



Our Children, Our Future

**4TH SINGAPORE PAEDIATRIC
AND PERINATAL ANNUAL CONGRESS
(SiPPAC 2015)**

**In conjunction with the 7th Singapore Paediatric
Congress and Singapore Paediatric Nursing Congress**

Saturday, 25 July 2015
Grand Copthorne Waterfront Hotel
Singapore

PROGRAMME BOOK

4th Singapore Paediatric and Perinatal Annual Congress

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WELCOME MESSAGE

It gives us great pleasure to welcome you to the 4th Singapore Paediatric and Perinatal Annual Congress (SiPPAC 2015) which is jointly organized by the College of Paediatrics and Child Health, Singapore, the Singapore Paediatric Society and the Perinatal Society of Singapore. This year holds special significance for us, as Singapore celebrates 50 years of Independence.

The Theme for our Congress is thus aptly named - SG 50: Our Children, Our Future. It is indeed timely for us to take stock of how perinatal medicine and paediatric care has advanced over the last 50 years, to review what some of the current challenges are and where we can continue to focus our attention. For indeed, our children are the future of our nation.

The Stuart Gan Lecture this year by Dr Pamela Lee, "Disseminated BCG and Susceptibility to Mycobacterial Infections – Implications on BCG Vaccinations" – sheds light on an important health care issue. Systematic vaccination and surveillance has significantly reduced invasive and serious tuberculosis in Singapore, but it remains an endemic issue. Advances in immunology and genetics have made us realise that there is more than meets the eye when it comes to mycobacterial infections.

A comprehensive range of topics are covered in various symposia throughout the day, including sessions for our Nursing Colleagues, Paediatric Trainees and those in General Paediatric Practice. An overwhelming number of abstracts were received this year, and we are glad to have the opportunity to showcase work by students, trainees and colleagues. We invite you to view these posters during the morning and afternoon tea breaks. There is also a session where the best submissions will be presented.

The day ends with the Annual Dinner, where Dr Lee Bee Wah will deliver the 10th College Lecture: "SG50 : Paediatric Allergy and Immunology – lesson and insights".

We trust that all attendees would have a good time of learning and fruitful interaction during this Congress. Thank you for being part of it.

Warmest regards



A/Prof Marion Margaret Aw
President
College of Paediatrics & Child
Health, Singapore (CPCHS)



Dr Ng Chin Yuen, Steven
Chairman
Chapter of Neonatologists, CPCHS



A/Prof Anne Goh
President
Singapore Paediatric Society
(SPS)



Adj Prof Victor Samuel Rajadurai
President
Perinatal Society of Singapore
(PSS)

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ORGANISING COMMITTEE

CO-CHAIRPERSONS	A/Prof Marion Margaret Aw Hui Yong	Dr Steven Ng Chin Yuen
SCIENTIFIC PROGRAMME	A/Prof Anne Goh Eng Neo	
SPONSORS/ EXHIBITION	Dr Alvin Chang Shang Ming	
ABSTRACT/ FREE PAPERS REVIEW	Dr Lee Le Ye	
FINANCE	A/Prof Fabian Yap Kok Peng	
SECRETARY	Dr Michael Lim Teik Chung	
SECRETARIAT	Ms Rohaya Ithnin Ms Faridah Binte Saadon	Ms Elise Toh
DINNER	Dr Khoo Poh Choo A/Prof Chan Mei Yoke	Dr Varsha Atul Shah Ms Faridah Binte Saadon
NURSING SYMPOSIA	Ms Lee Ang Noi Ms Elaine Hor Ms Lee Soke Yee	Ms Audrey Seet Wai Mei Ms Theivanayagi Shanmugham
COMMITTEE MEMBERS	A/Prof Chan Mei Yoke A/Prof Daniel Goh Yam Thiam Dr Liew Woei Kang	Dr Quek Bin Huey Adj Prof Victor Samuel Rajadurai Dr Varsha Atul Shah
SPECIAL THANKS TO		
ABSTRACT REVIEW TEAM	A/Prof Chan Mei Yoke A/Prof Daniel Goh Yam Thiam Dr Lee Le Ye	Dr Michael Lim Teik Chung Dr Poon Woei Bing Dr Quek Bin Huey
JUDGES FOR FREE PAPER ORAL PRESENTATIONS	Dr Pamela Pui-Wah Lee A/Prof Chan Kwai Lin, Daisy A/Prof Stacey Tay Kiat Hong	

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ABOUT THE ORGANISERS



College of Paediatrics and Child Health, Singapore (CPCHS) was incorporated in August 2004. Prior to that, the College of Paediatrics and Child Health was the Chapter of Paediatricians under the Academy of Medicine, Singapore, which was formed in 1989 to look after the academic interests and professional needs of paediatricians. Membership grew over the years which enabled the evolution of the Chapter into an Independent College, consisting of a core group of Paediatric Specialists and a Chapter of Neonatologists, all focused on the main objective of providing excellent care for the children and babies in Singapore.



Singapore Paediatric Society

Singapore Paediatric Society (SPS) is among one of the oldest professional societies in Singapore. The Society has been actively involved in many academic, educational and research activities in the field of child health. These include regular Continuing Medical Education lectures, symposia, national and regional paediatric and paediatric related conferences.

The Society also rewards research grants annually and a number of projects by our local doctors had been supported by Singapore Paediatric Society research grants. The other activities of the Society include the Haridas Memorial Lecture, the Stuart Gan Memorial Fund for the study of immunodeficiency and the Field Prize which is being awarded to outstanding paediatric nurses. Besides education and research, it aims to be an advocate for children in Singapore.



Perinatal Society of Singapore (PSS), formed in 1989, is a platform for education, training and research in perinatology. The Society bridges the gap between Obstetric and Neonatal Care. Members of the Society consist of Obstetricians, Foetal-Maternal Medicine Specialists, Neonatologists, Paediatricians, Midwives and Neonatal Nurses. The main objective is to promote the well-being of mothers, fetuses and neonates. This helps to improve outcomes by decreasing morbidity and mortality associated with pregnancy and childbirth. The Society is a key member of the Federation of Asia Oceania Perinatal Societies (FAOPS) and collaborates with the other member societies within the region to improve networking, collaboration, education and research.

4th Singapore Paediatric and Perinatal Annual Congress

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Saturday, 25 July 2015 | Grand Copthorne Waterfront Hotel, Singapore

PROGRAMME SCHEDULE

Venue: Grand Copthorne Waterfront Hotel Singapore, 392 Havelock Road Singapore 169663

Time		WATERFRONT BALLROOM, LEVEL 2			
0730		Registration			
0830		Opening Address by A/Prof Marion Margaret Aw Hui Yong (SiPPAC Organising Co-Chair and President, CPCHS)			
0840		Stuart Gan Memorial Lecture - 'Disseminated BCG and Susceptibility to Mycobacterial Infections – Implications on BCG Vaccinations' by Dr Pamela Lee, Hong Kong (Chair: A/Prof Anne Goh)			
0920		Coffee / Tea Break			
WATERFRONT 1, LEVEL 2			WATERFRONT 3, LEVEL 2		
0950	Symposium 1: More than Meets the Eye Chair: A/Prof Chan Mei Yoke / Dr Liew Woei Kang		Nursing Symposium 1: Neonatal Care Chair: Ms Audrey Seet		
	Periodic Fevers in Children	Dr Pamela Lee	Baby Friendly Hospital Initiative: Evidence For The Ten Steps To Successful Breastfeeding	NC Sharon Lee Kit Yin	
	Approach To a Child with Developmental Regression	A/Prof Stacey Tay	Use Of High Flow Cannula For Neonates	SSN Chan Xin Ying	
	A Closer Look at the Full Blood Count	Dr Joyce Lam	The Experiences Of Parents With Preterm Infants Hospitalized In A NICU: A Qualitative Descriptive Study	SN Yang Yen Yen	
	Failure to Thrive	Dr Rajeev Ramachandran	The Perception Of Kangaroo Care Practice Among Healthcare Professionals In Singapore	SN Priscilla Lim	
1130		Short Break			
1145	Free Paper Session Chair: Dr Varsha Atul Shah / Dr Khoo Poh Choo		Nursing Symposium 2: Child / Adolescent Care Chair: Ms Elaine Hor		
	Judges: Dr Pamela Lee A/Prof Daisy Chan A/Prof Stacey Tay		KKH Paediatric Home Care Services	NC Maryani Bte Wahab	
			When Diabetes Hits A Child	NC Angela Hui Yuen Ching	
			Exploring The Experiences Of Adolescents With Type 1 Diabetes Mellitus – A Qualitative Study	SN Priscilla Ng	
			Implementation Of Paediatric Early Warning Signs (PEWS) Tool In A Paediatric Haematology - Oncology Ward	APN Intern Katherine Leong	
1315		Lunch Symposium - By Abbott Theme: Child Nutrition and Optimal Growth Chair: A/Prof Marion Margaret Aw Hui Yong		Lunch Symposium - By Nestle Chair: A/Prof Anne Goh	
1430	Sensory Stimulation and Cognitive Development of the Normal Child – What’s nutrition got to do with this?	Dr Lian Wee Bin	Breast Feeding - The Singapore Story And What We Learn From It?	Dr Lee Le Ye	
	Feeding difficulties in Young Children – What’s new with the science and treatment particularly, nutrition intervention?	A/Prof Marion Margaret Aw Hui Yong	Influences On Early Life Nutrition And Opportunities For Intervention	Dr Grace Uy	
	Symposium 2: Perinatal / Neonatal Chair: A/Prof Lee Jiun / Dr Steven Ng		Symposium 3: Office Paediatrics Chair: Dr Ng Yong Hong / Dr Michael Lim		
	Advances In In-Utero Diagnosis And Intervention	Prof Arijit Biswas	Common Dermatological Conditions in Children	Dr Mark Koh	
	Neonatal Non-Invasive Ventilation: Do We Really Need To Intubate?	Dr Alvin Chang	Common ENT Problems in Childhood	A/Prof Henry Tan	
	A Homage to Dubowitz - The Neurological Examination in Neonates and Infants	Dr Vijayendra Ranjan Baral	Primary Nocturnal Enuresis	Dr Perry Lau	

4th Singapore Paediatric and Perinatal Annual Congress

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1545	Coffee / Tea Break			
1615	Symposium 4 : Child Development / Neurology Chair: Prof Ho Lai Yun / A/Prof Anne Goh		Symposium 5: National Issues in Child Health Chair: Dr Warren Lee / Dr Lee Le Ye	
	Is This A Mental Disorder? - Dual Diagnosis In Children With Developmental And Intellectual Disabilities.	Dr Radha Srikanth	Public Health Issues In Singapore Children	Dr Lyn James
	Physicians and the Schools - The Paediatrician's Role in Learning Difficulties	Dr Chong Shang Chee	Re-Emerging Infections - Revisiting TB	A/Prof Thoon Koh Cheng
	Mental Well Being In Singapore School Children	A/Prof Daniel Fung	Addiction In Children	Dr Christopher Cheok
1730	End of Scientific Sessions			
SiPPAC 2015 DINNER AND 10TH COLLEGE OF PAEDIATRICS & CHILD HEALTH (CPCHS) LECTURE GRAND BALLROOM, LEVEL 4				
1800	Registration @ Grand Ballroom, Foyer, Level 4			
1830	Guests to be seated for the arrival of Guest of Honour (GOH)			
1845	ARRIVAL OF DR LAM PIN MIN, MINISTER OF STATE, MINISTRY OF HEALTH, SINGAPORE			
1855	Citation of Prof Lee Bee Wah - By A/Prof Marion Margaret Aw Hui Yong, CPCHS President and SiPPAC Organising Co-Chair			
1900	10th CPCHS Lectureship - 'SG50: Paediatric Allergy & Immunology - Lessons & Insights' by Prof Lee Bee Wah, Department of Paediatrics, National University of Singapore			
2000	Award / Presentation Ceremony & Photo Taking Session			
2010	Address by Dr Steven Ng, Chairman, Chapter of Neonatologists, CPCHS and SiPPAC Organising Co-Chair			
2015	Dinner			
2030	Entertainment			
2300	End of Event			

4th Singapore Paediatric and Perinatal Annual Congress

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GENERAL INFORMATION

Venue

Grand Copthorne Waterfront Hotel Singapore
392 Havelock Road, Singapore 169663

Congress Secretariat

College of Paediatrics & Child Health, Singapore (CPCHS)

c/o Academy of Medicine, Singapore
81 Kim Keat Road, #11-00, NKF Centre
Singapore 328836
Tel: +65 6593 7805
Fax: +65 6593 7880
Email: sippac@ams.edu.sg
Website: <http://ams.edu.sg/colleges/CPCHS/home>

Singapore Paediatric Society (SPS)

c/o Department of Paediatrics
National University Health System
NUHS Tower Block, Level 12
1E Kent Ridge Road, Singapore 119228
Tel: 65-6772 4408
Fax: 65-6779 7486
Email: secretariat.sps@gmail.com

Perinatal Society of Singapore (PSS)

c/o Division of Obstetrics & Gynaecology
100 Bukit Timah Road Level 3, Children's Tower
Executive Office, Zone A Singapore 229899
Tel(65) 6394 1323 Fax No.: (65) 6394 2241
Email: Fiona.Low.SE@kkh.com.sg

Language

The official language of the Congress is English.
There will be no simultaneous translation.

Registration

The Registration Desk is located at Level 2, Foyer Area outside the Waterfront Ballrooms, Grand Copthorne Waterfront Hotel, Singapore.

Saturday, 25 July 2015 0730 – 1730 hrs

Delegates may collect their Congress materials at the Registration Desk from 0730 hrs. Name badges

will be provided and delegates are required to wear the badges for identification purposes and admission to the various sessions.

Certificate of Attendance

Certificate of Attendance will be issued to all delegates.

Trade Exhibition

The trade exhibition will be held at Level 2, Foyer Area of the Kiwi Lounge, Grand Copthorne Waterfront Hotel Singapore.

Trade Exhibition Hours

Saturday, 25 July 2015 0730 – 1730 hrs

Scientific Sessions

All scientific sessions will be held at Level 2, Waterfront Ballrooms, Grand Copthorne Hotel Singapore.

10th CPCHS Lecture

The 10th College Lecture will take place at Grand Ballroom from 1900 hrs to 2000 hrs, Level 4, Grand Copthorne Waterfront Hotel Singapore.

Congress Dinner

The congress dinner held in the evening will be a grand celebration with an interesting social programme. It will be a night of fellowship and camaraderie amongst all guests within the Paediatric fraternity where old friendships are revived and new relationships established.

Congress Dinner | Level 4, Grand Ballroom

Saturday, 25 July 2015 1915 – 2300 hrs

Admission is by registration for guests who have purchased dinner tickets from the SPS Secretariat.

Opening Address

The Opening Address will commence at 0830 hrs on Saturday, 25 July 2015 at Level 2, Waterfront Ballrooms.

4th Singapore Paediatric and Perinatal Annual Congress

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GENERAL INFORMATION

Filming and Photography in Sessions

Taking of pictures, filming and recording are prohibited. Please do not bring cameras, video recorders and filming equipment into the presentation venues.

Liability

The Organising Committee is not liable for personal accidents, loss or damage of private property of registered delegates during the Congress. Delegates and accompanying persons should make their own arrangements with respect to personal insurance.

Disclaimer

Whilst every attempt has been made to ensure that all events of the Congress detailed in the handbook will take place as scheduled, the Organising Committee reserves the prerogative to amend the programme as deemed necessary.

Information for Speakers, Symposium Chairpersons, Oral Presenters and First Authors (Posters)

Registration

All speakers, symposium chairpersons are to register at the Registration Desk located in the Penguin Room, Level 2, Grand Copthorne Waterfront Hotel Singapore at least 60 minutes before presentation time. Penguin Room is the designated Secretariat Room for this event.

Uploading of Presentation Slides

All presentations must be brought to Penguin Room at least 60 minutes before the presentation time. Speakers are reminded to register first before uploading your slides. No presentation can be uploaded in the session room directly.

Speakers Preparatory Room Hours | Level 2, Penguin Room

Saturday, 25 July 2015 0730 – 1730 hrs

Reporting Time

All speakers are to report to the Chairperson of their session 15 minutes before the start of the symposium for briefing. All speakers should familiarise themselves with the date, time and place of their sessions.

Slides Format

All presentations are to be saved in Microsoft presentation format. For Mac users, please bring along your laptop and adapter.

Time Keeping

The timer will flash a card 2 minutes before the end of the allocated time for presentation. Kindly adhere strictly to the allocated time as the session will have to end promptly to avoid delays.

Equipment

The room will be equipped with microphone, laser pointer, projector screens, LCD projector and laptop. The laptop connected to the LCD projector will be placed on the rostrum, and PowerPoint slides will be controlled directly by the presenter at the rostrum.

Reserved Seats for Speakers

Front row seats are reserved for upcoming speakers. Please be seated there so that you can be identified as present by the Chairperson.

Instructions for Poster Displays

Display boards for the poster presentation will be provided on-site. The poster size should be 841 mm wide by 1,189 mm high. Only one board will be allowed for each poster.

Reporting Time: All first authors for posters are to report to the Registration Desk located at Penguin Room, Level 2, Grand Copthorne Waterfront Hotel Singapore for registration and collection of meeting materials from 0730 hrs on Saturday, 25 July 2015.

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GENERAL INFORMATION

All posters are to be put up by 0900 hrs on Saturday, 25 July 2015 at the display panels provided near the lift lobby area near the Waterfront Foyer Area. Velcro tapes will be supplied to the author for mounting the posters. Information on the allocation of poster boards will be available at the Registration Desk. Posters must be dismounted on the same day by 1735 hrs. The organiser is not responsible for the materials left behind. Posters that are not removed by this time will be disposed.

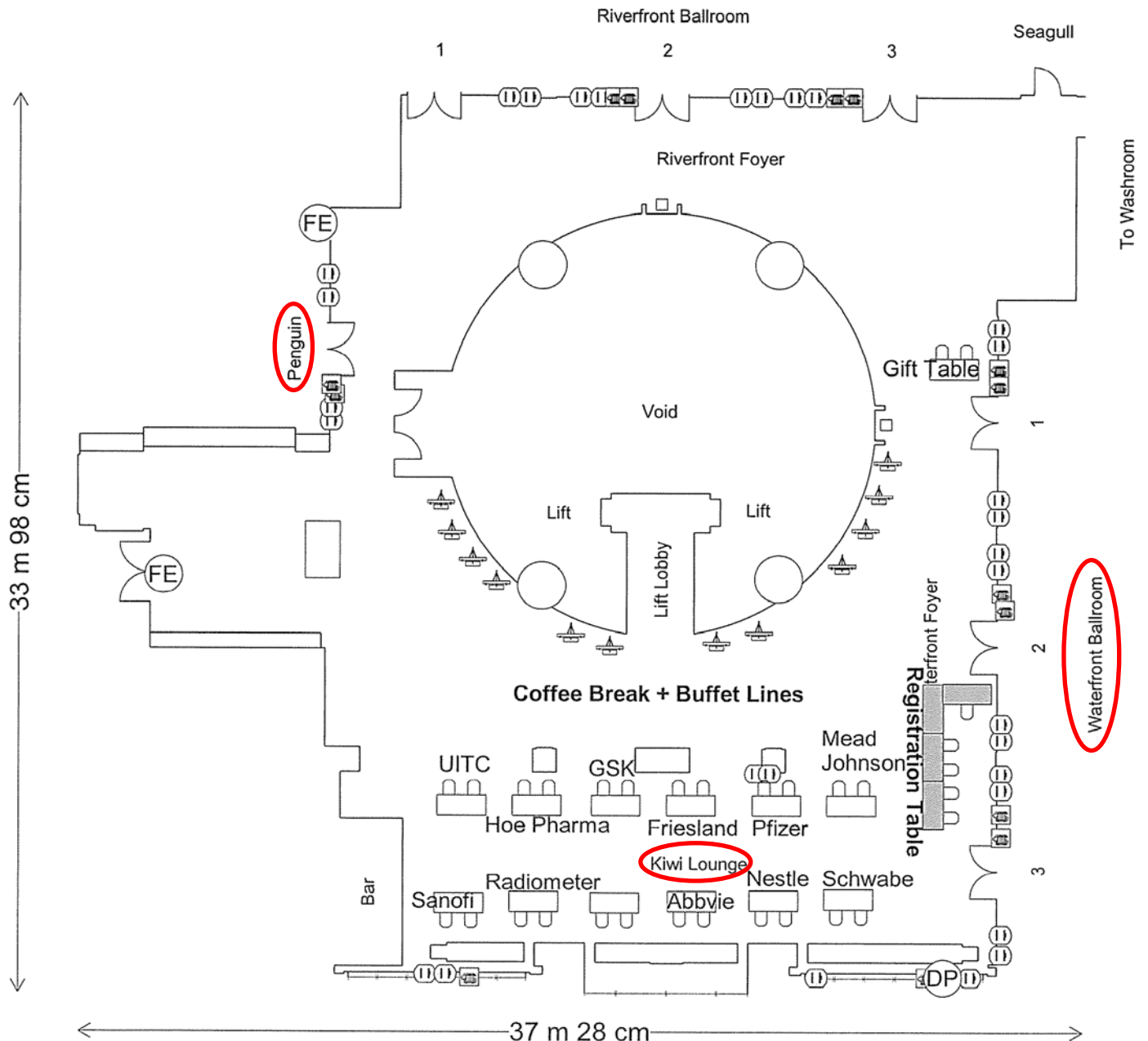
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VENUE FLOOR PLAN

Level 2, Grand Copthorne Waterfront Hotel Singapore



KIWI LOUNGE

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TEACHING FACULTY

LOCAL FACULTY

A/Prof Marion Margaret **Aw** Hui Yong

Dr Vijayendra Ranjan **Baral**

Prof Arijit **Biswas**

Ms **Chan** Xin Ying

Dr Alvin **Chang** Shang Ming

Dr Christopher **Cheok** Cheng Soon

Dr **Chong** Shang Chee

A/Prof Daniel **Fung** Shuen Sheng

Ms Angela **Hui** Yuen Ching

Dr Mark **Koh** Jean Aan

Dr Lyn **James**

Dr Joyce **Lam** Ching Mei

Dr Perry **Lau** Yew Weng

Ms Sharon **Lee** Kit Yin

Ms Katherine **Leong** Shiao Pheng

Ms Priscilla **Lim** Fong Chien

Ms Priscilla Sindo **Ng** May Hsien

Dr Rajeev **Ramachandran**

Dr Radha **Srikanth**

A/Prof Henry **Tan** Kun Kiaang

A/Prof Stacey **Tay** Kiat Hong

A/Prof **Thoon** Koh Cheng

Ms Maryani Bte **Wahab**

Ms **Yang** Yen Yen

OVERSEAS FACULTY

Dr Pamela Pui-Wah **Lee**

STUART GAN MEMORIAL LECTURE



Disseminated BCG and Susceptibility to Mycobacterial Infections – Implications on BCG Vaccinations

Dr Pamela Pui-Wah Lee

Clinical Assistant Professor, Department of Paediatrics and Adolescent Medicine, LKS Faculty of Medicine, Queen Mary Hospital, The University of Hong Kong

Tuberculosis is endemic in Asia. The policy of universal *Bacillus Calmette–Guérin* (BCG) vaccination shortly after birth is adopted in all Asian countries. BCG is a live vaccine and has the potential to cause local disease and systemic dissemination in immunocompromised hosts, including infants who are infected with HIV through vertical transmission, as well as patients with primary immunodeficiencies (PID) such as severe combined immunodeficiency (SCID), chronic granulomatous disease (CGD), hyper-IgM syndrome, and defects of the IL12-IFN γ axis (Mendelian susceptibility to mycobacterial diseases, MSMD). Persistent discharge and ulceration at the site of BCG inoculation are the most common initial presentations, while some progress to have disseminated skin nodules, osteomyelitis, hepatosplenic abscess, pneumonia and bone marrow involvement.

Disseminated BCG is extremely difficult to treat, especially in SCID patients. Even with the use of combination anti-mycobacterial agents, the chance of complete eradication is low unless functional immune response is restored by haematopoietic stem cell transplant. Prolonged use of anti-mycobacterial drugs often leads to organ toxicities and drug resistance. Inflammatory complications which develop upon immunoreconstitution post-transplant may necessitate the use of immunosuppressive treatment, which adversely affect immune recovery and poses risks to develop opportunistic infections. Multiple BCG reactivations can occur in patients with CGD and MSMD, and BCG can remain latent until reactivations take place in adulthood and manifest as disease.

It is important for neonatologists, general practitioners, primary care clinicians and nurses working in maternal and child care centers to be aware of BCG-related complications, which may be the first sign of an underlying immunodeficiency. As neonatal BCG is included in standard vaccination schedule in many countries, it is a challenge to identify and avoid administration of BCG to infants who potentially have PIDs. Special attention should be given to infants with family history of BCG vaccine complications, and one may need to consider withholding routine BCG vaccinations until appropriate investigations are carried out. Deferring BCG vaccination has been recently advocated to protect highly vulnerable populations, but the appropriate strategy is yet to be determined. Newborn screening for SCID offers a potential to avoid this complication, if an integrated system of screening and vaccination can be organized.

10TH COLLEGE OF PAEDIATRICS AND CHILD HEALTH (CPCHS) LECTURE



SG50: Paediatric Allergy and Immunology – Lessons and Insights

Dr Lee Bee Wah

Adjunct Professor, Department of Paediatrics, National University of Singapore, Singapore

Singapore celebrates its golden jubilee this year. Although considered a brief period in history, we have come a long way. As our late 'founding father' aptly put it, we have gone 'from third world to first'. How has this impacted on the practice of medicine today? Life expectancy at birth is at its highest ever, and reached an average of 82 years in 2012. This has been achieved largely by the implementation of important public health measures such as safe drinking water, modern sanitation, and a comprehensive childhood vaccination program. However, *pari passu* with these achievements, we are now facing another class of diseases. Over the last 4 to 5 decades, the world including Asia has witnessed an increase in prevalence of childhood asthma and allergic disorders such as eczema and allergic rhinitis. More recently, food allergy has been considered the second wave of the allergy epidemic. We are beginning to realize that our modern lifestyle is, ironically the culprit responsible for this phenomenon. Gaining an understanding on the mechanisms involved, would provide us with the best chance to find rational preventive and treatment strategies. This year's College lecture will cover the trends of allergies in Singapore and provide insight into how we might tackle these disorders.

TEACHING FACULTY – LECTURE ABSTRACTS

Symposium 1: More than Meets the Eye

Periodic Fevers in Children

Dr Pamela Pui-Wah Lee

Clinical Assistant Professor, Department of Paediatrics and Adolescent Medicine, LKS Faculty of Medicine, Queen Mary Hospital, The University of Hong Kong

Fever is a common symptom for which children are brought to medical attention. Majority of cases are caused by infections which are self-limiting. Febrile respiratory illnesses up to 7-8 episodes per year are not uncommon in school-age children, but this often leads to parental concerns about 'weakness of the immune system'. The diagnostic approach begins with a detailed enquiry on the fever pattern, with documentations from a meticulous diary of fever and associated symptoms. Intermittent, self-limiting episodes of fever in a well-appearing child demonstrating normal growth are likely to be sequential viral illnesses. Recurrent febrile illnesses resulting from infections which only recover with antibiotic treatment raises the alert for possible immune deficiency, especially when there is a history of invasive or opportunistic infections in a child with failure to thrive. For patients who do not have warning signs for immune deficiency and whose clinical presentation is not typical of recurrent infections, autoinflammatory disorders should be considered.

Autoinflammatory disorders are characterized by recurrent exacerbations of systemic inflammation. They are caused by dysregulation of the innate immunity, leading to exaggerated cytokine response upon sensing of pathogens and danger signals in myeloid cells (macrophages, monocytes and neutrophils). The most common form of autoinflammatory disorder in childhood is periodic fever, aphthous stomatitis, pharyngitis and adenitis (PFAPA), which is marked by stereotypic episodes that recur with clockwork periodicity of 21 days. Common manifestations include fever, skin rash, oral ulcers, abdominal pain and joint pain;

inflammatory markers are elevated during acute exacerbations and will return to normal in between attacks. The mainstay of treatment is single-dose corticosteroid during an attack, and supportive care. Prognosis of children with PFAPA is good and complete resolution is expected before adulthood. However, patients with monogenic autoinflammatory disorders such as Familial Mediterranean Fever (FMF), TNF-receptor associated periodic syndrome (TRAPS), hyper-IgD syndrome, mevalonic aciduria and cryopyrin-associated periodic syndrome (CAPS) are prone to develop complications such as arthropathy, serositis, papilloedema, splenomegaly and lymphadenopathy. Patients with neonatal-onset multi-system inflammatory disease (NOMID) and Muckle-Wells syndrome (MWS) may have sensorineural deafness. These inherited autoinflammatory syndromes are caused by genetic defects of the interleukin-1 (IL-1) signaling pathway and cytosolic pattern recognition receptors (NLRP3, NOD2, pyrin). Definitive diagnosis requires genetic testing, as guided by fever pattern, tissue involvement and family history. Excellent therapeutic response can be achieved with the use of IL-1 blocking agents, providing proof for the pivotal role of IL-1 in the pathogenesis of these autoinflammatory syndromes.

Approach To a Child with Developmental Regression

A/Prof Stacey Tay Kiat Hong

Head & Senior Consultant, Division of Paediatric Neurology; Senior Consultant, Division of Paediatric Genetics and Metabolism, National University Hospital

Developmental regression is a worrying symptom for children and is an important red flag for clinicians. The complexities of diagnosis, investigations and management can be challenging for paediatricians. The objective of this talk is to outline a reasoned and systematic approach to a child with suspected developmental regression.

TEACHING FACULTY – LECTURE ABSTRACTS

Inherited metabolic disorders as well as certain genetic disorders form the bulk of the causes of developmental regression. Because of the individual rarity of the conditions as well as the unfamiliar constellation of symptoms, paediatricians may find it difficult to initiate a diagnostic workup for the child as they may not have seen many of these rare conditions before. Clinicians have to use a composite strategy of evaluation of the child's core symptoms as well as to identify clues and red flags that may help to select diagnostic investigations that will shorten the diagnostic odyssey for the patient. A systematic approach is essential in obtaining an early diagnosis so as to allow treatment of the disease, and in the absence of a definitive cure, to allow the patient medical supportive measures that would retard the progress of disease and improve the quality of life for the patient. While many neurometabolic and neurogenetic disorders remain incurable, more therapeutic options are now available with the advent of small molecular therapy, enzyme replacement therapy and gene therapy.

A Closer Look at the Full Blood Count

Dr Joyce Lam Ching Mei

Consultant, Paediatric Haematology / Oncology Service, Department of Paediatric Subspecialties, KK Women's and Children's Hospital

The full blood count is one of the most commonly ordered laboratory investigations in the workup of children presenting to paediatricians with a variety of signs and symptoms. Parameters that are commonly looked at include the white cell count and differentials, haemoglobin and platelet count. Various common and uncommon causes of high and low values will be discussed. Other useful parameters reported within the full blood count will also be introduced, highlighting their roles in the differential workup of various conditions.

Failure to Thrive

Dr Rajeev Ramachandran

Consultant, Division of General Paediatrics & Adolescent Medicine, National University Hospital

Failure to thrive (FTT) or growth failure has long been a major focus of attention and one of the important problems to manage for paediatricians.

FTT is not a syndrome. It is a physical sign that a child is receiving inadequate nutrition for optimal growth and development. The work of the paediatrician is to determine, in an ordered and logical process, what may be leading to the inadequate nutrition and, when possible, to treat the underlying pathophysiologic issues, which often are multifactorial.

We will discuss the limitations of the classic dichotomy of "nonorganic" versus "organic" failure to thrive (FTT). We will discuss the various reasons for FTT, which is not a diagnosis but rather a physical sign of inadequate nutrition to support growth. We will discuss the potential sequelae of FTT. We will also try to understand how the diagnostic process must account for the multifactorial nature of FTT. We will go through a systems-based, multidisciplinary approach to treatment of FTT.

Nursing Symposium 1: Neonatal Care

Baby Friendly Hospital Initiative: Evidence For The Ten Steps To Successful Breastfeeding

Ms Sharon Lee Kit Yin

Nurse Clinician, Lactation Services, Nursing Specialist Services, KK Women's and Children's Hospital

The Baby Friendly Hospital Initiative (BFHI) was launched in 1991 by World Health Organization (WHO) and the United Nations International

TEACHING FACULTY – LECTURE ABSTRACTS

Children's Emergency Fund (UNICEF) to protect, promote and support breastfeeding.

BFHI aims to give every baby the best start in life by helping mothers to exclusively breastfeed after delivery through the implementation of the "ten steps to successful breastfeeding" in the maternity facilities. The implementation include having a written a breastfeeding policy, training all health care staff to implement the policy, informing all pregnant women of the benefits and management of breastfeeding, initiating skin-to-skin contact after birth, and guiding mothers' on the technique and management of breastfeeding to maintain lactation. Mothers are encouraged to breastfeed on demand and to room-in with their babies. Pacifier, bottle feeding are discouraged and infant formula are not given unless medically indicated. Support after discharged is also given to ensure continuation and longer breastfeeding duration. BFHI addresses the major factors in health care practices which interfere with breastfeeding. Evidence has shown a greater effect in increasing and sustaining exclusive breastfeeding with the implementation of all the "ten steps" in the maternity facilities.

In summary, the supporting evidence for the "ten steps" provides the basis for maternity facilities to ensure implementation according to the BFHI standards to protect, promote and support breastfeeding for optimal health outcomes for both mother and child.

Use Of High Flow Cannula For Neonates

Ms Chan Xin Ying

Ward 54, NICU, Singapore General Hospital

The purpose of this presentation is to introduce high flow nasal cannula (HFNC), a new respiratory therapy that is used in Singapore General Hospital neonatal ward.

HFNC is beneficial and it serves as a transitional level between Continuous Positive Airway Pressure (CPAP) and low flow therapy.

As nurses, it is imperative to keep up with the latest trend of respiratory therapy and acquire the knowledge in the management of neonates who are placed with HFNC.

The Experiences Of Parents With Preterm Infants Hospitalized In A NICU: A Qualitative Descriptive Study

Ms Yang Yen Yen

Staff Nurse, Ward 9A (O/G), National University Hospital

Objectives: The aim of this study was to explore the experiences of parents with preterm infants who were hospitalized in a Neonatal Intensive Care Unit (NICU).

Methods: A qualitative descriptive design was used for this study. Parents of preterm infants were recruited from the NICU of a public tertiary hospital in Singapore. Semi-structured interviews were conducted with 8 parents from November 2013 to February 2014. Thematic analysis was used to analyze the data.

Results: Four themes were identified from the analysis: Mixed emotions, coping strategies, support received, and suggestions for improvement to current care for parents. Parents of preterm infants experienced a multitude of emotions that varied from shock and sadness when their babies were born and hospitalized, to excitement and anticipation for their impending discharge. Parents adopted several strategies to cope with the birth and hospitalization, and also received support from various people in their lives, including health care professionals, their spouses, family, friends, and workplace. While the NICU experience was a positive one for most parents, some suggestions were made to improve informational and professional care.

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Conclusions: Directions for future studies can include an exploration of how their coping strategies and existing support systems can be enhanced, as well as how health care professionals can improve care for these parents.

The Perception Of Kangaroo Care Practice Among Healthcare Professionals In Singapore

Ms Priscilla Lim Fong Chien

Staff Nurse, Ward 24 (NICU), National University Hospital

Objective: To explore the perceptions of and attitudes towards Kangaroo Care (KC) practice among the Healthcare Professionals (HCPs) in Singapore.

Methodology: The research was a generic qualitative study framed by the Technology Acceptance Model (TAM) and conducted in a 18-bed tertiary referral NICU in Singapore. Participants (N = 8 nurses and 3 medical officers) were recruited using purposive sampling.

Data Collection And Analysis: Data were collected using 11 semi-structured interviews, each lasting approximately 60 minutes. Interview data were transcribed verbatim, major themes identified and coded.

Findings: There was general agreement that KC is beneficial in terms of psychological support and bonding for parents and infants. However findings identified concerns about the 'practical' implications of KC. The top constraints to promoting KC in the NICU were increased time and workload, lack of space and privacy for parents, the safety and suitability of infants, poor staff education, lack of support from colleagues and management, disagreement with the content of KC protocol, the readiness of parents to embrace KC practice and cultural differences. Although the majority of participants reported negative perceptions and attitudes, a number of educational

and practical concerns were identified to ensure implementation of KC is effective and consistent.

Conclusion: This study revealed the perceptions of and attitudes of HCPs towards the use of KC in one NICU were predominantly negative. These perceptions and attitudes were highly considered and shared with the KC workgroup to develop strategies to improve the implementation and uptake of KC practice in the unit.

Nursing Symposium 2: Child / Adolescent Care

KKH Paediatric Home Care Services

Ms Maryani Bte Wahab

Nurse Clinician, KKH Homecare Services, KK Women's and Children's Hospital

Objectives: Advances in medical technology have contributed to increased survival rates in children. The negative impact of hospital admissions on children and their families and the rising cost of healthcare have led to the growth of paediatric homecare services. The KK Paediatric Homecare program was started in 2001 with the aim to discharge technology dependent children into the home setting.

Methods: The nursing services provided include enteral feeding care, oxygen therapy, tracheotomy care, gastrostomy care, invasive and non-invasive ventilation and home parenteral nutrition. Caregivers are empowered to deliver safe and competent care through structured checklists and individualized care-plans. Close supervision and monitoring also enhances parental confidence. The homecare nurses coordinates and collaborates with various members of the multidisciplinary team to prevent care fragmentation. Continued support is maintained via post discharge telephone calls, home visits, homecare clinic reviews and a 24Hr mobile hotline.

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Upon discharge, patients are linked to the community nurse to ease transition into the home setting.

Results: Key performance indicators showed a reduction in length of stay, readmissions and emergency department visits. There is a reduction in cost savings and freeing up of inpatient hospital beds.

Conclusions: Collaboration among the multidisciplinary team and linking to community partners is central in ensuring holistic and smooth transition for the technologically dependent child into the home setting.

When Diabetes Hits A Child

Ms Angela Hui Yuen Ching

Diabetes Resource Nurse, Specialist Clinic, KK Women's and Children's Hospital

Objectives: Childhood diabetes is a chronic disease requiring life-long self-management. Upon diagnosis and throughout the child's journey of diabetes, parents and the child have to deal with feelings of shock, denial, sadness, anger, fear and/or guilt. Besides having to acquire new knowledge about diabetes and its management, parents and the child must master new skills and integrate diabetes management into daily life. We highlight two studies illustrating what parents and the child have to go through when diabetes hits a child.

Methods: A multi-disciplinary team comprising Endocrinologist, Diabetes Nurse Educator, Dietician, Medical Social Worker and Psychologist, provide parents and the child with up-to-date information about living with diabetes. Support group events and/or camps are organized for them to network and move forward in life. We surveyed 50% of our adolescent patients with type 1 diabetes age >13 years their diabetes management

and quality-of-life. We also introduced and evaluated peer support for improving the health outcomes of adolescents with diabetes.

Results: Many adolescents with diabetes reported good quality of life despite not achieving satisfactory glycemic control. Self-esteem and social adjustments are significant psychosocial concerns related to daily diabetes management. Many parents and their child find joining support groups and attending camps and events with other families of children with diabetes extremely helpful.

Conclusion: Living with childhood diabetes presents unique challenges. Diabetes management is best achieved by adopting a team approach, with the aims of helping families accept the diagnosis, achieve good glycemic control, grow and live well with diabetes.

Exploring The Experiences Of Adolescents With Type 1 Diabetes Mellitus – A Qualitative Study

Ms Priscilla Sindo Ng May Hsien

Staff Nurse, Ward 24 (NICU), National University Hospital

Objective: The aim of the study was to explore the self-management experiences of adolescents with Type 1 Diabetes Mellitus (T1DM); to explore participants' perception of T1DM, how they coped, and the challenges when self-managing T1DM.

Methods: A qualitative design was adopted. Data were collected by semi-structured face-to-face interviews, without parental presence. A purposive sample of 11 participants was recruited from a local tertiary hospital. Thematic analysis was adopted to analyze the data.

Results: 6 males and 5 females were recruited. The age ranged from 13 - 17 years old. Six themes were generated. (1) Loss, (2) Gain, (3) Barriers to treatment adherence, (4) Facilitators of treatment

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adherence, (5) Coping strategies, (6) Gaps in current care.

Discussion: Participants experienced reduced physical stamina, restriction in life, interrupted social life and the loss of opportunities. Participants experienced closer social relationships, healthier lifestyle, growth in maturity, ability to escape difficult situations. School, troublesome nature of treatments, lack of self-control and discipline were factors highlighted as barriers to treatment adherence. Fear of complications and social support were stated as facilitators to treatment adherence. Acceptance, distraction, avoidance, problem solving and positive thinking were some coping strategies adopted by participants. Participants called attention to gaps in healthcare services, treatment methods, financial and informational support.

Conclusion: Findings of this study allow health professionals to understand patients' psychosocial needs better. These findings could guide the development of treatment and counselling to tailor according to these needs- to effectively improve their quality of life and adherence to treatment.

Implementation Of Paediatric Early Warning Signs (PEWS) Tool In A Paediatric Haematology - Oncology Ward

Ms Katherine Leong Shiao Pheng

Nurse Clinician/Advanced Practice Nurse Intern, Ward 8B / Paediatrics, National University Hospital

Objectives: Paediatric haematology oncology patients are a high-risk population that can deteriorate acutely due to the intensity of treatment and its side effects. The ability to detect early deterioration, aids in prompt management to arrest/prevent acute code blue activations and unplanned paediatric intensive care unit (PICU) admissions. To meet these objectives, a pilot study to evaluate the applicability and effectiveness of a

modified PEWS tool was implemented. A PEWS tool is a physiologic scoring system accompanied with a descriptive algorithm of actions to take based on patient's score.

Method: All patients admitted were assessed with the modified PEWS tool as per protocol of the study. Thereafter, a retrospective collation of 3 months of these patients' data were reviewed and analyzed.

Results: 156 patients were admitted during this time. Of which, 16% (n=26) had PEWS score of > 1. Of these 26 patients, 81% (n=21) were managed and acute symptoms reversed in the ward due to prompt intervention and management. 19% (n=5) were stabilized in the ward and escalated to the High Dependency/PICU through planned (timely and controlled interventions) transfers. In addition, no patients with PEWS score of 0 deteriorated and no patients had acute jumps in PEWS score from 0 to 5. This implies that the PEWS tool is accurate in picking up true deteriorations.

Conclusion: From the initial review done in this pilot study, PEWS is an effective tool to detect patient's impending deterioration early. This in turn allows timely and controlled interventions for the optimization to reverse the deteriorating events. Further research in the validation of the tool in a general paediatric ward is the next step prior to possible implementation.

Symposium 2: Perinatal / Neonatal

Advances In In-Utero Diagnosis And Intervention

Prof Arijit Biswas

Head and Senior Consultant, Department of Obstetrics & Gynaecology, Yong Loo Lin School of Medicine, National University of Singapore

In the last two decades, major advances in prenatal diagnosis and in-utero fetal treatment have

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revolutionized prenatal care. New advances in imaging technology, ultrasound and MRI, are allowing earlier and more precise anatomic diagnosis of abnormalities. It helps both the patient and the physician with information about the anatomy, physiology and genetics of specific abnormalities in the fetus. This is making possible better, individualized decision-making regarding the pregnancy and tailoring management options. Prenatal genetic diagnosis is making major strides by changing from invasive techniques to non-invasive methods through the identification and examination of the soluble fetal DNA in the mother's plasma. Earlier and more precise prenatal diagnosis gives the opportunity to offer a range of options to the couple, which includes, in selected cases, fetal treatment in-utero. Fetal therapeutic modalities include (a) Pharmacotherapy – transplacental or directly to the fetus (b) intrauterine transfusions (c) ultrasound-guided procedures (d) Fetoscopic surgery and rarely, (e) open fetal surgery. In certain instances of multiple pregnancies, selective termination of one or more fetuses can be offered. Fetal treatment in-utero may result in immediate benefit to the fetus or help to reduce associated postnatal complications. Careful case selection and counseling is required since the therapy itself is often associated with significant risk to the fetus and the mother. Systematic research and evaluation of various treatment options are on going. Fetal stem cell therapy is already showing great promise and in-utero gene therapy is a subject of intense research.

Neonatal Non-Invasive Ventilation: Do We Really Need To Intubate?

Dr Alvin Chang Shang Ming

Consultant, Department of Neonatology, KK Women's and Children's Hospital

Historically, non-invasive ventilation (NIV) was used to assist patients with respiratory failure. This included the use of pneumatic chambers, negative

pressure ventilation for children with poliomyelitis etc. In the neonates, these techniques did not improve outcomes in the past. Hence, the use of mechanical ventilation- endotracheal intubation with positive pressure, time-cycled ventilation had remained the main modality to manage respiratory failure.

However, intubation and provision of positive pressure ventilation with mechanical devices does have its complications- atelectrauma, barotrauma and volutrauma. This results in ventilator-induced lung injury (VILI) and chronic lung disease of infancy. The long-term outcome of this impacts the quality of life of the infants and their families.

Therefore, neonatal NIV, to avoid VILI and its complications, had been an area of interests recently. Some of the techniques include Continuous Positive Airway Pressure (CPAP), nasal intermittent mandatory ventilation (NIMV) and the high-flow nasal cannula etc. Newer devices are even able to synchronise breaths during NIV. This is said to reduce the work of breathing. However, studies reporting the use of NIV had shown varying results. This is particular so with regards to the prevention of VILI and chronic lung disease of infancy.

Hence, the evidence to support the use of neonatal NIV on a large scale had not demonstrated much clinical advantage over the use of conventional mechanical ventilation. There is a need for properly designed good quality trials in order to answer questions on the routine use of NIV in the neonatal population.

A Homage to Dubowitz - The Neurological Examination in Neonates and Infants

Dr Vijayendra Ranjan Baral

Consultant, Department of Neonatal & Developmental Medicine, Singapore General Hospital

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The neurological examination in a newborn and early infancy can be challenging. Early identification of potential problems is beneficial and will inform the clinical team regarding future follow up and interventions.

A system of assessing the neurology of newborns and infants was developed by Dubowitz & Dubowitz in 1981 and has been revised over the years.

This is an easy to perform examination tool which uses definitions and diagrams and has been validated in different population settings and users.

An optimality score has also been developed to make the examination more quantitative and for comparison with sequential assessments and to try and prognosticate outcomes.

The objective of the talk will be to run through the components of the neonatal and infant examinations, demonstrate how to perform the examinations and interpret findings. Its use and experience in the local context will also be discussed.

Symposium 3: Office Paediatrics

Common Dermatological Conditions in Children

Dr Mark Koh Jean Aan

Head & Consultant, Department of Paediatric Dermatology Service, KK Women's and Children's Hospital

Paediatric dermatological conditions are common problems seen in a general paediatric clinic. Common conditions include atopic dermatitis, skin infections and infantile haemangiomas. Many of these conditions can be treated by the general paediatrician in an outpatient setting. The diagnosis, pathogenesis and management of these conditions will be discussed during this lecture on office paediatric dermatology.

Common ENT Problems in Childhood

A/Prof Henry Tan Kun Kiaang

Head & Senior Consultant, Paediatric Otolaryngology, KK Women's and Children's Hospital

Abstract not available at the time of publication.

Primary Nocturnal Enuresis

Dr Perry Lau Yew Weng

Senior Consultant, Division of Paediatric Nephrology, Khoo Teck Puat-National University Children's Medical Institute National University Hospital

Nocturnal enuresis is a bothersome condition with a high prevalence in children. Due to decreasing incidence with increasing age, it is often thought that nocturnal enuresis is a benign disorder that resolves spontaneously. However, recent studies had shown a significant psychological impact of children with nocturnal enuresis and an association between a childhood history of nocturnal enuresis and nocturia or urinary incontinence in adulthood. Hence, a proactive management of this common condition in childhood is needed. This lecture reviews the approach to a child with nocturnal enuresis, identifying comorbid conditions, and discusses an optimal evaluation strategy using voiding diary with obtained information on maximum voided volume and nocturnal urine production to guide treatment choice. In addition, the current knowledge about pharmacological and non-pharmacological treatment of this common condition will be discussed.

Symposium 4: Child Development / Neurology

Is This A Mental Disorder? - Dual Diagnosis In Children With Developmental And Intellectual Disabilities.

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Dr Radha Srikanth

Consultant, Psychiatrist in Learning Disabilities, Department of Child Development, KK Women's and Children's Hospital

Children with intellectual disabilities can be at high risk of developing psychiatric disorders – several years of research has found the rates of psychopathology in children with intellectual disability to be as high as 40 to 50 percent.

This predisposition may be due to poor coping ability, social deprivation, lack of support, abuse, communication and sensory difficulties, higher prevalence of epilepsy, physical disorders, use of medications, family history of mental disorders and behaviours associated with genetic conditions.

Common psychiatric disorders in children with intellectual disabilities include: attention deficit hyperactivity disorder (ADHD), depression, anxiety disorders. Disorders like schizophrenia and bipolar disorders are rare in childhood. Children with intellectual disabilities have a higher incidence of autism spectrum disorder.

However, mental health problems in children with intellectual disabilities can often be overlooked or mistaken, by caregivers and medical professionals alike, to be part of their disability, through diagnostic overshadowing. It is widely studied that these problems go unnoticed. Often this leads to poor clinical outcome, increased burden of cost and impaired quality of life.

Diagnosis must be made by a specialist after a thorough clinical assessment, gathering of collateral information and direct observation of the child or the adolescent.

Medications can be used in conjunction with psychological treatments suitably adapted to level of the child's cognitive abilities. Psychoeducation and providing support to the family members is of paramount importance to aid the recovery of the child.

Early identification and intervention of these conditions would lead to high quality of life for the children and the families.

Physicians and the Schools - The Paediatrician's Role in Learning Difficulties

Dr Chong Shang Chee

Consultant, Khoo Teck Puat-National University Children's Medical Institute; Head, Child Development Unit, Division of Development and Behavioural Paediatrics, National University Hospital

Learning difficulties are complex and challenging, and affects a child's abilities to read, write, speak, reason, organize and do Math, leading to under-performance in school. One study showed that at least 77% of paediatricians have encountered children with learning difficulties in their practice with considerable diversity in awareness, screening or assessment of children with such issues. This talk highlights the paediatrician's roles in

1. Being alert to children at risk of learning difficulties
2. Adopting a broad neurodevelopmental framework in the approach of children with such difficulties
3. Enhancing physician-school collaborations for meaningful prescription of recommendations

Mental Well Being In Singapore School Children

A/Prof Daniel Fung Shuen Sheng

Senior Consultant, Department of Child & Adolescent Psychiatry, Institute of Mental Health

Abstract not available at the time of publication.

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Symposium 5: National Issues in Child Health

Public Health Issues In Singapore Children

Dr Lyn James

Director - Epidemiology and Disease Control Division, Public Health Group, Ministry of Health

The state of health of children in Singapore has improved remarkably since independence. However their health and well-being are under threat from a multitude of factors. Increasingly sedentary lifestyles, poor food choices and increased mental stress are just some factors which are of concern. In order to mitigate these threats, the inculcation, adoption and maintenance of healthy living from a young age, is essential to give children a good start in life.

Re-Emerging Infections - Revisiting TB

A/Prof Thoon Koh Cheng

*Head & Senior Consultant, Infectious Diseases
Department of Infectious Diseases
KK Women's and Children's Hospital*

Childhood tuberculosis (TB) is a sentinel event that frequently reflects ongoing community transmission of adult tuberculosis, and can be said to be a "litmus test" of how well public health efforts against tuberculosis are functioning. The key difference between childhood and adult TB is that childhood TB is usually paucibacillary, and yet more likely to lead to more severe disseminated or extra-pulmonary TB with more serious sequelae. An appreciation of the diagnostic approach to childhood TB will aid in case classification as well as subsequent management. Key factors in the diagnostic approach to childhood TB include clinical, epidemiologic, radiologic, immunologic, microbiologic and adjunct domains. Specific insights from the descriptions of the natural history of childhood TB in the pre-chemotherapy and peri-chemotherapy era also help in framing the risks involved in the management of childhood TB.

Finally, the treatment of childhood TB is usually not difficult, but must be considered in the context of a network of risks, the most important of which is the risk of disease, and the risk of transmission, as well as risks of adverse events, non-compliance, drug resistance, and mis-diagnosis.

Addiction In Children

Dr Christopher Cheok Cheng Soon

Vice Chairman, Medical Board (NAMS); Senior Consultant & Clinical Director, National Addictions Management Service / Addiction Medicine, Institute of Mental Health

Addictions in children are not often discussed in paediatric circles but affects 1-2% of youth. Addictions start in youth and takes a chronic life long course, often with social and occupational consequences. This lecture will provide an overview of substance abuse and behavioural addictions. New lifestyle addictions such as smartphone and gaming addictions will also be discussed.

4th Singapore Paediatric and Perinatal Annual Congress

(In conjunction with the 7th Singapore Paediatric Congress and Singapore Paediatric Nursing Congress)

Saturday, 25 July 2015 | Grand Copthorne Waterfront Hotel, Singapore

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4th Singapore Paediatric and Perinatal Annual Congress

(In conjunction with the 7th Singapore Paediatric Congress and Singapore Paediatric Nursing Congress)

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4th Singapore Paediatric and Perinatal Annual Congress

(In conjunction with the 7th Singapore Paediatric Congress and Singapore Paediatric Nursing Congress)

Saturday, 25 July 2015 | Grand Copthorne Waterfront Hotel, Singapore

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*Note: Posters marked with * have been selected as Poster of Distinction.*

POSTER ABSTRACTS

MP01

Severe Hypercalcemia in an Infant with Rhabdoid Tumor of the Kidney

R Aoyama, A Sng, Y Lim, YS Lee

Department of Paediatrics, National University Hospital

Background: Hypercalcemia is a common complication of adult malignancies, but uncommon in childhood cancers, accounting for less than 1% of cases.

Case Discussion: We report a case of severe hypercalcemia in a 5 month old infant. She presented with painless gross haematuria and mild irritability. A renal ultrasound showed a large heterogenous mass arising from the left kidney measuring 8.2 x 5.2 x 6.6 cm. Her serum calcium measured 4.74 mmol/L (2.15-2.55) with an ionized fraction of 2.62 mmol/L (1.15-1.35). Her serum phosphate was low at 1.26 mmol/L (1.64-2.47). Her parathyroid hormone (PTH) was elevated at 33.0 pmol/L (1.3-9.3) and PTH-related peptide was elevated at 13.0 pmol/L (<2.0).

She was treated with hyperhydration and saline diuresis for 24 hours but her serum calcium remained elevated at 4.65 mmol/L. She was given 2 doses of intravenous pamidronate at 0.5mg/kg/day over 2 days, and followed by a single dose subcutaneous calcitonin 4U/kg. which brought the total serum (?Corrected) calcium levels to 2.64 mmol/L which posed less risk for operation. She underwent an open left nephrectomy and histology revealed a malignant rhabdoid tumour. Post operatively she was on calcium supplementation and 1-hydroxycholecalciferol supplementation but there was no significant hypocalcemia.

Conclusion: We have demonstrated the effective use of pamidronate at a total dose of 1mg/kg and subcutaneous calcitonin to lower serum calcium

levels in a patient with severe hypercalcemia of malignancy.

MP02

Investigating the implications of applying the new Diagnostic and Statistical Manual of Mental Disorders, Version 5 (DSM-5) criteria for diagnosing autism spectrum disorder (ASD) in a preschool population in Singapore

CM Wong, HC Koh

Department of Child Development, KK Women's and Children's Hospital, Singapore

Introduction: This study compared the DSM-IV-TR and DSM-5 diagnostic criteria for diagnosing ASD in a preschool population in Singapore.

Methods: Anonymised diagnostic reports for children who underwent an assessment for ASD from March 2012 to August 2013 were re-evaluated by one of two clinicians with experience in ASD diagnosis, using the DSM-IV-TR and DSM-5 criteria. The clinicians were also blinded to the summary / conclusions of the report.

Results: 206 psychological reports were obtained. Median age at time of diagnosis was 3 years 7 months. Four children who did not meet criteria for a diagnosis of autism originally also did not meet criteria on DSM-5. Of 202 children with ASD, 18 (8.9%) did not meet criteria on DSM-5. In 15 cases, it was because only one restricted, repetitive behaviour (RRB) was reported. In 2 cases, the children had adequate non-verbal communicative behaviours despite meeting other criteria. In the last case, the child had deficits in social communication and interaction but no RRBs and a diagnosis of social communication disorder was likely. Children with autistic disorder were more likely to retain their diagnosis than children with PDD-NOS or Asperger Syndrome.

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Conclusion: This is the first study of this kind in Singapore population. The number of children with ASD who would still be diagnosed with ASD using the DSM-5 criteria is higher than that reported in other studies. The data gathered should aid service providers in planning resources for children who might not meet the new criteria but who still need early intervention.

MP03

Mycoplasma Pneumoniae In Children: Laboratory Characteristics And The Utility Of Mycoplasma Polymerase Chain Reaction And Serology

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³Infectious Disease Service, Department of Paediatrics, KK Women's and Children's Hospital, Singapore

⁴Department of Pathology and Laboratory Medicine, KK Women's and Children's Hospital, Singapore

⁵Respiratory Medicine Service, Department of Paediatrics, KK Women's and Children's Hospital, Singapore

⁶Pharmacy, KK Women's and Children's Hospital, Singapore

Objectives: Mycoplasma pneumonia is one of the most common causes of childhood community acquired pneumoniae. This study aims to describe the laboratory characteristics of Mycoplasma pneumonia.

Methods: A retrospective study of patients admitted to KK Children's Hospital with a discharge diagnosis of Mycoplasma pneumonia between May to October 2012.

Results: There were 174 patients studied. Median age was 6.55 years, with 64.9% aged 5 and above. PCR was performed on 170 patients, and 96% were diagnosed based on a positive PCR result. Serology was performed on 17 patients, and 12 had titres ≥ 320 indicative of recent infection. Only 7

patients were diagnosed based on serology (≥ 320) alone. PCR tested positive between day 0-22 of fever, of which 58.1% was on day 7 and before. Titres ≥ 320 occurred between day 1-14 of fever, of which 33.3% were on day 7 and before. Lymphopenia was seen in 80.4% of children (ALC $< 3 \times 10^9/L$). Median ALC was $1.95 \times 10^9/L$. Lymphopenia was also more predominant in children aged 5 and above (OR 10.2, 95% CI 3.97-26.3). As for C-reactive protein, 92.9% had CRP > 5 mg/L. The median CRP was 36.9 mg/L (IQR 16.75-76.85). High CRP of more than 200 mg/L was found to be associated with complicated pneumonia (OR 17.2, 95% CI 2.05-143.8).

Conclusion: A positive mycoplasma PCR test can still be obtained beyond 7 days of fever. Lymphopenia is a common finding in Mycoplasma pneumonia and is more predominant in children aged 5 and above.

MP04

Do foreign domestic workers decrease stress in parents caring for children with developmental disabilities?

K Mulay, YQ Kang, E Law

Kho Teck Puat-National University Children's Medical Institute, National University Health System

Objective: To examine whether the presence of foreign domestic workers (FDW) and the quality of these workers are associated with parental stress

Methods: Parents of consecutive children aged 2-12 with developmental disabilities from our developmental clinics were recruited from December 2014 to April 2015. Of those recruited, 93% of parents gave consent and completed the Parenting Stress Index, Short Form (PSI) as well as questionnaires on demographics and FDW. Information on FDW included the number of hours each FDW spent per day with the child and the rating of the FDW using a Likert scale from 1 (poor)

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to 5 (excellent). The main outcome of the study was Parental Distress on the PSI. We utilised linear regression to examine whether the presence of a highly rated FDW was associated with decreased parental distress.

Results: Parents of 265 children with developmental disabilities completed the study; 47.3% of the families had at least one FDW. The mean hour FDWs spent directly with the children per day was 2.3 hours (SD 4.874) and the mean rating for the FDW quality was 2.77 (SD 0.865). After controlling for family factors (i.e. household income, the need for parents to change work hours, and enrollment of the child in school or child care), linear regression showed that the quality of the helper ($\beta = -7.689$, $p = 0.037$) was associated with less parental distress.

Conclusions: This study suggests that the presence of a highly capable FDW is associated with lower parental distress, especially for parents caring for children with developmental disabilities.

MP05

Is there an association between screen time and sleep duration in children with developmental disabilities?

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Objective: To examine whether an increase in screen time per day predicts lower sleep duration in children with developmental disabilities.

Methods: Consecutive children aged 2-12 with developmental disabilities from our developmental clinics were recruited for this study from December 2014 to April 2015. Of those recruited, 93% of families gave consent and provided information on demographics, child's screen time use, and sleep duration. First, we used Pearson's correlation to

examine whether there was a relationship between screen time and sleep duration. We then utilised linear regression to model this relationship while controlling for child and family factors.

Results: Parents of 265 children with developmental disabilities completed the study; 79.8% were mothers and 92.5% were married. The mean age of the children was 7 years, 7 months. The mean screen time use on weekdays was 1 hour, 28 minutes. The mean amount of sleep per weekday was 8 hours, 9 minutes. The amount of screen time was significantly correlated with sleep duration ($r = -0.226$, $p = 0.040$). Linear regression showed that for every additional 6.94 minutes of screen time, sleep was reduced by 1 minute ($\beta = -0.144$, $p = 0.043$). Older age ($\beta = -0.772$, $p = 0.004$) and living with a single parent ($\beta = -56.672$, $p = 0.009$) were also associated with less sleep.

Conclusions: More screen time per day is associated with lower sleep duration. Clinicians caring for children should address screen time on a regular basis in order to ensure healthy sleep hygiene.

MP06

School burden and sleep duration in children with developmental disorders

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Objective: This study aims to explore the relationship between school burden and sleep duration in children with common developmental disorders.

Methods: Children diagnosed with autism spectrum disorder (ASD), attention-deficit/hyperactivity disorder (ADHD), learning disorder (LD), or specific language impairment (SLI), and who were in Primary 1 and above were recruited; of which 93% consented. Parents

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provided information about their child's homework, tuition, and screen time and completed the Children's Sleep Habits Questionnaire (CHSQ). ANOVA and LSD tests were used to compare sleep duration between children with different developmental disabilities. Linear regression was utilised to examine predictors of sleep duration.

Results: A total of 156 children were studied. Mean age was 9 year, 9 months (SD 24.31 months). Mean homework time each weekday was 2 hours, 21 minutes (SD 99.79 minutes). Mean total sleep each weekday was 8 hours, 6 minutes (SD 55.89 minutes). Children with ADHD slept less than children with LD/SLI and ASD each weekday (F 3.877, $p=0.026$). Compared to children with ASD, children with ADHD had 41.66 minutes less sleep and those with LD/SLI had 15.13 minutes less sleep. After controlling for child and family factors, older age ($\beta=-0.620$, $p=0.025$) and more homework time ($\beta=-0.134$, $p=0.025$) were associated with lower sleep duration.

Conclusions: School burden is associated with poorer sleep hygiene in children with developmental disorders. Specifically, those with disorders related to learning, language, and attention have shorter sleep duration. Family should be counselled about the importance of sleep hygiene in this population.

MP07

A Novel XIAP mutation in two Singaporean brothers with variable clinical manifestations

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Objectives: X-linked inhibitor of apoptosis (XIAP) deficiency, or X-linked lympho-proliferative syndrome type 2, is a rare and recently-described

primary immunodeficiency with susceptibility to haemophagocytic lymphohistiocytosis (HLH) and inflammatory bowel disease. The genetic defect commonly found is a mutation in the XIAP/BIRC4 gene, which may lead to ineffective lymphocyte cytotoxicity during infection resulting in dysregulated inflammatory cascades but the exact mechanism is still unclear. We report two brothers with a novel mutation in the XIAP gene with differing presentations.

Methods/Patients: The elder brother, LY, presented in infancy with anicteric hepatitis and diarrhea and later at age 7 years with severe EBV-associated infectious mononucleosis syndrome with prolonged fever, hepatitis, hepatosplenomegaly and lymphadenopathy. He did not fulfill criteria for HLH. He responded to oral prednisolone and valacyclovir over 2 years with current quiescence of disease.

The younger brother, NY, presented at 4 months with fever, bicytopenia, hepatosplenomegaly and anicteric hepatitis triggered by primary EBV infection. He fulfilled 4 out of 8 criteria for HLH and responded well to modified HLH-2004 protocol with steroids alone.

Results: Genetic analysis by PCR gel electrophoresis showed a 3423 base pair deletion in the XIAP gene from intron 1 (position -1854) to intron 2 (position +660) including the entire exon 2 in both brothers. Their mother is the heterozygote carrier.

Conclusions: The brothers carry a novel deletion mutation of exon 2 in the XIAP gene. The clinical phenotypes greatly differ, consistent with that described in literature.

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MP08

Persistent Biphasic Stridor In A Ten-Year-Old Girl: A Case Report

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Case report: We present a ten-year-old girl with Kabuki syndrome (a congenital disorder with multiple physical comorbidities and intellectual impairment) with new-onset biphasic stridor. The patient had a background of congenital cyanotic heart disease post-bilateral bidirectional cavopulmonary connection, left hydronephrosis, and supraglottoplasty for laryngomalacia in infancy with no subsequent respiratory symptoms. The patient recently underwent left nephrectomy for a left non-functioning kidney, requiring prolonged intubation for seven days post-operatively due to septic shock and pneumonia. Stridor was first noticed 18 days post-extubation following an upper respiratory tract infection. On examination, she was stridorous, in severe respiratory distress and cyanosed with oxygen saturations of 60% (compared to her usual baseline of 85%). Her voice was hoarse. Chest X-ray revealed subglottic narrowing, suggesting subglottic edema or stenosis. She was treated as atypical croup with nebulised adrenaline, nebulized budesonide, and oral dexamethasone, with improvement in her respiratory status. However, her biphasic stridor and voice hoarseness persisted over the next two weeks. A bronchoscopy was performed which revealed bilateral vocal cord palsy and salivary aspiration into her airways. Bilateral vocal cord palsy was most likely acquired from prolonged intubation, with her symptoms exacerbated by a respiratory virus infection. This condition affects breathing, phonation, and increases the risk of aspiration.

Conclusion: In children presenting with stridor beyond the typical age group for croup, it is important to consider structural causes of upper airway obstruction. A persistent stridor which develops in a child with no recent airway concerns should always be investigated for with bronchoscopy.

MP09

Use of functional endoscopic evaluation of swallowing in clinical practice

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Case report: We present a 23-month-old female toddler born to second-degree consanguineous parents with moderate pectus excavatum, and a persistent inspiratory stridor. The patient was seen post-mandibular reconstruction for retrognathia. She also had failure to thrive, global developmental delay, and dysmorphism with no unifying diagnosis, and was on gastrostomy feeding for presumed swallowing difficulties. The patient underwent bronchoscopy to investigate her respiratory symptoms. This revealed absent epiglottis and rudimentary aryepiglottic folds. There were concerns about her ability to protect her airways from aspiration, but her parents were keen for oral feeding following mandibular reconstruction. To evaluate her risk of aspiration, functional endoscopic evaluation of swallowing (FEES) was performed with a 2.8mm diameter bronchoscope with the toddler sitting on the mother's lap. The scope was passed trans-nasally into the hypopharynx. Different consistencies of food boluses were fed to the patient. The ability to sustain airway protection and initiate a prompt swallow without spillage of material into the hypopharynx was directly visualised, showing no evidence of aspiration. She was trialed on small

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quantity of oral feeds with increasing consistency for non-nutritive oromotor stimulation, thus improving her quality of life.

Discussion: Congenital hypoplasia or aplasia of epiglottis is a rare anomaly, caused by interruption of epiglottis formation early in intrauterine life, and can lead to recurrent aspiration. FEES safely demonstrated the absence of penetration and aspiration in this child with absent epiglottis. This case underlines the usefulness of FEES as a tool for studying swallowing in children at risk of aspiration.

MP10

Bilateral simultaneous spontaneous pneumothorax: The case for prompt clinical examination and management

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Case report: A 16 years-old Chinese adolescent non-smoker with unremarkable past history of respiratory disease or injury presented to the emergency department with left-sided chest pain and shortness of breath. On examination, the patient was in moderate respiratory distress. He was afebrile with a heart rate of 102 beats per minute, blood pressure of 112/73 mmHg, respiratory rate of 28 breaths per minute and oxygen saturation of 97% on room air. The trachea was midline. Lung percussion and auscultation revealed bilateral hyper-resonance and decreased air entry respectively. An urgent chest radiograph showed bilateral pneumothorax with complete collapse of the left lung. Bilateral chest tubes were inserted with full expansion of the right and near complete expansion of the right lung. The patient underwent video-assisted thoracoscopic partial

wedge resection and parietal pleurectomy bilaterally with good results.

Discussion: Simultaneous bilateral spontaneous pneumothorax (SBSP) is uncommon, but potentially life-threatening. It occurs in up to 5.2% of reported cases of spontaneous pneumothorax. It has been described in association with infections and congenital disease, but rarely in previously-healthy individuals. Spontaneous primary pneumothorax may occur following rupture of pre-existing subpleural blebs/bullae. The mechanism of bullae formation remains unclear. In contrast to unilateral pneumothorax, bilateral spontaneous pneumothorax presents difficulties in diagnosis. A good clinical examination followed by chest radiography aids in definitive diagnosis. This case report demonstrates the importance of good clinical examination and prompt diagnosis of SBSP to direct treatment quickly.

MP11

Demographics and Feeding Behaviours of Children presenting to an Interdisciplinary Feeding and Nutrition Clinic.

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Background: The interdisciplinary feeding clinic at the National University Hospital is organized as a one-stop clinic to assess and manage children with a range of feeding difficulties. Members of this interdisciplinary team include paediatricians, dietitians, speech pathologists, and psychologist.

Objectives: To describe the demographics and feeding behaviours of children seen at this interdisciplinary clinic and their parents' coping strategies.

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Methods: Retrospective chart review of children who have been assessed in this clinic since its inception in November 2012 till March 2015.

Results: One hundred and six children were assessed; 62(58.5%) male, 19.8% were ex-preterm infants, median (range) age 27.5 (1 – 168) months. The main reasons for referral were feed refusal (46.2%), picky/selective eating (24.5%), tube feeding/ swallowing dysfunction (15.1%) and failure to thrive (14.2%). After evaluation, 70 (66%) children were found to have a behavioural cause contributing to their feeding difficulties, 29 (27.4%) had gastro-esophageal reflux disease, and 40 (37.7%) had underlying complex medical conditions (e.g. underlying syndrome(11), neurological abnormalities(10), complex congenital cardiac disease(5)). 32.2% of patients had more than one diagnosis. Parents used a combination of coping strategies to deal with their child's feeding issues. These included distraction techniques (62.2%), giving preferred foods (60.4%), coaxing (51.9%) and punishment (19.8%).

Conclusions: Feeding difficulties are often multi-factorial. Children born prematurely or with underlying chronic medical conditions may be at increased risk. Care-givers are often stressed by their child's feeding difficulties and resort to negative coping strategies.

MN01

Antenatal And Perinatal Risk Factors For High Grade Intraventricular Hemorrhage: A 10 – Year Retrospective Review Of Very Low Birthweight Infants In Singapore General Hospital

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Objective: The purpose of this study was to

identify variables affecting the risk of high grade IVH using a retrospective cohort study.

Methods: 573 VLBW infants were identified from January 2002 to Dec 2012. Out of 573, there were 50(8.7%), 38(6.6%) and 485(84.6%) infants with low grade IVH (Grade 1 and 2), high grade IVH (grade 3 or 4) and no IVH respectively. Maternal factors, labour and delivery characteristics and neonatal parameters were collected. One way ANOVA were used for the continuous variables and Chi-square/Fisher's exact test were for categorical variables.

Results: Risk factors for severe IVH were maternal pyrexia, multiple gestations and male gender with P-value=0.024. Low 1 and 5 minutes APGAR Score, lower birthweight, lower gestational age, high requirement of fractional inspiratory oxygen (FiO₂), mean airway pressure (MAP) on mechanical ventilation, hyaline membrane disease, pulmonary haemorrhage, patent ductus arteriosus (PDA), hypotension requiring inotropes, hypoglycaemia and air leak with P-value <0.001. Antenatal steroid decreases the risk of IVH with P-value 0.02.

Multivariable ordinal logistic regression showed that male gender (adjusted OR 1.73; 95% CI:1.03 – 2.94; P-value 0.04), High FiO₂ (adjusted OR 1.02; 95% CI : 1.01-1.03 P-Value 0.001), pulmonary haemorrhage (adjusted OR 2.98; 95% CI : 1.09-7.78; P-Value=0.028) and hypoglycaemia (adjusted OR 2.34; 95% CI : 1.36-4.02; P-Value = 0.002) were associated with greater risk of high grade IVH .

Conclusion: Male ELBW infants born to a mother with pyrexia, who has no antenatal steroids, low gestational age, low birth weight, low APGAR Scores, high FiO₂ requirement, HMD with surfactant, pulmonary haemorrhage, hypotension and hypoglycaemia are at increased risk of high grade IVH.

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MN02

Incidence, Risk factors, Management and Outcomes For Premature Infants < 34 weeks with Persistent Pulmonary Hypertension of the Newborn

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Objectives: To review Persistent Pulmonary Hypertension of the Newborn (PPHN) in the premature infant < 34 weeks in terms of incidence, risk factors, management and outcomes

Methods: Prospective cohort study conducted from Aug 2012 to Apr 2015.

Inclusion criteria: gestation < 34 wks admitted to SGH, comparing those with diagnosis of PPHN by echocardiography by presence of:

- Right to left shunts on PDA and/or ASD/PFO
- Right ventricular systemic pressure > ½ of systemic pressures

Compared to controls without PPHN.

Results: A total of 290 infants satisfied inclusion criteria, with 3.8% (n=11) having PPHN. Risk factors differ from higher gestation PPHN. Maternal risk factors include: cardiac diseases, renal diseases and histological/culture proven chorioamnionitis. Neonatal risk factors include lower gestation, birth weight, 5 min Apgar scores and need for intubation/chest compression at birth. It was more likely to be associated with hyaline membrane disease, worse metabolic acidosis as defined by (BE) and higher oxygen requirements within first 12 hours of life. CRIB, CRIB2 scores and worst base excess(BE) within the 1st hour were significantly predictive.

73% of premature PPHN were managed with nitric oxide, with significant longer duration of rescue HFOV and inotropes required. However, significant

higher morbidities and mortalities were still detected compared to controls, as defined by BPD, grade 3 IVH, PVL, ventriculomegaly, coagulopathy, ROP, nosocomial pneumonia, oral aversion and oropharyngeal dysphagia.

Conclusion: PPHN with < 34 wks gestation infants represents a significantly much higher risk for multiple morbidities and mortalities, requiring close long term follow-up.

MN03

Summative Assessment Using Competency Based Testing (CBT) To Assess Improvement Before and After E-Learning Implementation for the Singapore Neonatal Resuscitation Course

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Objectives: To assess the impact of the introduction of E learning on cognitive knowledge of neonatal resuscitation in a provider teaching course compared to lecture teaching and self reading.

Methods: Prospective cohort study to assess the impact of E learning on cognitive knowledge of neonatal resuscitation, by conducting summative assessment using a set of 60 scrambled multiple choice questions constructed using competency based testing percepts.

All participants for SNRC Provider Courses between Jan 2013 till Jul 2014 were included, comparing controls in 3 pre-E learning courses with those in 5 post-E learning courses. Primary outcomes were test scores and 80% passing rates, before and after E learning. Secondary outcomes included identification of subgroups most likely to benefit,

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and to identify strengths and weaknesses using core competencies.

Results: A total of 157 participants were included, with 67 controls compared to 90 E-learning. Test scores improved from median of 83% to 87% ($p=0.09$). Among doctors, passing rate improved from 88.1% to 98.2% at first attempt ($p=0.04$). Improvement was particularly marked if the doctor is not practicing in a public hospital neonatal unit, with passing rates increasing from 58.3% to 100.0% ($p=0.04$). The competencies showing significant improvement after E learning were principles of resuscitation and special conditions incorporating prematurity, post resuscitation care and ethics. There was a trend towards significance in the intubation/airway competency ($p=0.06$).

Conclusion: Doctors benefited significantly from E learning, particularly doctors who were not in public tertiary neonatal units.

MN04

Isolated Fourth Ventricle As An Early Complication Of Post Meningitic Hydrocephalus In An Extremely Preterm Neonate- Management Challenges

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Introduction: Isolation of the fourth ventricle as a late complication of post-haemorrhagic hydrocephalus (PHH) / post-meningitic hydrocephalus (PMH) has been reported in the paediatric population. However, entrapment of fourth ventricle in the neonatal period is a uniquely challenging entity.

Methods: We report the case of 890gram neonate born at 25weeks gestation secondary to maternal *Pseudomonas* chorioamnionitis .Fulminant neonatal *Pseudomonas* septicemia - meningitis ensued and complicated further by unilateral subdural effusion and a rapidly progressive disproportionately enlarged fourth ventricle. The conundrum of identifying raised posterior fossa pressure, diagnostic challenges and management options to limit long-term adverse neuro-developmental outcomes are discussed.

Results: Cranial ultrasonography corroborated MRI Brain report - left subdural effusion , midline shift of cerebral structures and a disproportionately enlarged fourth ventricle. Decompression of subdural collection done was complicated by migration of the catheter tip which was subsequently removed. Serial neuro-sonography showed progressively enlarging disproportionate fourth ventricle with extensive encephalomalacia of the left cerebral hemisphere. Clinically, infant manifested with episodes of neck arching, apnoea, differential tone patterns between upper and lower limbs. A Rickham reservoir was inserted at post-menstrual age of 32 weeks gestation to facilitate frequent CSF tapping; thereby alleviate the raised posterior fossa pressure. A definitive fourth ventricle ventriculo-peritoneal shunt was inserted at post-menstrual age of 36 weeks gestation.

Conclusion: Isolated fourth ventricle as a neonatal complication can pose various management challenges. Clinicians should be vigilant to identify subtle neurological manifestations. Prompt decompression of the posterior fossa is recommended to minimize potential adverse long-term neurological outcome.

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MN05

A Tale Of Two Epochs: Revisiting Meconium Aspiration Syndrome – Incidence, Risk Factors And Management

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Objective: To review the incidence, risk factors, and management of meconium aspiration syndrome (MAS) in the contemporary era, compared to 1990s.

Methods: Retrospective cohort study on neonates admitted to SGH from January 2012 - February 2015 (epoch II) with meconium-stained amniotic fluid (MSAF). MAS was defined as respiratory symptoms in neonates born through MSAF with abnormal chest-radiograph, which cannot be otherwise explained. Comparison was made with published data from Jan 1991- Dec 1993 (epoch I).

Results: Among 4,255 livebirths in epoch II, 495 (11.6%) had MSAF, 23(0.5%) developed MAS. Compared to epoch I with 12,268 livebirths, 1893(15%) had MSAF, 174 (1.4%) developed MAS. There was a reduction in MSAF OR0.72, 95%CI[0.65-0.80] and MAS OR0.38, 95%CI[0.24-0.58]. There was no mortality, compared to 2% mortality in epoch I. Multiple logistic-regression showed Apgar scores at 1 minute and thick MSAF to be independent predictors for MAS. Others included foetal distress, caesarian delivery, non-vigorous and needing active resuscitation at birth. 34% were acidotic at birth and complications associated with MAS included air leak syndromes(21.7%), persistent pulmonary hypertension(13%), hypoxic ischaemic encephalopathy(4.3%), coagulopathy(4.3%), severe thrombocytopenia requiring transfusions(17.4%) and neonatal jaundice requiring phototherapy(43.5%). 18(78.3%) of MAS infants required respiratory support, of which 8(34.8 %)

required invasive ventilatory support. Median length of inpatient stay was 7 days for MAS and 2 days without.

Conclusion: There was a decline in the incidence of MAS which potentially reflects better obstetric and neonatal care. Apgar scores at 1 minute and thick MSAF were the most reliable predictors for developing MAS.

MN06

Epidermolysis Bullosa (EB) A Case Report Of Blisters In A Neonate

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Epidermolysis bullosa is a group of complex inherited bullous disorders with incidence rate of 20 per 1 million live births. Characterized by painful blister formation from mechanical trauma to the skin, it is caused by mutations within the genes that encode the structural protein that reside within the epidermis, dermoepidermal junction, or uppermost papillary dermis with corresponding clinical classifications of EB simplex, junctional EB and dystrophic EB respectively. Blister formation is determined by the site where the protein mutation is located. EB is diagnosed by genetic analysis, transmission electron microscopy and immunofluorescence antigenic mapping.

This is a case report of EB in a term baby born from a non-consanguineous marriage. At birth, baby was noted with extensive skin erosions on all four limbs and the back. The infective markers were unremarkable and blood culture was negative. Baby was treated with intravenous Penicillin, Cloxacillin and Gentamicin. Daily wound dressing with non-adherent dressings was performed with oral morphine and paracetamol prescribed for analgesia. Patient was referred to Dermatology Service with the suspicion of EB. Immunofluorescence mapping performed on a

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fresh blister confirmed the diagnosis of non-Herlitz Junctional Epidermolysis Bullosa, caused by deficiency in collagen XVII (BP 180). Hospital stay was complicated by Coagulase-negative staphylococcal sepsis on day 13 of life. Intravenous Vancomycin therapy had to be converted to oral clindamycin due to poor venous access.

Treatment of EB is mainly supportive. It entails avoidance of trauma, blister and wound management, treatment of infections and nutritional support. Prognosis varies with disease severity.

MN07

Increased Osmolality of Milk Feeds with Medications - Implications for the Premature Infant

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Objective: Milk feeds of high osmolality (>450mOsm/kg) predispose to necrotising enterocolitis (NEC), which has devastating consequences, in premature infants.

1. To determine the osmolality of 14 commonly used medications when administered with milk feeds.
2. To determine the optimal dilution of these medications, in 4 different diluents, to keep the osmolality within the safety threshold.

Methods: Osmolality of 14 neonatal medications, diluted using four different diluents (water, breast milk (EBM), breast milk with fortifier (HMF) and preterm formula), were measured utilizing the

Advanced TM Micro-osmometer Model 3300 based on freezing point depression. Three separate readings within ± 2 mOsm/kg were obtained for consistent results. The medications include caffeine citrate, calcium glubionate, domperidone, folic acid, hydrochlorothiazide, ibuprofen, Iron, multivitamin, omeperazole, phenobarbitone, potassium phosphate, sodium chloride, sodium phosphate and ursodeoxycholic acid. Dose-effect curves were plotted for each medication in each of the four diluents. The volume of each diluent that must be added to each medication to keep the osmolality: ≤ 450 mOsm/kg was then calculated. Data analysis was done using SPSS.

Results: Among the diluents, fortified EBM had the highest osmolality 401mOsm/kg. Of all medications only phenobarbitone and folic acid had osmolality lower than the diluents. For the remaining 12 medications, an indirect curvilinear relationship between increasing dilution and osmolality was observed and the optimal dilution to keep the drug/diluent osmolality was determined. A highest dilution of up to 1:25 to 1:50 was required for calcitonin, sodium chloride, ibuprofen and ursodeoxycholic acid. Iron hydroxide polymaltose, folic acid, hydrochlorothiazide and sodium phosphate required only a dilution of 1:3 to 1:7.

Conclusion: 12 of the 14 medications had very high osmolality. These observations provide information for optimizing and standardizing the dilutions for medications used in neonatal feeding practice and thereby improves safety and minimizes the risk of NEC in premature infants.

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MN08

Postnatal outcomes of antenatal renal pelvis dilatation over 14 years in a tertiary hospital in Singapore

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Objectives: Antenatal renal pelvis dilatation is a common foetal anomaly, with an incidence of 1-5% in all pregnancies. This study aims to identify the clinical outcomes/prognosis of infants with antenatal renal pelvis dilatation (ANRPD) in relation to the degree of prenatal dilatation and postnatal ultrasonography, as well as to determine the local occurrence of ANRPD. Currently, there are no universal guidelines on the management and follow-up on infants with ANRPD.

Methods: We retrospectively reviewed case notes of infants born from November 2001 to March 2014 in Singapore General Hospital. We identified infants with an anteroposterior pelvic diameter (APPD) of 5mm or greater after a 20-week screening scan and reviewed postnatal ultrasound as well as follow-up imaging (ie. DMSA, MCU, MAG3) and compared their outcomes.

Results: We identified 138 infants with ANRPD, with an incidence of 0.7%. Majority of the subjects were term (88.4%) and male (76.8%) infants. Amongst these, 75 (54.3%) and 34 (24.6%) infants had normal (median APPD 7mm) and abnormal (median APPD 8mm) postnatal ultrasound findings respectively. Twenty-nine infants (21.0%) were lost to follow-up. Sixty-five infants required further postnatal imaging including DMSA, MCU and MAG3 scans, but only 6 infants (4.3%) had significant vesico-ureteric reflux or pelvi-ureteric junction obstruction requiring surgical intervention.

Conclusion: This study provides valuable data on infants with ANRPD, which will guide clinicians in

the management and follow-up of such infants, so as to strike the right balance between excessive investigations, yet sufficient enough to identify and diagnose clinically significant ANRPD.

MN09

Smaller 25G Needle Resulted in Fewer Traumatic Lumbar Punctures in Neonates Less than 2500g

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Aim: To review whether the introduction of smaller 25G needle resulted in less traumatic lumbar puncture taps compared to the standard 23G needle.

Methodology: Retrospective cohort study comparing all lumbar punctures (LP) performed between Jul 2014 to May 2015 in neonates admitted to Singapore General Hospital. Smaller 25G needles were used from 20 Dec 2015. Comparisons were made using LPs performed using 25G compared to 23G needles. Primary outcome was traumatic LP taps defined as CSF samples that were grossly bloody in appearance as well as those with >200 RBC on microscopy.

Results: A total of 49 LPs were included. After multivariate analysis (variables included were gestational age, birth weight, weight of child when LP was performed, post menstrual age (PMA) of child when LP was performed, gender and type of needle used), 25G needle was independently associated with a lower incidence of traumatic taps compared to 23G needle (adjusted OR 0.11, 95% CI 0.03 to 0.42).

After stratifying for weight of child when LP was performed (<2500g and ≥2500g), the association between 25G needle and lower incidence of bloody

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tap only remained in the group < 2500g at the time the LP was performed, suggesting that 25G is more effective in reducing the incidence of bloody tap in the smaller neonates.

Conclusion: 25G needles were independently associated with lower incidence of traumatic LPs, and this effect was especially significant for weight less than 2500g at time of LP.

MN10

Managing Neonatal Structural Heart Disease

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Objectives: Post-operative management of neonatal structural heart disease requires a multidisciplinary approach. We present the outcomes of patients with neonatal structural heart disease who underwent post-operative care at our neonatal intensive care unit (NICU).

Methods: Data was retrospectively collected from January 2010 to December 2014 from our NICU admission books. All patients with structural heart disease were included.

Results: From January 2010 to December 2014, 76 patients underwent surgical management of which 61.8% were male with a mean ($\pm$ SD) gestational age of 38+3 weeks ($\pm$ 1+4 weeks) and mean birth weight of 2921g ($\pm$ 548g). The most common conditions managed included Transposition of Great Arteries (30.2%), Pulmonary Atresia with Intact Ventricular Septum (14.5%), Coarctation of Aorta (10.5%), Ventricular Septal Defect (9.2%) and Total Anomalous Venous Drainage (6.5%). The Arterial Switch Operation (23.7%) and Blalock

Taussig Shunt insertion (23.7%) were the most common surgical interventions, followed by Coarctation Repair (10.5%) and Ventricular Septal Defect repair (9.2%) with an overall mean RACHS-1 surgical complexity score of 3.1 (medium complexity). Overall post-operative survival was 93.4% (98.6% survival in patients who underwent low or medium complexity surgery) with a median hospitalization stay of 22 days. Of the 5 patients who died, 4 patients (Hypoplastic Left Heart) underwent high complexity surgery by RACHS-1 and ABC scoring (5 and 14.5 respectively) and 1 patient had surgical intervention for obstructed Total Anomalous Pulmonary Venous Drainage.

Conclusion: A variety of neonatal structural heart diseases including those with complex cardiac anatomy were managed at our NICU with good outcomes.

MN11

Aortic thrombus causing ischaemic bowel mimicking as necrotizing enterocolitis in a premature neonate

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Spontaneous neonatal aortic thrombus is rare. Clinical presentation varies depending on the location of the thrombus. We report a case of a premature infant with ischaemic bowel likely due to an aortic thromb-embolic event.

A premature male infant with gestational age (GA) of 25+6 weeks was admitted to the neonatal intensive care unit for his prematurity-related illness. On day 72 of life, 36+1weeks corrected GA, he presented with acute abdominal distension,

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hypotension and respiratory distress. Due to clinical deterioration and concerns for necrotizing enterocolitis (NEC), he underwent an exploratory laparotomy. Intraoperative findings revealed a 'wedge-shaped' infarct suggestive of segmental ischaemic small bowel along with thrombosis of mesenteric vessels, thus the segment of ischaemic small bowel was resected and stoma was created. Hence, a Doppler ultrasound was done to investigate the source of the thrombus, and it revealed a 2 cm infra-renal aortic thrombus. Of note, an umbilical artery catheter was placed during his first week of life. He was treated with subcutaneous enoxaparin, with effective reduction in the thrombus size in subsequent scans. However, this treatment was complicated by bilateral subdural haematoma, hence enoxaparin was discontinued. The infant has a residual small thrombus and does not require further treatment. The subdural haematoma had also improved.

Aortic thrombus, although rare, should be considered in the differential diagnosis of an acute abdomen. Management of neonatal aortic thrombus remains controversial and further studies are required to aid clinicians in deciding the best management plan with minimal risk and optimal outcome.

P01

Premature infants less than 34 weeks: Predictive respiratory related risk factors for oral feeding difficulties

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Introduction: Oral feeding as a physiologic competency is often the last hurdle a preterm infant has to cross before discharge to home,

therefore prolonging hospitalisation. The suck:swallow:breathe (SSB) triad is a complex sensorimotor coordination process and preterm infants often have underlying physiological conditions that compromise their ability to coordinate. A prospective study was conducted to identify the respiratory related risk factors for SSB incoordination (SSBI) in preterm infants < 34 weeks gestational age.

Methods: All infants with gestation < 34 weeks at birth admitted to SGH from January 2012 to January 2015 were reviewed for respiratory related incidence and risk factors, clinical course and length of stay. Infants with SSBI as diagnosed by a paediatric speech therapist were compared to those without SSBI.

Results: 276 infants were included, with 85 diagnosed with SSBI (30.8%). Various respiratory related risk factors were found. They included having a history of intubation, diagnosis of hyaline membrane disease and bronchopulmonary dysplasia as well as having increased duration of respiratory support. Respiratory support included high frequency ventilation, conventional mechanical ventilation, continuous positive airway pressure and nasal oxygen. A longer level three and level two duration of stay were also associated with SSBI.

Conclusion: Infants with SSBI had increased length of stay as compared with infants without SSBI. SSBI may be associated with various post natal respiratory risk factors.

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*P02

Nutrient contribution of growing-up milk to the diets of 3-year-old children in Singapore

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Objectives: Growing-up milk (GUM) is a milk-based formula fortified with nutrients for children. This pilot study aims to investigate the nutritional contribution of GUM to the diet of children in Singapore.

Methods: Diets of 70 Chinese children were collected using 24-hour food recall, with weekday and weekend diets as part of the sample. Analysis was performed on a subset of GUM consumers. The nutrient contribution of GUM to the diet was assessed, and modelling was performed to evaluate the replacement of GUM with unfortified whole milk (WM) and reduced-fat milk (RFM).

Results: GUM contributes 28.9% of calories, 24.9% protein, 26.7% carbohydrate and 36.6% fat to the diet. GUM accounts for 64.4% calcium, 56.6% vitamin D, 33.8% linoleic acid, 34.3% linolenic acid and 35.0% DHA.

Compared to the WM diet, GUM diet provided 5.2% more calories with 10.9% less saturated fat. It also supplied 43.9% more vitamin D, 19.8% more linoleic acid and more iron, folate and zinc. In WM diet, the recommended intakes for vitamin D and folate will not be met.

Compared to the RFM diet, GUM diet contributed 48.4% more vitamin D, 33.8% more linoleic acid, 34.3% more linolenic acid and more iron, folate and zinc. In RFM diet, the recommended intakes for linoleic acid, linolenic acid, vitamin D and folate will not be met.

Conclusion: GUM helps children meet nutrient recommendations better than WM and RFM. Being nutrient-dense, GUM is a practical and convenient option to provide key nutrients to support overall growth and development, especially of the brain and bone.

P03

Profile of Hepatitis B carrier mothers and infants born in KKH

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Introduction: Perinatal transmission is the predominant mode of hepatitis B virus (HBV) transmission. Maternal carriage of HBV is estimated at 2-3 per 100 deliveries recently. The aims of this study were to compare the characteristics of HBV Carrier mothers and also the immunoprophylaxis program efficacy.

Method: This is a prospective cohort study from KKH. Bio-demographic data of the mother and child were collected together with their vaccination records. Blood samples were taken from the children after completion of the 3 dose HBV vaccination schedule.

Results: 232 mothers were identified as chronic HBV carriers during the 1 year period from July 2013. The incidence of chronic carrier was 1.9 per 100 deliveries (232/12139 live births). 58(24.7%) children were recruited for our study. Rest of them defaulted or chose to be tested at the polyclinic. The mean maternal age was similar at 31.8 years old (subjects) vs 30.7 years old (p=0.349). Most were Chinese in origin. Hepatitis Be antigen positive mothers were similar (31% vs 23.6%) (p=0.469). The mean birth gestation age (37weeks vs 38 weeks), birth weight (3.08 kg vs 2.99 kg) and also gender ratio were similar between those

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studied and those not ($p > 0.05$). There was no case of perinatal transmission. However, 2(3.4%) children were non-immune and received booster vaccines.

Conclusion: Maternal carriage of chronic HBV was low at 1.9 per 100 deliveries. The patients were similar between those studied and those not with regards to both maternal or infants' demographics. Perinatal transmission was low in our study and we advocate for continued surveillance to determine evaluation of the perinatal HBV vaccination program.

P04

Food Practices and Use of Complementary & Alternative Medicine (CAM) in Children with Inflammatory Bowel Disease (IBD).

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Objective: Patients with IBD make dietary changes as a result of various food beliefs. Our study aimed to determine (i) CAM usage, (ii) specific food practices and (ii) food reintroduction patterns after exclusive enteral nutrition (EEN), in children with IBD.

Method: Parents of children with IBD were invited to participate in a questionnaire during scheduled outpatient appointments.

Results: Parents of 23 patients (n=11 male) between 4-19 years old completed the questionnaire. 14 had Crohn's disease (CD), 8 had ulcerative colitis (UC), and 1 had indeterminate colitis. 70% (n=16) used CAM; with probiotics, turmeric, fish oil the most widely used. 75% (n=12) had informed their child's paediatrician of CAM

use. Foods identified as triggers or avoided to prevent relapse included sausages, nuggets, dairy products, sugars, chili and gluten. 70% ate fruits less than once daily. 65% ate vegetables less than once daily. Forty-six percent of 13 subjects who took EEN (Modulen) found it helpful in achieving remission. Nine of them reported not having to increase their medications after food reintroduction. 46% agreed that it was challenging to reintroduce foods after completing EEN. Most reported rice as the first food reintroduced.

Conclusion: CAM use is prevalent in our local paediatric IBD population, with most being willing to inform their paediatrician of it. A large number of patients consume less than national recommended quantities of fruit and vegetables. Further studies to elucidate reasons behind these dietary choices and the efficacy of commonly used CAM such as turmeric may be warranted.

SP01

Case series: Bio-psychosocial profiles and inpatient intervention strategies of severely obese adolescents

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Objectives: The prevalence of obesity among adolescents is increasing. Few studies specifically look into the profile of severely obese adolescents, and no inpatient adolescent weight management programme has been evaluated locally. Five adolescents were admitted to KK Women's and Children's Hospital, Singapore, for inpatient management of severe obesity from 2011-2014. One of which was re-admitted. We aim to study the profile of these patients and evaluate the programme.

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Methods: Bio-psychosocial data of these patients was reviewed retrospectively. Intervention strategies applied were evaluated using quantitative markers obtained on discharge and subsequent outpatient follow-up.

Results: On admission, the mean age was 14.1 years (SD 2.73), and the mean body mass index (BMI) 61.5kg/m² (SD 9.86). They were admitted for duration of 4 days to more than 1 month. All five had financial difficulties and obstructive sleep apnea, with a mean Obstructive Apnea-Hypopnea Index (OAH) of 36.5/hr (SD 11.6). Four cases reported academic difficulties, although all had normal developmental histories. Inpatient weight management involved a multi-disciplinary approach, and the mean BMI on discharge was 59.4kg/m² (SD 9.81). Outpatient follow-up showed an overall steady decline in BMI for one case. Default and attrition rates were generally high.

Conclusion: Severe obesity in adolescents is a product of multiple factors, and is associated with severe medical and psychosocial co-morbidities. As the first locally evaluated inpatient weight management programme for severely obese adolescents, we believe that this case series contributes to the dynamic development of inpatient weight management services tailored to meet the needs of severely obese adolescents in Singapore.

*SP02

Impact Of Renal And Liver Replacement Therapy On Employability In Adolescent Patients

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Objectives: This study aims to determine the employability profile of patients who have had renal replacement therapy (RRT) and liver transplantation (LT) as children.

Methods: This cross-sectional study utilizes a custom-designed questionnaire with subjective and objective items (based on Hillage-&-Pollard, 1998): ability to gain and maintain employment. Renal/liver replacement therapy patients diagnosed for at least 6 months and not studying full-time were included. Those with cognitive deficits, mental illness, physical disability or prognosis less than 6 months were excluded. Questions were administered through telephone surveys by 5 investigators with standardized scripts.

Results: Of 61 eligible patients, 40 (9 LT, 17 renal transplant and 14 dialysis) responded. Median (range) age was 25 (17-36) years. Employment rate (65.0%) was comparable to Singapore census (67.0%), with 84.4% earning below the median salary (\$3033) for a similar age range (25-29 years). Diploma holders (32.5%) consist of the slight majority compared to Degree holders (32.0%) in Singapore.

40.0% of patients required accommodative measures at work; 63.5% took at least 1 sick leave/month (median, range 0-12). 62.5% had no paid sick leave. Career inflexibility was prevalent. Compared to LT recipients, fewer RRT patients (21.4% vs 66.7% p=0.048) felt they could switch jobs and more (77.4% vs 22.2%, p=0.004) felt disadvantaged during job applications. Overall, 55% had no additional skills training, and 67.6% saw no career path in their current job.

Conclusion: Our study reveals that children with RRT or LT struggle to find and maintain employment as adults. This highlights the need for better advocacy regarding accommodative measures and workplace practices. RRT patients

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could be a potential priority group in efforts to boost future employability.

SP03

Acute Cellular Rejection (ACR) and its influence on EBV (Epstein-Barr virus)-associated post-transplant lymphoproliferative disease (PTLD) in a South East Asian Cohort of paediatric liver transplant recipients.

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Objectives: PTLD occurs due to an unchecked proliferation of EBV-infected B cells with immunosuppressant use. As immunosuppression is often intensified after ACR, we investigate the association of ACR with PTLD and EBV viraemia.

Methodology: A retrospective cohort review was done of 97 liver transplants performed on 91 pediatric recipients, between 1991-2014. We tracked all biopsy-proven ACR episodes in the first post-transplant year, and biopsy-proven PTLD. In PTLD cases, only ACR episodes prior to disease onset were analysed. EBV viraemia was measured by plasma PCR. Median tacrolimus trough levels were measured in 3 time-periods post-transplant: month 1-3, 4-6, 7-12.

Results: The incidence of PTLD was 16.4%. PTLD cases were more likely to have prior ACR (33.3% vs. 27.6%)*, and earlier ACR (20.4 vs. 36 days post-transplant)* compared to non-PTLD cases. PTLD cases also had higher median tacrolimus levels across all 3 time-periods: month 1-3 (9.3 vs. 8.9)*, 4-6 (8.2 vs. 7.85)* and 7-12 (7.6 and 7.2)* (ng/mL). EBV viraemia was more prevalent after ACR than those without (46.2% vs. 39.4%)*. Patients with ACR also became viraemic earlier (5.31 vs. 9.57 months)*. Peak EBV titres were however lower in

patients with prior ACR (7.65x10⁴ vs. 1.70x10⁵) (copies/mL of plasma).

Conclusions: Patients with PTLD were more likely to have had ACR, occurring earlier post-transplant than non-PTLD patients. The increased immunosuppression as suggested by higher tacrolimus trough levels with ACR may predispose to PTLD. EBV viraemia occurred earlier with ACR, warranting early surveillance strategies.

[* p-value = NS]

*SP04

Implication of Cytomegalovirus (CMV) disease on short-term and long-term outcome of allograft function in paediatric liver transplant (LT) recipients.

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Objectives: CMV disease may contribute to increased mortality and morbidity in LT recipients. We aimed to determine the relationship between CMV disease and both short and long-term graft function in paediatric LT recipients.

Methods: Clinical records of 104 LT in 98 children transplanted between 1995-2014 were reviewed for presence of CMV disease and allograft rejection. Long-term liver allograft function was assessed at the 10-year mark post-transplant.

Results: The incidence of CMV disease was 20.4% (20/98). At least one episode of biopsy-proven allograft rejection occurred in 13 patients with CMV disease and 27 patients without CMV disease (65% vs 34.6%, p=0.02). There was no clear-cut association between onset of CMV disease and

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acute rejection, with 8/13 (61.5%) having their first episode of rejection before and 5/13 (38.5%) after CMV disease. There was no association between CMV disease and the number of rejection episodes ($p=0.108$). At 10 years post-transplant, 15/33 patients had normal LFT, of whom 6/15 (40%) had preceding CMV disease. The incidence of CMV disease in patients with abnormal LFT was 11.1% (2/18). The cause of abnormal LFT at 10 years post-transplant was diagnosed clinically in 5, and biopsy confirmed in 13; these included biliary pathology (7), autoimmune hepatitis (2), rejection (3), liver fibrosis (5) and portal vein thrombosis (1).

Conclusion: There was an association between the presence of CMV disease and occurrence of allograft rejection within the first year post-transplantation. However the occurrence of CMV disease did not appear to influence the total number of rejection episodes or long-term allograft outcome.

SP05

Pancreatitis in children

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Introduction: Literature has reported that pancreatitis in children can result in significant morbidity, with severe clinical complications (25%) and mortality (4%).

Objectives: This study aims to determine the clinical presentation and etiology of children with acute pancreatitis, and determine if there are differentiating features between those with idiopathic pancreatitis or underlying structural (pancreatic/biliary) abnormalities.

Methods: This is a retrospective chart review of children (≤ 18 years old) admitted to KKH or NUH for acute pancreatitis from January 2002 to December 2014.

Results: 92 patients were admitted. Median (range) age at presentation was 10.0 (1 – 18) years old. Abdominal pain (91.8%), especially in the epigastric area, and vomiting (54.1%) were the commonest presenting symptoms.

Main etiology of pancreatitis were idiopathic (39.1%), drug-induced (31.5%), biliary or pancreatic structural abnormality (17.4%), trauma (5.4%) and systemic disease (4.4%).

Children with structural abnormality presented at younger age compared to those with idiopathic pancreatitis (6.0 vs 11.5 years; $p=0.019$). They also had significantly higher alanine aminotransferase (ALT) (median 155.0 vs 23.0 U/L, $p=0.008$), aspartate aminotransferase (AST) (median 113.0 vs 28.0 U/L; $p=0.001$), and gamma-glutamyl transpeptidase (GGT) (206.0 vs 18.0 U/L; $p=0.012$) at presentation, and were more likely to have recurrent episodes of pancreatitis (1.75 vs 1.25; $p=0.023$).

Conclusion: The predominant symptoms of children with acute pancreatitis are not specific (abdominal pain and vomiting). Main etiologies include idiopathic, drug-induced and structural (biliary/pancreatic) abnormality. Patients with pancreatitis due to structural abnormalities present at a younger age, and had greater derangements in liver function tests.

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SP06

Cytomegalovirus Infection in Paediatric Liver Transplant Patients

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Objectives: Cytomegalovirus (CMV) disease post-liver transplant (LT) may result in patient and graft morbidity. The aim of this study is to determine the epidemiology of CMV disease in paediatric LT patients, and to evaluate if our change in anti-viral protocols decreased its incidence.

Methods: This is a retrospective study in children who underwent LT from 1991-2014. Short-course antiviral prophylaxis consisted of 3 weeks of intravenous ganciclovir whilst the long-course included an additional 2 months of oral acyclovir or valganciclovir.

Results: Ninety-nine children underwent 105 LT. Median age at LT was 2.02(0.35-19.7) years. Main indications for LT included biliary atresia (66.7%), metabolic disease (11.4%) and Alagille syndrome (5.7%). Pre-LT, 56 (53.3%) recipients were CMV IgG positive and 87(82.9%) donors were CMV IgG positive. 20.2% had CMV disease post-LT, with affected sites being the liver allograft(14), lung(2), colon(2), eye(1) and systemic(1). No patient died as a result of CMV disease. Patients given long-course antiviral prophylaxis tended to have more severe leukopenia (57.9% vs 44.2%, $p=0.22$). The median peak CMV DNA titres in 1 year post-LT was 1000(150-2.0E+06) copies/ml. Median peak CMV DNA titres was higher in patients with CMV disease compared to those without ($p=0.03$). There was no apparent difference in incidence of CMV disease with duration of antiviral prophylaxis (long-course 21.9%, short-course 14.6%, $p=0.36$). There was a trend that patients who did not receive

intraoperative blood transfusion did not get CMV disease(0/3 vs 18/77), although this was not statistically significant($p=0.48$).

Conclusion: CMV disease occurred in 19.0% of patients despite anti-viral prophylaxis. CMV disease resulted in significant morbidity but not mortality in our population.

*SN01

Risk factors and short-term visual and developmental outcomes of infants with severe Retinopathy of Prematurity

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Objective: To evaluate factors associated with severe Retinopathy of Prematurity (ROP) in very low birth weight (VLBW) infants born in National University Hospital (NUH). Secondary aims were to compare neurodevelopmental and ophthalmologic outcomes between cases with severe ROP and controls with mild or no ROP.

Methodology: Retrospective case-control study of VLBW infants born over 13-years in NUH. Seventeen cases with severe ROP requiring laser treatment were each matched for gestational age with two controls with no or mild ROP. Antenatal, perinatal and postnatal variables, as well as childhood neurodevelopmental and ophthalmologic outcomes, were collected from their clinical records and analyzed using SPSS.

Results: Factors that showed significant positive associations (p -value <0.05) for severe ROP included culture-proven sepsis (OR 5.63), necrotizing enterocolitis (OR 10.15), gastrointestinal perforation (OR 1.31), increased number of blood transfusions (median of 4 vs 2 in cases vs controls), chronic lung disease at 36 weeks

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(OR 4.11) and increased duration of intubation (median of 20 days vs 5 in cases vs controls). Those with severe ROP had more marked developmental delays requiring early intervention and special education. None of the infants had blindness or retinal detachment, but cases had a higher incidence of myopia, squints and poorer visual acuities in early childhood.

Conclusion: Neonatal sepsis, necrotizing enterocolitis and perforation, increased episodes of blood transfusions and chronic lung disease are factors significantly associated with severe ROP in VLBWs, consistent with findings in other studies. This study also highlights the importance of long-term ophthalmologic and developmental surveillance for these high-risk children.

SN02

Prospective cohort study to compare the correlation between non-invasive transcutaneous bilirubin (TcB) and total serum bilirubin (TSB) measurements among term and preterm neonates before, during and after phototherapy

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Objectives: To determine the level of agreement between transcutaneous bilirubin (TcB) measurements and total serum bilirubin (TSB) in term and preterm neonates before, during and after phototherapy

Methods: Term and preterm neonates with suspected jaundice or undergoing routine jaundice screening were recruited. Eligible neonates had serum bilirubin obtained via capillary puncture and

TcB assayed using the JM-105 measured from 3 sites (forehead, sternum, interscapular), forming paired readings. Patient characteristics and hours of life the bilirubin was assayed were recorded.

Results: From March-May 2015, 816 paired readings (505 term, 311 preterm) were recorded from 276 neonates (212 term, 55 preterm). The ICC of TcB assayed from the 3 sites was 0.94, 0.72 and 0.96 before, during and after phototherapy. Mean difference (TcB - TSB) before phototherapy was 0.14 μ mol/L (forehead), 4.96 μ mol/L (sternum), 3.15 μ mol/L (interscapular) in preterm neonates and 7.92 μ mol/L (forehead), 3.57 μ mol/L (sternum), -2.78 μ mol/L (interscapular) in term neonates. After phototherapy, it was -19.68 μ mol/L (forehead), -2.23 μ mol/L (sternum), 0.90 μ mol/L (interscapular) for preterm and -2.40 (forehead), -3.02 (sternum), -5.35 μ mol/L (interscapular) for term neonates. Using a clinically acceptable difference of $\pm 50\mu$ mol/L, the Bland-Altman-plots analysis showed good agreement between TcB and TSB before and after phototherapy, but poor agreement during phototherapy in both term and preterm neonates. Multivariate analysis showed that skin colour contributed significantly to difference in TcB and TSB, with Malays and Indians showing higher positive difference than Chinese.

Conclusions: While transcutaneous bilirubin measurements are not reliable during phototherapy, it can be an effective tool for screening and monitoring of jaundice before/after phototherapy given the good agreement.

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SN03

Renal Ultrasonography is Required in Infants with Isolated External Ear Anomalies

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Introduction: Minor ear anomalies are frequently detected during routine newborn screening, and have been associated with renal and urinary tract malformations. However, there is conflicting evidence regarding routine renal ultrasound screening to exclude congenital anomalies of the kidneys and urinary tract (CAKUT) in the presence of isolated external ear anomalies.

This study aims to delineate characteristics of a child with isolated external ear anomalies that suggest greater risk of CAKUT, and determine the incidence of CAKUT within this population.

Methods: Infants with isolated external ear anomalies born over a 10-year period (Jan 2004-Dec 2014) were studied. Data including birth weight, gestational age, type of ear anomaly, renal ultrasound findings, hearing screen results and clinical outcomes were obtained from case records.

Results: Of 471 children with isolated external ear anomalies, 20(4.2%) had CAKUT. The commonest types of ear anomalies were pre-auricular skin/cartilaginous tags(95.1%) and pre-auricular sinuses(4.0%). Renal ultrasound scans were performed in 28%(n=132) of them at 2.0±3.4 months. The commonest types of CAKUT were pyelectasis(n=19) and hydronephrosis(n=2). These children were more likely to be male, have abnormal antenatal scans at 20 weeks, and associated with other minor congenital anomalies compared to those without(p<0.05). 85%(n=17) of children with CAKUT had mild clinical disease with resolution, 4(20%) required prophylaxis for recurrent urinary tract infections and 1(5%)

required surgical correction for hydronephrosis. 17(3.7%) had significant hearing impairment.

Conclusion: Our study shows that isolated external ear anomalies in infants may be a marker of renal and urinary tract abnormality, and ultrasound screening is recommended to exclude CAKUT in such infants.

SN04

Role Of Intravenous Immunoglobulin In The Management Of Transient Neonatal Myasthenia Gravis

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Introduction: Myasthenia gravis (MG), is a rare presentation in neonatal period. It can either present as congenital MG or as transient neonatal myasthenia gravis(TNMG) which occurs in infants born to women with acquired MG through passive-transfer of acetylcholine receptor(AChR) antibodies.

Case Report: Term male infant born to mother with history of MG on pyridostigmine, was delivered by caesarian section for decreased fetal movements and polyhydramnios. Baby had no respiratory effort at birth requiring positive pressure ventilation. Clinical examination revealed profound generalized hypotonia with absent moro reflex. AChR antibody titres were elevated(344nmol/L). Attempts to wean the baby off ventilator were elevated(344nmol/L). Attempts to wean the baby off ventilator were unsuccessful and hence anticholinesterase agent, pyridostigmine was started on day 22 of life. Though the baby was able to be extubated to room air, he continued to be hypotonic and symptomatic

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requiring intragastric feeding and frequent oropharyngeal suctioning. On day 38, Intravenous Immunoglobulin (IVIG) infusion was administered at a dose of 2gm/kg over 3 days. Following IVIG infusion, there was improvement in tone and decrease in secretions and the AChR antibodies titres decreased (44nmol/L). Repeat course of IVIG was administered on day 60 resulting in remarkable clinical improvement. Infant was discharged on intragastric feeds and maintenance dose of pyridostigmine.

Conclusion: IVIG has had very limited use in TNMG. Literature review shows only 2 reported cases that used IVIG in the treatment of TNMG. In conclusion, IVIG, in addition to pyridostigmine may hasten the clinical recovery process and shorten the hospital stay in infants with TNMG. However, the role of IVIG in the management of TNMG needs further study.

4th Singapore Paediatric and Perinatal Annual Congress

(In conjunction with the 7th Singapore Paediatric Congress and Singapore Paediatric Nursing Congress)

Saturday, 25 July 2015 | Grand Copthorne Waterfront Hotel, Singapore

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ORAL PRESENTATION - ABSTRACTS

OP-01

Chloral hydrate is more effective than Melatonin in inducing sleep for sleep-deprived children undergoing paediatric EEG

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Objectives: To compare the efficacy of Chloral hydrate versus Melatonin in inducing sleep for paediatric patients undergoing electroencephalography (EEG)

Methods: This is a retrospective review where children and adolescents between 1 to 18 years old who were scheduled to undergo elective EEG test were studied using 2 medications given to induce sleep. Chloral hydrate (40mg/kg) was given over a 2-year period from April 2011 – March 2013, while Melatonin (21st Century 3mg tablets) was given from April 2013 – March 2015. Prior to the EEG, simple partial sleep deprivation instructions were given to all patients. Patients who had global developmental delay (GDD), learning disability (LD) or autism were identified.

Results: There were 181 patients in the Chloral hydrate group and 134 in the Melatonin group. Overall, 98% slept with Chloral and 92% slept with Melatonin, with this being statistically significant ($p=0.0164$). A sub-group analysis was then performed for patients who had partial sleep deprivation on the night prior to the EEG test versus those who did not. Following partial sleep deprivation, the comparison of the 2 groups showed similar results and was statistically significant ($p=0.0138$). With no sleep deprivation, the difference in results was not statistically significant. Among those with sleep deprivation

and given Melatonin, 7 out of the 31 patients who had either GDD/LD/Autism did not achieve sleep, while all 21 such patients who were given Chloral instead achieved sleep.

Conclusion: When implemented together with partial sleep deprivation, Chloral hydrate is more effective than Melatonin in inducing sleep for EEG studies in paediatric patients.

OP-02

Elevated HbA1c during Pregnancy in Diabetic Women as a predictor of Large-For-Gestational-Age Infants in an Asian Cohort

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Introduction: Diabetes mellitus in pregnancy is associated with large-for-gestational-age (LGA) infants. However, there is substantial variation in the reported relationship between LGA infants and HbA1c values in pregnancies complicated by diabetes mellitus. Our study aims to investigate whether elevated HbA1c values ($\geq 6.5\%$) during pregnancy are associated with a higher risk of an LGA infant (birth weight ≥ 90 th percentile for gestational age).

Methods: The study population consisted of 202 women with diabetes in pregnancy whose babies were born healthy and at term (37+0 to 41+6 weeks) in KK Women's and Children's Hospital, Singapore, between 1st January 2012 and 31st December 2013. A single HbA1c measurement was performed during either second or third trimester. Relevant data was extracted from the electronic medical records system

Results: The mean (standard deviation) HbA1c %value for mothers with LGA infants was

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significantly higher than that of mothers without LGA infants [6.8 (1.2) vs 5.8 (0.9), p-value <0.001]. Adjusted for demographics and gestational age, the odds of an LGA infant for women with HbA1c values of $\geq 6.5\%$ was 8.5 times greater than that for those with HbA1c <6.5% (OR: 8.5, 95%CI: 3.6 - 20.2, p-value < 0.0001). For each percent increase in HbA1c, the odds of an LGA infant doubled (OR: 2.1, 95%CI: 1.4- 3.0, p-value < 0.0001).

Conclusion: Women with HbA1c $\geq 6.5\%$ during pregnancy have more than 8 times the risk of having an LGA infant as compared to women with HbA1c levels <6.5% during pregnancy. Also, for every 1% increase in HbA1c levels, the women's odds of having an LGA infant were doubled.

OP-03

Characteristics of Fungal Infections (FI) in a cohort of paediatric liver transplant (LT) recipients at the Khoo Teck Puat-National University Children's Medical Institute (KTP-NUCMI) from 1991 to 2014

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Introduction: Fungal infection is a significant cause of morbidity in LT recipients. We aimed to determine the incidence, outcomes, risk factors and need for empiric anti-fungal treatment for FIs.

Methodology: Records of 98 LTs performed on 91 children with median age at transplant of 2.21 (0.95-16.7) years were reviewed for presence of FI. Fungal infection was defined as fungal growth from a sterile body site. All patients received post-transplant anti-fungal prophylaxis with oral nystatin for 3 months. Standard dual immunosuppression consisted of steroids and tacrolimus.

Results: 25.5% (25/98) of recipients had FI within 30 days post-transplant with median time to onset of 9(1-30) days. *Candida spp* caused 84% of FIs of which 56% were *Candida albicans*. 65.2% of isolates were azole susceptible. 32% (8/25) of FIs grew from peritoneal fluid samples; of which 62.5% (5/8) of these recipients had undergone abdominal re-exploratory surgery within first post-transplant month. All patients responded to systemic anti-fungal therapy without complications. One patient died from disseminated candidiasis.

FIs were more likely in patients whom pre-transplant had; prolonged prothrombin time(69.6% vs 20.4%, p=0.84), chronic liver disease (96% vs 4%, p=0.5), hyperbilirubinemia (95.6% vs 4.3%, p=0.43), more than 7 days of antibiotic treatment (80% vs 20%, p=0.32), biliary enteric anastomosis (80.9% vs 19%, p=0.58) and had bacterial co-infection post-transplant (67% vs 33.3%, p=0.23).

Conclusion: Chronic liver disease and prior antibiotic exposure conferred slightly higher risk for FI. Despite routine post-transplant oral nystatin, our unit's incidence for FIs remains significant warranting a need to rethink strategies for empiric systemic anti-fungal prophylaxis

OP-04

Rescue HFOV in VLBW Infants: Incidence, Risk Factors, Etiologies, Management and Complications

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Objectives: Despite the widespread use of High Frequency Oscillatory Ventilation (HFOV) as a rescue modality in Very Low Birthweight (VLBW) infants, there is a lack of information about its ability to prognosticate outcomes.

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Aim: In VLBW infants, to review whether the use of rescue HFOV for respiratory failure as compared to conventional mechanical/non-invasive ventilation, prognosticate for higher bronchopulmonary dysplasia (BPD) or death. Secondary outcomes: Intraventricular haemorrhage (IVH), periventricular leukomalacia (PVL), severe BPD, retinopathy of prematurity (ROP), duration of neonatal intensive care (level 3), necrotizing enterocolitis (NEC) and pneumothorax.

Methods: Retrospective cohort study. Inclusion criteria: All VLBW infants < 1500g at birth admitted to SGH from January 2012 to January 2015, comparing those on rescue HFOV to those without.

Results: 151 infants were studied, of which 15 required HFOV (8.4% of VLBWs) and 136 did not. Rescue HFOV in VLBW was associated with increased BPD or death (OR 24.2 95% CI 3.1 – 189.9). Other significant secondary outcomes included severe BPD, IVH, PVL, prolonged level 3 stay and increased pneumothorax (13.3% vs 2.3%). It was not associated with ROP or NEC.

Rescue HFOV was associated with lower gestation and birthweights, histologically or culture proven chorioamnionitis, maternal group B Streptococcal carriage, lower Apgars (1 and 5 minutes), and were more likely to require intubation/chest compression. Common etiologies included severe HMD and PPHN. Other multi-systemic morbidities were found.

Conclusion: Rescue HFOV in VLBW identified a high risk group associated with BPD or death, as well as increased neurological complications and pneumothorax.

OP-05

Reliability of the Neonatal Sepsis Risk Calculator in Determining the Probability of Early Onset Infection in Neonates > 34 Weeks Gestation

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Background: Combining maternal and neonatal risk factors may enable physicians to identify well-looking but potentially ill newborns more accurately, and aid in streamlining treatment.

Objectives:

1. To predict early onset infection (EOS) risk in newborns > 34 weeks of gestational age (GA) using a published neonatal sepsis calculator;
2. Calculate resulting theoretical cost savings for limited sepsis evaluations and shortened length of hospital stay (LOS).

Methods: Outcomes in neonates > 34 weeks GA treated with antibiotics for suspected EOS (cases) were compared with untreated controls on the basis of maternal risk factors listed in the Neonatal Sepsis Calculator, infant presentation, and blood test results which were retrospectively collected from case records.

Results: 388 infants with possible EOS were included: 50% had maternal risk factors; 36.6% appeared well while 63.4% were symptomatic. 144 (37.1%) were given antibiotics. All had negative blood cultures.

EOS risk per infant was estimated and a cut-off risk of <0.65/1000 live births was chosen and assessed for reliable differentiation between well infants vs. infants at higher risk of EOS.

99.3% of well-appearing infants were correctly identified, implying that below this risk level, infants could be observed and left untreated

ORAL PRESENTATION - ABSTRACTS

without increasing risk of clinical deterioration due to undetected infection, amounting to theoretical cost savings of >\$1777.00/baby if the calculator is judiciously used.

Conclusions:

The EOS risk calculator reliably identified well vs. ill infants of > 34 weeks GA at risk of EOS. Its use may help reduce cost of care without compromising the infants' health and safety.

OP-06

Preschool teachers' and parents' beliefs and knowledge with regards to early childhood temperament

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Objectives: We aimed to assess teachers' and parents', beliefs and knowledge about childhood temperament and find out which temperament traits were perceived to be difficult to manage. We also sought to characterize the temperament of local children compared to American norms.

Methods: This was a cross-sectional survey study conducted over a one-year period from March 2013, in 16 preschools. Data was collected using self-administered questionnaires and Carey Temperament questionnaire. Using SPSS version 21, Chi squared test were used to compare data for categorical variables.

Results: A total of 268 parents and 104 teachers responses were collated. Participation was voluntary. Both parents and teachers believed erroneously that temperament was affected by gender and can be changed by discipline or the environment. Teachers generally perceived more difficulties in managing the children compared to

parents especially in children who had high activity ($p=0.028$), low mood ($p=0.002$) and low sensory threshold ($p=0.016$). Children in Singapore were more rhythmic, adaptable, intense, persistent, and have more positive mood compared to American children. Teachers (41.4%) also reported inadequate training in managing childhood temperament.

Conclusions: Our study highlights inadequate knowledge about childhood temperament amongst caregivers and a difference in the temperament of Singaporean children compared to children from the United States of America. It would be beneficial to review how childhood temperament and the goodness of fit model can be better taught to teachers and parents, to improve outcomes of our children. Utility of a locally adapted version of the Carey temperament questionnaire should also be considered.

OP-07

Children with developmental disabilities and quality of life related to school: Does entry into special education school matter?

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Objective: This study aims to explore whether children with developmental disabilities who are placed in special education report a higher school quality of life (School QoL) compared to those in mainstream schools.

Methods: Consecutive children aged 2-12 with developmental disabilities from our developmental clinics were enrolled into the study from December 2014 to April 2015. Inclusion criteria for this study were children 1) with a diagnosis of autism spectrum disorder (ASD) or intellectual disability (ID) after multidisciplinary assessments and 2) were in Primary 1 and above. Parents of these

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children provided information about the child's school and completed the Pediatric Quality of Life Inventory (PedsQL). We used t-test to compare the School QoL in the PedsQL between children in special education and in mainstream schools. We then used linear regression to determine whether attendance in a special education school was associated with improved School QoL.

Results: Parents of 83 children (69 ASD and 14 ID) completed the study. Mean age of the children was 9 year, 9 months (SD 24.31 months). School QoL was higher in those who attended special education school (66.71 vs 57.48, $p=0.048$). Linear regression showed that special education ($\beta=9.23$, $p=0.049$) and younger age ($\beta=-0.102$, $p=0.033$) were predictive of better School QoL.

Conclusions: For children who are eligible for special education (i.e. ASD and ID), the group enrolled in special education schools has better School QoL when compared to the group in mainstream schools. Parents report poorer School QoL as children with ASD and ID age. Clinicians caring for these children should ensure that difficulties related to school functioning are addressed.

OP-08

Rising trend of paediatric inflammatory bowel disease (PIBD) over a 20-year period

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Objectives: Childhood-onset IBD demonstrates unique characteristics in phenotype and severity. We aimed to describe the epidemiology and phenotype of PIBD in our local population.

Methods: Clinical records of children diagnosed with IBD at KTP-NUCMI from 1994-2014 were

reviewed. Anatomical involvement and disease behavior were classified according to the Paris classification.

Results: Sixty-nine children (67% male, 31.9% Chinese, 36.2% Indian) were identified to have PIBD (53.6% Crohn's disease (CD), 44.9% Ulcerative colitis (UC), 1.4% indeterminate colitis. Median age at diagnosis was 10 years old (0.16-18, IQR 6). There was an increase in the number of newly diagnosed children per 5-year period: 2 (1994-1998), 8 (1999-2003), 12 (2004-2008), and 47 (2009-2014). The most common presenting symptoms were bloody stools (49.3%), abdominal pain (43.5%), and diarrhea (31.9%). Growth delay (34.7%), perianal disease (8.7%), and extra-intestinal manifestations of fever and arthralgia (24.3%) were seen at disease presentation.

Of those with CD, 81% had inflammatory disease behavior, and 24.3% had both upper and lower tract disease. Age < 10 years at UC presentation was significantly associated with extensive disease involvement (63.2% pan-colonic, $p=.007$).

Enteral nutrition (4 weeks) induced remission in 48.6% of children with CD while all other patients required a combination of steroids and immunomodulators with one child needing Adalimumab & thalidomide. A higher proportion of younger patients experienced relapse requiring repeated steroid therapy.

Conclusions: We note a four-fold rise in PIBD over the last 5 years similar to global trends. Early age of onset was associated with extensive disease involvement.

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OP-09

Are our children's diets balanced? A food group analysis of the diets of 3-year-old children in Singapore

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Objectives: There is little local data on the diets of toddlers. A pilot study was conducted to assess the diets of 3-year-old children and compare intakes to the food group recommendations by the Health Promotion Board (HPB).

Methods: Diets of 70 Chinese children were collected using 24-hour food recall. Care was taken to ensure that there were both weekday and weekend diets in the sample. All food and drinks consumed were categorized into the respective food groups and the quantities were compared against serving recommendations from HPB. Composite foods were first broken down into their base ingredients before categorization.

Results: On average, the children consumed 3.8 servings of Rice and Alternatives; 0.8 serving of Fruit; 0.5 serving of Vegetables; 1.5 servings of Meat and Alternatives; and 2.2 servings of Milk and Alternatives.

Relatively more children (33.3%) were able to meet the recommended 3-4 servings of Rice and Alternatives compared to other food groups. Fruit and vegetable intakes were insufficient, with 55.1% and 81.2% consuming less than the recommended amounts (1 serving each) respectively. Nearly 34.8% did not meet the recommendations for Milk and Alternatives. For the Meat and Alternatives group, 2 in 3 children (59.4%) exceeded the recommended servings.

Conclusion: This pilot study suggests that the diets of most 3-year-old children in Singapore are not well-balanced. Further research with a nationally representative sample should be conducted to confirm these findings. Such data will influence public health education, physician counselling, nutrition policies as well as food manufacturing and services for children.

OP-10

A longitudinal study from infancy: Predicting Social Emotional Development

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Objectives: The Singapore Children's Society conducted a longitudinal study exploring the caregiving trends in Singapore. One part of the study seeks to uncover the impact of caregiving choices, child's temperament and mother-child attachment at 18 months on child's social-emotional development at 36 months. Social emotional development refers to the ability to successfully regulate emotion and manage social interactions with others. Research has found that healthy social emotional development is associated with the child's ability to make friends, display empathy towards others, and have greater self-confidence.

Methods: A total of 439 Singaporean or Permanent Resident first-time mothers were interviewed when their child was 4, 18 and 36 months old. Mothers completed questionnaires on their child's care arrangement, attachment, temperament and social-emotional development. This analysis focuses on data collected at 18 and 36 months.

Results: The child's social-emotional development at 36 months was best predicted by mother-child

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attachment security, child's temperament and mother's education level at 18 months. Other demographic and care arrangement variables were not associated with child's social-emotional development. These other variables were gender of the child, housing type, mother's employment, mother's choice of child's caregiver, as well as the level of closeness mother perceived towards her child.

Conclusion: The results show that mother-child attachment plays an important role in child's social emotional development. Effort to improve a child's social emotional development could include measures to enhance the security of the relationship between mother and child.

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