



BIENNIAL RESEARCH REPORT 2017 & 2018

WORKING TOGETHER TO PROMOTE CLINICAL RESEARCH EXCELLENCE



PREFACE

During the last two years the amazing staff, who work with children and their supportive and determined families who want to make a difference to all of our patients, have produced some fascinating research. The reach and depth of the various investigations are a tribute to the commitment and interest shown by our researchers. A determination to prove or even disprove a theory which then informs action and makes a contribution to our clinical knowledge takes time, energy and clarity of thinking. This purpose is at the core of delivering Excellence Every Patient Every Time. Our staff want to make a difference both by knowing (Discovery Research) and doing (Translational Research) evidenced-based clinical work.

Our teams are ably supported by a range of systems and support structures including the HNE LHD Research and Innovation Team and Director of Research - Professor John Wiggers, the Hunter Medical Research Institute and its new Director - Professor Tom Walley, the University of Newcastle Priority Research Centres, and the many clinical staff and managers who provide that little bit extra effort to make sure the researchers can deliver.

As always, the partnership with Hunter Children's Research Foundation along with other community fund-raising groups makes many things possible. Our patients and their families are strong advocates and we sincerely appreciate their support. The growth in the research portfolio is inspiring so enjoy browsing through this report and know it just touches on surface - be inspired for 2019-20.

Sincerely



Professor Trish Davidson
Executive Medical Director
Hunter New England Health



Professor Joerg Mattes
Chair of Paediatrics and Child Health
University of Newcastle

MESSAGE FROM THE CHAIR OF THE CHILDREN, YOUNG PEOPLE AND FAMILIES RESEARCH EXECUTIVE

Growing research capacity and outcomes with direct relevance to the health and wellbeing of children has always been a “no-brainer” when it comes to the potential benefits. The earlier preventions and treatments modify the onset and progress of chronic diseases, the greater is the impact and cost-effectiveness in relation to overall disease burden.

Researchers in the Hunter are world-leading when it comes to developing e.g. safe interventions during pregnancy that can prevent birth and newborn complications, asthma and respiratory diseases. These research activities align with a strong emphasis by Hunter New England Health on maternal health and the first 2000 days in a child’s life. In this regard, research is the vehicle that can provide solutions to the world and implement them here in the Hunter to ensure that all children, from beach to the bush, have the best possible start in life.

Researchers in the Hunter have been very fortunate to enjoy the strong support of our community, and on their behalf, I wish to express my deepest gratitude to all children, families, volunteers, donors, and staff who have participated, supported, and facilitated translational research. A very special contribution is made by the Hunter Children’s Research Foundation and the current committee members who work tirelessly to raise funds for the very best research, and more recently the inaugural HCRF Peggy Lang Early Career Research Fellowship.

The Children, Young People and Family Research Executive would like to thank their long-standing past members Professor Trish Davidson, Executive Medical Director Hunter New England Health, Pat Marks, past General Manager, Children, Young People and Family Services, and Associate Professor Bruce Whitehead, Head of the Paediatric Respiratory & Sleep Medicine Department for their invaluable work towards the purpose of this committee, and more broadly, the leadership provided which critically shaped our research achievements and future aspirations.

A research report can only provide a small insight into the kinds of amazing research that has been conducted, including the dedication, diligence and originality required to conclude it successfully. Outcomes have been generated by researchers from Hunter New England Health, the Hunter Medical Research Institute (HMRI), and/or the University of Newcastle who work together in close collaboration across services, departments, HMRI research programs, and University of Newcastle Priority Research Centres on a single goal, to improve Child Health through excellence in research.

Sincerely

Professor Joerg Mattes

GROWING RESEARCH CAPACITY

HUNTER NEW ENGLAND RESEARCH FELLOWSHIPS 2017

The Clinical Research Fellowships Scheme is a major initiative in our research strategy. The Scheme was developed to cultivate a culture of excellence in research among practicing clinicians. In the last Fellowship round, three Child Health Researchers were awarded the prestigious fellowship.



Dr Tracy Dudding-Byth,

Staff Specialist, Clinical Geneticist at Hunter Genetics.

Project Title: The Face Diagnosis (FaceDx) Project: Using advanced computer vision technology to reduce time to diagnosis in children with syndromic intellectual disability

Goal Statement:

“Lead and inspire a growing, effective, harmonious team of researchers working together to make a difference in the lives of individuals with undiagnosed intellectual disability”



Dr Nicole Nathan

Program Manager

Project Title: A randomized trial of an intervention to facilitate the implementation of a state-wide school physical activity policy

Goal Statement:

“Lead policy-relevant research that will inform how to most effectively deliver efficacious preventive health programs to our community”



A/Professor Luke Wolfenden

Program Manager

NHMRC Career Development Fellow

Project Title: Improving the impact of population health interventions through translation

Goal Statement:

“Work to ensure that the effectiveness of preventive health care services continuously improves and reaches all community members for whom they could benefit”

HUNTER CHILDREN'S RESEARCH FOUNDATION PEGGY LANG EARLY CAREER FELLOWSHIP 2018

Thanks to an bequest from a Victorian woman, they never had the privilege of meeting, the Hunter Children's Research Foundation has established its first Early-Career Fellowship supporting high-quality medical research in children's illness.

The three-year funding came from the late Peggy Lang, who was unmarried and didn't have children of her own but wanted to support paediatric research. She gifted HCRF its largest ever donation, comprising an estate that included shares and a parcel of land on remote French Island in Victoria.

On the 15th February 2018, the Foundation officially presented the \$450,000 Early Career Research Fellowship to Dr Megan Jensen, a University of Newcastle/HMRI nutrition researcher working in respiratory health. It includes an allotment to cover costs for two concurrent research projects.



Sheryl Nisner, Janelle Shakespeare, Dr Megan Jensen, Judy Hogan, Lorraine Gardner

"I got goosebumps to hear that Peggy Lang had left this gift, and I look forward to honoring her legacy," Dr Jensen said. "It couldn't have come at a more pivotal time in my career."

"This validates the importance of nutrition in helping children to breathe better for life – it's something that every parent can do, just by the choices they make in supermarket aisles."

Dr Jensen is particularly interested in the influence of maternal nutrition during pregnancy on infant respiratory health. "We looked at the blood levels of Vitamin D in 52 pregnant women with asthma and found that 60% of them had low vitamin D levels during pregnancy," says Dr Jensen. "Higher vitamin D levels during pregnancy were associated with better respiratory outcomes in the infants' first 12 months of life", she adds. Dr Jensen is currently studying a larger sample of pregnant women with asthma and hopes that by improving vitamin D levels in pregnancy so will respiratory health in their babies.

UNIVERSITY OF NEWCASTLE PRIORITY RESEARCH CENTRES

The University of Newcastle (UoN) has recognised its strongest research groups with designation as Priority Research Centres (PRCs). The process of assessment for PRC status is highly competitive and is judged by an external panel of national research leaders.

Seven of the eleven UoN Health PRCs pursue Paediatric and Child Health research within their overall research themes. Many PRC researchers work at or collaborate with Hunter New England Health and KidsHealth to generate discoveries and innovations that are life-changing to children worldwide, and in our community.

The recent Excellence in Research (ERA) report generated by the Australian Government covering the years 2016-2018 has rated our research in Paediatrics & Reproductive Medicine at UoN 'well above world standard' (5 out of 5). This is in line with the last ERA report covering 2013-2015 when Paediatrics & Reproductive Medicine received for the first time a 'well above world standard' rating. UoN is now one out of only three Universities in Australia having achieved 'well above world standard' in the two most recent 3-year periods.

<https://dataportal.arc.gov.au/ERA/Web/Outcomes#/for/1114>

The PRC GrowUpWell® focuses on improving child health through discovery and translational research that generates measurable health impacts of significance to our community.

<https://www.newcastle.edu.au/research-and-innovation/centre/grow-up-well/about-us>

The PRC for Physical Activity and Nutrition investigates physical activity and nutrition for population health, with particular emphasis on education and health promotion strategies for chronic disease prevention, treatment and wellbeing.

<https://www.newcastle.edu.au/research-and-innovation/centre/cpan/about-us>

The PR Centre for Brain and Mental Health Research (CBMHR) is focused on increasing our understanding of the brain and mind across the lifespan, in the absence and presence of disease. The Centre hosts three platforms for research: Preclinical Neurobiology, Psychological Processes and Mental Health.

<https://www.newcastle.edu.au/research-and-innovation/centre/cbmhr/about-us>

The PRC for Health Behaviour (PRCHB) uses intervention and service delivery to promote healthy behaviours and good quality healthcare across communities.

<https://www.newcastle.edu.au/research-and-innovation/centre/chb/about-us>

The PRC for Reproductive Science creates new knowledge in how successful reproduction occurs in humans and animals. Key areas include Aboriginal health and the male and female factors that lead to birth of a healthy baby. Through close collaboration with industry, the Centre develops diagnostics and therapeutics in these areas.

<https://www.newcastle.edu.au/research-and-innovation/centre/crs/about-us>

The PRC for Cancer Research, Innovation and Translation aims to integrate basic science & clinical research bi-directionally, to facilitate rapid development and implementation of our research discoveries, and to stimulate lab research on priority questions generated from the clinic.

<https://www.newcastle.edu.au/research-and-innovation/centre/cancer/about-us>

The PRC for Cardiovascular Health aims to utilise a comprehensive approach to investigate the underlying mechanisms of various cardiovascular diseases. Research within the centre will span basic science, clinical and translational studies to identify therapeutic targets and enhance clinical outcomes for cardiovascular health across the Hunter region.

<https://www.newcastle.edu.au/research-and-innovation/centre/cardiovascular-health/about-us>

THE HUNTER PAEDIATRIC SOCIETY: THE 2017 AND 2018 RESEARCH SHOWCASE EVENT

3rd Hunter Paediatric Trainee Showcase 2017

This event is a platform for junior medical staff to present their research in front of their peers. On 25th October 2017, 7 trainees presented their research to an audience of 70 paediatric clinicians. They presented on sepsis, food allergy, diabetes, asthma, child protection and Kawasaki's disease. Three senior staff members which included Dr Don Anderson, Dr Keith Howard and Dr Paul Craven judged the event. The inaugural Peter Ebeling Award for Excellence in Junior Paediatric Research was awarded to Dr James Mulvany for his work titled "Does radionuclide bone scintigraphy add value to skeletal survey in the diagnosis of abusive fractures in children?"



Dr Rani Bhatia, Dr Daniel Chilton, Dr James Mulvany, Dr Rena C. Ng, Dr Daphne Ng, Dr Kate Meredith, Dr Komal Vora, Dr Andrew Walkolm, Dr Julie Adamson, Patricia Marks

4th Hunter Paediatric Trainee Showcase 2018

A regular event at John Hunter Children's Hospital, the 4th Hunter Paediatric Trainee Showcase was held on 31st October 2018. Nine trainees presented their work on diabetes, anaphylaxis, medication allergy, incontinence, obesity, substance abuse and child protection in front of 70 attendees. The three judges, Dr Bruce Whitehead, Dr Matt Edwards and Dr Rebecca Glover, awarded the Peter Ebeling Award for Excellence in Junior Paediatric Research to Dr Georgina Elliott for her work on "Adolescents with substance use problems in our area: A retrospective review".



Dr Rowen Seckold, Dr Georgina Elliot, Dr Dilharan Eliezer, Dr Hilary Cahill, Dr Krista Monkhouse, Dr Joel Vanderniet, Dr Kate Bryan, Dr Alan Pham, Dr Julie Adamson, Dr Rani Bhatia



HUNTER CHILDREN'S RESEARCH FOUNDATION

The Hunter Children's Research Foundation (HCRF) was formed in 1996 to raise much needed funds for research into children's terminal and debilitating illnesses. HCRF works in association with HMRI and is affiliated with the John Hunter Children's Hospital and HNE Kidshealth.

Its work is overseen by an independent committee, the Children, Young People and Families Research Executive. Money raised in the Hunter by HCRF stays in the Hunter to establish new and continue existing research projects in such areas as asthma, cancer, cystic fibrosis, diabetes and sleep disorders – illnesses that can affect any family at any time.

HCRF aims to provide funds for essential research equipment and fund research grants and fellowships for new and ongoing research. To date HCRF has funded \$1,910,000 in research grants and fellowships as well as \$80,000 in research equipment. Dr Megan Jensen was announced as the recipient of the \$450,000 HCRF Early Career Research Fellowship, funded by the Peggy Lang Bequest, on the 15th February 2018. \$235,000 in research grants were funded in 2017 and 2018.

We are grateful for the support of Jennifer Hawkins and retired paediatrician Dr Cliff Hosking as our patrons together with HCRF ambassadors Matt Hall, Anna Weatherup and Michael and Sue Hagan.

How can you help HCRF?

- By supporting our charity functions e.g. by attending the annual Dine for a Dream Dinner and other events, donating a piece of equipment or prizes for raffles and having a speaker come to the next meeting of your group.
- Follow HCRF by liking our Facebook page Hunter Children's Research Foundation-HCRF.
- Join ReaCH 200 an annual donation program where local businesses and individuals contribute to Research for Children in the Hunter.

For more information about HCRF please call:

Lorraine Gardner, HCRF Secretary/Treasurer, on 0416 044 754.

The current HCRF Committee Members are: [Janelle Shakespeare-Chair](#), [Lorraine Gardner- Secretary/Treasurer](#), [Helen Ancuk](#), [Skye Baldwin](#), [Natasha Beyersdorf](#), [Sheridan Ferrier](#), [Judy Hogan](#) and [Sheryl Nisner](#).



GRANT RECIPIENTS FOR 2017 - HCRF



DR KATHRYN SKELDING, PRC Cancer Research, Innovation and Translation RESEARCHER

'Re-purposing PARP inhibitors to treat childhood leukaemias' \$25000

Dr Kathryn Skelding and Janelle Shakespeare



ASSOCIATE PROFESSOR KOERT DE WAAL, PRC for Cardiovascular Health RESEARCHER

'Left atrium volume and deformation in preterm infants' \$25000

A/Prof Koert de Waal and Janelle Shakespeare



DR NICOLE NATHAN, PRC for Health Behaviour RESEARCHER

'A randomised controlled trial to assess the impact of a uniform intervention on girl's physical activity at school' \$25000

Dr Nicole Nathan and Janelle Shakespeare

GRANT RECIPIENTS FOR 2017 - HCRF AND PRC GROWUPWELL® PARTNERSHIP



DR MALCOLM STARKEY, PRC GrowUpWell® RESEARCHER

'Understanding the role of Group 2 Innate Lymphoid Cells (ILC2s) in paediatric urinary Tract infections' \$20000

Dr Malcolm Starkey and Janelle Shakespeare



DR ADAM COLLISON, PRC GrowUpWell® RESEARCHER

'Role of circRNAs in human eosinophilic Oesophagitis - a novel assessment of disease pathogenesis with potential diagnostic and therapeutic benefit' \$25000

Dr Adam Collison and Janelle Shakespeare



DR VANESSA MURPHY, PRC GrowUpWell® RESEARCHER

'Management of asthma during pregnancy, early life nutrition and offspring respiratory outcomes at age 3' \$25000

Dr Vanessa Murphy and Janelle Shakespeare



PROF JOERG MATTES, PRC GrowUpWell® RESEARCHER

'Grow Well Smoke Free: A double-blind randomised placebo-controlled trial in pregnancy' \$15000

Prof Joerg Mattes and Janelle Shakespeare

COMMUNITY ACKNOWLEDGEMENT OF RESEARCH EXCELLENCE AWARDS 2017

RESEARCH MENTOR OF THE YEAR

SPONSORS: NEWCASTLE PERMANENT BUILDING SOCIETY

RECIPIENT: DR RANI BHATIA

Dr Rani Bhatia has mentored and supervised multiple paediatric advanced trainees at John Hunter Children's Hospital in clinical and academic research within the expanding field of paediatric immunology and allergy over the last five years. These research projects have culminated in publications, scientific presentations and approval of projects from Royal Australasian College of Physicians counting towards paediatric training.

Dr Bhatia has, in a dynamic and inspirational manner, guided trainees in what has been, for many, the first encounter with clinical research.

She is always approachable, despite a busy clinical load and always engaging and innovative in assisting a novice researcher in understanding process and progressing through their work.

Dr Bhatia has also been a leading voice for Hunter Paediatric Society to set up the annual trainee research showcase, giving local medical trainees the opportunity to present their research in front of senior clinicians and colleagues.

Dr Bhatia is supportive and inclusive in her mentoring of paediatric trainees. She provides constructive feedback and comes up with ideas of further improving each individual's effort, thereby enhancing both young researchers' skills and the end-product research in the field of paediatric immunology and allergy. She has provided many trainees with a high standard method of conducting research in their future careers.



Dr Rani Bhatia, award presented by Newcastle Permanent

ACHIEVEMENT IN RESEARCH

SPONSORS: JSA GROUP

RECIPIENT: A/PROF ALISON LANE, PRC GrowUpWell® RESEARCHER

A/Prof Alison Lane is a clinician researcher, accredited practicing occupational therapist and the Program Convenor Occupational Therapy at the University of Newcastle.

Prior to this appointment she was the Director of Occupational Therapy services at the Royal Children's Hospital, Queensland and The Children's Hospital in Denver, Colorado.

Her research group studies sensory features in Autism Spectrum Disorder with the goal to validate a method for classifying individuals with autism into clinically meaningful phenotypes.

A/Prof Lane has published in excess of thirty journal articles, fifty conference papers, and received more than five million dollar in research support. Her major contribution to the field to date is to be the first to identify distinct sensory subtypes in autism and link these to discrete developmental profiles. She is a leader in the investigation of early sensorimotor signs of developmental disability and has recently published new data indicating that early motor signs of autism risk may be observable as early as 4 months of age. Her team has received a funding boost from HMRI this year, via the Gastronomic Lunch, to customize an autism intervention so that it is adopted to work with each child more precisely.

A/Prof Lane is a recognised clinical and research expert in Autism Spectrum Disorder. She leads the conduct of highly innovative studies in the Hunter to develop personalised interventions to achieve better outcomes more quickly in affected children.



A/Prof Alison Lane, award presented by JSA Group's Jeff Shakespeare

ENCOURAGEMENT FOR RESEARCH

SPONSORS: NIB HEALTH FUNDS LIMITED

RECIPIENT: DR MEGAN JENSEN, PRC GrowUpWell® RESEARCHER

Dr Jensen is a clinician researcher and accredited practicing dietitian.

She completed a 2-year overseas postdoctoral fellowship in Canada, at the University of Montreal, under Professor Francine Ducharme. Her research focuses on randomised controlled nutritional interventions and nutritional assessment in maternal and childhood asthma. Her other research areas include a focus on obesity and body composition, having conducted a dietary-induced weight loss trial in children with asthma and characterisation of paediatric obese asthma. Her current research involves the assessment of dietary intake and nutritional status in women with asthma during pregnancy and the relationship with outcomes in their offspring.

Megan has published in excess of 30 journal articles, 15 conference papers and received 19 research grants. She is part of a research team that was awarded \$3.4 million from the Canadian Institutes of Health Research to conduct a multicentre randomised trial to explore the potential of vitamin D in the prevention of virus induced asthma in preschoolers.

She serves as the National Convener for both the Research Discussion Group and the Paediatric and Maternal Health Discussion Group for the Dietitians Association of Australia. She also currently serves as Chair of the Student Mentor Committee for the Nutrition Society of Australia.

Dr Jensen is an early career researcher with impressive achievements. Her research findings may result in new ways how to prevent virus-induced and obesity-associated asthma.



Dr Megan Jensen, award presented by Jane Gray

ACHIEVEMENT IN QUALITY IMPROVEMENT

SPONSORS: THE WESTS GROUP

RECIPIENT: ELIZABETH NEWHAM AND ANTHONY MEANY

Elizabeth and Anthony are the Project Coordinators instrumental in the development of a paediatric clinical audit tool, which has been successfully trialled across 35 acute paediatric wards within New South Wales. The tool was designed to allow paediatric wards to measure patient safety in alignment with the National Safety & Quality Health Service Standards.

The audit tool was developed in consultation with nursing, medical and allied health staff across NSW to measure quality of care and identify clinical risks in their own setting. Data from the audits was recorded using the Quality Auditing Reporting System at the Clinical Excellence Commission. The tool was specifically designed to enable paediatric units to have their own clinical audit tool instead of trying to measure patient safety using tools predominately designed for adult populations.

Elizabeth and Anthony worked with teams to (a) educate staff on using clinical audit tool; (b) use clinical audit to identify quality improvement plans and (c) assist with designing action plans and using appropriate improvement methodology.

Elizabeth and Anthony are the essence of team work. They are two people who have been able to build capacity in local teams in sites that are geographically distant, ranging from tertiary facilities to small rural facilities. They proactively sought out innovative methods to teach, educate and support the units. Because of Elizabeth and Anthony there are a number of paediatric wards with greater staff capacity to implement clinical practice improvement to ensure the safety and quality of children and young people are met.

Elizabeth and Anthony have great ability to manage time, meet deadlines and develop solutions to a very large complex project. There were many barriers that impacted on the success of this project, but Elizabeth and Anthony could tackle these barriers head on. Elizabeth and Anthony were responsive, approachable and skilful at transferring their expertise to novice staff to build a culture of continuous improvement.



Elizabeth Newham, award presented by Professor Trish Davidson

GRANT RECIPIENTS FOR 2018 - HCRF



DR ADAM COLLISON, PRC GrowUpWell® RESEARCHER

Supported by: Gwen O'Brien & Jurox Pty Ltd

'Understanding the link between immune cell function and lung function in the development of asthma in early life'
\$25000



DR ANIRUDDH DESHPANDE, PRC GrowUpWell® RESEARCHER

'Understanding how cohabiting bacteria in urine influence treatment of urinary infections and urinary leakage in children: a pilot study' \$25000



DR ALICE GRADY, PRC for Health Behaviour RESEARCHER

'An online intervention to improve child dietary intake in childcare' \$25000

COMMUNITY ACKNOWLEDGEMENT OF RESEARCH EXCELLENCE AWARDS 2018

RESEARCH MENTOR OF THE YEAR

SPONSORS: NEWCASTLE PERMANENT BUILDING SOCIETY

RECIPIENT: PROF PHILIP MORGAN, PRC for Physical Activity and Nutrition RESEARCHER

Prof Philip Morgan is the Deputy Director of the Priority Research Centre in Physical Activity and Nutrition at the University of Newcastle. He is the leader of a ground breaking program of internationally acclaimed lifestyle programs, which have captured the attention of the community, partners, funding agencies and a global network of organisations. As a researcher, Phil has an outstanding track record. He has obtained in excess of \$12 million in competitive grant funding, has 244 peer-reviewed publications and a h-index of 41 (Scopus); 55 (Google scholar). He is frequently invited to keynote major conferences and professional forums (n=24), has served on important national advisory committees and has an impressive media profile (>550 interviews).

As a research mentor, Phil is an award winning research higher degree (RHD) supervisor who has supervised 24 students to completion. He is described by previous RHD students as inspiring, engaging and motivating. A supervisor who consistently goes well above and beyond for his students actively seeking professional development opportunities, assisting with professional networking; supporting and encouraging award and scholarship applications and providing timely and insightful feedback. He recognises the importance of involving his students in the decision-making process, thus helping to increase their confidence as independent researchers. Of note, many of Phil's former students have secured competitive academic positions and post-doctoral fellowships. Phil possesses the unique ability to communicate knowledge and expertise to everyone he has contact with – be it a student, professor, or lay person in the community.

Finally, Phil is an extraordinary role model, both in his personal and professional life. He is a caring and present father who enjoys and prioritises spending time with his young family.



Prof Phil Morgan, award presented by Dr Cliff Hosking

ACHIEVEMENT IN RESEARCH

SPONSORS: JSA GROUP

RECIPIENT: A/PROF LUKE WOLFENDEN, PRC for Health Behaviour RESEARCHER

Associate Professor Luke Wolfenden is a behavioural and implementation scientist, and a health service provider and researcher. His research seeks to reduce the burden of chronic disease in the community, and has a particular focus on the prevention of child overweight and obesity in community organisations such as schools, child care etc. The success of his child obesity research is founded on his ability to work with end users to identify solutions for improving children's diet and physical activity that once proven, are readily implemented into routine practice.

Luke completed his PhD just 12 years ago. Since that time Luke has emerged as an international leader in this field. He began by leading the evaluation of the highly awarded and influential HNE Good for Kids child obesity prevention program, and has subsequently developed an internationally renowned team of child obesity prevention and implementation science researchers, including 6 post-doctoral researchers and 10 PhD students.

From an academic point of view Luke has published a remarkable 377 papers since being awarded his PhD, has been awarded \$21m in competitive research grants. From a service improvement perspective his research has directly led to changes at the local, state and national levels in hospitals, schools, child care services and community sports clubs. He has received numerous local, national and international awards for his research and translation impacts, including a National Preventive Health Research Translation Award, and an International Society for Behavioural Medicine award.

This outstanding career research trajectory was this year recognised by Luke being awarded a prestigious Centre for Research Excellence grant from the NHMRC to establish a national centre of excellence in chronic disease implementation science – an award that is a fitting recognition of his research and service delivery leadership capabilities.



A/Prof Luke Wolfenden, award present by JSA Group's Mark Amos

ENCOURAGEMENT FOR RESEARCH

SPONSORS: NIB HEALTH FUNDS LIMITED

RECIPIENT: DR PRUDENCE LOPEZ, PRC for Reproductive Science RESEARCHER

Dr Prudence Lopez graduated from Newcastle University in 2006 with a 1st in Obstetrics and Gynaecology.

She started paediatric training in 2009, completed a Diploma in Child Health (highly commended) in 2009. She commenced training in Paediatric Endocrinology in 2011 completed her fellowship in 2016.

Prue commenced her PhD program in 2012 and graduated in 2018. During this time, Prue published 8 articles, presented at several conferences, won an International Society of Paediatric and Adolescent Diabetes research prize, got married and had 2 children.

Prue's research has had a significant impact on the management of paediatric type 1 diabetes.

Her first article described the influence of environmental factors on the insulin pump function.

Her other articles have demonstrated that protein and fat in meals increase the blood glucose levels and explored how to give insulin to address this problem. Prue's articles are quoted in national and international paediatric diabetes management guidelines and have influenced diabetes management across the world.

Prue is an original thinker, hard worker and diligent researcher. Her achievements have been outstanding, and she is a worthy recipient of this prize.



Dr Prudence Lopez, award presented by NIB Health's Dean Armida

ACHIEVEMENT IN QUALITY IMPROVEMENT

SPONSORS: THE WESTS GROUP

RECIPIENT: PAEDIATRIC PALLIATIVE CARE TEAM

The John Hunter Children's Hospital Paediatric Palliative Care Service developed a telehealth supported in-home volunteer program for patients and families in regional and rural areas within the service's catchment area.

The use of IT systems such as Telehealth and Camtasia maximises the efficiency of staff who are supporting and training volunteers, by reducing travel time and duplication as well as providing a resource for volunteers to access training for the future.

By partnering with existing adult palliative care volunteer organisations, the Program effectively utilises an existing resource, while providing opportunities to upskill interested volunteers.

Evaluation of both the training and the volunteer service was conducted in 2017-18, with both being highly rated by volunteers, families and relevant staff. The program is ongoing and provides capacity for timely activation of volunteers for families in need.

Congratulations to the Paediatric Palliative Care Team.



Madelon Scully and Dr Sharon Ryan representing the Paediatric Palliative Care Team, award presented by Professor Trish Davidson

DISCIPLINE OF PAEDIATRICS ADVANCED TRAINEE PROJECT AWARD

The purpose of the RACP Paediatric or Royal Australasian College of Physicians Paediatric Advanced trainee project award is to provide funds towards the statistical analysis of research data by a senior statistician. In 2018, the award winners were Dr Kate Bryan and Dr Alison Freeth.

Dr Kate Bryan

“Diagnostic checklists and their use in infants less than 1 year of age who present to JHH emergency department with fractures”,

Supervisors: Dr Marea Murray and Dr Anna Lachowicz

Dr Alison Freeth,

“Prescribing rates of Proton Pump Inhibitors in Paediatric Patients”

Supervisor: Dr Scott Nightingale



Dr Alison Freeth

RESEARCH OUTCOMES

HIGH-FLOW OXYGEN TO TREAT ACUTE RESPIRATORY DISEASES IN CHILDHOOD

High-flow oxygen has become the routine hospital treatment for many infants with bronchiolitis since researchers from the John Hunter Children's Hospital and HMRI have shown its benefit in a clinical trial published in The Lancet and funded by HCRF. "Fewer babies experienced treatment failure with high-flow oxygen in the study. The treatment might also have a role as a rescue therapy to reduce the proportion of children requiring high-cost intensive care", said Dr Elizabeth Kepreotes, Clinical Nurse Consultant at the John Hunter Children's Hospital. Her team received the NSW Health Excellence Award for Research & Innovation 2018 for the work.



Professor Andrew Searles, Dr Adam Collison, Mark Kepreotes, Dr Elizabeth Kepreotes, Associate Professor Bruce Whitehead, Professor Joerg Mattes, Professor Trish Davidson.

"Our results have been confirmed in a larger study involving multiple hospitals, which cements the beneficial role of high-flow oxygen in babies with bronchiolitis", Professor Mattes adds. "What we need to know now is whether high-flow oxygen also works in lung conditions seen in older children where oxygen needs to be given". A larger clinical trial is already funded by the government and underway. The study involves the John Hunter Children's Hospital along with 18 other hospitals across Australia and New Zealand and will recruit more than 1600 children with results expected in 2021.

BETTER DIAGNOSTIC AND TREATMENT APPROACHES FOR RARE DISEASES IN CHILDHOOD

Cushing's disease is a rare yet burdensome disease of the hormonal system that manifests with growth failure and weight gain with abnormal fat distribution including a round, "moon" face, high blood pressure, and weak muscles. Most commonly it is caused by tiny tumours within the pituitary gland that sits under the middle part of the brain.

At the 2017 European Congress of Endocrinology in Lisbon, Portugal, Associate Professor Patricia Crock from the John Hunter Children's Hospital, and her husband, Dr Dieter K. Luedecke, Emeritus Head of Pituitary Surgery and the Neuroendocrine Laboratory at University Hospital Eppendorf Hamburg, presented their unique 30 years experience of 100 children with Cushing's disease.

The work outlined innovations in diagnosis, such as the first use of non-invasive salivary cortisol testing and neurosurgical approaches developed by Dr Luedecke including micro-biopsies, to achieve nearly 100% remission of the condition.



Associate Professor Patricia Crock and Dr Dieter K. Luedecke

It is the second largest case series after that from the National Institutes of Health, Bethesda, USA and changed the clinical approach towards Cushing's disease in this Excellence Centre as well as other leading health institutions around the world. The poster was awarded with a prize, chosen from more than 1800 posters at the meeting and the research has been published in the Journal of Pediatric Endocrinology and Metabolism.

USING SIMPLE BLOOD TEST MARKERS TO PREDICT WHICH BABIES WILL NEED A LIVER TRANSPLANT

“Biliary atresia, whilst being a rare condition, is the commonest chronic liver disease leading to liver transplantation in infants”, says Dr Scott Nightingale, Paediatric Gastroenterologist at the John Hunter Children’s Hospital and HMRI researcher. Babies with biliary atresia are jaundiced (yellow in colour) and pass pale stools indicating a problem with the tubes that drain bile from the liver. When babies with biliary atresia are diagnosed, a surgical procedure is required to help drain bile from the liver, but more than half of these babies will require a liver transplant. Early identification of babies requiring liver transplantation is critical in order to refer and prepare for transplantation.

Using data from 217 infants from New South Wales and Canada, his research team showed that using two simple blood test markers, bilirubin and albumin, at 3 months after the initial surgical procedure could reliably predict which infants will require a liver transplantation within the first two years of life.



Dr Scott Nightingale

PERSONALISED MEDICINE FOR RARE PEDIATRIC KIDNEY DISEASE

Imagine if your child or grandchild had to endure several invasive surgical procedures before they even started primary school. Imagine the uncertainty of not knowing the underlying cause of the condition and what can be done to prevent it from reoccurring.

In cutting-edge new studies supported by the PRC GrowUpWell and brought about by collaboration between Biomedical Scientist Dr Malcolm Starkey at HMRI, Paediatric Surgeon Dr Ani Deshpande from the John Hunter Children's Hospital and clinicians from Canberra, a personalised medicine approach is developed to identify the underlying genetic mutation resulting in a specific kidney condition. Then the team tests, in laboratory models, how these mutations cause kidney disease as well as new ways of harnessing the power of the immune system, our body's natural defense and repair mechanism, to reduce the severity of the condition.

Current research focuses on a rare kidney stone disease called cystinuria affecting children in particular. "Our targeted approach may hold the key to curing rare diseases and unlock new knowledge that may have broad implications for using our immune system as a therapy-delivery system", says Dr Malcolm Starkey.



Dr Dilharan Eliezer, Dr Aniruddh Deshpande, Dr Malcolm Starkey, Guy Cameron, Nirmal Bhatt, Svenja Loering

PREVENTING “HEARTBREAK” IN PRETERM BABIES

Research in the neonatal intensive care unit (NICU) of the John Hunter Children’s Hospital has a strong focus on the neonatal heart and vasculature, especially in preterm infants. In the past year the NICU team have completed an HCRF funded randomised pilot study exploring patent ductus arteriosus treatment.

“The ductus arteriosus is a blood vessel that joins two of the major arteries, the aorta and the pulmonary artery, and is supposed to close early after birth. However, in almost half of all extremely preterm infants the ductus arteriosus remains open which can lead to problems of fluid overload in the heart and lungs”, says Associate Professor Koert de Waal, Neonatologist at the John Hunter Children’s Hospital.

Earlier closure can be achieved with anti-inflammatory drugs, but these drugs are not without side effects. Dr de Waal and colleagues have now completed their pilot trial funded by the HCRF showing that comparable clinical outcomes can be achieved with or without treatment. This result paves the way for a large international multicentre study.

Dr de Waal’s team studied the changes in size, shape and function of the heart and how those relate to the development of heart failure in preterm infants. Conventional and novel echocardiography techniques such as blood speckle imaging have been used to monitor heart dysfunction during the neonatal intensive care period.



Dr Nilkant Santram Phad, Edward Crendal, Associate Professor Koert de Waal

FROM BENCH TO BEDSIDE: NEW HOPE FOR CHILDREN WITH SEVERE ASTHMA

When Professor Joerg Mattes, a paediatrician at the John Hunter Children's Hospital and researcher at HMRI, undertook vital research at HMRI's Laureate Professor Paul Foster laboratory into the role of an immune cell called 'the eosinophil' in asthma, they were hopeful that targeting this cell with new drugs may be life-changing for some asthma sufferers. "Drug companies around the world began working on inhibitors, which is an art form in itself," Laureate Professor Foster recalls. "However, the first clinical trials failed its proof-of-principle and development closed down almost overnight." The drugs were shelved. "Some very clever clinicians around the world then started looking more closely at patients who had active eosinophils. They singled them out to receive the drug, and that's when we started to get the really great results," Laureate Professor Foster adds.



Laureate Professor Paul Foster and Professor Joerg Mattes

"Almost all breakthrough treatments in asthma, and many other diseases for that matter, come from discovery research done in the laboratory. It starts with the use of models to understand the mechanisms, before drug companies can begin developing therapies," Dr Mattes says. "The other important part of the story is implementing the new treatments into practice, which is what we're doing. Children can't be treated simply as small adults."

At the Severe Asthma Clinic at John Hunter Children's Hospital clinicians work in a multi-disciplinary team to identify the treatment which is exactly matched to the underlying problem that causes the uncontrolled asthma in the child.

When a thunderstorm was approaching the hills of Tamworth, 14-year-old Olivia Burke knew that a trip to the emergency department may be required due to her severe asthma. However, Olivia's asthma dramatically improved when she was started on a treatment of blocking the action of Interleukin-5 receptor (protein) which depletes eosinophils from the lungs. Her mum Gail said it has completely changed her daughter's life. "She was on a mountain of medication, she would have two to three episodes a year that required hospital admission. "It's just been a miracle, it's changed her life completely and we haven't had one episode since May 2018" Gail said. For Olivia, she can now do many things her asthma has previously prevented. "I can ride horses now without being allergic to them and I can play a full game of netball now without needing to use my Ventolin," Olivia said.

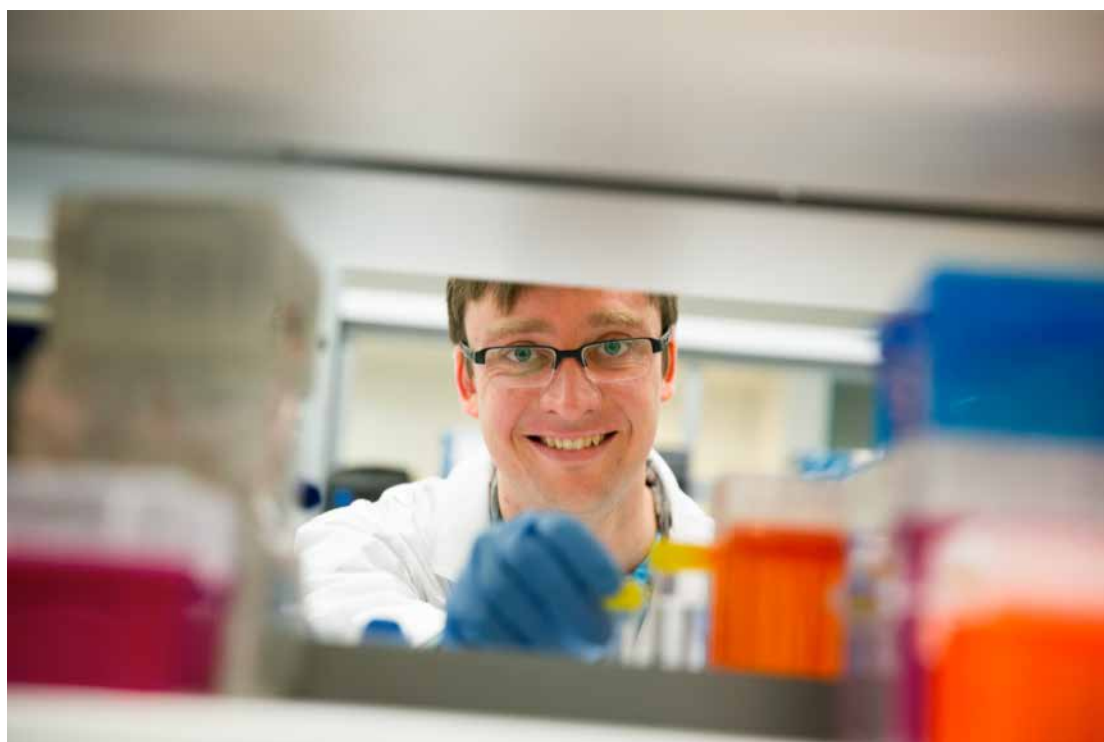
However, there is no cure for asthma and the new treatments have not been tested in very young children. “We need to find better treatments for all those who are still struggling to manage their symptoms, specifically very young children. The majority of patients who are admitted with asthma or wheezy illnesses are younger than 5”, Professor Mattes says.



Olivia Burke

FINDING THE GOOD BUGS THAT PREVENT LUNG DISEASE

Bronchiolitis accounts for more than half of all infant hospitalisations in Australia, and there is no prevention -yet-. “One factor that may impact susceptibility to respiratory infections in babies is an altered colonisation of their guts by bacteria”, says HMRI researcher Dr Adam Collison. “These bacteria are known as the gut microbiome and the formation of this is an important process in early life.” The gut microbiome is made up of between 300 and 1000 different species of bacteria in varying amounts and these bacteria interact with the host immune cells residing in the intestinal wall. This relationship can shape the child’s immune response. The species of bacteria that make up the microbiome can be modified by diet, supplements and medicines, making it a potential target for therapeutic intervention.



Dr Adam Collison

In studies funded by HCRF, Dr Collison collected microbiome information from 180 babies at 6 weeks of age and found a different pattern of bacterial colonisation in the gut in those infants who develop bronchiolitis during their first year of life. “This work is a step towards the development of interventions that can establish a gut microbiome found in babies with good respiratory health”.

INNOVATIVE APPROACHES FOR BETTER DIABETES CONTROL

Type 1 diabetes in children is managed using injections of insulin, either continuously as an insulin pump or with multiple daily injections of insulin. Regardless of the method of insulin delivery bolus doses of insulin are required prior to eating. Traditionally, the mealtime insulin dose has been calculated based on the carbohydrate ratio of the meal. However, patients and clinicians have noticed spikes of high glucose levels after high protein and fat meals, even when the carbohydrate counting was accurate. High glucose spikes are associated with an increased risks of complications of diabetes including cardiovascular disease, retinal disease and kidney disease. New methods of determining the mealtime insulin dose that take into account meal fat and protein have been developed.

In a study led by Professor Bruce King and Dr Prudence Lopez from the John Hunter Children's Hospital and done in collaboration with the Perth Children's Hospital three different methods of calculating mealtime insulin dose were compared. "We found that for high protein meals, the so-called Pankowska equation resulted in a lower increase in glucose levels compared to other methods", said Dr Prudence Lopez. However, there was a higher risk of low glucose levels with the Pankowska Equation. For the high fat meal, there was no difference in glucose levels for any of the dosing methods used.

"Regardless of insulin dosing method used, blood glucose control following a high protein or high fat meal is not optimal", adds Dr Lopez. This study added to the body of research that additional insulin is required for high fat and protein meals, however more research is urgently required to determine the optimal insulin dosing method for these meal types.



Back row: Helen Phelan; Dr Rowen Seckold; Katherine Bird; Megan Paterson; Donna Williams; Marcelle Pappas; Michelle Neylan; Emma Fisher; Dr Carmel Smart; Liz Nunn; Dr Prudence Lopez; Prof Bruce King.
Front row: Alison Wright; Tanya Sutton; Anne McCrea; Dr Donald Anderson; A/Prof Patricia Crock; Joan Laidler; Dr Komal Vora.

CHILDHOOD ASTHMA RATES REDUCED WITH TAILORED INTERVENTION

Personalised management approach to pregnant women's asthma may halve the rates of childhood asthma. Professor Joerg Mattes says that one of the holy grails of asthma research is to demonstrate that childhood asthma can be prevented. "If we can demonstrate that intervention can lead to the prevention of asthma that is exciting because prevention is better than a treatment."

In this recent study, researchers followed up on the asthma status of pre-school aged children born to asthmatic mothers who had participated in the Managing Asthma in Pregnancy (MAP) trial. In this trial, one group was randomly allocated a traditional asthma-management approach while the other used a personalised approach by measuring a lung-inflammation marker and tailored treatment to the mother's lung inflammation and symptoms.

"With this new approach, pregnant women were on preventers earlier, and it was adjusted according to the levels of inflammation in the lungs," Professor Mattes explained. "When we followed up on these children four to six years later we found that the rates of childhood asthma were very much reduced by approximately half,"

One of the most common childhood illnesses, asthma impacts children's quality of life. In Australia, over 37,000 hospitalisations per annum are due to asthma, with children aged 0 -14 years hospitalised at a significantly higher rate. Asthma can be deadly if it is uncontrolled, with up to 400 deaths per year in Australia attributed to asthma.

Breathing For Life respiratory researcher Dr Vanessa Murphy's research goal is to eliminate asthma. "Asthma is very unpredictable in pregnancy and we know that women who have poorly controlled asthma are more likely to have children who will develop asthma," Dr Murphy said.



Professor Joerg Mattes, Dr Vanessa Murphy.

"What we've found is that when women's asthma is controlled optimally by adjusting medication according to lung inflammation, we're potentially preventing bronchiolitis in babies, and reducing the rate of asthma in pre-schoolers who are susceptible." Dr Murphy explained. The research, published in The Journal of Allergy & Clinical Immunology (JACI) supports the benefits of regular inhaled steroid asthma preventer therapy during pregnancy for those women who need it for their asthma control instead of not taking the medication because of pregnancy. "It's better for the mother, and for the baby, to take the medications that are needed to have optimal asthma control" Professor Mattes concluded.

DEVELOPING EVIDENCE-BASED SOLUTIONS TO PROMOTE HEALTH AND WELL-BEING OF CHILDREN IN OUR COMMUNITY

Associate Professor Luke Wolfenden and his team from the Priority Research Centre for Health Behaviour are leading a large program of work to promote health and well-being in childhood and reduce the risk factors for future non-communicable diseases such as diabetes, cancer and cardiovascular disease. This research focusses on improving children's diet, physical activity and prevent unhealthy child weight gain. Collaborating with colleagues at the Hunter New England Population Health Research Group, and other government, non-government and industry partners, Dr Wolfenden has developed and tested a number of effective health programs that are making a real difference to community health.

These include the Feed-Australia intervention to improve foods provided to children in childcare services and an intervention to improve child physical activity in the childcare setting. The programs have been adopted by the Hunter New England Local Health District and will be provided to all childcare services in the region. Further evaluation and dissemination of the program has been made possible by government funding from the National Health and Medical Research Council.



Associate Professor Luke Wolfenden

In the school setting, two physical activity programs have been developed, one targeting primary school aged children, the other children attending high school, and are being disseminated across the state. Both interventions have been found to be effective in improving child physical activity. Furthermore, recent trials demonstrating the potential impact of interventions to improve the nutritional quality of foods packed in children's lunch-box and a web-based intervention to improve the purchasing of healthy foods from online school canteens hold considerable promise. "Trials to confirm their impact are well underway and may lead to large scale roll-out of these programs across the state", says Dr Wolfenden.

POLYUNSATURATED FATTY ACID SUPPLEMENTATION TO PREVENT LUNG DISEASE IN PRETERM INFANTS?

Bronchopulmonary dysplasia is a serious lung condition affecting preterm babies. It is characterised by an inflammatory reaction in the lungs and abnormal lung development. Enriching diets with n-3 long-chain polyunsaturated fatty acid docosahexaenoic acid (DHA) can suppress inflammatory responses. In a clinical trial involving the John Hunter Children's Hospital and 12 additional hospitals in Australia, New Zealand and Singapore, 1273 preterm babies were randomised to receive either an emulsion providing DHA or soy without DHA as a control.

The research published in the prestigious journal The New England Journal of Medicine showed that DHA supplementation did not result in a lower risk of bronchopulmonary dysplasia than a control soy emulsion among preterm infants and may have resulted in a greater risk. "These results highlight the importance of conducting adequately powered randomised trials to test new interventions and reinforce the need to be careful about the amounts of all nutrients as more is not necessarily better", writes Dr Javeed Travadi, study lead and Neonatologist at the John Hunter Children's Hospital.



Dr Javeed Travadi and Roslyn Black.

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**EXPLORING HOW CHILDREN GROW UP WELL
IS THE KEY TO LIFE-LONG HEALTH**

Cliff Hosking
'The Explorers'