Paediatrics & Child Health Division Oral Abstracts

O1
THE HEALTH AND WELLBEING OF ABORIGINAL YOUNG PEOPLE: IDENTIFYING THE EVIDENCE BASE

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Background: There are major incentives for investing in the health of Australian Aboriginal young people; one third of Aboriginal people are young (aged 10–24), they experience excess morbidity and mortality and have unique needs around health promotion and risk modification. However, quality data informing young people's health is difficult to access and reported in child, adolescent and adult literature. This literature is predominantly descriptive and of uncertain quality. It is also unclear what gaps exist.

Objective: To identify the evidence base for the health and wellbeing of Aboriginal young people, in order to inform health status and effective interventions.

Method: Systematic literature review (1994–current) of published literature reporting the health of Australian Aboriginal young people aged 10–24 years. A broad search strategy was used: (Austral* AND (Aborigin* OR Indigenous OR "Torres Strait") AND (you* OR adol* OR child*) searching the databases Medline, ERIC, CINAHL, EMBASE, Aboriginal and Torres Strait Islander health, PsycINFO, Cochrane, and Australian Indigenous Health InfoNet. Studies reporting health data were mapped against Global Burden of Disease framework and Close the Gap building blocks. Aboriginal involvement, quality of ethical approval and dissemination of findings were measured. Two reviewers independently checked each publication.

Findings: 3712 publications were identified and1509 full texts reviewed. In total 363 publications reported health data on Aboriginal young people, of which 20% exclusively sampled Aboriginal young people. There were no randomised trials. 20% of reports evaluated a program or intervention. Forty percent of studies were retrospective and relied on quality of database or case notes to ascertain Aboriginal status. Few studies reported the exact location of the sample; 20% were exclusively in remote areas and 7% in urban areas. Twenty percent of studies sampled from population databases, 10% from schools and 7% from correctional facilities. Forty percent clearly indicated ethical approval with Aboriginal involvement and 30% reported Aboriginal involvement in the research. Overall 25% of studies were focused on communicable disease, 25% on non-communicable and 20% on maternal health. Aside from health, few studies measured Close The Gap building blocks.

Conclusions: The majority of health data for Aboriginal young people is reported within data for children and adults. Despite significant limitations, there are some data informing the health status of Aboriginal young people providing a solid foundation for moving forward.

O2
MANAGEMENT OF ANXIETY IN CHILDREN: PRACTICAL TIPS FOR THE CLINICIAN

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Background: Anxiety disorders are estimated to exist in children at a prevalence ranging from 3.8–12% (Spence 1998; Ford, Goodman et al. 2003). Whilst a number of children have problems of a magnitude that require formal psychological therapy, there are many who can be aided by the use of fundamental cognitive behavioral and relaxation techniques. These techniques can be undertaken in the outpatient setting. By paralleling the use of these techniques with medical treatment for other medical conditions the compliance with treatment can be enhanced.

Objectives: This paper will provide an introduction to anxiety in children and a discussion on the practical aspects of the management of anxiety in the medical setting using cognitive behavioral and relaxation techniques. Issues such as adapting therapies for younger children and the benefits of combining psychological treatments with everyday medical management for other conditions will be examined.

References

Ford, T., Goodman, R., et al. (2003). "The British Child and Adolescent Mental Health Survey 1999: the prevalence of DSM-IV disorders." J Am Acad Child Adolesc Psychiatry 42(10):1203–1211.

Spence, S. H. (1998). "A measure of anxiety symptoms among children." Behav Res Ther 36(5):545–566.

O3
RETINAL VENULAR GEOMETRY PREDICTS EARLY RENAL DYSFUNCTION IN YOUNG PERSONS WITH TYPE 1 DIABETES

ABSTRACT WITHDRAWN

O4
WHAT MEASUREMENTS ON REAL TIME ULTRASOUND (RTUS) WILL PREDICT A SUCCESSFUL SUPRAPUBIC ASPIRATION?

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Background: Urinary tract infections (UTI) are a common cause of bacterial illness in infants. Diagnosis should only be made through culture of an uncontaminated urine specimen. SupraPubic Aspirate (SPA) is considered the gold standard of urine collection in this age group, having the lowest contamination rates compared with catheterisation, clean-catch and bag urine samples.

Aims/Objectives: To assess the dimensions of the bladder on real-time ultrasound (RTUS) which will predict a successful SPA in children <24 months. To compare the use of a BladderScan (BS) at predicting the success of the SPA procedure compared to RTUS

Methods: Infants <24 months whom required an acute urine specimen to exclude a UTI were recruited to the study. Prior to the SPA, RTUS and BS were both used to assess bladder volume. These measurements, SPA technique and success/failure of procedure were analysed.

Findings: 84 SPAs were performed after RTUS. The overall success rate was 83% (70/84). The success was higher at 95% when a bladder volume >10 mL was detected. There was 95% success when transverse diameter was >3 cm. Anterio-posterior or longitudinal diameter measurements did not predict success.

52 SPAs were performed using both BS and RTUS, with 85% (44/52) success. In 35 cases, there was a BS measurement of 0 ml ie According to BS guidelines the SPA would not be attempted. However, 77% (27/35) of these SPAs were successful. Variations between US and BS volume readings ranged from −54 mL to +44 mL.

Conclusions: Using a bladder volume of >10 mL or a transverse diameter of >3 cm on RTUS will improve the success of SPA in infants <24 months.

The BladderScan alone is not a reliable method for predicting when to perform an SPA. In an emergency setting, RTUS will provide clinicians with a more accurate assessment on when an SPA can be performed.

O5
POSTNATAL DEPRESSION IN MOTHERS OF INFANTS PRESENTING TO A PAEDIATRIC EMERGENCY DEPARTMENT

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Background: The prevalence of postnatal depression (PND) within the Australian community is estimated to be 10–20%, however it has been reported that up to 50% of cases go unrecognised in routine clinical practice. PND can have widespread implications for all family members, particularly for the infant in whom cognitive and emotional deficits have been reported. There are currently no data regarding prevalence of PND in a paediatric emergency department setting, nor is there a systematic way to assess mothers in such an environment, and the amount of maternal history obtained is at the discretion of the individual practitioner. The Edinburgh Postnatal Depression Scale (EPDS) has been validated in many settings, with a validation study using an Australian population yielding a sensitivity of 100% and a specificity of 95.7%.

Aim: To determine the point prevalence of PND in mothers of infants aged 0–6 months presenting to the emergency department of a tertiary paediatric hospital, using a validated screening tool.

Methods: Mothers of patients presenting with non-acute conditions were approached prior to consultation. Consenting mothers completed the EPDS and screens with a score of 13 and above, or reporting suicidal ideation, were considered 'positive'. The child's treating doctor was informed if a mother screened positive and a social work consultation offered.

Findings: 238 mothers were approached, with 200 consenting to the questionnaire. 39 mothers screened positive (19.5%, 95% confidence interval 14.3–25.7%).

Conclusion: This study indicates a high prevalence of postnatal depression in a paediatric emergency department setting. With almost one in five mothers exhibiting depressive symptoms, it is important that clinical staff increase their awareness of the condition, incorporate appropriate questioning into the consultation and refer mothers on to support services if necessary.

O6
ABORIGINAL CHILD HEALTH: SHARING A JOURNEY INTO THE POST-COLONIAL SPACE OF THE KIMBERLEY

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Metrics of morbidity provide evidence that the disparity in health status is widening between Aboriginal children in remote communities in the Kimberley region of Western Australia and the urban mainstream. The Australian Early Developmental Index shows that such Aboriginal children are far behind their mainstream peer group at school entry on all domains of development maturity and social competence. Their probable future trajectory is reflected by low levels of engagement in the real economy and a 50-times over-representation for Aboriginal teenaged boys in Juvenile Justice detention in WA.

This paper argues that social determinants of ill health are insufficient as entire causal factors and that a more distal (upstream) explanatory framework is required. Growth faltering from nutritional neglect in early childhood is used as a model for an analysis informed by an historical and anthropological perspective of the failure of parental norms which result in such serious ill health. Through this lens the series of disruptions to Aboriginal society in the Kimberley since white settlement are shown to have destroyed the three biological prerequisites of optimal human parenting. These comprise food security for the maintenance of a traditional transitional (weaning) practice; a population age profile which optimizes the conditions for cooperative parenting through the availability of allo-mothers; and physical and emotional security without the ever-present threat of violence.

The way in which the profession could take an institutional approach to remediate the health outcomes of this tragedy will preface a discussion of the role of the child specialist who works in the inter-cultural zone with respect to the concept of the post-colonial space. In this space resolution is achieved of the ethical dilemma for the doctor to respect Indigenous cultural authenticity whilst working as a healer and towards helping to achieve the conditions needed for equality in health.

O7
DELIVERING PAEDIATRIC MEDICAL, FORENSIC AND COUNSELLING SERVICES TO ABORIGINAL CHILDREN IN REMOTE NORTHERN TERRITORY COMMUNITIES

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Paediatricians from Royal Darwin Hospital have, for over 20 years now, been travelling regularly out to remote Aboriginal communities to conduct paediatric clinics. Dr Annie Whybourne will discuss some of the difficulties and rewards of providing this type of service.

As part of the Australian Federal Government's response to the 2007 NT Government's "Little Children Are Sacred Report", a mobile outreach child abuse counselling service and an outreach forensic medical service were funded. Naomi Brennan will outline the counselling service and discuss some of the outcomes and lessons learned.

Dr Tracy Johns will discuss the challenges involved in offering forensic medical examinations in remote communities and introduce the portable colposcope that may be of interest to child forensic paediatricians around the country.

O8
CHRONIC COUGH – CASE-BASED DISCUSSION

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Cough is the most common presenting symptom to medical practitioners in many countries including Australia. Worldwide, the desire to reduce the impact of the symptom of cough is reflected in the billions of dollars spent cough medications. When is cough a 'nuisance'? When is cough a serious symptom? Does chronic cough matter? Missing a serious aetiology may lead to increased later morbidity. Thus, each child that presents with a chronic cough requires a systematic approach.[1]

To assist in the decision of whether or not to investigate, it is necessary to have operational definitions for clinical use. Based on current data, paediatric cough definitions have been formulated on three main categories, built on different constructs: (a) duration, (b) cough quality and characteristics, (c) clinical characteristics based on the likelihood of an underlying disease or process (expected cough, specific cough, non-specific cough). These definitions are not exclusive (i.e. can overlap). These are also distinct from adult definitions as many of adult-type aspects of cough cannot be applied to young children. The depth of investigations is highly dependent on the clinical characteristics present.

If medications are tried, the concept of 'time to response' is important. In most situations 'time to response' is generally 2 weeks.[2] There is, however, limited evidence for the above.[1] The evidence (as well as the lack of evidence), for and against, the above will be highlighted within the case discussion. The management of the common symptom of chronic cough in children needs to be further improved with relevant clinical research and education.

References

1. Chang AB: Cough. In: Common Respiratory Symptoms and Illnesses: A Graded Evidence-Based Approach. *Pediatr Clin North Am* 2009,**56**: 19–31.
2. Chang AB, Landau LI, van Asperen PP, et al: The Thoracic Society of Australia and New Zealand. Position statement. Cough in children: definitions and clinical evaluation. *Med J Aust* 2006,**184**:398–403.

O9
SOMATOFORM DISORDERS: CONVERTING THE CONVERTED BACK TO NORMAL FUNCTIONING

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"Somatising" refers to Medically Unexplained Symptoms that are thought to be the body's response to psychological distress. These symptoms can take the form of pain, weakness, collapsing episodes or a variety of other symptoms that may mimic medical illness but have no clear medical ("organic") aetiology. Frequently they remit with appropriate investigation and reassurance and without more intensive management, but when they do not they can be difficult to manage and functionally debilitating. This workshop is presented by Dr Andrew Court, an adolescent psychiatrist currently working in Consultation-Liaison at the Royal Children's Hospital in Melbourne. He has a wide experience in this area both from working collaboratively with paediatricians at RCH and in his private practice. He is currently developing assessment tools for use by health professionals as well as psychological interventions for appropriate patients. He will present clinical material, a review of the current literature, drafts of assessment tools and advice on management for the more complex end of the patient population.

O10
'CARE FOR CHILD DEVELOPMENT': A PROMISING PRACTICE FOR ABORIGINAL FAMILIES IN THE NT

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Background: *Counsel the Family on Care for Child Development* (CCD) is a WHO/UNICEF initiative designed to optimise children's psychosocial development and physical growth. CCD has been developed for resource poor developing nation contexts and was seen to have potential as an intervention to support Aboriginal children in the Northern Territory (NT) at risk of developmental problems or neglect and to foster optimal parent-child interactions and relationships. CCD is a population level intervention that aims to:

- Improve health worker's abilities to strengthen bonding and attachment.
- Enhance responsive and sensitive caregiving.

During late 2010, a trial of the CCD professional training component was conducted in a remote community in the NT, with the support of WHO/UNICEF consultants.

Objectives: Test the CCD training approach and materials with diverse community stakeholders.

Explore adaptation requirements.

Determine the suitability of CCD for wider use.

Explore opportunities for an inter-sectoral approach to support early childhood development (ECD) through the use of CCD.

Findings: The CCD approach, with a focus on responsive parenting, quality of early attachment, care and stimulation was considered relevant and valuable for practitioners to use with caregivers in the NT. Many potential positive outcomes were identified and it was viewed as suitable for universal rollout in the NT. There was high level of satisfaction with the training and an additional benefit of the training was the significant opportunity to facilitate a higher level of inter-departmental collaboration for child and family services professionals. Such opportunities were viewed to be rare and institutionally valuable.

Conclusion: While further evaluation and research is necessary, overall the CCD training was found to be a promising and feasible practice for the NT Aboriginal context. Learnings from this trial will inform policy regarding systematic implementation of CCD across the NT.

O11
FETAL ALCOHOL SYNDROME: WHERE DID APSU SURVEILLANCE LEAD?

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In response to increasing scientific interest and lack of Australian data, the Australian Paediatric Surveillance Unit (APSU) approved a national study on Fetal Alcohol Syndrome in 2000. In a 4-year period we identified 92 newly diagnosed (incident) cases. Children had multiple health, developmental and behavioural problems: >60% were in foster care; >60% were Aboriginal; and nearly half had an affected sibling, suggesting missed opportunities for prevention. This study raised many questions and acted as an impetus for health professional education, informed new policy and catalyzed research. A national Alcohol in Pregnancy research group was formed and further research conducted included studies on: Health Professionals' attitudes and knowledge regarding alcohol use in pregnancy; Womens' knowledge about Fetal Alcohol Spectrum Disorders (FASD); the reasons Aboriginal women drink; how to ask questions about alcohol in pregnancy; the effects of maternal substance abuse on infant development; and communication of public health messages about alcohol and pregnancy.

On the policy front, members of the APSU study group were involved in an Intergovernmental Committee on Drugs Working Party on FASD; in writing a monograph on FASD in Australia commissioned by DoHA; and in convening a national conference on FASD. Data from the APSU study were considered by the NHMRC when developing Guidelines for alcohol use in pregnancy (2009). Recently, the Federal government funded The Lililwan Project (determining FASD prevalence in the Fitzroy Valley, Kimberley, WA); the Development of a Screening and Diagnostic tool for FASD for Australia; and a working party to develop standardized data on alcohol use in pregnancy for inclusion in midwives' data collections. NHMRC is currently funding two cohort studies to evaluate the impact of alcohol use in pregnancy on child outcomes. In summary, the APSU study raised awareness about FAS in Australia and provided a springboard for further research, policy and advocacy.

O12
AN ABORIGINAL COMMUNITY RESPONSE TO ALCOHOL USE IN PREGNANCY AND FETAL ALCOHOL SPECTRUM DISORDERS

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The Fitzroy Valley is located ~500 km east of Broome in the remote Kimberley region of WA, with Fitzroy Crossing town at its centre. The valley is home to ~4500 predominantly Aboriginal people belonging to 5 main language groups (Bunuba, Walmajarri/Wangkatjungka, Nyikina and Goonyandi) and living in >45 remote communities located up to 190 km from Fitzroy Crossing. In 2007, Fitzroy Valley communities were in crisis with high rates of alcohol abuse, alcohol-related harms, violence and crime. Courageous women successfully lobbied for restrictions on take-away of full strength alcohol and the subsequent health and social benefits have been well documented. Following a Women's Bush Meeting in 2008, the community identified the need to address FASD – the legacy of alcohol use in pregnancy – as a priority. In October 2008, a FASD leadership team was formed and in November 2008 they embraced a 'circle of friends' – partners in government, business and community organisations – and developed a strategy to address FASD and early life trauma. The strategy, called Marulu, includes diagnosis and prevention of FASD, community education, and support for parents and carers. Marulu is a Bunuba word meaning "precious, worth nurturing". In 2009, we were invited to help progress the strategy and conduct a FASD prevalence study called The Lililwan Project. Lililwan is a Kriol (Aboriginal English) word meaning "all the little ones". In October 2009, following extensive community consultation that confirmed this research as a priority, we formally accepted the invitation.

The films Yajillarra (meaning "to dream") and Marulu will be shown and discussed. Yajillarra, which tells the story of the alcohol restrictions, was lauded when shown at the UN forum for Indigenous peoples and the Status of Women. The films were directed by Melanie Hogan, filmed by Caroline Constantine and produced by Jane Latimer.

O13
ALCOHOL USE IN PREGNANCY IN REMOTE AUSTRALIA: *THE LILILWAN* PROJECT*

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*Lililwan is a Kriol word meaning 'all of the little ones'

Background: Many women report drinking alcohol during pregnancy. This is a particular problem in some remote Indigenous communities. Neither alcohol consumption in pregnancy nor Fetal Alcohol Spectrum Disorders (FASD) prevalence have been systematically studied in Australian populations. In 2009, Nindilingarri Cultural Health Services (Fitzroy Crossing, WA) engaged our research group to conduct a FASD prevalence study in the Fitzroy Valley.

Aims/Objectives: To document alcohol exposure during pregnancy in a population-based cohort of Indigenous women in the Fitzroy Valley.

Methods: We identified the parent/primary carer of the entire population of children born in 2002 or 2003 and living in the Fitzroy Valley (n = 134). Data were collected on alcohol use in the three months before and in each trimester during pregnancy.

Findings: Of eligible parents/carers, 127 (95%) consented to be interviewed (5 were later excluded based on the child's age). 49% of mothers reported drinking alcohol during the index pregnancy (24% drank in all trimesters). Of all mothers, 18% reported drinking 2–3 times per week; 8% drank ≥4

times/week. 31% drank >6 drinks per drinking session at least once per week, and 6% did so daily. Using locally developed pictorial charts we calculated standard drinks (SD) consumed per session. 85% of mothers who drank in pregnancy consumed between 8–18 SD per session, 57% of whom consumed 14–18 SD per session. Using these data we calculated AUDIT-C scores. 93% of women who drank alcohol in pregnancy were categorized as "very risky" drinkers. Beer was the most common drink (88%). 39% of mothers reported both drinking and smoking (cigarettes/marijuana) during pregnancy.

Conclusions: A large proportion of women who drank during pregnancy did so at risky levels. Thus a high proportion of their children are vulnerable to FASD. Understanding social factors that contribute to drinking during pregnancy will be key to FASD prevention.

O14
THE POTENTIAL FOR UTILISATION OF THE PHYSICIAN ASSISTANT PROTOTYPE IN PAEDIATRIC OUTREACH SETTINGS IN AUSTRALIA

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Background: Physician Assistants (PAs) are a novel type of health care provider, trained in a condensed and accelerated general medical model and practice under the delegated authority of doctors. Born in the turbulent 1960s of the United States, the concept is now experiencing great popularity and modest international growth. PAs are well distributed throughout primary and specialty care in the US and PAs as well as Nurse Practitioners (NPs) are more likely than physicians to practise in rural areas and where vulnerable populations exist.[1] Physician Assistants fit well in to the entrepreneurial US healthcare system, but focus on placing them in to rural and underserved areas has been a tradition from the inception. Challenged populations PAs work with include, urban indigent and uninsured, migrant farmworkers, homeless, rural/remote and Indigenous communities. A small percentage of the more than 85,000 PAs in the US practice exclusively in Paediatrics, but many others working in primary care and specialties also care for children.

Aims/Objectives: The principle goal of the session is to examine innovative strategies to address healthcare workforce deficiencies in Australia. The presentation will include an outline of the history of the PA movement and in particular, utilization of PAs in public health, underserved populations and outreach settings. A detailed review of the singular instance of a US Physician Assistant working in a Paediatric outreach setting as part of the South Australia Health PA Pilot will precede analysis of the theoretical utility of PAs in outreach paradigms in Australia.

Reference

1. Hooker, R. Physician assistants and nurse practitioners: the United States experience. MJA 2006;185(1):4–7.

O15
4 YEAR OLD FINAL OUTCOMES OF A UNIVERSAL INFANT-TODDLER SHARED READING INTERVENTION: THE LETS READ RANDOMISED TRIAL

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Background: Early shared reading and literacy promotion benefits have stimulated international interest in the development of a range of early-years literacy-promotion programs despite limited evidence of effectiveness at a broader population level.

Objective: To determine whether a universal primary care literacy promotion intervention (*Let's Read*) delivered to parents over the first 3.5 years of their child's life can improve emergent literacy and language outcomes by age four.

Methods: *Design:* Cluster randomized controlled trial (RCT). *Setting:* All 74 maternal and child health centres (MCHC) in 5 local government areas with relatively higher levels of disadvantage in Melbourne, Australia. *Participants:* 633 infants recruited at 4–8 weeks of age (367 intervention, 266 control). *Intervention:* Maternal and Child Health nurses delivered four brief interventions at 4–8, 12, 18 months and 3.5 years of age, in which they targeted and modeled shared reading activities, supported by purpose-designed parent materials and free books. *Outcomes at age 4 years:* Emergent literacy – Sutherland Phonological Awareness Test-Revised (SPAT-R); Expressive language – Clinical Evaluation of Language Fundamentals-Preschool (CELF-P2); home literacy environment – StimQ. *Analysis:* Random effects linear regression models were fitted separately to each outcome, specifying the MCHC as the cluster and adjusting for socio-economic status, age, gender, language spoken at home and maternal mental health (SF12 Health Survey). *Trial registration:* ISRCTN04602902.

Findings: Retention was 87% at 4 years from baseline. The table shows the adjusted mean difference (AMD) for intervention vs control children for outcomes.

	AMD (95% CI)	p		AMD (95% CI)	p
CELF: Receptive	0.7 (−2.2 to 3.6)	0.6	SPAT: Phonemic	0.1 (−0.4 to 0.5)	0.8
CELF: Expressive	0.9 (−1.8 to 3.6)	0.5	SPAT: Letter Awareness	0.0 (−1.6 to 1.6)	1.0
SPAT: Intrasyllabic	0.1 (−0.3 to 0.6)	0.3	STIM-Q: Total	−0.1 (−1.0 to 0.8)	0.8

Conclusions: *Let's Read* did not improve emergent literacy, expressive language, or home based literacy activities (including shared reading) at 4 years of age. These findings do not support low-intensity universal book distribution and literacy promotion programs at a population level.

O16
THE PREVALENCE AND SUBPOPULATION DISTRIBUTION OF AUSTRALIAN CHILDREN WITH ADDITIONAL HEALTH AND DEVELOPMENTAL NEEDS AT SCHOOL ENTRY

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Background: Research has shown that identifying and providing early support for children with additional health and developmental needs has beneficial effects. There are only limited Australian data available to assist in timely and responsive planning for these children.

Aim: To measure the prevalence and subpopulation distribution of Australian children with additional health and developmental needs at school entry.

Methods: During 2009 teachers completed the Australian Early Development Index online for all Australian children in their first year of fulltime schooling. The AEDI consists of over 100 questions measuring five developmental domains. In addition, information was collected and analysed for children with chronic special needs, emerging developmental difficulties and those requiring further assessment.

Findings: Data were collected on 261,203 (98% of the Australian 5 year old population) of which 4.4% (n = 11,479) were classified as already having a diagnosed chronic special need (physical or emotional) on entry to school. Teachers also reported whether children had developmental difficulties that interfered with their ability to do school work, resulting in an additional 45,676 children (17.8%). The most common difficulties were speech, learning and behavioural problems. 10.5% (n = 27,223) of children were identified by teachers as requiring further assessment made up of 4,823 diagnosed special needs children and 22,400 children without a diagnosed special need. Rates of special needs children varied little across subpopulations but the rate of developmental difficulties was higher in indigenous children (29%) and lower in diverse language children (13.1%). There was a higher proportion of children with developmental difficulties (26.6%) living in the poorest areas of Australia compared to other children (21.7%).

Conclusion: The results reveal that (1) developmental difficulties are distributed across social gradients, (2) teachers recognise children's developmental needs early, (3) schools face considerable challenges in trying to address children's needs, and (4) there are opportunities to address children's developmental needs early in their educational pathways.

O17
INDIGENOUS CHILD HEALTH: SWIFT WINDS OF CHANGE

Gracey M

Unity of First People of Australia

Little is known of Indigenous health before colonisation but infant and young child mortality was probably high. Vast changes have occurred in the past 50 years. In the 1960s there were very high rates of low birth weight, paediatric infections, malnutrition, and excess morbidity and mortality. Strenuous efforts helped reduce these problems but, Indigenous *versus* non-Indigenous comparisons are still very unfavourable.

Recent decades brought a sinister epidemic of "lifestyle" diseases that eroded many of those improvements. These relate to diet, exercise patterns and alcohol and drug misuse. Inadequate community and domestic living conditions contribute substantially. Overweight/obesity, type 2 diabetes, hypertension, cardiovascular disease, chronic renal disease and their complications are prevalent in Indigenous children and adolescents. These chronic disorders have originate in early life and, probably, intrauterine development. They are major causes of the Indigenous *versus* non-Indigenous health gap.

Despite some improvements, current strategies and programs mostly fail Indigenous infants and children and new approaches are needed. Our Kimberley program involves remote communities themselves and encourages local responsibility for adopting healthy lifestyle patterns, including diet and regular exercise. Communities cooperate with local and visiting clinical personnel and are supported by experts in food, nutrition and cooking, dietitian/nutritionists, sports stars, diabetes educators, schoolteachers, food store managers, and an "edible gardens" program. Emphasis goes to encouraging children in these activities. The program has run for nine years and is reducing the burden of these chronic diseases.

O18

HEALTHY KIDS, HEALTH FUTURE: EAR HEALTH, SPEECH AND LANGUAGE AMONG URBAN ABORIGINAL CHILDREN (THE SEARCH STUDY)

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Background: Aboriginal children living in remote communities experience a high burden of middle ear disease but little is known about the burden in Aboriginal children living in urban communities. Data are also scarce on hearing, speech and language impairment in Aboriginal children. Study of Environment on Aboriginal Resilience and Child Health (SEARCH) is a large cohort study examining the health of urban Aboriginal children attending four Aboriginal Community Controlled Health Services in western Sydney, Newcastle, and Wagga Wagga.

Aims/Objectives: We sought to determine the frequency of middle ear disease, hearing impairment, and speech and language impairment in urban Aboriginal children.

Methods: Audiologists examined the middle ears of all children, and completed hearing assessments with age-appropriate techniques on all compliant children. Speech pathologists performed standardised age-appropriate speech and language testing on all children younger than 8 years. Receptive and expressive language scores below 16th percentile were considered impaired.

Findings: Middle ear disease (acute otitis media, otitis media with effusion, tympanic membrane perforation or chronic suppurative otitis media) was identified in 418/1126 children (37%). Severe middle ear disease (wet or dry perforation) was identified in 2% of the cohort. Hearing impairment (>20 dB loss in the best ear) was identified in 80/781 children (10%), of whom 71/80 (89%) had middle ear disease. Speech skills were not age-appropriate in 172/375 (46%) children (0–8 yrs). In children younger than 5 years, receptive language impairment was found in 76/207 (37%), expressive language impairment was found in 75/207 (36%), and one in four (27%) had concurrent receptive and expressive language impairments.

Conclusions: Urban Aboriginal children experience a high burden of middle ear disease, hearing impairment and speech and language impairments. Early intervention in Aboriginal children offers an opportunity to close the gap of early childhood disadvantage.

O19
ANTECEDENTS OF CHRONIC KIDNEY AND CARDIOVASCULAR DISEASE IN AUSTRALIAN INDIGENOUS AND NON-INDIGENOUS CHILDREN: RESULTS FROM THE ARDAC STUDY

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Background: The prevalence of chronic kidney disease (CKD) and cardiovascular disease (CVD) is higher in Indigenous adults compared with non-Indigenous adults in Australia.

Aims: To determine the prevalence and trajectory of markers of CKD and CVD in Indigenous and non-Indigenous children and young adults in New South Wales (NSW).

Methods: A prospective cohort study over 12 years from 2002 of Indigenous and non-Indigenous children in urban, rural and remote schools in NSW with screening for haematuria, albuminuria, blood pressure [BP], body mass index [BMI] at 2 year intervals. Data on geographic isolation (ARIA scores), socio-economic disadvantage (SEIFA index) and birth weight were collected.

Findings: Of 2266 children (55% Indigenous) screened at baseline (mean age 8.9 years), haematuria was significantly more common in Indigenous children but there were no differences in albuminuria, BP or BMI. At baseline, the prevalence of markers overall was: haematuria 5.5%, albuminuria 7.3%, obesity 7.1%, systolic hypertension 3.0%, diastolic hypertension 1.9%. Multivariate analysis demonstrated no association between the prevalence of markers and indigenous status, low birth weight, geographic isolation or socio-economic disadvantage. At follow up at 2 (63% children), 4 (66% children) and 6 years (45% children), persistence of markers was uncommon (6 years [mean age 14.3 years]: haematuria 1.8%, albuminuria 4.0%, obesity 4.0%, systolic hypertension 1.8%, diastolic hypertension 0.5%) and did not differ between Indigenous and non-Indigenous children. 70% of markers were transient. The point prevalence of albuminuria increased with age ($p < 0.001$) in both Indigenous and non-Indigenous children.

Conclusions: These findings suggest that the increased risk for CKD and CVD in Indigenous adults is not manifest in children and teenagers. Further screening at average ages around 16 and 18 years will be undertaken to determine if markers of CKD and CVD begin to diverge between young Indigenous and non-Indigenous adults.

O20
ANTECEDENTS OF CHRONIC KIDNEY AND CARDIOVASCULAR DISEASE IN AUSTRALIAN INDIGENOUS AND NON-INDIGENOUS CHILDREN: A 6-YEAR POPULATION-BASED FOLLOW-UP STUDY (THE ARDAC STUDY)

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Background: End stage kidney disease and cardiovascular deaths are significantly more common in Indigenous adult Australians compared with non-Indigenous Australians but the natural history remains largely unknown due to a lack of population-based follow-up studies originating in early childhood.

Aims: To determine the trajectory for chronic kidney disease (CKD) and cardiovascular disease (CVD) in Indigenous and non-Indigenous children and young adults.

Methods: A prospective cohort study of school children from New South Wales was commenced in February 2002 with Indigenous and non-Indigenous children matched at baseline and reviewed every 2 years. Data on potential risk factors (demographic details, geographic isolation, socio-economic disadvantage) for early CKD and CVD (haematuria, albuminuria, obesity, systolic and diastolic hypertension) were collected.

Findings: 2266 children (55% Indigenous; 51% male; mean age 8.9 years) were enrolled at baseline, with 1021 (45%) reviewed at 6 years (mean age 14.3 years). At baseline, prevalence of markers of CKD was: haematuria 5.5%; albuminuria 7.3%; obesity 7.1%; systolic hypertension 3.0% and diastolic hypertension 1.9%. At 6 years, prevalence of persistent markers was: haematuria 1.8%; albuminuria 4.0%; obesity 4.0%; systolic hypertension

1.8% and diastolic hypertension 0.5%. There was no difference in the prevalence of persistent markers between Indigenous and non-Indigenous children. The point prevalence of albuminuria increased with age ($p < 0.001$) in both Indigenous and non-Indigenous children. Multivariate analysis showed that these markers were not associated with indigenous status, low birth weight, geographic isolation or socio-economic disadvantage.

Conclusions: Albuminuria increased over time in both Indigenous and non-Indigenous children. Over 70% of abnormalities were transient and the risk of persistent markers was low. Indigenous children and teenagers were not identified to be at increased risk of CKD or CVD compared with non-Indigenous teenagers.

O21
DELIVERING PAEDIATRIC MEDICAL, FORENSIC AND COUNSELLING SERVICES TO ABORIGINAL CHILDREN IN REMOTE NORTHERN TERRITORY COMMUNITIES

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Background: As part of the Australian Federal Government's response to the 2007 NT Government's Ampe Akelyernemane Meke Mekarle "Little Children Are Sacred Report", a mobile outreach child abuse counselling service and an outreach forensic medical service were funded.

The Mobile Outreach Service (MOS) *Plus* provides a range of direct therapeutic case work services to children and their families and a range of complimentary support services designed to build community and individuals 'readiness' to respond to child abuse and subsequently, to engage with the counselling service.

Objectives: The objective for MOS Plus is to provide equitable access to timely, culturally safe and valued responses to Aboriginal children, adolescents and their families living in remote communities of the Northern Territory affected by trauma associated with any form of child abuse and neglect, including sexual assault.

Outcomes: Improvement in psychological and emotional wellbeing and reduction in child abuse related trauma of Aboriginal children in remote communities through access to, and provision of best-practice counselling services and mobile forensic sexual assault medical services.

Increase in the safety of children in their families and communities.

Conclusions/Findings: Naomi Brennan will outline the counselling service and discuss some of the outcomes and lessons learned. Dr Tracy Johns will discuss the challenges involved in offering forensic medical examinations in remote communities and introduce the portable colposcope that may be of interest to child forensic paediatricians around the country.

O22
PREDICTORS AND OUTCOMES FOLLOWING SURGERY IN CHILDHOOD TEMPORAL LOBE EPILEPSY

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Background and Aims: Following surgery in childhood Temporal Lobe Epilepsy (TLE), outcome relates to seizure freedom, behaviour and neurodevelopmental impact. Our primary aim was to evaluate postoperative outcome and define predictors in a series of children with TLE.

Methods: We conducted a retrospective analysis of children with medically resistant TLE who underwent surgery (2002–2008) at Sydney Children's Hospital. Patient demography, seizure semiology, neurophysiology, imaging and pathology were re-examined and current status determined.

Findings: The cohort was 28 children aged 2–18 years at surgery (median age 10). Median age of epilepsy onset was 4.5 years. Hippocampal sclerosis (HS) ($n = 13$) and tumour ($n = 13$) were the most common lesions, while twelve had associated dysplasia.

Nineteen patients (68%) were seizure free at follow-up (median four years). Eight patients underwent >1 operation, and four of these became seizure free (all isolated pathology). The other four patients had dysplasia associated with HS or tumour and failed to improve.

Patients with pre-morbid behavioural/psychiatric difficulties or left sided pathology were more likely to have post-operative behavioural/psychiatric problems ($p = 0.003$; $p = 0.023$).

Conclusions: Irrespective of primary pathology, the majority of patients had a good seizure-free outcome, but those who failed to improve all had associated pathology in addition to primary diagnosis. Post-operative behavioural and psychiatric problems were associated with pre-operative disturbances and left sided pathology.

O23
NEONATAL HSV DISEASE IN AUSTRALIA: 13 YEAR ACTIVE SURVEILLANCE REVEALS IMPROVED MORTALITY WITH HIGH DOSE ANTIVIRAL THERAPY, AND INCREASED HSV-1 DISEASE IN ADOLESCENT MOTHERS WITH GENITAL HERPES

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Background: Neonatal herpes simplex virus (HSV) infection is uncommon, but death or handicap after disseminated or CNS disease is almost inevitable without antiviral therapy. Over the last decade, increased antiviral dose and duration has been used to prevent disease progression and recurrence.

Aims/Objectives: We sought to prospectively determine the epidemiology, management and mortality of this condition in Australia.

Methods: Active surveillance for neonatal HSV disease was undertaken through the Australian Paediatric Surveillance Unit from 1997 to 2009. A study questionnaire requesting de-identified clinical demographic and management data was sent to clinicians who notified a case in response to monthly emailed report cards.

Findings: 121 confirmed/probable cases of neonatal HSV disease were identified from 233 notifications (94% return rate); with a reported incidence of 3.49 cases/100,000 live births. Mortality rate was 19.3%. The majority of mothers of HSV infected newborns were born in Australia (91%), 8.5% of mothers (6/71) were reported as being of Aboriginal or Torres Strait Islander descent. The proportion of cases caused by HSV-1 significantly increased over the study period to 59%. HSV-1 was the major serotype in young mothers who reported genital disease. From 2003, the majority of infants received high dose parenteral acyclovir (60 mg/kg/day). Although the reported incidence did not vary over the study, there was a significant reduction in mortality (24% to 16%) between two six-year time periods (1998–2003) and (2004–2009).

Conclusions: Although uncommon, neonatal HSV disease continues to cause significant mortality despite available therapies and sensitive diagnostic techniques. The use of high dose antiviral therapy is temporally associated with reduced mortality from disseminated neonatal HSV disease. HSV-1 is the major serotype causing neonatal HSV disease in Australia, particularly in adolescent mothers with genital herpes, who represent an important group to target for prevention.

O24
BREAKING THE CYCLE: CHILD PROTECTION ISSUES IN NEW ZEALAND

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Aims/Objectives: This presentation will briefly review the evidence on child abuse and family violence in New Zealand, present a viewpoint on the history of child protection in New Zealand, and summarize a range of attempts to prevent or intervene effectively to "break the cycle". At the end of this session, participants should have a greater understanding of the issues facing child protection in New Zealand, and of some of the more significant strategies currently being adopted by governmental and non-governmental agencies.

Outline: Topics of interest include the prevalence of corporal punishment and physical abuse in New Zealand (with particular reference to data from longitudinal community studies, and in comparison to the international literature); the representation of Maori and Pacific Island populations in statistics for family violence and child abuse; the Children Young Persons and Their Families Act 1989 and its efficacy in protecting children – including modifications in practice in the last 5 years; the implementation of home visiting as a means of child abuse prevention in New Zealand; the mandatory reporting debate; the abolition of corporal punishment in May 2007; routine screening for family violence in the New Zealand health system and the recent development of "whanau ora" as a governmental strategy. The evolution of collaborative inter-agency practice for children at risk will be discussed, including the Child Protection Protocol between Police and Child Youth and Family, the placement of statutory social workers in public hospitals and the development of a 3-way Memorandum of Understanding between Police, Child Youth and Family and District Health Boards. Proposals to develop a national Child Protection Alert system will be discussed.

O25
THE HEALTH AND WELL-BEING OF INCARCERATED ADOLESCENTS

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Incarcerated adolescents are among the most vulnerable people in our community but their health is rarely seen as a priority. This is despite the fact that there is increasing evidence that their health needs are greater than adolescents in non-custodial settings. It is now known that these health needs are not simply in the domain of greater physical and mental health but also in areas such as substance use, sexual health as well as in areas like learning difficulties and behavioural problems. These very often occur on a background of severe social disadvantage. There is a significant overrepresentation of Indigenous young people in juvenile detention centres throughout Australia and New Zealand.

There is a high turnover of detainees within centres with many incarcerated for very brief periods. There is also a high level of recidivism. Providing comprehensive and holistic long term health care is challenging but opportunities exist to improve care within centres and beyond upon release. Providing conventional medical and nursing care does not address longer term issues and a minimalistic approach with no community follow up probably contributes to high recidivism levels whereas the converse is likely to be true.

There are few national standards or policies reflecting best practice for this population in either Australia or New Zealand. Internationally however there are numerous position statements and guidelines for provision of health care to incarcerated adolescents. The RACP policy is consistent with previously published documents and pays specific attention to the over-represented number of Indigenous adolescents in custody in both Australia and New Zealand. It is intended to set the standard for health care in these settings in Australia and New Zealand and to be a framework upon which improvement and standardisation of care can be based.

O26
A NEW MODEL OF CARE FOR ABORIGINAL CHILDREN

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The Wadja Aboriginal Family Place at the Royal Children's Hospital (RCH) is a newly developed model of care in Aboriginal Hospital Liaison in its second year of operation. For inpatients and outpatients with multiple and complex health and social issues, case management is provided by an Aboriginal staff member to ensure that assessment, discharge planning and consultations are culturally appropriate.

Wadja is a part of the Social Work Department and its staff include a Coordinator, two Aboriginal Health workers, two Aboriginal Case Managers and two pediatricians who work with Aboriginal patients and their families.

Wadja conducts a paediatric clinic every Wednesday for Aboriginal children. The child and family are seen at each clinic visit by a Wadja Aboriginal staff member and a Wadja paediatrician. The assessment determines if case management is required. Follow up is offered to all families as required.

Each Aboriginal child hospitalized at RCH is seen by an Aboriginal staff member who makes an assessment of the child's emotional, social, cultural and health needs (in addition to the nursing and medical assessment). Case management for both inpatients and outpatients encompasses social and emotional support as well as discharge planning and practical assistance for the child and family.

The model of care also incorporates an educational aspect. The staff of Wadja are committed to providing cultural awareness to their colleagues at RCH through various forums. A cultural awareness program can also be accessed through the RCH Intranet by staff. Another important element of the program is capacity building.

The Wadja model of care is undergoing an evaluation by Onemda, the Aboriginal Research Unit at the University of Melbourne.

The presentation will incorporate a clinical case to highlight how the model of care works.

O27
OTITIS MEDIA AND NASAL CARRIAGE OF STREPTOCOCCUS PNEUMONIAE AND HAEMOPHILUS INFLUENZAE IN A HIGH-RISK POPULATION PRIOR TO AND IN THE FIRST 6 MONTHS OF THE ROLL-OUT OF THE SYNFLORIX (PHID-CV) SCHEDULE OF 2,4,6, AND 18 MONTHS

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Background: Almost half of the Aboriginal children living in remote communities of the Northern Territory (NT) have an episode of tympanic membrane perforation (TMP) in the first 2 years of life. Non-capsular *Haemophilus influenzae* (NCHi) and *Streptococcus pneumoniae* (Spn) are the primary pathogens in TMP.

Aim: To monitor vaccine and antibiotic selective effects on Spn and NCHi carriage and infection, and changes in prevalence of OM.

Methods: In September 2008, we commenced a survey of nasal carriage and otitis media in Aboriginal children 0 to 6 years of age living in remote Aboriginal communities. Nasal secretions and ear discharge from TMPs were collected at the time of ear examinations. All investigations were conducted according to published methods.

Findings: From September 2008 to April 2010, 304 Aboriginal children (mean age 16.6 months, 53% male) participated. Sixteen (5%) had received a single dose of Synflorix (PHiD-CV); 14 also had received at least one dose of PCV7. Almost all had OM; 21% had TMP. Pneumococci were carried by 72% and *H. influenzae* by 75% of children; 62% carried both pathogens and 15% had neither. Of 55 cultures of TMP, 15 (27%) were positive for pneumococcus and 22 (40%) were positive for *H. influenzae*. Dominant pneumococcal carriage serotypes were 16F, 19F and 19A. 40% of pneumococci had intermediate resistance to penicillin and 29% were azithromycin resistant. Rates of resistance were much higher in the dominant serotypes. Antibiotic selective pressure is probably influencing the pneumococcal carriage hierarchy.

Conclusions: In this high risk population, almost all children had OM and TMP remains common. This is associated with high rates of carriage of either pneumococcus or *H. influenzae* (85% from less than six months of age). Pneumococcal serotypes 16F, 19F and 19A predominate and antibiotic resistance is increasing again. The potential benefit from changes in the pneumococcal vaccine schedule and the best use of pneumococcal vaccines in this population is unclear.

O28
HIGH RATES OF SLE (SYSTEMIC LUPUS ERYTHEMATOSUS) IN INDIGENOUS CHILDREN IN AUSTRALIA- AN INTERIM REPORT OF THE AUSTRALIAN PAEDIATRIC SURVEILLANCE UNIT STUDY (APSU) 2009–2010

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Background: There are no data on incidence of SLE in Australia however previous reports suggest high rates in Indigenous populations.

Aim: Document the incidence, geographic distribution, presentation, initial treatment and ethnicity of SLE in Australian children (<15 yrs).

Method: Cases notified to the APSU from October 2009 to end September 2010 were collated. Questionnaires regarding presenting symptoms, laboratory investigations, initial treatment, adverse events, ethnicity and geographic location were sent to reporting physicians.

Findings: 17 cases were reported in 12 months (1 error) and completed questionnaires were received in 13/16 cases giving a response rate of 81%. 10 fitted case definition for SLE having >4/11 criteria set out by the American College of Rheumatology (ACR)[1]; 2 children fulfilled diagnostic criteria with >1 clinical criteria (ACR) with antinuclear antibody (ANA) titre >1:320; 1 child did not meet criteria but had a renal biopsy diagnostic of SLE. Therefore the overall incidence of SLE was 0.3 per 100 000 children <15 yrs. Median age at diagnosis was 10.3 yrs (2.7–14 yrs); female: male ratio was 5.5:1. 46% of cases were reported in NSW, 23% in QLD and 1 case each reported in WA, NT, SA and Victoria. Commonest ethnic background was Caucasian (38%) followed by Indigenous (30%) and Asian (23%). The incidence for Indigenous children was 4.0 per 100 000. Arthritis was the commonest presenting symptom (9/13) followed by malar or photosensitive rash. 6/13 proceeded to renal biopsy with class IV nephritis the commonest finding. At presentation 77% received daily oral prednisone, 38% methylprednisolone, 25% cyclophosphamide, and 50% of patients received hydroxychloroquine. No patient received rituximab initially. The majority of newly diagnosed SLE were inpatients (9/13) with average LOS 14 days. There were no deaths but 1 patient required dialysis/ ICU care. 2 experienced significant drug related events (cardiomyopathy from hydroxychloroquine; rash from ACE inhibitors).

Conclusion: SLE is a rare condition in children in Australia but the incidence of SLE in indigenous children is much greater than that of the overall population.

Reference

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O29
AUDIT OF BIRTH WEIGHT OF BABIES BORN IN FITZROY CROSSING BEFORE AND AFTER ALCOHOL RESTRICTIONS IN OCTOBER 2007

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Background: Alcohol abuse is a major cause of injury and death from domestic violence and a causal factor in the diseases which shorten the lifespan of Aboriginal people in remote communities in northern Australia. Children are innocent victims of this violence, including the unborn child. In October 2007, the Aboriginal elders achieved restrictions on the alcohol content of packaged liquor available for sale in Fitzroy Crossing, WA.

Aims/Objectives: To measure the impact of alcohol restrictions on fetal growth of infants born to mothers residing in the Fitzroy Valley (postcode 6765).

Methods: De-identified data from the WA Midwives Perinatal collection were examined by regression analysis to assess associations between birth weight, length and head circumference, controlling for maternal age, smoking status and gestation in the periods 9 months before the restrictions (group A), the first 9 months after restrictions (group B) and subsequently until the end of 2009 (group C).

Findings: Data was available for 348 live births (7 stillbirths excluded from analyses as pre-viable). The adjusted mean birth weight of infants born in the first 9 months after the restriction (group B) was 260 grams greater than before the restrictions which was statistically significant ($p = 0.003$). The latter group C shows only a 172 gram increase ($p = 0.03$) compared to group A. Birth length increased by 1.1 cm in group B ($p = 0.014$) but was not significantly different in group C. There was no change in head circumference between the groups.

Conclusions: There was a significant increase of 260 g in mean birth weight of infants born after the restrictions commenced which is both clinically and biologically relevant. However, the magnitude of the change does not appear to be sustained. Length and head circumference were not significantly altered.

O30
CURRENT MANAGEMENT OF HAEMANGIOMA

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Vascular lesions in infants and children are classified into 2 major types: tumours and vascular malformations. Infantile haemangiomas are the most common tumours, other types of vascular tumours include pyogenic granuloma, kaposiform haemangioendothelioma, tufted angioma and congenital haemangiomas (RICH and NICH). The majority of haemangiomas require no treatment and follow a benign course of proliferation and involution leaving only residual fibro-fatty tissue. Some lesions however are life threatening due to their location (tracheal lesions), may result in significant morbidity due to their location (periorbital lesions), will result in an adverse cosmetic outcome (lesions crossing the vermillion border) or are associated with other systemic effects (hypothyroidism). The treatment options for these lesions include surgery, laser, interventional radiology techniques and medication. Pharmacological options in the past have included corticosteroids, interferon or chemotherapy, more recently Propranolol has been shown to be a safe and effective treatment, in particular, for infantile haemangiomas.

O31
A MODIFIED TECHNIQUE FOR MEASURING AIRWAY BLOOD FLOW IN CHILDREN

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Background: Increased airway mucosal circulation is an important feature of inflammatory airway diseases such as cystic fibrosis (CF) and asthma. Quantification of this circulation is very difficult, but a soluble inert gas uptake technique has been developed for use in adults by Adam Wanner[1]. Trials confirm that airway blood flow (Q_{aw}) is increased in asthmatic patients and decreases with inhaled corticosteroid treatment[2]. Airway blood flow has not been measured in children or in patients with CF.

Aims:

1. To measure Q_{aw} using a non-hypoxic gas mixture with a simplified respiratory manoeuvre suitable for use in children.
2. To compare Q_{aw} in healthy volunteers and patients with CF.

Method and Results: The current Wanner method uses a potentially hypoxic gas mixture containing 10% dimethylether (DME) and a breathing manoeuvre not able to be carried out by children. Using an AMIS 2000 mass spectrometer, 1% DME and a simplified 8 and 16 second breath-hold from functional residual capacity as the only modifications, allowed consistent determination of Q_{aw} in healthy volunteers. Q_{aw} was significantly elevated in CF patients (mean Q_{aw} ($n = 5$) = 42.3 µl/min/ml) compared with healthy volunteers (mean Q_{aw} ($n = 20$) = 16.3 µl/min/ml) ($p = 0.0007$). The simultaneous measurement of 0.3% acetylene demonstrated its total unsuitability as a test gas for this measurement. Similarly, 1% nitrous oxide using infrared sensors 1000 times more sensitive than the mass spectrometer was far too insoluble to be useful.

Conclusions: It is possible to reproducibly determine Q_{aw} using 1% DME and a simplified breathing manoeuvre. Initial results suggest that Q_{aw} is significantly elevated in patients with CF compared with healthy volunteers. Due to the rigor and labour intensivity required to produce a meaningful Q_{aw} result, the methodology presently remains in the research arena.

References

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O32
INTEGRATING BIRTH-DOSE VACCINATION WITH EARLY POST-NATAL CARE IN A REMOTE SETTING IN PAPUA NEW GUINEA

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Background: Rugged geography, limited resources and traditional cultures constrain health care in Papua New Guinea (PNG). In East Sepik Province (ESP) many villages accessible only by river have poor access to health services, see most births take place at home, and suffer high mortality rates. In May 2008, Burnet Institute, with local partners, launched a project in ESP to support the PNG government's attempts to scale-up perinatal care and immunisation, which now includes a first dose of hepatitis B vaccine, to be given within 24 hours of birth.

Aim and Objectives: To test the feasibility of professional health workers and trained village health volunteers (VHVs) providing birth-dose hepatitis B vaccination, using Uniject®, linked to early post-natal care, in remote villages of ESP.

Methods: We developed a basic post-natal care package, including birth-dose hepatitis B vaccination; and tools for training, community education and supervision. Over two years we trained 212 VHVs and 13 rural health staff, and supported them in perinatal care for more than 364 mothers. We measured outcomes through structured community discussions, project database and government health statistics.

Findings: Project coverage with birth dose vaccination was estimated at 83%, (74% home births, 93% in health centres) well above baseline estimates (18% and 0%). Uniject® allowed delivery by VHVs and extended coverage tenfold. Both VHVs and health centre staff proved competent, including managing vaccine supplies outside of the cold-chain. VHVs also provided post-natal education and vitamin A.

Communities welcomed the program and most problems were due to logistic and maintenance challenges. Provision of perinatal services to the home did not encourage home birth, instead we saw a likely increase in births at health facilities. VHVs played a critical role in perinatal care in both homes and facilities. It did not prove feasible to enlist VHVs or staff beyond those already providing childbirth care. Other lessons included continuing high rates of complications of childbirth, good models for integrating volunteers into formal health services, and the continuing need to address community practices.

Conclusions: It is feasible to involve trained volunteers in perinatal care, including birth-dose vaccination, and support safer community-based childbirth care without increasing home births.

O33
UNIVERSAL NEWBORN HEARING SCREENING: NATIONAL SURVEY OF AUSTRALIAN ENT SURGEONS, AUDIOLOGISTS AND PAEDIATRICIANS

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Objectives: To survey Australian paediatricians, ENT surgeons and audiologists regarding newborn hearing screening and congenital hearing loss, in order to identify (1) current practice patterns; (2) knowledge about hearing loss; (3) perceived knowledge of its management; and (4) preferred interdisciplinary models of care.

Methods: In 2010, all Australian Paediatric Research Network (APRN) members were invited to complete a short questionnaire embedded in the APRN's annual multi-topic survey. A stand-alone web-based version was sent to all Australian audiologists and ENT surgeons via their professional bodies (Audiological Society of Australia, Australian Society of Otolaryngology Head and Neck Surgery).

Results: Survey respondents comprised 181 paediatricians, 84 ENT surgeons and 469 audiologists (49%, 22% and 27% response respectively). ENTs reported greatest involvement in aetiological investigations (89%) while paediatricians in developmental surveillance (73%). Referral rates to other specialists were similar for all groups (62–72%). All were generally positive in assessing their knowledge about hearing loss. Paediatricians, however, felt less well informed than ENTs and audiologists across a number of issues, including medical and audiological interventions, education, and communication options. While each group showed a predilection for their own profession to coordinate the care of these children, a high proportion in each group supported paediatricians in this role (paediatricians 80.2%, ENTs 41.8% and audiologists 31.4%).

Conclusions: Paediatricians are widely endorsed as playing an important role in developmental surveillance and coordinating the care of deaf and hearing-impaired children. With Australia-wide roll-out of universal newborn hearing screening nearing completion, paediatricians' self-identified learning needs should therefore be addressed urgently. These and other data from this survey could inform the implementation of the forthcoming Australian National Standards and Quality Framework for Newborn Hearing Screening.

O34
NATIONAL SURVEILLANCE FOR ACUTE RHEUMATIC FEVER IN AUSTRALIAN CHILDREN THROUGH THE AUSTRALIAN PAEDIATRIC NATIONAL SURVEILLANCE UNIT

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Background: Acute rheumatic fever (ARF) is a multi-system disease caused by an immunological response to untreated group A streptococcal infection. Children who have had ARF are susceptible to recurrent episodes. Recurrent ARF commonly leads to rheumatic heart disease (RHD) which results in cardiac failure, the need for heart valve surgery or death. Recurrent ARF can be prevented by regularly administering penicillin prophylaxis.

ARF is predominantly a problem among Indigenous communities however our understanding of the epidemiology and impacts of ARF is currently restricted to the NT and QLD. There are limited data on the incidence, management and outcomes of this debilitating condition for the southern regions of Australia.

Aims/Objectives: Estimate the incidence of ARF, particularly outside the NT and QLD. Determine the proportion of all ARF episodes that are recurrences. Identify populations, groups and regions at highest risk of ARF.

Methods: Menzies School of Health Research in collaboration with the Australian Paediatric Surveillance Unit (APSU) developed a case definition and questionnaire to collect information about ARF in children aged up to 15 years. Clinicians are prompted by the APSU every month to report cases seen, and reporting is voluntary. Key information around risk factors, clinical presentation, treatment and barriers to diagnosis were collected to help describe the illness. Reported cases were classified according to completeness and compliance with the case definition.

Findings and Conclusions: A total of 240 potential ARF cases were notified to the study from October 2007 to December 2010. Approximately 150 of these were confirmed cases (another 24 were duplicates) and 16 cases were classified as probable ARF. ARF continues to occur in southern areas of Australia and is seen in non-Indigenous Australian and Pacific Islander children as well as Aboriginal and Torres Strait Islander children.

O35
IMMEDIATE AND LONG TERM CHANGES IN BODY COMPOSITION ON STIMULANT MEDICATION

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Background: Children with attention deficit hyperactivity disorder (ADHD) often lose weight when they start treatment with stimulant medication.

Aims: To investigate the immediate and long term effects on body composition and bone mineral density (BMD).

Methods: Prospective longitudinal study of children newly diagnosed with ADHD recruited from 2003–2008. Body composition (dual-energy x-ray absorptiometry) was performed at baseline, and at 6 months and 3 years after starting treatment. Total fat, lean tissue and BMD were compared with data from healthy children (110 boys, 138 girls).

Findings: 31 children (24 boys) aged 4.7–9.1 years had baseline scans with 24 repeated at 6 months and 14 at 3 years. After 6 months the children's growth was less than expected based on reference data (height Z-score 0.49 ± 1.05 and 0.28 ± 1.04 at baseline and 6 months respectively, $p < 0.001$; weight Z-score 0.58 ± 0.90 and 0.01 ± 0.95 respectively, $p < 0.001$). There was a significant reduction in fat mass at 6 months (-1.41 ± 0.96 kg, $p < 0.001$) but because the lean tissue continued to increase (0.76 ± 0.64 kg ($p < 0.001$)), the average loss of total tissue mass was only -0.65 ± 1.07 kg ($p = 0.009$).

There was a preferential loss of central fat (central/total fat 0.40 ± 0.04 and 0.38 ± 0.05 at baseline and 6 months respectively, $p = 0.02$). At 3 years the Z-score of the proportion of central fat in relation to height was still significantly lower than at baseline (1.01 ± 0.80 and 0.46 ± 1.06 respectively, $p = 0.006$).

Over 3 years BMD increased proportionally to the increase in weight but declined significantly relative to height (Z-score of BMD for height: 0.62 ± 0.67 and 0.21 ± 0.70 at baseline and 3 years respectively, $p < 0.001$).

Conclusions: On stimulant medication weight is preferentially lost as central fat. The thinner body habitus on stimulant medication is associated with lower BMD in relation to height. It is unknown whether stimulant associated weight loss in childhood is related to lower BMD in adulthood. However, the long term reduction in central fat could be beneficial in individuals with obesity.

O36
DO SICK CHILDREN HAVE RIGHTS IN AUSTRALIA AND NEW ZEALAND? EVALUATING COMPLIANCE WITH CHILDREN'S RIGHTS IN AUSTRALASIAN HEALTHCARE

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Background: Children and young people are significant and vulnerable consumers of hospitals and health-services. Healthcare professionals are committed to respecting the rights of children and young people who receive their services, but this has not been evaluated. In 2009, an international taskforce in Health Promotion for Children and Adolescents developed the Self Evaluation Model and Tool (SEMT) to audit the observance of such rights in hospitals and health-services. Children's Hospitals Australasia (CHA) coordinated the evaluation of child rights across hospitals and health-services in Australia and New Zealand using the SEMT.

Objectives:
- To determine how hospitals and community health-services across Australasia fulfill their obligations to children's rights in practice.
- To determine the feasibility of using the SEMT in healthcare facilities in Australasia
- To explore broad areas of convergence, identify good practice and gaps with respect to fulfilling child rights in health-services.

Methods: Eleven participating members representing 15 healthcare facilities across Australia and New Zealand completed the SEMT for children's rights in health-services. Facilities ranged from tertiary Children's Hospitals to district level hospitals and community health-services. Evidence for completing the tool was descriptive.

Findings and Conclusions: Healthcare facilities varied widely in how they supported children and young people's rights. Overall, the highest ratings by facilities were in protecting children and young people from all forms of violence. Tertiary paediatric hospitals rated themselves lower than general hospitals and community health-services. There was consensus about the need for checks and balances for children being included in research and protecting them from pain. The lowest assessments across facilities were in the rights to information and participation.

Participants found the self-assessment process useful in raising awareness of children's rights in health-services and as a benchmarking exercise. Australasian Charters for Children and Young People's Rights have been drafted as a part of this work.

O37
INFLUENCE OF SCHOOL HOLIDAYS ON WEIGHT OF CHILDREN PARTICIPATING IN A TERTIARY HOSPITAL WEIGHT MANAGEMENT PROGRAMME

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Background: Weight gain during holiday periods is a recognised phenomenon, with summer paradoxically being a particularly vulnerable period for children in the northern hemisphere. Outcomes regarding summer holiday weight gain in children in the southern hemisphere are unknown.

Objective: To determine the pattern of weight change during summer school holidays (Christmas break – CB) in a population of children who were overweight/obese attending a tertiary hospital weight management programme.

Methods: The study was conducted as a retrospective review using anthropometric measurements (height, weight, BMI and BMI z scores) at four different time points: (1) Baseline – 2 months before CB; (2) At commencement of CB; (3) At conclusion of CB; (4) 2 months after CB. Changes in anthropometry over three time periods (pre-holiday, holiday, and post-holiday) were calculated and analysed. Weight change was standardised to an interval of 60 days to account for the difference in the interval between measurements.

Results: 50 patients (median age 8.9 years) in total were included in the study with 61 data points. 63.9% of children lost weight preholiday compared to 13.1% during the holiday and 34.1% post-holiday. Mean weight change pre-holiday was 0.01 kg (95% CI –0.40 to +0.42), during holiday was 1.6 kg (95% CI 1.21 to 2.02) and post-holiday was +0.80 kg (95% CI 0.31 to 1.28). There was a statistically significant difference in the weight change during the holiday period compared to pre-holiday period ($p < 0.05$) and post-holiday period ($p < 0.05$).

Conclusions: This study demonstrates that children with overweight/obesity are vulnerable for weight gain during Christmas summer school holidays. Thus, holiday specific planning with focus on strategies to reduce or prevent weight gain is needed.

O38
A POPULATION-BASED STUDY OF HEARING LOSS IN CHILDREN WITH CEREBRAL PALSY

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Background: Hearing loss is an under-researched area in cerebral palsy (CP) despite a recent consensus definition of CP emphasising the importance of impairments that commonly accompany the motor disorder.

Aims/Objectives: The aim of this study was to examine the causes, type and frequency of hearing loss in a population-based sample of children with CP.

Methods: The Victorian Cerebral Palsy Register (VCPR) was used to select 685 children with CP (406 males, 279 females) born in Victoria between 1999 and 2004. From this cohort, children with documented hearing loss at five years of age were identified. Data were collected from the VCPR on demographic, birth and clinical details, and on brain magnetic resonance imaging (MRI) findings. Medical records and the most recent audiology reports were used to document risk factors, cause, type and severity of hearing loss, and the use of amplification aids or cochlear implantation.

Findings: The frequency of permanent, bilateral hearing loss of at least moderate severity in individuals with CP was 7.2% and the frequency of severe-profound loss was 3.5%. The most commonly identified antecedents were intrauterine cytomegaloviral infection, kernicterus, intrapartum asphyxia, postneonatal infection and recurrent otitis media. In 24 children the cause was unknown. Hearing loss was associated with neonatal intensive care, more severe motor impairment and a higher likelihood of other comorbidities. The most frequent brain imaging findings were periventricular white matter injury (15) and malformations (7). Of 49 children with hearing loss, 43 had sensorineural or mixed loss, two had conductive loss, and in 4 the type of loss was unknown. Thirty-three children had hearing aids and 18 had cochlear implants.

Conclusions: Population-based studies allow us to determine the frequency of hearing loss in children with CP and gain an understanding of risk factors, causes and type of hearing impairment.

O39
LATE OUTCOMES OF CARDIAC SURGERY FOR RHEUMATIC HEART DISEASE IN THE YOUNG: THE NEW ZEALAND EXPERIENCE 1990–2006

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Background: In the young Oceanian population, the long-term outcomes of cardiac surgery for RHD are not established and the optimal surgical strategy is poorly defined as there are no comparative studies with long term follow-up.

Objective: This study aims to compares the outcomes of mechanical valve replacements to valve repair and bioprosthetic replacements.

Methods: A retrospective review of all RHD patients under 20 years who underwent their first cardiac surgery between 1990 and 2006 at our institution. Patients were analysed according to the type of valve they were discharged with form hospital.

Results: Of 212 patients 98% were Māori or Pacific Islander. The median age was 13.5 (3–19) years. At the first operation, 49% of the patients had multi-valve surgery and a total of 27% received mechanical valves. Follow-up data were available for 94% of the patients with mean follow-up of 8.0 years (maximum 19.8 years), a total of 1696 patient-years. Actuarial survival at 10 and 15 years for patients with mechanical valves was 79% and 55%, compared to 86% and 83% for patients without mechanical valves ($p = 0.08$). Actuarial freedom from late re-operation at 10 and 15 years for patients with mechanical valves was 82% and 75%, compared to 56% and 46% for patients without mechanical valves ($p < 0.01$). Actuarial freedom from the composite thrombosis, embolism and bleeding end-point at 10 and 15 years for patients with mechanical valves was 65% and 52%, compared to 95% and 85% for patients without mechanical valves ($p < 0.01$).

Conclusion: In this group of young patients, mechanical valves had no impact on survival to date. Those with mechanical valves have higher rates of thrombosis, embolism and bleeding events whilst patients without mechanical valves have higher rates of re-operation.

O40
CAKUT (INCLUDING CYSTIC DISEASES)

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Congenital anomalies of the kidney and urinary tract occur in approximately 1 in 500 live births. Although many cases are asymptomatic or mild, CAKUT constitutes the most common cause of renal failure in childhood, accounting for about a third of children with endstage renal disease requiring renal replacement therapy (dialysis/transplantation).

CAKUT comprises a spectrum of renal tract malformations that occur at the level of the kidney (e.g. agenesis, hypoplasia, dysplasia, polycystic kidney disease etc), renal collecting system (e.g. hydronephrosis, megaureter), bladder (e.g. ureterocele, vesicoureteric reflux), and urethra (e.g. posterior urethral valves). Some forms of CAKUT are part of a syndrome or are associated with a positive family history (e.g. branchio-oto-renal syndrome) but most cases are sporadic and isolated to the urinary tract.

Despite the diverse anatomical and histological spectrum of kidney and urinary tract malformations in CAKUT, they all stem from an aberrant development of the renal tract. In many cases, the responsible genetic mechanisms have been identified.

O41
PRESENCE AND FREQUENCY OF URINARY INCONTINENCE ASSOCIATED WITH CHILDHOOD OVERWEIGHT AND OBESITY

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Background: Nocturnal enuresis (NE), daytime urinary incontinence (DUI), and obesity are important health concerns that impact on the quality of life of children and adolescents. Although obesity has been shown to be a strong risk factor for incontinence in women, this relationship remains unclear in the paediatric population.

Objectives: To determine the prevalence of overweight and obesity in children with wetting problems, and secondarily, to evaluate whether the overweight or obese group suffered from more severe NE and/or DUI, and whether these relationships were influenced by constipation, soiling, or gender, compared to non-overweight/non-obese children.

Methods: A retrospective chart review of 287 children aged 5–16 years attending a tertiary hospital-based incontinence clinic was conducted. Data on age, sex, weight, height, severity of NE and/or DUI (frequency and volume of wetting), and bowel habits were collected. Body mass index (BMI) was calculated, and overweight and obesity defined using international criteria.

Findings: In the 5–11 year age group, 17.9% were overweight and 9.6% were obese, which is comparable to prevalence values for Australian children. The overweight/obese children were more likely to have frequent DUI ($P = 0.04$; RR = 1.35, 95% CI = 1.04–1.75), but the severity (volume) of their wetting did not differ. Overweight/obese girls were more likely to have DUI compared to overweight/obese boys ($P < 0.0001$; RR = 1.81, 95% CI = 1.30–2.53). There was no difference in the severity of NE (frequency or volume) in overweight/obese compared to underweight/normal weight children. Constipation or soiling did not influence the relationship between overweight/obesity and NE or DUI.

Conclusions: In this cohort, excess weight was not found to be associated with NE. However, it was associated with DUI, especially in girls. Therefore, it may be appropriate for weight reduction to be part of the therapeutic regime in overweight and obese children with DUI.

O42
A RETROSPECTIVE AUDIT OF THE DIAGNOSTIC EVALUATION OF CHILDHOOD ENCEPHALITIS PRESENTATIONS TO A TERTIARY CHILDREN'S HOSPITAL INTENSIVE CARE UNIT

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Background: Encephalitis is caused by inflammation of the brain, usually infection-related. Current surveillance mechanisms in Australia are inadequate and there are no national guidelines for diagnostic evaluation in children.

Aims: We aimed to review the diagnostic assessment of suspected encephalitis cases admitted to the intensive care unit (PICU) of a tertiary children's hospital.

Methods: A retrospective clinical audit was undertaken of first presentations of childhood encephalitis to the paediatric intensive care (PICU) of the Children's Hospital at Westmead (CHW), NSW between January 2006 and December 2009. Cases were identified from the database of a larger retrospective study. Information regarding presenting signs and symptoms at admission, relevant history (animal exposure, international travel), type and timing of laboratory tests and neuroimaging undertaken were extracted from electronic records.

Findings: Sixteen children (10 males, 6 females) met the diagnostic criteria for "encephalitis"[1]. Median age was 6 years. 25% were born overseas. 13% had a history of international travel within the preceding 6 months, however, travel history and animal /vector exposure was commonly not recorded. 94% had CSF testing (average of 11 days post admission, p.a.); 94%: for bacterial culture, 88%: herpes simplex virus PCR, 83%: enterovirus PCR, 25%: viral culture 33%: other CSF testing. Virus identification on other specimens was undertaken in 75%. 94% had serology for autoimmune or infectious

aetiologies. All children had CNS imaging (MRI ± CT) and an EEG undertaken. A confirmed aetiology was only identified in 62.5%.

Conclusions: Diagnostic evaluation for childhood encephalitis is not systematic. Laboratory testing for viruses is not consistently performed or performed late in these children. The study supports the notion that clinical practice guidelines and nationwide surveillance is needed to avoid missed opportunities for identification of potentially treatable novel or emerging pathogens.

Reference

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O43
THE EFFICACY OF ZINC SUPPLEMENTATION IN YOUNG CHILDREN WITH RECURRENT ACUTE LOWER RESPIRATORY INFECTIONS: A RANDOMIZED DOUBLE-BLIND PLACEBO CONTROLLED TRIAL

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Background: Acute lower respiratory infections (ALRIs) are the most frequent illnesses globally and the largest single cause of mortality in children less than five years of age.

Aims and objectives: This study aimed to assess the efficacy of zinc supplementation in reducing respiratory morbidity in children aged 6–59 months with recurrent ALRIs.

Methods: The randomized double blind controlled trial selected children with recurrent ALRI referred to department of Pediatrics, Jawaharlal Nehru Medical College Hospital, India. Children were randomly assigned to receive either 10 mg zinc gluconate or placebo for 60 days. Demographic and clinical data were collected at baseline and every two weeks during the six month study period.

Results: The final analysis included 96 children allocated equally to the two groups. The incidence of ALRI and severe ALRI were significantly lower in the zinc group compared to the placebo group (20.8% vs. 45.8% ($P = 0.009$) and 21.7% vs. 58.3% ($P < 0.001$), respectively). The ALRI free days were higher in the zinc supplemented group ($P < 0.001$), whereas the duration of ALRI episode; fever and rapid breathing were significantly shorter in the zinc group ($P < 0.001$). The medians of serum zinc concentration were comparable at baseline but increased significantly in the zinc group at two months ($P = 0.000$). The median recovery time of morbidity was significantly shorter in the zinc group compared to the placebo group (10 days vs. 18 days) ($P < 0.001$). Lower risk (20.8%) of two or more episodes of ALRI was associated with the zinc group in comparison to placebo group 45.8% ($P = 0.009$). This suggests an absolute risk reduction (ARR) of 25%.

Conclusions: This trial proved a beneficial effect of zinc supplementation resulting in a significant reduction in respiratory morbidly among children less than 5 years with recurrent ALRI.

Keywords: Children, Infections, Morbidity, Respiratory, Zinc

O44
HOW USEFUL ARE MENINGOCOCCAL SKIN SCRAPING TESTS?

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Background: Skin scraping of petechiae to assist in the diagnosis of meningococcal disease has been performed by clinicians for more than a decade. There is little published data available on the utility and value of this test in diagnosing meningococcal disease in children.

Aim: To describe the clinical spectrum, demographic profile and utility (sensitivity, specificity) of skin scraping tests performed for investigation of suspected meningococcal disease in children for the first time in Australia.

Methods: The pathology database of The Children's Hospital at Westmead was searched for all skin scraping results (gram stain) for suspected meningococcal disease for an 11 year period (1998 to 2009). Demographic, clinical and microbiological details were obtained following individual chart review of positive (gram neg diplococci) cases and negative cases (ratio 2 negative: 1 positive cases, total = 110 cases).

Results: Of 1023 patients with skin scraping tests performed, 37 (3.7%) were positive for meningococci, 815 (79.6%) no organisms were seen and 171 (16.7%) had other organisms on gram stain. Detailed chart review of the 37 positive cases showed: median age 27 months (range 6 wks to 15.15 years), 56% girls, half (48.7%) presenting during winter, petechial rash (84%), purpuric rash (56%), mean length of hospital stay was 9.4 days (range 1–31 days) and 70% of patient required PICU admission. Mortality was 2.7%. Half (54%, 20/37) had *N. meningitidis* isolated on blood culture and 69% (18/26) had positive PCR on blood. The sensitivity of skin scraping was 54%. Of 73 patients with negative skin scrape tests, 5.8% grew *N. meningitidis,* 6.8% of the others streptococcus pyogenes (1), streptococcus pneumonia (1) aeromonas (1), MRSA (1) & bacillus (1)) on blood culture and PCR was positive for meningococcus in 9.2% (5/54). Pre hospital antibiotics given to 10% (4/37) did not affect skin scraping results.

Conclusions: Skin scraping for meningococcus is a useful adjunct to investigate suspected meningococcal cases, however up to 10% of negative skin scrape tests were positive for meningococcus. Clinicians should still treat suspected cases based on clinical presentation, and not overly rely on skin scraping results.

O45
CHILDREN TREATED WITH PHARMACOTHERAPY FOR ATTENTION DEFICIT DISORDER IN WESTERN AUSTRALIA: MENTAL HEALTH PROBLEMS AND FAMILY FUNCTIONING

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Background: Attention Deficit Hyperactive Disorder (ADHD) is the commonest neuro-developmental disorder affecting 6–10% of children worldwide with well known clinical consequences and functional outcomes that can affect individuals throughout their lifespan. The mental health burden in children and their parents is often underestimated and medical treatment criticised.

Aim: To determine the degree of mental health issues in parents and children treated with medication for ADHD including the effect on family stress pre and post medication use.

Method: Children who met the DSMIV or ICD10 criteria for ADHD and had commenced pharmacotherapy were identified by 8 Paediatricians across WA. A questionnaire completed by parents obtained information on maternal, paternal and child mental health conditions and Family Strain Index (FSI) prior to commencing and post medication.

Findings: 358 questionnaires were returned for analysis (81% response). 78 % of affected children were boys and 82% of children were reported as having one or more co morbid mental health conditions. Fifty six percent of mothers and 34% of fathers were diagnosed with more than one mental health condition. Depression was reported in 43% of mothers and 21% of fathers. The majority reported both child and family functioned better on medication and long acting methylphenidate was found to be most beneficial. Confirmatory Factor Analysis on the FSI before medication was commenced for this sample showed robust scale reliability (Chi square = 49.56; df = 9; p value ≤ 0.0001) with the European ADORE study. Both child and family functioning including the FSI significantly improved ($p < 0.0001$) following medication use.

Conclusion: Mental health problems in parents and children with ADHD are common. Treatment with pharmacotherapy is reported to significantly improve individual and family functioning. Better understanding and support needs to be provided to families and children with ADHD.

O46
EARLY HOSPITAL MORBIDITY IN CHILDREN TREATED FOR ATTENTION DEFICIT DISORDER IN WESTERN AUSTRALIA: A POPULATION DATA LINKAGE STUDY

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Background: Attention Deficit Hyperactivity Disorder (ADHD) is the commonest developmental disorder in childhood which contributes a significant burden to society. Early hospitalisation of children subsequently diagnosed with ADHD using a population data linkage system has not been adequately explored.

Aims: To provide an overview of the Data Linkage systems available in Western Australia (WA) that are linked to all children prescribed stimulant medication (SM) and describe an example of how this data linkage can be used to examine the risk of early hospital admissions in the ADHD child aged <4 years compared with matched controls.

Method: Between August 2003 and December 2007, 16,883 children and adolescents (cases) between 4–25 years who have been prescribed stimulant medication in WA for ADHD were recorded on the Monitoring of Drugs Dependency System (MODDS) data base. A stratified random sample of birth records with no linkage to MODDS was chosen as a comparison group (32,728). Case and comparison records were linked to the Hospital Morbidity Data Base, Mortality Data Base, Mental Health Data Base, Emergency Data Base, Corrective Services Data Base and Education Data Base, and de-identified data files provided for analysis.

Findings: Compared with children without MODDS records, children under 4 years who subsequently were diagnosed and treated for ADHD were around 26% more likely to be admitted to hospital with a respiratory condition (OR 1.26; CI (1.19–1.33), 52% more likely to be admitted with an accident or poison (OR 1.52; CI 1.41–1.64), had a 65% increased risk of admission for ear disease (OR 1.65; CI 1.53–1.78) but there was no significant difference for conditions relating to the perinatal period.

Conclusion: There is significant early hospital morbidity for children prior to being treated for ADHD. Data Linkage at a population level can provide information on causal pathways which may be a precursor of subsequent ADHD in childhood.

O47
DRUG WITHDRAWAL IN THE EPILEPSY MONITORING UNIT: OUTCOMES IN A NEWLY ESTABLISHED SERVICE

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Rationale: Drug withdrawal is often necessary in the Epilepsy Monitoring Unit (EMU) to facilitate seizures, and particularly used for children undergoing pre-surgical evaluation. There is an increasing emphasis worldwide on EMU safety; however literature detailing outcomes of drug withdrawal is sparse. In units with limited resources (including access to ictal SPECT) strategies for drug withdrawal need to be tailored to accommodate patient safety and the individual unit resources. This is a review of data from a newly established service.

Methods: Retrospective review of EMU and hospital record data of patients with intractable epilepsy admitted for pre-surgical Video-EEG evaluation (±ictal SPECT) and undergoing drug withdrawal at the Royal Children's Hospital EMU, Brisbane. This EMU currently has limited access to ictal SPECT services. During periods of drug withdrawal patients have a carer present at all times, intravenous access, continuous overnight oximetry, and an individualized management plan for prolonged seizures. Patient data reviewed included seizure history, seizure frequency, status epilepticus (SE), the inpatient drug withdrawal strategy, success of admission (i.e. typical seizure achieved, ±SPECT when relevant), and need for emergency management.

Results: There were 31 admissions (28 patients) from May 2008 to May 2010. Pre-admission seizure frequency was less than weekly in 7 patients; 12 patients had a history of SE. Drug withdrawal was individualized, based on the patient seizure history and anticonvulsant medication type. Drug withdrawal was full (3 admissions) or partial (28 admissions) and commenced on the first day in 17 admissions. The admission was successful in 25 patients (typical seizures obtained); of these, ictal SPECT imaging was achieved in 17. Overall seizure frequency increased during 15 admissions, decreased in 4 admissions, and remained unchanged in 12. Benzodiazepine treatment was required for prolonged seizures on 6 occasions, including 2 episodes of SE. There were no admissions to the intensive care unit.

Conclusions: Tailored drug withdrawal can achieve successful results in the EMU, even in the presence of limited resources. There is a requirement for individualized patient management to provide the safest possible outcomes.

Abbreviations
EMU: Epilepsy monitoring unit VEEG: Video Electroencephalogram AEDs: Antiepileptic drugs
SE: Status Epilepticus SPECT: Single Photon Emission Computerised Tomography

O48
THE HEALTH AND WELL-BEING OF INCARCERATED ADOLESCENTS

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Incarcerated adolescents are among the most vulnerable people in our community but their health is rarely seen as a priority. This is despite the fact that there is increasing evidence that their health needs are greater than adolescents in non-custodial settings. It is now known that these health needs are not simply in the domain of greater physical and mental health but also in areas such as substance use, sexual health as well as in areas like learning difficulties and behavioural problems. These very often occur on a background of severe social disadvantage. There is a significant overrepresentation of Indigenous young people in juvenile detention centres throughout Australia and New Zealand.

There is a high turnover of detainees within centres with many incarcerated for very brief periods. There is also a high level of recidivism. Providing comprehensive and holistic long term health care is challenging but opportunities exist to improve care within centres and beyond upon release. Providing conventional medical and nursing care does not address longer term issues and a minimalistic approach with no community follow up probably contributes to high recidivism levels whereas the converse is likely to be true.

There are few national standards or policies reflecting best practice for this population in either Australia or New Zealand. Internationally however there are numerous position statements and guidelines for provision of health care to incarcerated adolescents. The RACP policy is consistent with previously published documents and pays specific attention to the over-represented number of Indigenous adolescents in custody in both Australia and New Zealand. It is intended to set the standard for health care in these settings in Australia and New Zealand and to be a framework upon which improvement and standardisation of care can be based.

O49
INFLAMMATION AS A FACTOR IN THE CO-MORBIDITY OF DEPRESSION AND DIABETES: EPIDEMIOLOGY, MECHANISMS, AND IMPLICATIONS FOR PREVENTION

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Background: Depressive disorders and diabetes mellitus are individually responsible for a significant portion of the global burden of disease. They are also frequently co-morbid, which contributes to significantly poorer outcomes. Epidemiological studies have consistently demonstrated a bi-directional relationship between these two conditions, however the biological mechanisms of this remain poorly understood. Recent advancements in understanding the neurobiology of depression and adipose tissue biology suggest a novel role for the inflammatory response system as a mediator of this relationship. The recognition of such a pathway may have significant implications for the prevention and treatment of these two disorders by highlighting new targets for intervention.

Aims/Objectives: This review aims to draw together recent literature implicating the immune system in the pathogenesis and pathophysiology of depression and diabetes mellitus. In support of this a systematic review of the epidemiological literature detailing this co-morbidity was undertaken.

Methods: The author systematically reviewed the scientific literature on the subject from January 2000 until August 2010 in the PubMed and Cochrane Library databases. Key search terms included: depression, major depressive disorder, diabetes, type 2 diabetes mellitus, obesity, metabolic syndrome, inflammation, cytokine, adipokine, adipose, glucocorticoid, neurotrophin, neurogenesis, monoamine, neurotransmitter.

Findings: A robust epidemiological literature suggests a bi-directional relationship between depression and diabetes, however few studies have examined the biological correlates of this co-morbidity. A burgeoning literature supports the involvement of inflammatory pathways, particularly cytokines, in the pathogenesis and pathophysiology of diabetes mellitus and depression.

Conclusions: The finding of a common biological pathway suggests a key role for inflammatory processes in the co-morbidity of depression and diabetes mellitus. Further longitudinal studies including the assessment of biomarkers of inflammation are required to consolidate the understanding of these pathways and establish novel targets for prevention and treatment.

O50
ACUTE VIRAL RESPIRATORY TRACT INFECTION IN PRESCHOOL CHILDREN: THE IMPORTANCE OF VIRAL CO-INFECTION

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Background: Viral respiratory tract infection is a frequent problem in preschool children. Emerging pathogens and new diagnostics necessitate contemporary studies. The burden and impact of viral co-infection is uncertain.

Aims/Objectives: To describe the virology of respiratory tract infection in preschool children and to determine the burden and impact of co-infection.

Methods: An observational study assessing influenza vaccine effectiveness was conducted in Perth, Western Australia during winter 2008–2009. Preschool children (6–59 months) with fever (>37.5°C) and acute respiratory symptoms were eligible. Demographics, risk factors, clinical features and outcomes were recorded by parental questionnaire.

Respiratory viruses were identified by antigen detection, PCR and culture from per-nasal swabs. Predisposing risk factors, clinical features and outcomes of single virus infections and viral co-infections were compared.

Findings and Conclusions: Diagnostic samples were available from 919/944 subjects. Frequent symptoms included rhinorrhoea (87.4%), cough (86.5%) and poor feeding (74.8%).

Respiratory viruses were identified in 711/919 children (77.4%) with outcome data complete for 587/717 (82.6%). Rhinovirus (n = 239), RSV (n = 210), Influenza virus (n = 179), Human Bocavirus (n = 79), Parainfluenza viruses (n = 73) and Coronaviruses (n = 64) were most frequent.

Viral co-infection was observed in 198/711 (27.7%). No significant differences in risk factors (prematurity; asthma; smoke exposure) or clinical features (peak temperature; symptoms) were observed. Co-infection was more frequent in children attending childcare (143/470; 30.4% in childcare attendees, 55/241; 22.8% in those not attending, $p < 0.05$). No significant differences in outcomes (hospitalization; antibiotic prescription; duration of illness) were observed in those with and without viral co-infection.

Hospital admission was required in 127/587 (21.6%) children. Influenza infection was more frequently associated with hospital admission compared with other viruses (42/149; 28.2% Influenza infection, 85/438; 19.4% other viral infection, $p < 0.03$).

This study demonstrates the frequent identification of emerging pathogens including Human Bocavirus and Coronaviruses. Co-infection has no significant impact on clinical features or outcome in this cohort.

O51
MANAGEMENT OF NEONATAL SEPSIS

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Sepsis remains a leading cause of morbidity and mortality in newborn infants and is also a significant risk factor for long term neurodevelopmental disability.

Overwhelming sepsis is, however, an uncommon experience in the life of general paediatricians, a far more common experience being concern about the possibility of sepsis, the "septic work-up" being one of the commonest events in most level 2 and 3 nurseries.

This concern commonly proves unfounded and thought must be given to ways to minimise the detrimental effects of such concerns – iatrogenic trauma, antibiotic over-use and the spread of multiresistant organisms, separation from parents and disruption to feeding and bonding. This must be achieved without increasing the risk that significant early infection will be missed, losing the opportunity for the aggressive early treatment which is so important.

Early exposure to broad spectrum antibiotic therapy may disrupt the normal colonisation of the infant after birth. Excess mortality has been demonstrated in VLBW infants exposed to prolonged broad spectrum antibiotic therapy.

Early onset sepsis is most commonly perinatally acquired and is characteristically a bacteraemic illness, sometimes with pneumonia associated. Between 5 and 20% of infants with bacteraemia may also have bacteria in CSF. Group B streptococcus is the commonest organism and risks are modifiable by attention to screening, intrapartum antibiotics and postpartum assessment and treatment.

Careful assessment of prenatal and postnatal risk factors and clinical signs remains critical. The early signs of sepsis are commonly non specific and by the time that sepsis is clearly evident important opportunities to alter the course have already been missed.

Late onset sepsis is commonly a consequence either of infection from the baby's own flora, or is nosocomially acquired. Staphylococcal infection is relatively more common, especially in nursery infections. Meningitis is also more common.

Intrapartum prophylaxis given for Group B Streptococcal carriage will protect against early onset disease but offers no protection against late onset disease.

The infant with perinatal risk factors for sepsis or with a clinical presentation consistent with infection must be aggressively investigated. Infants who have neurological features or who are very likely to be bacteraemic should have lumbar puncture, if clinically stable enough to allow this. Antibiotic treatment should be for 48 hours in the first instance and should extend beyond this only if infection is demonstrated.

Third generation cephalosporins are, in a population sense, dangerous drugs. Their use as first-line treatment has been associated with the rapid evolution of multiresistance in strains colonising nurseries. There is no good quality evidence that they offer great advantage for meningitis, although CSF antibiotic levels attained are higher. It is appropriate to use them for gram negative meningitis, but they should be used very conservatively.

The essentials of management of the infected infant are early recognition and early aggressive treatment, directed to treatment of the primary infection with antibiotics and management of the systemic inflammatory response syndrome associated with severe sepsis.

Respiratory support in intensive care should be offered to the sick infant. Care is needed around intubation, as collapse may occur if circulation has not been stabilised before the additional stress. Volume replacement requirements may be very high (Total 40–100 ml/kg) and it is best to err on the high side in early resuscitation, with careful monitoring of circulation and oxygenation. Inotrope requirements may be high and agents such as Dopamine may be ineffective, Adrenaline or Noradrenaline may be necessary and are more useful if used early than as "last rites".

Newer approaches to the prevention and management of neonatal infection show promise. There is particular interest in the use of intravenous immunoglobulin and the INIS trial is about to report. There is some evidence of protective effect and also in some studies of a beneficial effect in treatment, but numbers are small and the trials heterogenous so far. The use of Probiotics has been shown effective in reducing all-cause mortality and the incidence of NEC, interestingly without a clear effect on the incidence and severity of infection. Other agents such as GM-CSF have been shown to raise leukocyte counts, but have not been shown to affect mortality.

O52
ROTAVIRUS VACCINES AND INTUSSUSCEPTION: AN INCREASED RISK

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Background: Recent studies in Mexico have found evidence suggesting an increased risk of intussusception (IS) in infants following rotavirus (RV) vaccination. In response, we conducted a detailed analysis of NSW data, including a chart review of ICD-coded hospitalisations, a case-control study, and a self-controlled case-series analysis.

Aim: To review the clinical characteristics of all cases of IS in NSW infants over 3 years, including the relationship to RV vaccination.

Methods: All NSW hospitalisations ICD10-coded as IS from 1st July 2007 to 30th June 2010 were individually chart reviewed and demographic details, RV vaccination status (ACIR), investigations, treatment and outcome recorded. Each case was classified as confirmed or non-confirmed using Brighton criteria.

Findings: 183 IS cases (Males: Females 2.1:1) were hospitalised. Only three quarters of ICD10 coded cases (72% n = 132) met Brighton criteria for confirmed IS. Most (84%) IS confirmed cases had received a dose of RV vaccine and were younger than non-RV vaccinated infants. One third (n = 37) required surgery and there were no deaths. 21 confirmed IS cases occurred <21 days post-RV vaccination, 5 of whom received RV vaccines at an older age than schedule recommendations. The case-control study found an increased likelihood of IS in the 1–7 day period after the second dose [OR 9.1 (1.6–52.9)]. The case-series analysis found a statistically significant relative incidence for the 1–7 day period after the first dose [6.8 (1.7–27.0)].

Conclusions: These findings suggest a small increase in the risk of IS 1–7 days after receipt of the first dose of Rotarix, and perhaps also the second dose. Data also suggest that this risk may be greater in children vaccinated beyond the recommended age limit. However, this information must be balanced against the benefits of rotavirus vaccination. This unique study adds to the emerging body of evidence regarding the safety of RV vaccines.

O53
LONG TERM IMMUNITY FOLLOWING ACELLULAR PERTUSSIS VACCINATION AT BIRTH

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Background: Vaccination at birth with acellular pertussis (Pa) vaccine is a potential strategy to reduce the rates of pertussis in very young infants. However, vaccine interference from the birth Pa dose may reduce long term immune protection and increase risk of injection site reactions with subsequent DTPa booster. This study investigated for the first time long term immunity and adverse reactions to the DTPa booster at 4 years old in children who received birth Pa vaccination.

Methods: Newborns were randomised into the following 3 groups:

Group 1 – monovalent acellular pertussis vaccine (Pa) and hepatitis B (HBV) vaccine at birth and Pa at one month old
Group 2 – Pa and HBV vaccine at birth only
Group 3 – HBV vaccine at birth only.

All had received DTPa-HBV-IPV-Hib and pneumococcal vaccines at 2, 4 and 6 months of age. Antibody responses to pertussis vaccine antigens (pertussis toxoid (PT), filamentous hemagglutinin (FHA) and pertactin (PRN)), diphtheria, tetanus and hepatitis B were measured pre and post the 4 year old DTPa booster vaccine.

Results: Antibody levels to pertussis antigens, diphtheria and tetanus at 4 years were equivalent in all groups. Overall 90% had antibody to PT below detectable levels pre booster. Infants who received Pa vaccine at birth had non significantly lower post booster anti-PT levels compared to control children, suggesting possible vaccine interference. There was no difference in injection reactions between birth Pa and no birth Pa groups following the DTPa booster.

Conclusion: These results suggest that Pa vaccine administered at birth does not reduce long term pertussis immunity at 4 years old, but slightly lower anti-PT levels, suggesting the potential for vaccine interference. Importantly no increased risk of large injection site reactions was seen following the DTPa booster vaccine. This study suggests that birth Pa vaccination can provide early infant protection without long-term negative consequences and could be part of the ideal vaccine strategy to prevent pertussis.

O54
INFLUENZA VACCINES, FEVER AND FEBRILE CONVULSIONS IN AUSTRALIA IN 2010: IMPLICATIONS FOR FUTURE PROGRAMS

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Background: In 2010 an increased rate of fever and febrile convulsions following influenza vaccine was detected in Western Australian children. This study aimed to assess the rate of adverse events in children who received the influenza vaccine in NSW to inform national investigations into the relationship to influenza vaccination.

Methods: Children aged 6 months to 5 years who received an influenza vaccine at The Children's Hospital at Westmead, Sydney Children's Hospital and John Hunter Children's Hospital were contacted and parental reports of fever, febrile convulsion, medical attendance and other adverse events were recorded. Fischers exact test was used to analyse the association between vaccine type, age and fever report.

Findings: 334 children, comprising monovalent H1N1 09 (n = 162), Fluvax® (n = 73) and Influvac® (n = 99) who received seasonal influenza vaccines were contacted. There was a significantly higher parental fever report for Fluvax® (CSL Biotherapies) than for Influvac® (Solvay Biologicals) (RR 6.5, 95% CI 3.1–13.9, $p < 0.0001$) or monovalent Panvax® (RR 2.9, 95% CI 1.8–4.3, $p < 0.0001$). There was also a statistically significant increase in parental fever report for Panvax® compared to Influvac® (RR 2.3, 95% CI 1.05–5.1, $p = 0.04$). There were no reports of febrile convulsions in any children. Medical attendance (<48 hours) post-vaccination was significantly more common with Fluvax® than with Influvac® (RR 8.2, 95% CI 1.9–35.4, $p = 0.001$) or monovalent H1N1 09 (Panvax®) (RR 3.0, 95% CI 1.3–6.8, $p = 0.01$). Real time data from 2011 influenza vaccine adverse event monitoring will be presented.

Conclusions: An increased rate of fever associated to Fluvax® receipt was also reported by WA investigators. The reason for this brand specific effect may relate to a higher neuraminidase content compared to previous years. This data led to a recommendation to avoid using Fluvax® in children under 5 years old. Safety data from 2011 will be important for the viability of future influenza vaccine programs.

O55
A SYSTEMATIC REVIEW OF THE DIAGNOSTIC STABILITY OF AUTISM SPECTRUM DISORDER

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Background: The impression of many parents is that once a young child is given the diagnosis of an Autism Spectrum Disorder (ASD) this is a lifetime diagnosis. There is debate in the current literature regarding the permanence of an ASD diagnosis.

Aims/Objectives: To undertake a systematic review of the diagnostic stability of ASD.

Methods: A comprehensive search strategy was used to identify published and unpublished studies about the outcomes of ASD. Participants were children and adults with ASD as defined by current international classification systems. Eligible studies used accepted diagnostic criteria, an observation period of at least 12 months and measured diagnostic stability at follow up. The risk of bias in the included studies was assessed by examining the sample selected, recruitment method, completeness of follow up, timing of diagnosis and blinding.

Findings: A total of 13293 papers were identified in the initial search. Of these 23 studies measured diagnostic stability and had a total of 1466

subjects. Their mean age at baseline ranged from 1.8 to 11.3 years. Duration of follow-up ranged from 1 to 32.5 years. Nine studies only included participants with an Autistic Disorder diagnosis as opposed to including the broader range of ASD. The percentage of children with a diagnosis of an ASD who still had that diagnosis at follow up ranged 67–100%. The percentage of children with a diagnosis of Autistic Disorder who still had that diagnosis at follow up ranged 53–100%.

Conclusions: There is some evidence that a significant minority of children will no longer meet diagnostic criteria for an ASD after a period of follow up. Issues with risk of bias of studies published to date, applicability to different patient populations means that we are a long way from offering families information about their child's individual prognosis.

O56
INFLUENZA COMPLICATIONS AND DEATHS REPORTED TO THE APSU AMONG ABORIGINAL AND TORRES STRAIT ISLANDER AND NON-ABORIGINAL AND TORRES STRAIT ISLANDER CHILDREN IN 2008, 2009 AND 2010

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Background: Aboriginal and Torres Strait Islander people are a recognised group vulnerable to influenza, however, there are few data describing its relative impacts in Aboriginal and Torres Strait Islander children.

Aims/Objectives: To describe severe complications and deaths attributed to influenza in Aboriginal and Torres Strait Islander and non-Aboriginal and Torres Strait Islander children.

Method: National surveillance for children aged <15 years, hospitalized with severe complications of laboratory proven influenza, using the Australian Paediatric Surveillance Unit during the influenza seasons 2008–2010. Approximately 1350 paediatricians reported cases and provided information about presenting symptoms, predisposing chronic disorders, immunization, complications, treatment and outcome.

Findings: 59 cases were identified in 2008, 100 in 2009 and 25 in 2010. Of the 184 cases 29 (16%) were Aboriginal and Torres Strait Islander and overrepresented (2% of Australian population). Flu B was dominant in 2008 (81%); flu A H1N1–09 in 2009 (83%) and 2010 (97%). In 2008 25% of children were Aboriginal and Torres Strait Islander, 11% in 2009 and 12% in 2010. 30% required PICU admission and this did not vary by year or ethnicity. There were no differences between Aboriginal and Torres Strait Islander and non-Aboriginal and Torres Strait Islander children in the number or type of complications: pneumonia (62%), encephalitis (10%), seizure (6%) and shock (4%). Only 10 (5%) of children (3 Aboriginal and Torres Strait Islander) were vaccinated for influenza despite 56 (30%) having predisposing chronic conditions and eligible for vaccination. In 2008 only 7% were treated with an antiviral; this rose to 45% in 2009 and 36% in 2010. Eight deaths were reported to the APSU over the 3 years, 6 in 2009. None were Aboriginal and Torres Strait Islander children.

Conclusions: Aboriginal and Torres Strait Islander children were overrepresented among children with serious complications of influenza, despite APSU's lack of coverage in rural and remote communities, however, there are few other national sources of detailed data describing the impacts of influenza in Aboriginal and Torres Strait Islander children. The rates of influenza vaccination were low as was use of antivirals suggesting a need for increased awareness and education for health professionals and families.