## CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>WELCOME - PROFESSOR ADAM JAFFE</td>
<td>3</td>
</tr>
<tr>
<td>PROGRAMME OVERVIEW</td>
<td>4</td>
</tr>
<tr>
<td>SNAPSHOT: DISCIipline OF PAEDIATRICS</td>
<td>6</td>
</tr>
<tr>
<td>In Brief</td>
<td>6</td>
</tr>
<tr>
<td>Location</td>
<td>6</td>
</tr>
<tr>
<td>Researchers</td>
<td>6</td>
</tr>
<tr>
<td>Higher Degree Research Candidates</td>
<td>6</td>
</tr>
<tr>
<td>Grants</td>
<td>6</td>
</tr>
<tr>
<td>Publications</td>
<td>7</td>
</tr>
<tr>
<td>What is HERDC?</td>
<td>7</td>
</tr>
<tr>
<td>OPENING ADDRESS - PROFESSOR TERRY CAMPBELL</td>
<td>8</td>
</tr>
<tr>
<td>KEYNOTE ADDRESS - PROFESSOR JOHN MATTICK</td>
<td>9</td>
</tr>
<tr>
<td>INVITED SPEAKERS</td>
<td>10</td>
</tr>
<tr>
<td>Dr Meredith Ward</td>
<td>10</td>
</tr>
<tr>
<td>Dr Antoinette Anazodo</td>
<td>11</td>
</tr>
<tr>
<td>Dr Nadine Kasparian</td>
<td>12</td>
</tr>
<tr>
<td>Dr David Ziegler</td>
<td>13</td>
</tr>
<tr>
<td>A/Prof Maria Craig</td>
<td>14</td>
</tr>
<tr>
<td>Dr John Lawson</td>
<td>15</td>
</tr>
<tr>
<td>ACCEPTED ABSTRACTS</td>
<td>16</td>
</tr>
<tr>
<td>Dr Claire Wakefield</td>
<td>16</td>
</tr>
<tr>
<td>Dr Susan Woofenden</td>
<td>17</td>
</tr>
<tr>
<td>Ms Ursula Sanson-Daly</td>
<td>18</td>
</tr>
<tr>
<td>Dr Santuri Rungan</td>
<td>19</td>
</tr>
<tr>
<td>Dr Paul Gray</td>
<td>20</td>
</tr>
<tr>
<td>Dr Lisa Ewans</td>
<td>21</td>
</tr>
<tr>
<td>Ms Christina Signorelli</td>
<td>22</td>
</tr>
<tr>
<td>Dr Kristen Neville</td>
<td>23</td>
</tr>
<tr>
<td>Ms Jeyran Shabazi</td>
<td>24</td>
</tr>
<tr>
<td>Mr Sohaib Virk</td>
<td>25</td>
</tr>
<tr>
<td>Dr Laverne Lok</td>
<td>26</td>
</tr>
<tr>
<td>Swaranjali Jain</td>
<td>27</td>
</tr>
</tbody>
</table>
It gives me great pleasure to welcome you to the second UNSW Paediatric Research Showcase, the culmination of UNSW Paediatric Research Week.

Over the past week we have had the opportunity to see the wide range of research excellence in Paediatrics undertaken on this campus. I was particularly delighted to see the growing research in Allied Health and Nursing.

The positioning of Sydney Children’s Hospital within the Health-Science Alliance affords us a great opportunity to embed research in health delivery with the ultimate aim of improving the health outcomes of the children we look after.

I would like to thank all our speakers today for their support for this event.

I would like to thank Professor John Mattick, Director of the Garvan Medical Research Institute for giving today’s keynote address. Genomics research is a key research priority for the campus and our collaborations with the Garvan Institute present great opportunities in this new era of genomic medicine.

Thank you for joining us and supporting this event.

Congratulations to our Independent Learning Project (ILP) Finalists who presented their research on Wednesday 12th November. The standard of written abstracts was extremely high making it very difficult to choose the final four. We will be announcing the recipients of the two prizes (Overall Winner and People’s Choice), this afternoon.

We will also be announcing the winner of the Margaret Dance Prize for the highest ranked BSc Med (Hons) student in the Discipline of Paediatrics for 2013. Again, the standard of work from our four Honours students last year was reflected in their marks - all High Distinctions.

Well done not only to our winners, but all of our students who submitted abstracts for the ILP Awards, together with all of our Honours students.

I would also like to thank Samantha McFedries, Sara Savige and Mary Hattingh for the organisation of this event. I am sure you will agree with me that they have done a magnificent job.

Professor Adam Jaffe
John Beveridge Professor of Paediatrics
Head of Discipline of Paediatrics
School of Women’s & Children’s Health

Associate Director of Research
Sydney Children’s Hospitals Network
(Randwick)
PROGRAMME OVERVIEW

The Showcase features a number of researchers at varying stages of their career, improving health outcomes for children - from infants through to adolescents.

The Showcase is designed to encourage, stimulate, and inspire paediatric research at UNSW, the Randwick Hospitals Campus, and associated Medical Research Institutes.

9:00 AM  Opening Address: Professor Terry Campbell  
Senior Associate Dean, UNSW Medicine; Professor of Medicine, St Vincent’s Clinical School, UNSW Medicine; Convenor, The Health-Science Alliance.

9:15 AM  Keynote Address: Professor John Mattick  
Executive Director; Lab Head - RNA Biology and Plasticity, The Garvan Institute of Medical Research  
Transforming the diagnosis, understanding and treatment of paediatric disease through genomics.

SESSION 1:  CHAIR - PROFESSOR ADAM JAFFE

9:45 AM  Accepted Abstract: Dr Claire Wakefield:  
Quality of life in grandparents of children with, and without, cancer.

10:00 AM  Accepted Abstract: Dr Susan Woolfenden:  
Equitable Access to Developmental Surveillance and Early Intervention - Understanding the Barriers for Children from Culturally and Linguistically Diverse (CALD) Backgrounds.

10:15 AM  Accepted Abstract: Ms Ursula Sansom-Daly:  
Harnessing e-health to promote resilience in adolescent and young adult cancer survivors.

10:30 AM  Accepted Abstract: Dr Santuri Rungan:  
Child development and settlement: A longitudinal study of refugee children.

10:45 AM  Invited Speaker: Dr Meredith Ward  
Vascular endothelial growth factor receptor 3 expression in normal and hypoxic developing brain and retina.

11:00 AM  MORNING TEA

SESSION 2:  CHAIR - PROFESSOR RICHARD LOCK

11:15 AM  Accepted Abstract: Dr Paul Gray  
Next Generation Sequencing for diagnosis and discovery of single gene immune diseases: Preliminary report of the CIRCA collaboration.

11:30 AM  Invited Speaker: Dr Antoinette Anazodo:  
Fertility Understanding Through Registry and Evaluation (FUTuRE Fertility)

11:45 AM  Invited Speaker: Dr Nadine Kasparian  

12:00 PM  Accepted Abstract: Dr Lisa Ewans  
The success of whole exome sequencing diagnosis in a large cohort of patients with Mendelian disorders.
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 12:15 PM | Accepted Abstract: Ms Christina Signorelli  
The impact of long term follow-up care on dental awareness and practices in childhood cancer survivors. |
| 12:30 PM | Invited Speaker: Dr David Ziegler  
Novel therapies for the most aggressive cancer of childhood |
| 12:45 PM | LUNCH |
| 1:00 PM | CLINICOPATH CONFERENCE (CPC)  
As per regular scheduling |
| 2:05 PM | ANNOUNCEMENT:  
ILP AWARD WINNERS 2014  
THE MARGARET DANCE PRIZE FOR BSC MED (HONS) 2013 |

**SESSION 3: CHAIR - PROFESSOR WILLIAM LEDGER**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 2:15 PM | Accepted Abstract: Dr Kristen Neville  
Appearance of Vitamin D abnormalities in older survivors of childhood cancer. |
| 2:30 PM | Invited Speaker: A/Prof Maria Craig  
Enterovirus infection and type 1 diabetes – more than a chance association |
| 2:45 PM | Accepted Abstract: Jeyran Shabazi:  
Highly synergistic combination therapy of the BET bromodomain inhibitor JQ1 and the histone deacetylase inhibitor Panobinostat against neuroblastoma. |
| 3:00 PM | Accepted Abstract: Sohaib Virk  
Impact of glycaemic variability on complications risk in young people with type 1 diabetes. |
| 3:15 PM | Invited Speaker: Dr John Lawson  
Adventures with Clinical Trials in Tuberous Sclerosis. |
| 3:30 PM | Accepted Abstract: Dr Laverne Lok  
| 3:45 PM | Accepted Abstract: Swaranjali Jain  
Characterising severity and assessing responsiveness to change of the epidermolysis bullosa disease activity and scarring index. |
| 4:00 PM | Closing Address: Professor Bill Ledger  
Head of School, School of Women’s & Children’s Health, UNSW Medicine |
| 4:10 PM | AFTERNOON TEA |
SNAPSHOT: DISCIPLINE OF PAEDIATRICS

IN BRIEF

The Discipline of Paediatrics is part of the wider School of Women’s & Children’s Health and a department within UNSW Medicine, The University of New South Wales. The Discipline of Paediatrics is involved with the teaching of undergraduate medical students including supervision of Honours and Independent Learning Projects; and postgraduate supervision of higher degree candidates – PhD, Masters of Science, and Masters of Medicine. The Discipline supports and encourages the research activities of clinical academics, hospital scientists, allied health, and nursing staff.

LOCATION

Located at the Randwick Hospital Campus, the heart of the Discipline of Paediatrics is at Sydney Children’s Hospital. However, teaching and research is not only limited to this Campus and Hospital – staff are also based at the Royal Hospital for Women, St George, Bankstown and Liverpool. The Discipline also contributes to the teaching of paediatrics at Sutherland and Campbelltown Hospitals; Albury-Wodonga, Wagga Wagga, Port Macquarie, and Coffs Harbour Base Hospitals and campuses of UNSW’s Rural Clinical School.

RESEARCHERS

Researchers within the Discipline of Paediatrics are contributing both nationally and internationally with novel and innovative discoveries and interventions in behavioural sciences, cancer, endocrinology, gastrointestinal, genetics & genomics, immunology & infectious diseases, neonatology, nephrology, neuroscience, population health, and respiratory – as well as other priority-research areas.

The Discipline of Paediatrics is comprised of academic, professional and technical, research support, operational, and conjoint appointments. The combined School of Women’s & Children’s Health currently has 48 research and teaching academic staff.

Conjoint staff are also an extremely valuable research and teaching resource to the Discipline of Paediatrics. Approximately two-thirds of the research output from the Discipline is generated from UNSW conjoint staff. Conjoint staff are defined as hospital employees who have an honorary appointment at UNSW.

The Discipline comprises clinical academics, lab-based hospital scientists, allied health and nursing staff.

In October 2014, the Discipline of Paediatrics had a total of 180 conjoint appointments, lecturer level and above. Of these, 167 were involved in research and teaching, or research only activities within the Discipline.

HIGHER DEGREE RESEARCH CANDIDATES

There are currently 50 higher degree candidates enrolled in the Discipline of Paediatrics. Children’s Cancer Institute, although an independent institute, also enrolls its research students through the Paediatrics. At present, 23 students are supervised by CCI, the remaining 27 are supervised by the Discipline. In 2014, we had 9 students commence higher degrees with the Discipline of Paediatrics and CCI.

GRANTS

In 2014, researchers in the Discipline of Paediatrics, UNSW have been affiliated with at least $9.2 million worth of successful funding applications. Please note that not all of these grants are administered by the Discipline. Our researchers collaborate with many institutions including University of Sydney, Murdoch Children’s Research Institute, and the University of Adelaide - amongst others.

Organisations who have awarded funding have included the National Health and Medical Research Council (NHMRC), Cancer Australia, Cancer Institute NSW, the Leukaemia Foundation of Australia, and the National Institutes of Health (NIH) in the US.
In 2013, the Discipline of Paediatrics researchers authored approximately 206 publications. Of these, 175 met the criteria of the Higher Education Research Data Collection (HERDC). These are approximate figures and may change when final data are released by UNSW.

To date, the Discipline’s researchers have authored approximately 117 publications in 2014. However, this number will change as papers move from “Accepted” to “In Press” and become available online.

**WHAT IS HERDC?**

The Higher Education Research Data Collection (HERDC) comprises research income and research publications data, provided annually by Australian universities.

The specifications for what can be included in the HERDC are updated every year by the Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education in consultation with universities and key stakeholders.

Ultimately, the HERDC is designed to ensure the Australian Government’s research block grants are allocated in a fair and transparent way to universities.

---

**RESEARCH WEEK ACKNOWLEDGEMENTS**

Thank you to the members of the Research Week Working Group who helped to organise and provide ideas for Research Week, and to the various review panels who judged the Independent Learning Project (ILP) Awards abstracts, oral presentations, and the Showcase abstracts.

Your contribution to Research Week has been greatly appreciated.

---

**RESEARCH WEEK WORKING GROUP**

Prof Adam Jaffe  
Prof Anne Cunningham  
A/Prof Maria Craig  
Conjoint A/Prof Julee Oei  
Dr Tao Liu  
Dr Keith Ooi  
Dr Sandra Chuang  
Dr Brittany McGill  
Sandy Wales  
Laurel Mimmo  
Deborah Broder  
Melinda Bresolin  
Samantha McFedries  
Sara Savige  
Mary Hattingh

**ILP AWARDS ABSTRACT & ORAL PRESENTATION JUDGES**

A/Prof Kei Lui  
Conjoint A/Prof Karen Zwi  
Dr Ian Andrews  
Dr Nadine Kasparian  
Dr Phillip Emder  
Dr Yvonne Belessis  
Dr Arjun Rao  
Dr Nusrat Homaira  
Kylie-Ann Mallitt

**RESEARCH SHOWCASE ABSTRACTS JUDGES**

Professor Adam Jaffe  
Professor Anne Cunningham  
Conjoint Professor John Ziegler  
Dr Sean Kennedy
Professor Campbell is the Professor of Medicine at St Vincent's Clinical School. He is Past President of the Cardiac Society of Australia and New Zealand (2000-2), and has been a Director of both the New South Wales Division and the National Boards of the National Heart Foundation of Australia. He was a member of the Australian Drug Evaluation Committee from 1992-8 and has been a member of the Pharmaceutical Benefits Advisory Committee since 2001. In 2003 he was made a Member of the Order of Australia (AM).

Professor Campbell earned BSc(Med), MBBS degrees from UNSW. He then completed his postgraduate training in Cardiology at St Vincent's Hospital, and completed a DPhil in Cardiac Pharmacology at Oxford University. Since that time he has worked at St Vincent's Hospital and UNSW in various positions, including Director of Cardiology, Director of the Coronary Care Unit and Deputy Director of Clinical Pharmacology. He has been Professor of Medicine at UNSW (St Vincent’s Clinical School) since 1998 and was Clinical Associate Dean in that School until 2006. He was appointed Associate Dean (Research) for Medicine at UNSW in 2004 and subsequently Senior Associate Dean in 2006.

Professor Campbell’s research work has encompassed both basic laboratory research and clinical cardiology. His basic research includes cardiac electrophysiology and pharmacology, using patch-clamp methods to study individual cardiac ion channels and their modulation by drugs and more recently, their structure-function relationships. His clinical research activities have been related to drug therapy for arrhythmias, heart failure and ischaemic heart disease. He has published well over 100 peer-reviewed papers in international journals and held competitive research funding from NHMRC and the National Heart Foundation from 1983 until 2011.
KEYNOTE ADDRESS

KEYNOTE ADDRESS: PROFESSOR JOHN MATTICK
BSc (First Class Honours) USyd, PhD Monash
Executive Director; Lab Head - RNA Biology and Plasticity, The Garvan Institute of Medical Research


Presentation Title: ‘Transforming the diagnosis, understanding and treatment of paediatric disease through genomics.’

John Mattick was born in Sydney in 1950. After completing his undergraduate and postgraduate studies at the University of Sydney and Monash University in 1977, he undertook postdoctoral training at Baylor College of Medicine in Houston, Texas. In 1982 he returned to Australia to work at the CSIRO Division of Molecular Biology in Sydney, and in 1988 moved to the University of Queensland in Brisbane, where he was the Foundation Professor of Molecular Biology, and Foundation Director, ARC Federation Fellow and then NHMRC Australia Fellow at the Institute for Molecular Bioscience.

During this period he was also the Foundation Director of the Australian Genome Research Facility, the ARC Special Research Centre for Molecular & Cellular Biology and the ARC Special Research Centre for Functional & Applied Genomics. He also spent sabbatical periods at the Universities of Cambridge, Oxford, Cologne and Strasbourg. In 2012 he returned to Sydney to take up the position of Executive Director of the Garvan Institute of Medical Research.

Professor Mattick has served on councils, advisory boards and committees of a number of research and funding organisations, including Genome Canada, the Wellcome Trust, the Human Frontier Science Program, the National Health & Medical Research Council, and the Human Genome Organisation.

He has made several seminal contributions to molecular biology, including delineation of the architecture and function of the fatty acid synthase complex, development of one of the first recombinant DNA-based vaccines, and genetic characterisation of bacterial surface filaments called type IV pili involved in host colonisation.

Over the past 20 years he has pioneered a new view of the genetic programming of humans and other complex organisms, by showing that the majority of the genome, previously considered ‘junk’, actually specifies a dynamic network of regulatory RNAs that guide differentiation and development. He has published over 250 research articles and his work has received coverage in Nature, Science, Scientific American, New Scientist and the New York Times, among others.
Dr Ward is a Neonatologist at Royal Hospital for Women, and works to optimise neurodevelopmental outcome and survival of infants requiring NICU admission. Dr Ward is also completing a PhD (SWCH, UNSW, supervisor Professor Anne Cunningham), investigating the role of the vascular endothelial growth factor family in neonatal brain injury.

Presentation Title:
'Vascular endothelial growth factor receptor 3 expression in normal and hypoxic developing brain and retina.'

Co-Authors: Professor Anne Cunningham; Dr Nicole Jones; Dr Anjali Joshi.

Development of the central nervous system (CNS) and its vasculature is coordinated through shared regulatory factors, including vascular endothelial growth factor (VEGF), which promotes neuroproliferation and angiogenesis via its receptors VEGFR1-3. VEGFR3, a mediator of lymphangiogenesis, is expressed in brain from early gestation, has been linked to neural progenitors and neurons (Choi, Shin et al. 2010) and oligodendroglia (Le Bras, Barallobre et al. 2006) in developing cortex and is reported to mediate adult neurogenesis (Calvo, Fontaine et al. 2011).

The cellular associations of VEGFR3 in developing brain have not been comprehensively reported, and its response to hypoxic brain injury in the immature CNS is unknown. We report VEGFR3 expression at a cellular level, determined by double-labeling immunohistochemistry, in developing rat brain from embryonic day (E) 13 to postnatal day (P) 23, and describe changes in VEGFR3 expression following hypoxic-ischaemic (HI) injury in P7 rat brain.

We found high expression of VEGFR3 in the ventricular zone and along radial glia in early gestation in association with neural stem cells and neuroblasts. In later development we found less expression on neural progenitors, but increased expression on mature neurons and astrocytes. High expression in choroid plexus and pigmented retinal epithelium (RPE) was noted from E18.

After HI injury, increased expression was found on reactive astrocytes, with reduced expression in the significantly disrupted choroid plexus and RPE. Our findings support an important role for VEGFR3 in neuronal proliferation in forebrain development, and ongoing functions with glial injury responses and ependymal function in postnatal brain.

Funding:
The Ross Trust, Cerebral Palsy Alliance; Leslie Stephens Fund for Neonatal Research; Financial Markets for Children.

Acknowledgements:
Dr Jeannette Hallab, RA 2007.
DR ANTOINETTE ANAZODO
MBBS, BSc, MSc, MRCPCH, FRACP,
Dip Adolescent Cancer
University of New South Wales; Sydney Youth Cancer Service; Kids Cancer Centre, Sydney Children’s Hospital

Dr Antoinette Anazodo trained in Paediatric and Adolescent Oncology in the United Kingdom and completed her training with a clinical fellowship at the Kids Cancer Centre at Sydney Children’s Hospital, Randwick (SCH).

Antoinette has developed an interest in the psychosocial, educational and vocational problems that AYA patients face during and after treatment and is particularly interested in sexual health, sexual dysfunction and fertility in cancer patients. Antoinette was appointed as Director, Sydney Youth Cancer Service at SCH and Prince of Wales Hospital in October 2010 and has developed a service that allows all AYA patients to have appropriate age and tumour specific medical treatment as well as ensuring they benefit from psychosocial assessment and care navigation through treatment. Antoinette’s appointment across the paediatric and adult campus has provided opportunities for clinical and research collaboration and the development of the first Youth Cancer Unit in NSW.

Presentation Title:
‘Fertility Understanding Through Registry and Evaluation (FUTuRE Fertility)’


Improvements in cancer diagnosis and treatment, in children, adolescent and young adults aged 0-25 years has led to significant improvements in survival rates. Unfortunately, fertility can be affected by cancer treatment, however, as survival rates improve there is an expectation that the reproductive health of patients should be preserved whenever possible. A major gap in acute cancer management with implication for all patient’s future fertility is the lack of data and evidence based fertility preservation (FP) and assisted reproductive practices (ART) in this age group, which could give patients hope for a biological family.

This research project has established the first web-based bi-national multi-site Australasian Fertility Preservation Registry collecting data from cancer and fertility centres on cancer diagnosis and treatment, referral for fertility preservation, success and complications. The cohort is being studied retrospectively to document short term and long term effects of cancer therapy on cancer therapy and the rates of natural and assisted reproductive pregnancies in cancer patients. Outcomes from the research project will monitor uptake, utilisation and use and complications of FP/ART and document the reproductive potential after treatment by age, diagnosis and treatment. Additionally, we are monitoring the fertility related psychological distress before and after cancer treatment. Finally data from the registry and Medicare on each patient is being used to perform health economics modelling of FP services.

As a direct consequence of this study, cancer and fertility centres are establishing referral pathways and an Australasian Oncofertility Consortium has been developed with a charter for idea Oncofertility care. This will lead to future use of shared evidence based guidelines and resources, teaching and training for multi-disciplinary staff. The outcomes from this research study will assist clinicians to give accurate risk projections for future infertility and reproductive potential and assist clinicians in making recommendations for FP/ART. Results will lead to development of national guidelines for FP strategies and psychosocial support of patients during and after cancer treatment. The health economics study will lead to an application to the Department of Health for Medicare item numbers to be associated with FP strategies in cancer patients leading to equitable access of FP.

Acknowledgements:
Salesforce; Sydney Logos; CanTeen
Dr Nadine Kasparian is a Senior Research Fellow (Paediatrics) at the University of NSW and Head of Psychological Care at the Heart Centre for Children, The Sydney Children’s Hospitals Network. Nadine leads Australia’s first integrated psychological research program and clinical service dedicated to childhood heart disease. Her work has been recognised internationally and is centred on developing an in-depth understanding of the experiences of infants, children, young people and families at all stages of medical care.

Presentation Title: ‘Risk, Resilience, and Relationships in Paediatrics: A Model of Care for Children with Life-Threatening Cardiac Arrhythmias and their Families.’

Co-Authors: Michelle McElduff; Lexi Dengler; Karen Weir; Lucy Kevin; Janine Smith; Christian Turner.

Background: Inherited arrhythmia syndromes are rare genetic cardiac conditions that can be associated with syncope and sudden cardiac death. Parents often become aware of their child’s condition following a traumatic event, such as witnessing their child collapse or following the sudden death of a family member. Following diagnosis, children and families face numerous challenges, including activity restrictions, life-long medication and medical management, and an increased risk of sudden death.

Aims: To explore the psychological experiences of children with inherited arrhythmias and their families, and to investigate whether a new, tailored multidisciplinary clinic reduces unmet needs and improves psychological well-being for children and their families.

Method: Parents of children with an inherited arrhythmia who attend a multidisciplinary clinic at the Heart Centre for Children complete self-report measures assessing their child’s quality of life and their own symptoms of traumatic stress, depression and anxiety, unmet needs, family functioning, social support, and health literacy. Assessments occur pre-clinic and at 1-, 6-, and 12-months post-clinic.

Results: 39 parents have been recruited to date (response rate: 80%). Preliminary results indicate that parents have an average of 14 unmet needs prior to attending clinic, with information needs most strongly endorsed. According to parental report, 49% of children scored within the at-risk range for emotional functioning, and 37% of parents reported family functioning within the unhealthy range.

Significance: Preliminary results and clinical vignettes will highlight the impact of medical trauma on children and families, and the ways in which trauma can be identified and optimally managed within paediatric settings.

Funding: Career Development Fellowship from the NHMRC 1049238.
Dr David Ziegler is a paediatric oncologist with expertise in neuro-oncology and early phase clinical trials. He is a Senior Staff Specialist in the Kids Cancer Centre at Sydney Children’s Hospital, Group Leader at the Children’s Cancer Institute (CCI), and conjoint senior lecturer at the University of New South Wales.

Presentation Title:
‘Novel therapies for the most aggressive cancer of childhood.’

Co-Authors: Maria Tsoli; Anne Kankean; Anahid Ehteda; Santosh Valvi; Arjanna Chitranjan; Laura Andrews.

Diffuse Intrinsic Pontine Gliomas (DIPG) are a common type of childhood brain cancer that represent the most aggressive of all childhood malignancies. There are no effective treatments, almost all children present with a short history of symptoms and subsequently experience rapid tumour progression resulting in inevitable death. Due to their location within the brainstem the tumours are not amenable to surgical resection, chemotherapy offers no benefit, and radiotherapy has palliative value only.

A key reason for the failure to improve treatment outcomes in DIPG has been the complete lack of biological material available for the study of the underlying tumourigenic pathways. Due to their sensitive location within the brainstem, an area critical for maintaining respiratory function and hence not amenable to surgery, these malignant tumours are rarely biopsied.

To overcome this barrier to elucidating the biology of the disease we have implemented an Australian national DIPG autopsy protocol to facilitate local tumour donations. Six such autopsies have now been performed in Australia, viable cells have been obtained from each autopsy and tumoursphere cultures have, for the first time, been successfully grown. We have used these unique DIPG cultures to perform the world’s first robotic drug screen.

Over 3,500 pharmaceuticals have already been screened, using automated technology, to select those agents that are able to potently inhibit DIPG tumour growth. Several lead compounds have been identified, which have led to the investigation of novel therapeutic strategies. These treatment approaches, using agents such as PENAO, Curaxins, Fenretinide and mTOR inhibitors will be presented and discussed.

Funding:
NHMRC, Kids Cancer Alliance, Cancer Institute NSW, Benny Wills Research Program, The Cure Starts Now, RACP.
Presentation Title:
'Enterovirus infection and type 1 diabetes – more than a chance association.'

Co-Authors: Prof William Rawlinson, Dr Ammira Akil, Mr Andy Ho, Ms Carah Figueroa-Crisostomo, Assoc Prof Anand Hardikar.

It is well accepted that type 1 diabetes (T1D) results from an interplay between genetic predisposition, environmental determinants and host immune response, however the contribution of viruses to the pathogenesis of T1D has been a topic of debate in the scientific literature for many years¹.

There is now a combination of substantial epidemiological, in vitro and in vivo evidence demonstrating involvement of human enteroviruses (EV) in the aetiology of T1D. In particular, we and others have shown that there is a highly significant relationship between T1D and EV infection: in our meta-analysis of >4000 cases of T1D and controls², the odds ratio was ~10 for EV infection at T1D onset vs controls, and the odds ratio was ~4 for EV infection and seroconversion to islet autoimmunity.

While there are more than 100 different EVs, on certain genotypes demonstrate β-cell tropism, infecting and replicating in β-cells and causing selective β-cell death in vitro. EVs induce secretion of cytokines and chemokines by the β-cell – demonstrating that EV infection initiates the innate immune response. Clinically, EV-associated diabetes presents with a distinct clinical phenotype, including more rapid onset of disease, a higher risk of DKA and absence of diabetes associated HLA genotypes.

We are currently exploring the effect of EV infection on miRNAs - regulators of gene expression – in human islets. We are also examining the evolution and diversity of EVs, using next generation sequencing, and how this impacts on β-cell tropism.


Funding:
NHMRC, Juvenile Diabetes Research Foundation, Rebecca Cooper Medical Research Foundation.
Dr John Lawson is a full time staff specialist in child neurology at Sydney Children’s Hospital. His clinical and research interests include the comprehensive care of paediatric epilepsy and Tuberous Sclerosis.

Presentation Title: ‘Adventures with Clinical Trials in Tuberous Sclerosis.’

Co-Authors: Dr Michael Cardamone; Dr Sean Kennedy; Dr David Mowat; Dr Vanessa Sarkozy; Ms Jacqui Robinson.

The major medical issue for children with tuberous sclerosis complex (TSC) is epilepsy. Seizures occur in 80% of the TSC population by 3 years of age and are resistant to standard medical treatment in at least 50%. There is a strong association between seizures and other severe co-morbidities such as intellectual disability and autism. More effective treatment is required. New treatments are available, mTOR inhibitors, that target the abnormal cellular metabolic pathway in TSC.

The TSC management clinic at SCH is unique in Australia and sees over 100 families with this rare disorder. The data of our initial clinical experience of mTor inhibitors in TSC will be presented. This led to SCH being the lead site in Australia for EXIST-3, an international multicentre RCT of everolimus (mTORi) for epilepsy in TSC. An overview of this clinical trial process will be presented.


Funding:
Will be discussing Novartis sponsored trials EXIST-3 and EXIST-1.
Presentation Title:
‘Quality of life in grandparents of children with, and without, cancer.’

Co-Authors: Donna Drew; Emma L. Doolan; Jordana K. McLoone; Alison L. Young; Richard J. Cohn

Background: Despite the central role grandparents play in families of children with cancer, their quality of life has not yet been evaluated worldwide.

Objectives: To compare quality of life, medication and health service use and psychological well-being in grandparents of children with, and without, cancer.

Methods: Grandparents of children with cancer were recruited through three paediatric hospitals. Age, gender and rurality-matched controls were recruited through not-for-profit organisations. Grandparents completed the WHO Quality of Life (WHOQOL-BREF), EuroQoL 5D-5L (EQ-5D-5L), Emotion Thermometers Tool, and health service and medication use questionnaires. Mixed methods data were analyzed with SPSS statistics (v20) and QSRv8.

Findings: 145 grandparents participated, 65 in the cancer group (64.1% female; mean age: 66.65 years) and 80 controls (67.5% female; 66.73 years). While grandparents qualitatively described satisfaction and joy in their role, grandparents of children with cancer experienced worse outcomes than controls. They had poorer quality of life assessed by both the WHOQOL-BREF (p<0.001) and the EQ-5D-5L (p<0.001). All emotion thermometers scores were significantly worse for grandparents in the cancer group. Grandparents of children with cancer were not more likely to have been admitted to an emergency department or to hospital (p=.575; p=.629), but reported significantly higher medication use (p=.002).

Conclusions: Grandparents are relied upon for multiple supportive roles. Their quality of life is critically important for their own, and their family’s, well-being. Their needs are substantial and have been neglected, in cancer and other paediatric illnesses.

Funding:
The Behavioural Sciences Unit is supported by the Kids with Cancer Foundation. The grandparent’s study is supported by RedKite.
Presentation Title:
‘Equitable Access to Developmental Surveillance and Early Intervention – Understanding the Barriers for Children from Culturally and Linguistically Diverse (CALD) Backgrounds.’

Background and objective: Children from Culturally and Linguistically Diverse (CALD) backgrounds are at risk of having developmental problems go undetected prior to starting school and not accessing early intervention. Our aim was to explore the beliefs and experiences of parents from CALD backgrounds and the health and early childhood professionals who serve them regarding early childhood development (ECD) and access to services that detect developmental problems early (developmental surveillance) and provide early intervention.

Design, Setting, Participants: This qualitative study used in depth interviews conducted with 13 parents from CALD backgrounds, and 27 health and early childhood professionals in Sydney. The Andersen Behavioural Model of Health Service Use (BM) was the underlying theoretical framework for thematic analysis.

Results and Discussion: Family and service characteristics that impacted on the probability of access were ECD knowledge, community attitudes, social isolation, English language proficiency and ethnicity. Those that impeded or facilitated access were financial and staff resources, extended family and social support, the availability of information and interpreters, competing needs, complex service pathways and community engagement. There were variable practices of early detection through developmental surveillance and a consensus that children from CALD backgrounds with developmental problems were missed and did not access early intervention despite language delay in children being a key issue identified by participants.

Conclusion: Increased community awareness and professional training in ECD; integration of health and early childhood services, and greater access to early intervention should be further investigated to prevent children from CALD backgrounds “slipping through the net”.

Funding:
The project was funded by a grant from the Multicultural Health Unit at South West Sydney Local Health District.

Acknowledgements:
We would like to thank the Multicultural Health Unit of South East Sydney Local Health District, all the participants and the government and non-government agencies that supported the project. In addition we would like to thank Dr Alexandra Hendry, Professor Valsamma Eapen, Astrid Perry, Lisa Woodland, Milica Mihajlovic, Associate Professor Karen Zwi, and Dr Meredith O’Connor for their input into the development and critique of this project.
MS URSULA SANSOM-DALY

B. Psych (Hons I); PhD/Masters (Clinical Psychology) Candidate; Clinical Psychology Registrar.

School of Women’s & Children’s Health, UNSW Medicine; Behavioural Sciences Unit (BSU), Kids Cancer Centre, Sydney Children’s Hospital

Ursula is the clinical psychology registrar for the Sydney Youth Cancer Service, as well as a part-time post-doctoral research officer at the Behavioural Sciences Unit, in the Kids Cancer Centre (SCH).

Ursula recently completed her PhD through the School of Psychology, UNSW, as a Leukaemia Foundation of Australia PhD scholar.

Presentation Title:
‘Harnessing e-health to promote resilience in adolescent and young adult cancer survivors.’

Co-Authors: Wakefield, C.E.; McGill, B.; Robertson, E.; Ellis, S.J.; Doolan, E.L.; Bryant, R.A.; Cohn, R.J.

Background: ‘E-health’ technologies have significant potential to extend the reach of evidence-based psychological support to vulnerable, isolated populations. For adolescents and young adults (AYAs) with cancer, the time following cancer treatment completion can be a time of psychological vulnerability as they attempt to return to ‘normal’. Assisting AYAs to develop adaptive coping skills at this time of transition may prevent later distress. Our team has developed ‘ReCaPTure LiFe’, an online intervention for AYAs aged 15-25 years in the first year post-treatment. This national phase II randomised controlled trial (RCT) aimed to establish the feasibility, acceptability, and efficacy of Recapture Life, relative to an online peer-support group control, and a 12-week waitlist.

Methodology: Recapture Life is a manualised program that promotes resilience using cognitive behavioural therapy (CBT) techniques tailored to the AYA cancer experience. It involves six, weekly, small-group sessions, delivered online by a psychologist using innovative video-conferencing technology. To date, 21 AYAs have completed the program from across five states in Australia. Groups have been conducted with participants >4000km apart, across different timezones. Early data indicate improved quality of life (p=0.033), and reduced distress (p=0.021), anxiety (p=0.015), and need for help (p=0.024) following the program.

Conclusions: Recapture Life is a promising model of support for AYAs across Australia. This talk will discuss new online models of evidence based support for young people living with cancer, examine how CBT can be tailored to the cancer context, and discuss the benefits and clinical challenges of using online delivery mechanisms for these populations.

Funding:
The Recapture Life study was co-funded by a beyond blue and Cancer Australia project grant (ID: 1022868). Claire Wakefield is supported by a Career Development Fellowship from the National Health and Medical Research Council of Australia (APP1067501) and an Early Career Development fellowship from the Cancer Institute of NSW (ID: 11/ECF/3-43). The Behavioural Sciences Unit is supported by the Kids with Cancer Foundation.

Acknowledgements:
We wish to acknowledge the contribution of Helen Wilson and Sanaa Mathur, as well as the support of the wider Recapture Life working party.
Presentation Title:  
‘Child development and settlement: a longitudinal study of refugee children.’  

Co-Authors:  A/Prof Karen Zwi, Lisa Woodland, Dr Sue Woolfenden, Prof Katrina Williams, Dr Santuri Rungan, Colleen Allen.

Background: Longitudinal study of refugee children aiming to (1) describe the health conditions of refugee children on arrival; (2) assess psychological wellbeing, development and early settlement factors at one and two years post arrival; and (3) identify risk and protective factors that contribute to health outcomes.

Method: 61 refugee children (6mths-16yrs) who settled in the Illawarra were recruited. Physical health examinations and pathology testing was conducted by GPs on arrival. At one and two years post-arrival, children were assessed for development (6mths–5yrs) [Australian Developmental Screening Tool (ADST)]; psychological wellbeing (4yrs-16yrs) [Strengths and Difficulties Questionnaire (SDQ)]; and settlement factors impacting on the family. Results were compared with Australian norms. Correlations were tested using parametric and non-parametric techniques and multiple regression analysis was used to identify risk and protective factors.

Results: Retention rate over a two-year period was high (97%) with the cohort being representative of the population settling in the Illawarra. A high prevalence of nutritional deficiencies, parasitic infections and under-immunisation were detected. Compared with Australian-born children, delayed language development was more common. The SDQ highlighted concerns in emotional symptoms and peer relationships. Families continued to experience significant stressors at one and two years post-arrival. Potential risk and protective factors are currently being analysed.

Conclusions: It is feasible to maintain contact in longitudinal studies with refugee children and families. Measures employed were acceptable to families and practical in identifying children requiring further assessment. Longitudinal research is useful to inform policy and ongoing service delivery although larger studies are required to make definitive conclusions.
Dr Paul Gray is a Paediatric Immunologist at Sydney Children’s Hospital. His training included a 1st class honours degree in Immunology and Virology and dual clinical training in Paediatric Immunology and Immunopathology. He is 3 years into a part-time Master’s by research using Next generation sequencing in Immune diseases.

Presentation Title:
‘Next Generation Sequencing for diagnosis and discovery of single gene immune diseases: Preliminary report of the CIRCA collaboration.’


There are more than 250 Single Gene Immune Diseases which cause a predisposition to infection, inflammation or autoimmunity. A further 1400 genes are predicted to cause immune diseases. Next Generation Sequencing (NGS) technologies have demonstrated increasing utility in the diagnosis of Mendelian disorders, and in the discovery of novel genes underlying disease. The Children’s Immunogenetics Research Consortium Australia (CIRCA) is a national collaboration centred on Sydney Children’s Hospital, SEALS and the Garvan Institute.

Methods: DNA was collected from patients with Primary Immunodeficiency, autoimmunity or autoinflammatory diseases, with features consistent with Mendelian inheritance. These were analysed by either a Haloplex panel of 100 known primary immunodeficiency genes or whole exome sequencing (WES).

Results: Thus far, 21 patients have been analysed. The Haloplex panel performed well with gene coverage = 92%, and identified all 6/6 known disease-associated control variants. New mutations were also identified in 2/6 previously undiagnosed patients, a homozygous 2b.p. deletion in RAG1 and a homozygous 4b.p. deletion in RFX5. WES provided diagnoses in 2/9 cases, a de novo heterozygous change in STAT3 and a deletion in FAS, the latter identified using cutting edge bioinformatics. WES has also identified 3 possible novel gene defects effecting 6/9 individuals, with 1 gene currently being assessed for the creation of a murine knockout model.

Conclusion: Preliminary results demonstrate our ability to diagnose single gene immune diseases, as well as to optimise the cohort for novel Mendelian diseases and to identify high impact novel candidate genes in these patients.

Funding:
General funding for Genomics at SCH / SEALS: NSW Cancer Council, NHMRC, UNSW, NSW Health Pathology.

Specific funding for this project: Jeffrey Modell Foundation, Parent contribution, Ramaciotti Foundation (Dr Tony Roscioli grant), RACP (JT Tweedle Scholarship).
Dr Lisa Ewans is a Provisional Fellow in Clinical Genetics working at Sydney Children’s Hospital. She is completing a Masters by Research through the Faculty of Medicine at UNSW, applying genomic technology to improve diagnoses and management for families affected by rare disorders.

Presentation Title:
‘The success of whole exome sequencing diagnosis in a large cohort of patients with Mendelian disorders.’

Co-Authors: Mark J Cowley; Kevin Ying; Ying Zhu; Corrina Walsh; Eric Lee; Rani Sachdev; Edwin Kirk; Michael Field4, Michael Buckley; Marcel E Dinger; Tony Roscioli.

Molecular diagnosis in patients with Mendelian disorders has improved significantly with next generation sequencing (NGS), allowing for rapid screening for disease-causing mutations in a single test. NGS has resulted in enhanced mutation identification, management, and in some cases the creation of novel therapies1. The translational importance of this technology to rare Mendelian disorders is clear, with the role of more than 100 genes in these disorders being recognized through whole exome sequencing (WES) since 20102.

WES was applied to a cohort of 52 patients with Mendelian disorders selected from clinical genetics clinics in New South Wales, in whom there was no confirmed genetic diagnosis. This cohort is phenotypically heterogeneous; however, most patients presented with intellectual disability (62%), consistent with population frequency and diagnostic importance.

Annotated WES data was filtered, excluding common variants based on population polymorphism data and incorporating impact on protein function using the GEMINI (Genome MINIng) software. The most likely inheritance model was applied to each family based on pedigree analysis, indication for referral, and, in consanguineous families, the additional filter of regions of homozygosity was applied. Further filtering was performed using pathogenicity scoring systems such as PROVEAN and CADD, assisting identification of disease causing mutations.

An overview of the testing outcomes, including a preliminary cost analysis, will be presented. Initial results from 13 families show a diagnostic success rate of approximately 25% for mutations in known disease-related genes, and a likely novel disease gene for intellectual disability involved in neurite growth in a consanguineous family.

References:

Acknowledgements:
Kinghorn Centre for Clinical Genomics; Newcastle GOLD Service; SEALS laboratory
Presentation Title:  
'The impact of long term follow-up care on dental awareness and practices in childhood cancer survivors.'

Co-Authors:  Jordana K. McLoone; Claire E. Wakefield; Richard J. Cohn.

Aim: Lifelong prevention programs minimising risk of dental disease are indicated in childhood cancer survivors (CSS). Fewer than half CCS attend long term follow-up (LTFU) clinic. This study aimed to determine whether LTFU attendance improved oral hygiene as proposed by the Health Belief Model (HBM).

Method: Adult CCS, and parents of CCS <16 years of age, LTFU clinic attendees and non-attendees, were surveyed.

Results: 279 respondents; 62% adult CCS (mean time since diagnosis 21 years), 38% parents of CCS <16 years (mean time since diagnosis 9 years). LTFU clinic attendees were more likely to report visiting their dentist regularly (51% versus 29%, χ²=13.286, p<0.000) and have greater awareness of cancer-related dental problems than non-clinic attendees (38%, versus 26%, χ²=4.107, p=0.043). Clinic attendees felt at higher risk of future cancer-related dental problems (44% versus 30% non-attendees; χ²=5.666, p=0.017). Only 12% of CCS reported regular teeth flossing compared with two-thirds of the Australian population. Consistent with the HBM, cancer-related dentist visits were predicted by perceived risk of future cancer-related dental issues (p=0.007), perceived importance of access to a dentist via LTFU (p=0.045), past cancer-related dental issues (p=0.015), and clinic attendance (p=0.033). These variables did not predict tooth care by flossing. Further regression analyses applying the HBM indicated perceived risk of late effects (p=0.007), and perceived benefits of LTFU (p=0.011) predict clinic attendance and dental follow-up.

Conclusions: LTFU care has potential to improve the management of reversible dental late effects and highlights that attendance at LTFU is a teachable moment for lifestyle education.

Funding:  
Kids Cancer Alliance.

Acknowledgements:  
The Kids Cancer Centre is proudly supported by Kids with Cancer Foundation Australia.
Presentation Title: ‘Appearance of Vitamin D abnormalities in older survivors of childhood cancer.’

Co-Authors: Jan Walker; Richard Cohn; Christopher Cowell, Christopher White.

Background: It is unclear whether the rate of Vitamin D insufficiency in paediatric cancer survivors is higher than in the background population, and whether this is of pathological significance.

Procedure: 25OHD was measured in a previously studied group of 208 survivors (n=108 paediatric 5-17 years, n=99 adults 18-39 years) and compared with paediatric (5-17 years; n=132) and adult controls (25-35 years; n=1393 from the AusDiab cohort) adjusted for age and gender. Relationships with treatment factors (irradiation, bone marrow transplantation and intensity of treatment) along with abnormal glucose tolerance, overweight/obesity (defined by BMI) and abdominal adiposity (waist:height ratio >0.5) were sought.

Results: 25OHD concentrations were similar in paediatric survivors compared with controls (64.3 ±21.6nmol/L vs. 66.3 ±22.8nmol/L), with no effect of age or gender. Adjusted for gender, rates of 25OHD insufficiency were higher in adult survivors compared with Ausdiab controls (42.4% vs. 20.8%; p<0.001). Apart from time since diagnosis (p=0.03), no relationship with treatment factors was detected. In multivariate regression analysis, abdominal adiposity (p=0.001) but not overweight/obesity by BMI status nor aGT, was associated with significantly lower 25OHD concentrations.

Conclusions: Adult survivors are at increased risk of abnormalities in vitamin D compared to the background population, probably reflecting longer time since diagnosis. Like others, we have not identified any contributory treatment related factors. Vitamin D insufficiency does not appear to predispose to the development of impaired glucose tolerance in this population.

Funding: Sydney Children’s Hospital Foundation.

Acknowledgements: We acknowledge the help support and encouragement of the medical and nursing clinicians in the departments of Oncology and Endocrinology at the Sydney Children’s Hospital in carrying out this study, particularly Ms Karen Johnston, our clinical nurse consultant in late effects. We thank the Australian National Diabetes Survey (AusDiab) for the use of their raw patient data, which was used as normative data for our adult subjects.
MS JEYRAN SHABAZI
PhD candidate (Thesis submitted 26th September 2014).
School of Biotechnology and Bimolecular sciences, UNSW Science; Histone modification group, Children’s Cancer Institute

Ms Jeyran Shabazi completed her undergraduate studies at UNSW. Upon completion of the honors degree, decided to continue the PhD path as a career in academia caught her interest. Now, she has submitted her PhD thesis at Children’s Cancer Institute, entitled “epigenetic regulators contributing to MYCN driven neuroblastoma” and is looking forward to pursuing a post-doc career.

Presentation Title:
‘Highly synergistic combination therapy of the BET bromodomain inhibitor JQ1 and the histone deacetylase inhibitor Panobinostat against neuroblastoma.’

Co-Authors: Dr Tao Liu; A/Prof Richard Lock.

Neuroblastoma is the most common malignancy in infancy and the most common extracranial solid tumor in children. Approximately 50% of human malignancies are characterized by over-expression of oncogenic Myc oncoproteins, which induce the initiation and promote the progression of malignancies by modulating gene transcription, leading to cell proliferation. The bromodomain and extra terminal (BET) family of proteins BRD3 and BRD4 have recently been shown to play critical roles in Myc gene transcription, and the BRD3/BRD4 inhibitors JQ1 and I-BET151 considerably reduce Myc gene transcription. Importantly, JQ1 and I-BET151 exert significant anticancer efficacies in multiple cancer types.

High levels of Bromodomain proteins such as BRD3 and BRD4 and histone deacetylases contribute to poor patient survival and are positively correlated with N-Myc expression. Our experiments revealed that BRD3 and BRD4 up-regulated N-Myc expression by direct binding to LIN28B gene promoter and reducing LIN28B expression. Combination therapy with the histone deacetylase inhibitor Panobinostat and the Bromodomain inhibitor JQ1 synergistically reduced the expression of key oncogenic genes including the anti-apoptotic Bcl-2 and LIN28B, leading to reduction in N-Myc protein expression. Panobinostat and JQ1 synergistically induced growth inhibition and apoptosis in neuroblastoma but not normal non-malignant cells in vitro, and synergistically blocked tumour progression in neuroblastoma-bearing mice. In conclusion, our data provide the vital evidence for JQ1 and panobinostat combination therapy as a novel strategy for the treatment of neuroblastoma patients.

Acknowledgements:
We would like to thank Dr Jay Bradner for providing us with JQ1 for in vivo experiments.
MR SOHAIB VIRK
BSc (Med) Honours student enrolled in BMed / MD
School of Women’s & Children’s Health, UNSW Medicine.

Sohaib Virk is a fourth year medical student at the University of New South Wales. He has a keen interest in paediatrics and endocrinology. He undertook this research as part of his BSc (Med) Honours year at The Children’s Hospital at Westmead.

Presentation Title:
‘Impact of glycaemic variability on complications risk in young people with type 1 diabetes.’

Co-Authors: Kim Donaghue; Yoon-Hi Cho; Paul-Benitez-Aguirre; Alison Pryke; Tracey Jopling; Albert Chan; Maria Craig.

Background: In young people with type 1 diabetes (T1D), the risk of microvascular complications rises exponentially as glycosylated haemoglobin (HbA1c) levels increase. However, the impact of glycaemic variability on complications risk remains unclear.

Methods: Adolescents and young children (aged 12-20) were seen at The Children’s Hospital at Westmead from 1990-2014. Glycaemic variability was computed as the standard deviation of all HbA1c measurements (SD-HbA1c) after the date of diagnosis. Early retinopathy was detected using seven-field fundal photography, albumin excretion rate (AER) using timed overnight urine collections, peripheral neuropathy using thermal and vibration threshold testing, and cardiac autonomic neuropathy using heart rate variability testing. Generalised estimating equations were used to investigate the impact of glycaemic variability while accounting for known risk factors.

Results: Overall, 1707 patients were analysed with median diabetes duration of 8.1 [6.3-10.8] years and 22 [14-29] HbA1c measurements per patient. In multivariable analysis, glycemic variability (HbA1c-SD) was independently associated with early retinopathy (odds ratio [OR] 1.31; 95% CI, 1.01-1.72), borderline AER elevation (OR 1.60; 95% CI, 1.22-2.10), microalbuminuria (OR 1.83; 95% CI, 1.06-3.15) and cardiac autonomic neuropathy (OR 2.51; 95% CI, 1.38-4.57). Glycemic variability was not associated with peripheral neuropathy (OR 0.99; 95% CI, 0.62-1.57).

Conclusions: This study has shown that variability of HbA1c adds to the mean value in predicting retinopathy, early nephropathy and cardiac autonomic neuropathy in young people with T1D. Our findings suggest glycaemic fluctuations independently contribute to the development of microvascular complications and insulin therapy should aim to minimise variability of HbA1c.
Presentation Title:
‘Mental Health Needs of Children in Out-of-Home-Care.’

Co-Authors: Dr Dimitra Tzioumi; Dr Sarah Mares.

Background: The prevalence of mental health disorders detected in pre-school children in Out-of-Home-Care (OOHC) is 60.5%\(^1\)\(^2\)\(^3\). However, literature specifically addressing the mental health needs of children under the age of 6 in OOHC in Australia is limited.

Aim: This study aims to identify the mental health outcomes of children between the ages of 0 to 6 in OOHC; and to evaluate associations between mental health outcomes and various factors. Factors examined in the analyses were: age of entry into care, types of care, and the number of parental risk factors, including parental mental health issues, drugs and alcohol and domestic violence.

Methods: A retrospective chart review of 93 children in OOHC at Sydney Children’s Hospital between July 2011 to June 2012 was performed. Associations between mental health outcomes and the factors described above were examined.

Results: Children in care have a higher prevalence of mental health problems. Children who enter care under 6 months of age appear to have less mental health problems, and children in Foster care appear to have increased number of mental health problems compared to those in Kinship care.

Presentation Title:
‘Characterising severity and assessing responsiveness to change of the epidermolysis bullosa disease activity and scarring index.’

Co-Authors: Adam G. Harris; Clement C. H. Loh; Jaehwan Kim; John S. Su; David Orchard; Lachlan J. Warren; Hamish McManus; Matthew G. Law; Dedee F. Murrell.

Background and Objective: Epidermolysis bullosa (EB) is a blistering disease with substantial morbidity and mortality. Clinical trials are hindered by the lack of validated outcome measures which can quantify disease severity and treatment efficacy. The Epidermolysis Bullosa Disease Activity and Scarring Index (EBDASI) is a recently developed score that measures disease activity and damage in EB. The aim of this study was to assess the responsiveness of the EBDASI in patients with a range of ages and disease subtypes.

Methods: Patients were recruited from EB outpatient clinics at a paediatric hospital and a private dermatology practice. Patients were evaluated at each visit by an expert clinician using the EBDASI, a physician global assessment (PGA) of disease severity (mild, moderate, severe) and a PGA of clinical change since the last visit (improved, deteriorated, stable). Receiver operating characteristic (ROC) curves were used to determine disease severity cut-offs and a change in activity score that represents a minimal clinically important difference.

Results: 13 patients at the paediatric hospital and 23 patients at the dermatology practice completed up to 6 study visits each. An EBDASI score cut-off of 42 differentiated mild from moderate disease and a cut-off of 107 differentiated severe from moderate disease. Improvement in EBDASI activity scores of greater than 6 corresponded with a clinically significant change.

Conclusions: The EBDASI is a valid and responsive tool for the evaluation of epidermolysis bullosa in patients of all ages and disease subtypes.

Limitations: Large randomised controlled trials evaluating therapeutic interventions for EB are needed to confirm these results.