The University of Western Australia, 2011.

Individualising fortification of human milk feeds to achieve growth targets for preterm infants in the neonatal clinical care unit.

Dr Suzanne Meldrum

The University of Western Australia, 2011.

The effects of high-dose fish oil supplementation during early infancy on neurodevelopment and language.

Dr Gabrielle Musk

The University of Western Australia, 2012.

Optimisation of high-frequency jet ventilation for the management of respiratory distress syndrome in preterm babies using a preterm lamb model.

Dr Tobias Strunk

The University of Western Australia, 2012.

Innate immune responses of preterm infants to coagulase-negative staphylococci.

Honours

Ms Sarah Granger

University of Notre Dame, 2012

Outcome of preterm Jehovah's Witness neonates.

Bachelor of Medical Science – 1st Class Honours

Ms Emma Amozig

The University of Western Australia, 2012.

Respiratory muscle function in the preterm infant at discharge.

Ms Jane Kee

The University of Western Australia, 2012.

The effect of high frequency oscillatory ventilation on function, inflammation and shear and circumferential stresses in preterm lamb airways.

Mr Alex Wood

The University of Western Australia, 2012.

Quantifying pulmonary impairment in contemporary premature infants.

Awards, Prizes and Other Honours

Ms Alexandra Heaton

- ✧ Student Leadership in International Cooperation award from the Federal Government, 2012, to promote outbound student mobility and interactions between the 'Group of eight' (Go8) universities in Australia and the comparable 'China nine' (C9) universities.

Ms Jane Kee

- ✧ Presenter Award at Student Health and Medical Research (SHMRC) September 2011, 'The effect of high frequency oscillatory ventilation on function, inflammation and shear stress in the airways of preterm lambs'
- ✧ Robert Collin Prize for the Bachelor of Medical Science (in Physiology), for Honours thesis 'The effect of high frequency oscillatory ventilation on function, inflammation and shear and circumferential stresses in preterm lamb airways'

Asst Prof Yong Song

- ✧ 2011 University of Western Australia Supplementary Travel Grant, \$700
- ✧ 2012 Asia Pacific Society of Respiriology Young Investigator Award, \$US200

Mr Alex Wood

- ✧ Gordon King Foundation Professor BMedSc Scholarship. February 2011.
- ✧ Students in Health and Medical Research Conference Poster Presentation: Oxygen consumption is not predicted by prematurity or BPD in contemporary infants. September 2011.
- ✧ Perth Paediatric Respiratory Conference Best New Presenter Award. November 2011.
- ✧ PSANZ Meeting Oral Presentation: Oxygen consumption is not predicted by prematurity or BPD in contemporary infants. March 2012.
- ✧ Conference abstract: Wood AJT, et al. Oxygen consumption is not predicted by prematurity or BPD in contemporary infants (Abstract). J Paediatr Child Health. 2012; 48 (Suppl. 1): 33.





Research Highlights



Saving Lives With Probiotics

CNRE researchers are world leaders in the use of probiotics in preterm infants to prevent a potentially fatal infection known as necrotising enterocolitis (NEC), a disease in which sections of the intestines die. Babies born at less than 33 weeks gestation and weighing less than 1,500g are especially prone to developing NEC.

Although the causes of NEC are not completely understood, the presence of harmful bacteria in the GI tracts of infants with NEC provides a potential 'plan of attack' against NEC; if

doctors can prevent these harmful bacteria from colonising the gut, then the incidence of NEC should decrease. One way to prevent 'bad' bacteria from colonising the gut is to colonise it first with 'good' bacteria – a biological arms race of sorts.

In 2011, CNRE clinicians and researchers, Clinical Professor Sanjay Patole and Clinical Associate Professor Shripada Rao developed the first clinical guidelines for the use of probiotics in preterm infants to prevent the development of NEC. These probiotics guidelines include information on the type of bacteria to use, dose, and length of time of supplementation.

There are now at least two Neonatal Intensive Care Units in Australia where probiotic supplementation for preterm infants is routine practice – Nepean Hospital in New South Wales, and King Edward Memorial Hospital/ Princess Margaret Hospital in WA.



Identifying Causes of Voice Abnormalities in Children Born Prematurely – The Voice Study

Children who are born prematurely, particularly those born extremely prematurely (less than 25 weeks gestation) are known to display voice abnormalities as they grow up. These abnormalities include hoarseness and breathiness, and can be so severe as to cause the child frustration and limit their social interactions. The impact of voice disorders can extend into adulthood and limit the career options of those affected.

CNRE researcher Clinical Associate Professor Noel French and his team,

funded by a grant from the Women and Infants Research Foundation, studied children born at less than 25 weeks gestation between 1996 and 2004 to determine the cause of these voice abnormalities.

The Voice Study was the first to examine the causes of long-term voice abnormalities in children born extremely prematurely: the study showed two factors correlated with these abnormalities – more than five intubations and female gender. Also of importance was the discovery of factors that were not associated with voice problems, such as length of intubation and the size of the endotracheal tube.

Although the researchers are not yet able to determine why voice problems are more prevalent in female children than males, the discovery of the relationship with the number of intubations may lead to changes in how extremely preterm babies are cared for in neonatal units.

The Voice Study team plans to examine children born prematurely at older gestations (<31 weeks) to see if this is a problem only for extremely preterm children, or for all children born preterm. This work is ongoing and being completed by PhD student and Speech Pathologist Victoria Reynolds.



Helping Preterm Infants Breathe

Babies born early struggle to breathe as their lungs are immature, so many require artificial ventilation. Their lungs are also very delicate, and therefore easily damaged by respirators – and the more premature a baby is, the more fragile his/her lungs are.

CNRE co-Director Professor Jane Pillow is a world leader in the area of respiratory physiology and neonatal mechanical ventilation; her research group is working actively to determine the best method for ventilating preterm babies.

A major research achievement of the lung research group was the completion in 2012 of a randomised controlled trial investigating the use of nebulised surfactant to help babies breathe without the help of a ventilator. Surfactant is a substance normally produced by the lung to prevent it from collapsing. Preterm infants often have insufficient surfactant production and secretion in their lungs, as their lung tissue is underdeveloped.

Although liquid surfactant can be instilled directly into the lung, this approach normally involves placement of a tube into the airways, and mechanical ventilation. The clinical trial, led by Prof Jane Pillow and Dr Stefan Minocchieri, used new vibrating membrane nebuliser technology to turn the surfactant



liquid into fine droplets that can be breathed in through a face mask. Their unique study provided the first evidence that surfactant can be effectively delivered to the lung by non-invasive nebulisation, avoiding the need for intubation and mechanical ventilation in many of the infants treated.

Confirmation of these preliminary findings in a larger trial will change the way newborn infants with breathing problems are treated around the world. The treatment is easy to apply and can be administered by personnel in low resource settings, potentially avoiding costly and disruptive transfer of infants to intensive care facilities.





Cutting the Cord – When is Best?

Before 2010, doctors clamped and cut the umbilical cords of newborns immediately after birth. After research showed that delaying clamping of the cord reduced iron deficiency and anemia in babies, new international guidelines were issued recommending that the cord not be cut until at least one minute after birth. These guidelines only apply to infants who, unlike preterm infants, do not require artificial resuscitation immediately following birth.

CNRE researcher Andy Gill, working with colleagues from institutions in Melbourne, Sydney and the Netherlands, sought to determine the physiological effects of delaying umbilical cord clamping on transition. They measured factors relating to cardiovascular stability in newborn lambs in which mechanical ventilation was initiated either before or after clamping of the umbilical cord.

The researchers found that the traditional approach to cord clamping (prior to commencing mechanical ventilation) had potential adverse effects on several physiological events including reduced heart rate, increased blood pressure in the vessels supplying the brain and the lungs, and altered blood flow. Importantly, the researchers also noted that the traditional approach was also associated with variable pressures and flows in the vessels supplying the brain, and the oxygen delivery to the brain itself.

In contrast, initiating ventilation in the infant prior to clamping the cord avoiding the marked changes in the heart rate, blood pressure and flow, offering more protection to the fragile immature brain. These findings are important, as it may provide a way for us to reduce the risk of bleeding in the brain in preterm infants, and improve their long term outcomes.

A large multicentre study (Australian Placental Transfusion Study) is underway to investigate the benefits of delayed cord clamping in premature infants.



The Paradox of Chorioamnionitis

Chorioamnionitis is inflammation of the placenta and/or membranes caused by a bacterial infection, and is associated with preterm birth, early-onset sepsis, and increased risk of chronic lung disease and cerebral palsy.

Research by Clinical Senior Lecturer Tobias Strunk and his team has shown for the first time that preterm infants who were exposed to chorioamnionitis are at a greatly decreased risk of late onset sepsis compared to those preterm infants who were not exposed.

This is the paradox of chorioamnionitis – inflammation of the placental membranes that can result in many negative outcomes imparts protection from another negative outcome. Chorioamnionitis likely causes the preterm infant immune system to mature more quickly so that it more able to fight the bacteria that cause late-onset sepsis. The mechanisms for maturation of the immune system remain unclear and are the subject of further research being conducted in the Centre.

Education Highlights

Workshops and Symposia

We began 2012 with a highly successful two-day Neonatal Nutrition Symposium in February. Attendance exceeded expectations, with almost 100 registrants who provided extremely positive feedback. The workshop was attended by a broad audience, including neonatal nurses, dietitians, researchers, and neonatologists.

The symposium featured presentations from two international speakers – Dr Sertac Arsanoglu from Turkey, and Ms Barbara Cormack from New Zealand. Topics covered included fetal and neonatal metabolism, human milk fortification, physiology of infant feeding, probiotics to protect the preterm gut, and human milk banking.

We thank our very generous sponsors for making this symposium possible – Nestle Nutrition, Pfizer Nutrition, Baxter Healthcare, Nutricia Baby Nutrition, and Medela AG.

In September 2012, the Centre welcomed Professor Kurt Albertine from The University of Utah School of Medicine for a combined research and education visit. Professor Albertine presented a two day workshop on manuscript writing and a one day workshop on NIH grant writing in conjunction with UWA's Research Services. Both sold out (over 40 registrants for each) and were also attended by staff from Perth's Curtin University.

Our year was capped off by another sold out workshop, a specialist course entitled Echocardiography and Congenital Heart Disease for the Neonatologist. The course was taught by the CNRE's Clinical Associate Professor Andy Gill and Dr Jim Ramsay from the Children's Cardiac Centre at Princess Margaret Hospital.

The CNRE is also playing a pivotal role in the organisation of the annual conference of the Perinatal Society of Australia and New Zealand which will be held in Perth in 2014.

Postgraduate Courses

Two new postgraduate courses in Neonatology – a Graduate Diploma and a Masters degree – are currently in development with planned commencement in 2014. The primary intake market will be doctors in the Royal Australasian College of Physicians Advanced Training program; however we also have had interest from paediatricians with an interest in expanding their neonatology knowledge and doctors who wish to pursue an academic career in neonatology.

Scholarships

A one-off Raine Foundation Honours Scholarship was created in 2012 for a student interested in an Honours project in the area of infant nutrition and human milk banking. The scholarship is worth \$6,000 and also comes with research/travel funding.





Media

In 2011–12, CNRE research was featured in several local and national news outlets:

- The West Australian – a feature on a preterm infant born at KEMH who participated in CNRE research – 31st December, 2011
- ABC's 7:30 Report – a feature on infection in preterm infants – March 12, 2012
- The West Australian – a feature on research to reduce the risk of deadly infection in newborns – 1st November, 2012
- Plus multiple features in UWA News

Industry Connections

We are very fortunate to have strong links with many companies in the area of neonatology, both in education and research.

Our 2012 Neonatal Nutrition Symposium was very generously sponsored by:

- Nestle Nutrition
- Pfizer Nutrition
- Baxter Healthcare
- Nutricia Baby Nutrition
- Medela AG

In 2011–12, we received research funding from:

- Fresenius Kabi (\$20,000)
- Medela (\$100,000)

Nestle Nutrition has shown strong interest in a nutrition program produced by Clinical Senior Lecturer Gemma McLeod: We continue to work with Nestle Nutrition to develop the program as well as international distribution of the product.

Equipment and consumable support for research studies was generously provided by:

- Draeger Medical
- Fisher & Paykel Healthcare
- Bunnell Pty Ltd
- Care Fusion
- Chiesi Farmaceuti
- Pari Ag



Collaborators

International Collaborators

- Prof Kurt Albertine, University of Utah School of Medicine, USA
- Dr Donald Davidson, University of Edinburgh
- Prof Robert Hancock, University of British Columbia
- Prof Zoltan Hantos, Szeged University, Hungary
- Prof Alan Jobe, University of Cincinnati, USA
- Asst Prof Tobias Kollmann, University of British Columbia
- A/Prof Ofer Levy, Harvard University, Boston Children's Hospital
- Dr Stefan Minocchieri, University of Basel, Switzerland
- Prof Neena Modi, Imperial College, London
- Dr Sven Schulzke, University of Basel, Switzerland
- Prof Bela Suki, University of Boston, USA

National Collaborators

- Prof David Burgner, Melbourne Children's Research Institute, University of Melbourne
- Dr Patricia Conway, University of New South Wales
- Dr Girish Deshpande, University of Sydney
- Dr Meera Esvaran, University of New South Wales
- A/Prof Nick Evans, University of Sydney
- Prof Bob Gibson, University of Adelaide
- Dr Rod Hunt, University of Melbourne
- A/Prof Martin Kluckow, University of Sydney
- Prof Maria Makrides, University of Adelaide
- A/Prof Andy McPhee, University of Adelaide
- Dr Tim Moss, Monash Institute for Medical Research, Melbourne
- Dr Graeme Polglase, Monash Institute for Medical Research, Melbourne
- Prof William Tarnow-Mordi, University of Sydney
- Dr David Tingay, Murdoch Children's Research Institute, Melbourne

Local Collaborators

- A/Prof Tony Bakker, School of Anatomy, Physiology and Human Biology, UWA
- Prof Andrew Bassom, School of Mathematics and Statistics, UWA
- Adj Prof Dorota Doherty, School of Women's and Infant's Health
- Adj Prof Graham Hall, Telethon Institute for Child Health Research
- Dr Geoffrey Hammond, Telethon Institute for Child Health Research
- Assoc Prof Kathryn Hird, Faculty of Medicine, University of Notre Dame
- Dr Anthony Keil, PathWest Laboratory Medicine WA
- Professor Shane Maloney, School of Anatomy, Physiology and Human Biology, UWA
- Dr Hannah Moore, Telethon Institute for Child Health Research
- Ms Elizabeth Nathan, Women and Infants Research Foundation and King Edward Memorial Hospital
- Dr Gavin Pinniger, School of Anatomy, Physiology and Human Biology, UWA
- W/Prof Susan Prescott, School of Paediatrics and Child Health
- Prof Peter Richmond, School of Paediatrics and Child Health
- Dr Andrew Wilson, Dept of Respiratory Medicine, Princess Margaret Hospital and School of Paediatrics and Child Health, UWA

Visitors to the Centre

In September 2012 Professor Kurt Albertine from the University of Utah's School of Medicine visited the Centre and presented workshops on manuscript and grant writing, as well as a CNRE seminar.

In October 2012, the CNRE hosted visitors from Utah, Melbourne and Germany to Perth to undertake a novel research study evaluating the potential of stem cells obtained from the placenta to reduce lung injury in premature lambs. The CNRE also welcomed Professor Paul Colditz from the University of Queensland's Perinatal Research Centre, who was visiting Western Australia as the MacDonald Orator for 2012.



Grants and Research Support

Agency	Title	CIs	Years	Amount
NHMRC	Project Grant: Influence of in utero environment on diaphragm structure and function.	Pillow, Pinniger, Bakker	2011–13	\$478,365
NHMRC	Project Grant: Consequences of waveform composition for epithelial integrity and homogeneous ventilation during HFOV.	Pillow, Bassom, Tingay	2011–13	\$395,696
NHMRC	Project Grant: Investigation of the influence of preterm birth on lung structure & function in school age children.	Hall, Wilson, Pillow	2010–12	\$197,450
SHRAC	Nebulised surfactant to relieve respiratory distress syndrome in babies treated with nasal CPAP.	Pillow, Minocchieri, Stevenson, Hagan, Simmer, Resnick, Devadason	2010–2011	\$126,476
NHMRC	Project Grant: A study of the impact of treating electrographic seizures in term or near-term infants with neonatal encephalopathy.	Hunt, Colditz, Inder, Badawi, Simmer, Liley, Osborn, Cheong, Wright	2011–15	\$1,301,309
NHMRC	Project Grant: Effect of high dose infant fish oil supplementation and FADS 1 & 2 genetic polymorphisms on cognitive development and school giftedness.	Simmer, Foster, Smith	2011–13	\$314,865
NHMRC	Project Grant: A prospective study of the development of innate immunity in very preterm infants and how this leads to increased susceptibility to late onset neonatal sepsis.	Burgner, Richmond, Currie, Simmer, Strunk, Levy	2009–11	\$615,250
NHMRC	Project Grant: Australian Placental Transfusion Study	Tarnow-Mordi, Evans, Newnham, Osborn, Isaacs, Simmer	2009–13	\$2,696,700
NHMRC	Project Grant: Investigation of factors that influence Aboriginal maternal and infant health outcomes: improvements to be achieved with the introduction of Aboriginal Health Workers into tertiary care.	Doherty, Newnham, Larson, Hornbuckle, Simmer, Henderson	2012–14	\$567,101
NHMRC	Project Grant: Docosahexaenoic acid for the reduction of bronchopulmonary dysplasia in preterm infants born at less than 29 weeks gestational age: a RCT.	Collins, Gibson, McPhee, Thio, Sullivan, Simmer, Rajadurai	2012–2014	\$1,870,914
Telethon Channel 7 Trust	Probiotics for Neonates (PANTS)	Patole, Keil, Chang, Nathan, Doherty, Simmer, Esvaran, Conway.	2011–12	\$140,000
Medela	Randomised controlled trial – innovative feeding system.	Simmer et al.	2011	\$100,000
Women's and Infants Research Fund/Telethon	Voice disorders in preterm children: Prevalence, presentation, influencing factors and response to treatment.	French, Meldrum, Simmer, Vijayasekaran, Reynolds, Lipscombe	2012	\$115,000
UWA Research Collaboration Award	Building capacity and international collaboration in a chronic ventilation model of neonatal ovine research.	Pillow	2012	\$15,000
Ada Bartholomew Medical Research Trust	Alteration of mitochondrial function and structure of the preterm diaphragm.	Song	2011	\$30,000
UWA Research Development Award	Impact of antenatal exposure to glucocorticoids on the fetal diaphragm	Song	2012	\$26,750

Clinical Trials



RESPIN

Trial purpose:

To investigate the nature and consequences of immune responses of term and preterm infants at birth

Recruiting:

150 preterm (<30wk) and 50 term (>37wk) infants

Treatment/investigation:

Cord blood samples from placenta at delivery.

Funded by:

Women and Infants Research Foundation

Nebulised Pentoxifyline

Trial purpose:

To determine the effectiveness of nebulised pentoxifyline for the prevention of chronic lung disease in extremely preterm infants.

Recruiting:

90 preterm babies (<28wk)

Treatment/investigation:

Pentoxifyline or placebo 4x/d for 10 days

Types of Nutrition on GI Response

Trial purpose:

Study the preterm infants' GI response to different volumes and compositions of mother's own milk, pasteurised donor human milk, and formula milk and during the transition from IV feeding to full oral feeds.

Recruiting:

Stable infants 28-33 weeks gestational age

Treatment/investigation:

Different volumes and compositions of mother's own milk, pasteurised donor human milk, and formula milk.

Funded by:

Medela

Dexamethasone and Adrenaline for Bronchiolitis (DAB Trial)

Trial purpose:

To determine whether the combination of systemic steroids and nebulised adrenaline will decrease the length of positive pressure support among children admitted to intensive care with bronchiolitis.

Recruiting:

Babies born with post-conceptual age >36 weeks.

Treatment/investigation:

Systemic dexamethasone and nebulised adrenaline

Australian Placental Transfusion Study

Trial purpose:

To determine if placental transfusion in very preterm babies will improve health outcomes compared to early cord clamping.

Recruiting:

Babies less than 30 weeks gestational age

Treatment/investigation:

Placental transfusion or cord clamping

Funded by:

National Health and Medical Research Council

APTS Echo Substudy

Trial purpose:

To determine the effect of placental transfusion vs early clamping on systemic blood flow.

Recruiting:

Babies less than 30 weeks gestational age

Treatment/investigation:

Echocardiogram

Funded by:

National Health and Medical Research Council

NEST (Neonatal Seizures)

Trial purpose:

To determine the effects of treating neonatal clinical and electrographic seizures.

Recruiting:

Babies 35 weeks gestational age and older; less than 48 hours old.

Treatment/investigation:

Treatment of either clinical seizures alone, or clinical plus electrographic seizures.

Funded by:

National Health and Medical Research Council.

Novel Teat Study

Trial purpose:

To test the effect of a novel feeding device.

Recruiting:

Infants born at 25 to 34 weeks gestational age.

Treatment/investigation:

Use of a control teat or the test teat

Funded by:

Medela

CureNeb

Trial purpose:

To determine if nebulised surfactant will reduce the need for intubation and improve respiratory outcomes.

Recruiting:

Infants born at 29-36 weeks, less than four hours old.

Treatment/investigation:

Nebulised surfactant given (20–30 minutes).

Funded by:

State Health Research Advisory Committee.

PANTS (Probiotics and Neonates Trial)

Trial purpose:

To determine if probiotic supplementation results in colonisation of the gut with those bacteria.

Recruiting:

Infants born at less than 33 weeks and less than 1500g.

Treatment/investigation:

Supplement of probiotics in the daily feed; two stool samples.

Funded by:

Telethon

PREDICT

Trial Purpose:

To investigate mechanisms behind exquisite vulnerability of very preterm infants to coagulase-negative Staphylococcus infections.

Recruiting:

Infants born at 23 weeks and above.

Treatment/investigation:

Development of the innate immune system in very preterm infants during the period of highest life-time risk of sepsis.

Funded by:

National Health and Medical Research Council.

BOOST II

Trial purpose:

Randomised controlled trial investigating the effect of oxygen saturation on death and disability at age 2.

Recruiting:

All preterm infants

Treatment/investigation:

Relatively high or low oxygen, measured effects at age 2.

Funded by:

National Health and Medical Research Council.

DINO7

Trial purpose:

Randomised controlled trial investigating high vs low dose DHA in preterm infants.

Recruiting:

Previous participants in DINO, now aged seven.

Treatment/investigation:

Neurodevelopmental assessments

Funded by:

National Health and Medical Research Council

Long-term outcomes in congenital diaphragmatic hernia survivors

Recruiting:

From 5-20 years of age; 50 healthy controls and 50 congenital diaphragmatic hernia survivors.

Treatment/investigation:

Cardiac echo, lung function tests, chest CT and quality of life questionnaires.

Funded by:

Women and Infants Research Fund

Conference presentations



Aydon, L, McKean, L, Mooney, D. Investigation of the postgraduate students' progression of learning throughout a 12 month course work Masters program in neonatal intensive care nursing. Australian College of Neonatal Nurses 7th Annual Conference 2012, Hunter Valley, NSW, Australia.

Berry, CA, Tingay D, Bhatia R, Polglase GR, Song Y, Szyld E, Jobe AH, Pillow JJ. Does volume monitoring during resuscitation improve short-term respiratory outcomes?. 15th Annual Congress of the Perinatal Society of Australia and New Zealand, 10-13 April 2011, Hobart, Australia.

Bhatia R, Tingay DG, Polglase G, Berry CA, Kopotic R, Song Y, Szyld E, Jobe AH, Pillow JJ. Pressure Limited Sustained Inflation Versus Gradual Tidal Inflation For Resuscitation of Preterm Lambs. 15th Annual Congress of the Perinatal Society of Australia and New Zealand, 10-13 April 2011, Hobart, Australia.

Collins JJP, Kuypers E, Polglase GR, Nitsos I, Pillow JJ, Newnham JP, Kallapur SG, Jobe AH, Kramer BW. The effects of maternal glucocorticoids and LPS-induced chorioamnionitis on Wnt and Shh signaling in the fetal lung. American Thoracic Society Conference, May 2011, USA.

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September 2012, Pages 672.e1–672.e7





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