‘Our vision is to lead practice through research and knowledge translation that improves clinical care and outcomes’
Grace Centre for Newborn Intensive Care

The Grace Centre for Newborn Intensive Care (GCNIC) at The Children’s Hospital at Westmead is a key service within the Sydney Children’s Hospitals Network (SCHN) and comprises a Neonatal Intensive Care and High Dependency Unit, Department of Neonatology, the Grace Research and Education Units and the Grace Developmental Clinic. GCNIC strives to be a centre of excellence in clinical neonatal care, with clinical and educational practice based on contemporaneous evidenced-based research.

As the major level six referral unit for babies with surgical and cardiac conditions, GCNIC is a unique component of the NSW Pregnancy and Newborn Services Network, with approximately 600 admissions each year and an average length of stay of 10 days. Infants are admitted for complex surgery for congenital or acquired acute conditions (45%); congenital heart conditions requiring surgery (35%), and complex medical conditions (20%).

The clinical service provides acute assessment, diagnosis, stabilisation, treatment and care of critically ill neonates as well as developmental follow-up programs for neonates who have undergone surgery within the newborn period. The GCNIC practice an individualised developmentally supportive model of care for infants and families.

Grace Research Unit

The Grace Research Unit is a leading neonatal research unit with a commitment to multi-disciplinary research. Our researchers collaborate with colleagues in multiple departments within the Sydney Children’s Hospitals Network, nationally and internationally. Grace is an academic research unit, with the majority of the research team having completed or being currently enrolled in higher research degrees. Monthly research meetings are conducted and staff members present their research at these meetings prior to presenting at national and international conferences. Critical Appraisal is also held monthly for the unit to remain up to date with current research and challenge thoughts and practice. We have skills in all aspects of conducting research including study and database design, statistical analysis and the writing of papers for publication. We successfully support a nursing clinical research program, medical and nursing honours students, registrar/fellow college projects and Masters and PhD researchers.

Our achievements in 2016

37 published papers
52 national and international presentations
$3 million in research funding
20 collaborative research projects
Heads of department

**Professor Nadia Badawi AM**
Nadia is the Medical Director and co-head of the GCNIC. Nadia is also the Macquarie Group Foundation Chair of Cerebral Palsy at Cerebral Palsy Alliance Research Institute. Her research interests include cerebral palsy, newborn brain damage, outcomes of neonatal intensive care and neonatal surgery.

**Angela Casey**
Angela is the Nurse Manager of GCNIC and has been in this role for six years and has over 10 years nursing management and leadership experience within SCHN. Angela has a keen interest in nursing leadership and workplace culture.

**Dr Robert Halliday**
Robert is a Senior Staff Specialist Neonatologist and the head of department at the GCNIC. In addition to his clinical commitments he has maintained an active role in medical informatics, clinical process redesign, epidemiological research and post graduate medical education.

Research staff

**Associate Professor Karen Walker**
Karen is a Clinical Associate Professor with the University of Sydney. She is the research manager at GCNIC and leads and facilitates the collaborative research program. She is also a Senior Research Fellow with the Cerebral Palsy Alliance. Her research interests include the outcomes of neonatal intensive care, the global challenges of disability and multidisciplinary collaborative research projects.

**Natalie Fairbairn**
Natalie is the Research Officer at GCNIC. She has been a senior occupational therapist at GCNIC and has worked here since 2012. She is currently completing a PhD investigating the long-term developmental outcomes of eight to nine year olds who have had major cardiac and non-cardiac surgery.

**Emre Ilhan**
Emre is a research assistant and a physiotherapist with a passion for neonates, pain management, research and health ethics, and research design and statistics. Emre has assisted the research team at GCNIC on various projects such as the DAISy8 Study. Emre is planning to undertake research on the epidemiology of pain in cerebral palsy across the lifespan.
Lois Aguanta
Lois has been a Registered Nurse and researcher at GCNIC for five years and is interested in providing encouraging and supportive environments for families learning to adapt to Neonatal Intensive Care Unit (NICU). Her research project is entitled “Helping Skin to Skin Care (SSC) Stick: Using a point-of-care reference tool to improve initiation and documentation of SSC within a Surgical NICU.”

Amy Barker
Amy is a Transitional Nurse Practitioner and has been a member of the GCNIC team for seven years. Her initial research stemming from her nursing Honours degree focused on postoperative pain assessment and management following major neonatal surgery. Her current research focus surrounds the management of complex newborns who are discharged on non-invasive respiratory support.

Dr Peter Barr OAM
Peter is a Neonatologist, researcher and previous head of GCNIC. His studies have included clinical case reports, clinicopathological case series, and cohort studies in sick newborns, studies of novel procedures and treatments in sick newborns, studies of psychological health and/or personality in bereaved parents, NICU parents, NICU nurses and neonatologists.

Dr Kathryn Carmo-Browning
Kathryn is the Deputy State Director of Newborn and paediatric Emergency Transport Service and a Senior Staff Specialist in Neonatology in the GCNIC. Her passion is delivering equitable care to rural babies and children and her research is in the haemodynamic stability of the newborn in retrieval – with a focus on improving survival and outcomes for those babies born critically unwell in rural locations.

Cathryn Crowle
Cathryn is a Senior Occupational Therapist in GCNIC. Cathryn has an interest in the developmental outcomes of cardiac and surgical infants, particularly relating to the early identification of cerebral palsy. Her PhD investigates the use of the General Movements Assessment to predict neurodevelopment in infants who have undergone surgery in the neonatal period.

Alyssa Fraser
Alyssa has worked at the GCNIC for the past three years where she began her nursing career as a new graduate nurse. She was recently regraded as a Clinical Nurse Specialist and is currently acting as a Clinical Nurse Educator.

Claire Galea
Claire is a Statistician and Research Associate at GCNIC. Claire works with specialists undertaking PhDs, Masters and research projects. Claire is responsible for the statistical design and analysis of projects ensuring that data collection, management and reporting are of the highest standard.

Priya Govindaswamy
Priya is a Clinical Nurse Educator in GCNIC and she has worked in emergency and critical care for over 10 years. Priya has a Master’s degree in paediatric nursing and she is currently undertaking research for her MPhil on needs and stressors of parents in the surgical NICU. Priya is passionate about supporting learning and development within the clinical setting.

Nadine Griffiths
Nadine is a Nurse Educator and Clinical Nurse Consultant at GCNIC. Nadine is interested in promoting staff development in the clinical setting by supporting the development of innovative unit-based education initiatives. She is a Newborn Individualised Developmental Care and Assessment (NIDCAP) Certified Professional; she is currently undertaking additional training to become the first NIDCAP trainer in Australasia.

Christine Jorgenson
Christine has worked in GCNIC for nine years as a Registered Nurse. This year she joined the research team as an audit officer, maintaining the NICUS database. She has a strong interest in supporting and participating in collaborative research projects.
Caroline Karskens
Caroline has been part of GCNIC for over 15 years. She is a Registered Nurse in both clinical and research areas. She continues to be involved in research projects, both medical and nursing. Maintaining the NICU’s database is her primary role.

Philippa Mann
Philippa is a Registered Nurse at GCNIC and is also a PhD candidate at Western Sydney University. She is researching Australian practices and perceptions in relation to twin co-bedding in the neonatal period. She hopes to use this as a foundation to conduct a multi-centre trial investigating benefits and risks of the practice for her PhD.

Dr Bhavesh Mehta
Bhavesh is a Neonatologist and Clinical Lecturer at the University of Sydney. His interest area is sleep and he is currently completing a PhD on the prevalence of sleep disordered breathing in neonates and their long-term neurodevelopmental outcomes.

Dr Himanshu Popat
Himanshu is a Neonatologist and Epidemiologist. He is completing a PhD on the effect of delayed cord clamping on systemic blood flow and cerebral perfusion in preterm infants. He has a special interest in point-of-care ultrasound, cardiovascular hemodynamic, cerebral perfusion, biological signal processing and early identification of at-risk infants.

Dr Amit Trivedi
Amit is the coordinator of advanced training in Neonatal and Perinatal Medicine the RACP’s Advanced Training Committee. He is also a supervisor of advanced trainees in neonatal/perinatal medicine. Dr Trivedi has a Masters in epidemiology and has much experience in research. Amit’s main research interests are around nutrition and growth.

Dr Alison Loughran-Fowlds
Alison is a Senior Staff Specialist and Neonatologist in GCNIC. She was awarded her PhD in 2011 and holds a Clinical Lecturer position at the University of Sydney. She is the head of the Grace Development Clinic. Her focus of interest is following the neurodevelopmental outcomes of infants who have undergone major cardiac and general surgery, and integration of the General Movements Assessment into developmental review of surgical infants.

Associate Professor Kaye Spence AM
Kaye is a Clinical Nurse Consultant, Associate Professor (Adjunct) at Western Sydney University and a certified NIDCAP Professional. Kaye is interested in supporting nurses with research, developmental care, feeding complex neonates, pain management and translational research.
Publications


National oral and poster presentations

1. Badawi N. Adults with cerebral palsy. RMSANZ conference. Workshop Chair, organising committee and speaker, Melbourne, 18 October 2016.


Research supporters and collaborations

Clinical Neonatal Nursing Fellowship - Donna Hobson, Registered Nurse

The Fellowship provides an opportunity for a clinical neonatal nurse to learn about research by undertaking a study with supervision. It is hoped that the experience will aid in the translation of research to practice.

Donna undertook a national survey of feeding practices of infants with gastroschisis with over 200 professionals including neonatologists, surgeons and experienced nurses working in surgical neonatal units in Australia and New Zealand. In addition, a retrospective audit was conducted of feeding practices of infants admitted to GCNIC. Her research has resulted in the development of a feeding protocol for these infants. The protocol is being implemented for infants admitted with gastroschisis.
Continuing studies

Development After Infant Surgery (DAISy8)
The DAISy8 study is following up the children at eight to nine years of age who were previously seen at one and three years as part of the DAISy study. We are looking at the longer term developmental and educational outcomes of eight to nine year olds who have had neonatal cardiac or non-cardiac surgery when they are compared to children who have not had early major surgery. The study is assessing the children's cognition, language, attention, behaviour and movement skills.

General Movements After Infant and Neonatal Surgery (GAINS)
The General Movements Assessment (GMA) is a validated and reliable method of identifying infants at risk of neurodevelopmental disability, including cerebral palsy, with the aim of intervening early and improving outcomes. However, minimal data exists on the use of the GMA among infants who have undergone surgery in the neonatal period. The aim of this research is to investigate the use of the GMs assessment with infants following either cardiac or non-cardiac surgery, for the prediction of neurodevelopment at 12 months of age.

Sleep Disordered Breathing (SDB)
SDB in neonates and their long-term neurodevelopmental outcome at three years of age. Evidence suggests that SDB is related to poor neurocognitive outcomes in children. The study looks at the prevalence of sleep-breathing problems in infants, in a cohort that had SDB as a neonate. The study involves assessing the child developmentally using Bayley Scales of Infant Development III, facial photography and conducting a sleep study.

Congenital Heart disease and Early support for family and Infant pSychological Health (CHERISH)
CHERISH is a prospective cohort study investigating the prevalence, course and correlates of psychological morbidity in mothers and fathers following fetal or postnatal diagnosis of complex CHD, compared to healthy controls. It will also investigate the association between parental stress during pregnancy and later infant outcomes, family outcomes and economic costs.

Predicting and Preventing Leukaemia in children with Down syndrome (PreP21)
Children with Down syndrome have a higher risk of developing childhood leukaemia compared to other children of the same age. Evidence is limited in this area, by routinely collecting blood samples of participants and testing for blood cancer cells we hope to develop a test that will in the future help predict which children with Down syndrome are more at risk of developing leukaemia.
In 2017 Grace Centre for Newborn Intensive Care will launch the department’s strategic plan and continue to:

- Start new research projects
- Establish new collaborations
- Publish and present our research
- Support our postgraduate students
- Translate our research into clinical practice.

“I remember there was one patient who we didn’t think would survive. His family brought him in just after he turned one and I burst into tears. I remember thinking, this is why I am here every day. It is incredibly rewarding to be allowed to be a part of a family’s journey and I am very grateful for that.”

Professor Nadia Badawi