13TH SINGAPORE PAEDIATRIC & PERINATAL ANNUAL CONGRESS 2025

Evolving Trends in the Concept and Practice of Perinatal, Neonatal & Paediatric Health in the Asia-Pacific Region

11 September 2025:
KK Women's & Children's Hospital, Singapore

12 -13 September 2025:
Grand Copthorne Waterfront Hotel, Singapore

PROGRAMME BOOK

Organised by

PERINATAL SOCIETY OF SINGAPORE

Singapore Paediatric Society

COLLEGE OF PAEDIATRICS AND CHILD HEALTH, SINGAPORE

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WELCOME MESSAGE

It is an honor and pleasure to welcome you to the 13th Singapore Paediatric and Perinatal Annual Congress (SiPPAC). The Perinatal Society of Singapore (PSS) is proud to lead the organisation of this prestigious event, in collaboration with the College of Paediatrics and Child Health, Singapore (CPCHS) and the Singapore Paediatric Society (SPS) as co-organisers.

This year's theme, "Evolving Trends in the Concept and Practice of Perinatal, Neonatal & Paediatric Health in the Asia-Pacific Region", reflects our commitment to addressing the dynamic challenges and advancements in healthcare for children, mothers, and families across the region.

SiPPAC 2025 promises to be a landmark event, offering a platform for meaningful dialogue, collaboration, and learning. With a comprehensive program featuring insights from local experts as well as renowned international speakers from Australia, Qatar, India, Philippines and Switzerland, the congress will explore cutting-edge practices, emerging trends, and solutions to the pressing issues facing our field. From the impact of technological advancements to the challenges posed by the evolving healthcare landscape, SiPPAC 2025 will provide invaluable opportunities to shape the future of healthcare in the Asia-Pacific region.

We are expecting about 250 delegates from Singapore and across the region to attend this prestigious event, making it a truly international gathering of thought leaders and practitioners. This diverse participation will foster rich discussions, cross-border collaborations, and the sharing of best practices to address the unique healthcare needs of our communities. The exciting Scientific Programme will have 6 plenary sessions, 21 symposiums, and free-paper and poster sessions covering a comprehensive range of topics. Your participation will not only enhance the congress experience but also contribute to the advancement of perinatal, neonatal, and paediatric healthcare across the region.

We extend our sincere gratitude to our distinguished speakers and faculty for contributing to two exciting days of learning. We also wish to thank our sponsors for their generosity and support. Finally, our deepest appreciation to the members of the Organising Committee for their tireless efforts, which has made this congress possible.

Wish you all a memorable & fruitful Congress!

Prof Victor Samuel Rajadurai
Organising Chairman
SiPPAC 2025 Congress
President
Perinatal Society of Singapore

ORGANISING COMMITTEE

Chairperson	**Prof Victor Samuel Rajadurai** President, Perinatal Society of Singapore
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	A/Prof Daisy Chan	Dr Poon Woei Bing
	Dr Lee Le Yee	Dr Biju Thomas
	Dr Liew Woei Kang	Dr Wong Chui Mae

CONGRESS INFORMATION

CONGRESS VENUE

11TH SEPTEMBER 2025
KK Women's and Children's Hospital
Training Centre, Women's Tower, Level 1
100 Bukit Timah Rd, Singapore 229899

12TH – 13TH SEPTEMBER 2025
Grand Copthorne Waterfront Hotel
Riverfront & Waterfront Ballroom, Level 2
392 Havelock Road Singapore 169663

CONGRESS REGISTRATION

11th September 2025 - Registration
KK Women's and Children's Hospital Training Centre, Women's Tower Level 1
Registration commences at 0800hrs.

12th – 13th September 2025 – Registration
Counter is located at the Level 2, Entrance Foyer of Riverfront & Waterfront Ballroom 2, Grand Copthorne Waterfront Hotel.

The counter will be open daily from 0800hrs to 1700hrs

NAME BADGE

Upon registration on 12th September 2025, you will receive your name badge. You are required to wear your name badge to all sessions. Should you lose your name badge, please contact the congress secretariat for a replacement. Please note that replacement fee applies.

EXHIBITION

An exhibition on medical equipment and allied applications will be held at the Riverfront & Waterfront Ballroom Foyer, Level 2.

8th November 2024 0900hrs – 1700hrs
9th November 2924 0900hrs – 1600hrs

POSTER DISPLAY

The Poster Display will be held at the Riverfront & Waterfront Ballroom Foyer, Level 2

11th September 2025	1050hrs - 1115hrs
	1530hrs - 1545hrs
12th September 2025	1040hrs - 1100hrs
	1530hrs - 1600hrs

WiFi

Network: Millennium_ CONFERENCE
Access Code: Re@ct10n
(Underline letters are Caps, symbol @ and number 10. The word is "Reaction")

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SPEAKERS' READY ROOM

The Speakers' Room is located at Penguin Room, Level 2.

Speakers who have not sent in their slides prior to the congress or require changes to be made to the slides, please proceed to this room.

PRAYER ROOM

The Prayer Room is located at Paradiso Room, Level 3.

NURSING ROOM

The Nursing Room is located at Cardinal Room, Level 3.

CONGRESS LANGUAGE

English is the medium of instruction for this congress.

CME / CPE ADMINISTRATION

(Applicable to Singapore registered Healthcare Professionals ONLY)

Delegates are register to register their attendance daily at the congress registration counter; once at the beginning of the day and once after lunch.

LOST AND FOUND

For lost and found items, please approach the Congress Registration Counter.

CONGRESS SECRETARIAT

Should you require any assistance, please reach out to the Congress Secretariat located at the Registration Counter

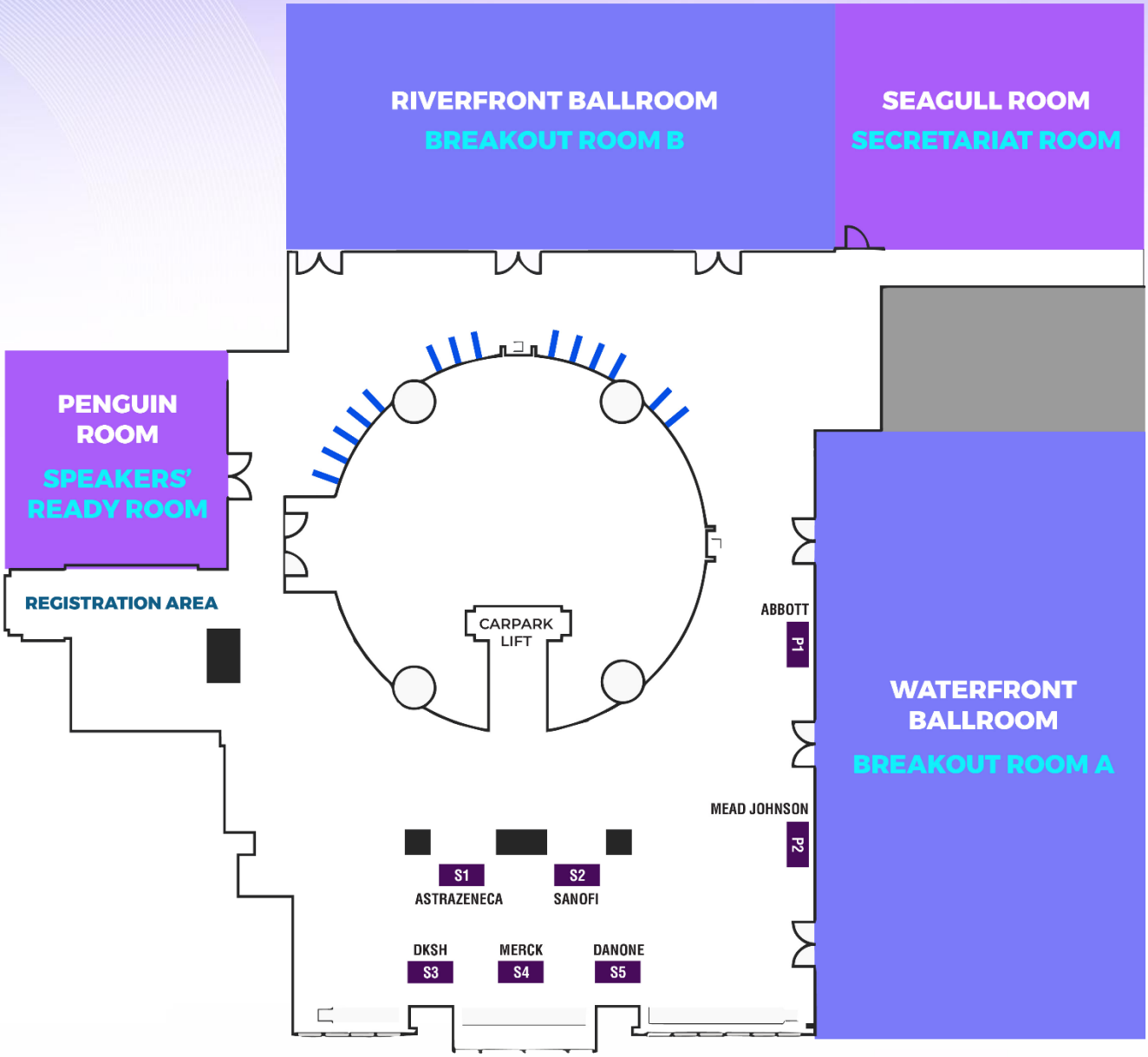
LIABILITY

The Organisers are not liable for any personal accidents, illnesses, loss, or damage to private properties of delegates during the Congress. Delegates are advised to make their own arrangements with respect to personal insurance.

DISCLAIMER

Whilst every attempt will be made to ensure that all aspects of the Congress will take place as scheduled, the Organising Committee reserves the right to make appropriate changes should the need arises with or without prior notice.

FLOORPLAN


RIVERFRONT BALLROOM
BREAKOUT ROOM B
SEAGULL ROOM
SECRETARIAT ROOM
PENGUIN ROOM
SPEAKERS' READY ROOM
REGISTRATION AREA
CARPARK LIFT
ABBOTT
P1
WATERFRONT BALLROOM
BREAKOUT ROOM A
MEAD JOHNSON
P2
S1
ASTRAZENECA
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Senior Consultant
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Dr Yeo Wee Song
Private Paediatrician
KidsNexus Paediatric Centre

PROGRAMME

Day 1: 11th September 2025, Thursday

13TH SIPPAC PRE-CONGRESS NEONATAL EDUCATION UPDATE **(The half-day programme is included for all participants registered for the Main Congress)**			
Venue: Auditorium, Level 1, KK Women's & Children's Hospital			
08:30	Registration		
09:00	**Welcome Address by Prof Samuel Rajadurai**		
Session A	**Chairman: Clin Assoc Prof Suresh Chandran**		
09.05 – 09:30	Robin Sequence: From Dilemmas to Developing an Adaptable Standardized Stepwise Approach **Dr Dimple Goel, Consultant Neonatologist, Perth Children's Hospital, WA, Australia**		
09:30 – 09:40	Q & A Session		
09:40 – 10:05	Neonatal and Syndromic Forms of Diabetes Mellitus **Prof Khalid Hussain, Division Chief, Endocrinology, Sidra Medicine, Qatar**		
10:05 – 10:15	Q & A Session		
10:15 – 10:40	Tea Break		
Session B	**Chairman: Dr Abdul Alim**		
10:40 – 11:05	Giving Preemies a Growth Boost - Is There a Mineral That Can Help? **Dr Srinivas Bolisetty** **Medical Clinical Co-Director, Royal Hospital for Women, NSW, Australia**		
11:05 – 11:15	Q & A Session		
11:15 – 11:45	POCUS-Guided Neonatal Shock Management & Inotropes **Dr Mohit Sahni** **Director Nf-ECHO Academy, Chief Neonatologist & Neonatal Cardiologist, Surat Kids Hospital, India**		
11:45 – 11:55	Q & A Session		
11:55 – 12:20	Assessment of Neurodevelopmental Outcomes in Newborn Infants with Brain Injury **Dr Nirmal Visruthan Kavalloor, Head of NICU, Department of Neonatology, KKH**		
12:20 – 12:30	Q & A Session		
12:30 – 14:00	Lunch Break		
	SEPARATE REGISTRATION IS REQUIRED FOR THE PRE-CONGRESS WORKSHOPS		
14:00 – 17:30	**Workshop 1:** **Neonatal fECHO & Hemodynamic**	**Workshop 2:** **Advanced Cranial US**	**Workshop 3:** **Kangaroo Mother Care (KMC) for Term and Preterm Infants**

PROGRAMME

Day 2: 12th September 2025, Friday

Time	Programme	
08:00	Registration	
08:25	**Venue: Waterfront Ballroom**	
	Opening of Congress	
08:30 - 09:40	**Plenary Session 1: SPS Haridas Memorial Lecture** Genetics, Discovery of Jamuar Syndrome and the Future of Paediatric Genetics in Singapore **Assoc. Prof Saumya Shekhar Jamuar, KKH** **Session Chair: Dr Alvin Chang, President, Singapore Paediatrics Society** **Plenary Session 2**: How Has POCUS Changed the Practice of Neonatal and Paediatric Intensive Care? **Dr Mohit Sahni, Surat Kids Hospital, India** **Session Chair: Dr Abdul Alim, KKH**	
09:40 - 10:50	**Symposium 1A: Hypoglycemia and Hyperinsulinism in Infants & Children**	**Young Investigator Award & Oral Presentation**
	Venue: Waterfront Ballroom	**Venue: Riverfront Ballroom**
	Session Chair: Prof Samuel Rajadurai, KKH	**Session Chairs: Dr Sridhar Arunachalam, SGH & A/Prof Michael Lim, NUH**
	Optimizing Early Life Hypoglycemia Care for Infants; Insights from Singapore **Prof Fabian Yap, KKH**	**<u>Young Investigator Award Presentations</u>** Investigating the Performance Characteristics of the Modified Checklist for Autism in Toddlers (M-CHAT) in Very Low Birth Weight (VLBW) Children **Miss Roxanna Koh, YLLSM-NUS** Novel Insights into Atopic March Trajectories Using Unsupervised Machine Learning on GUSTO Birth Cohort **Mr Javier Ng, YLLSM-NUS** Beyond Biopsy: The Promise of Serum Intestinal-Fatty Acid Binding Protein (I-FABP) as Non-Invasive Biomarker for Diagnosing and Monitoring Pediatric Celiac Disease **Miss Stephanie Amabella Prayogo, Universitas Indonesia** **<u>Oral Paper Presentations</u>** Implementing a Remote Continuing Medical Education Curriculum for Pediatricians in a Rural Children's Hospital in Cambodia **Dr Nalinin Phang, Chenla Children's Healthcare** Strategies in Enhancing the Microbiota in Breast Milk to Promote Infant Gut Health: A Pilot Prospective Exploratory Study **Dr Felicia Lee, Universiti Kebangsaan Malaysia** Epicutaneous Immunotherapy in the Fight Against Pediatric Peanut Allergy: A Systematic Review and Meta-Analysis **Dr Peggy Liberty, Universitas Sumatera Utara** A 2x2 Factorial Randomized Controlled Trial Evaluating WHO Caregiver Skills Training (e-learning) and a Locally Developed In-Person Parent Mediated Training Workshop for Families of Children with Autism Spectrum Disorder **Dr Ker Yung Chua, NUH**
	Hypoglycemia in SGA Infants – Transient, Prolonged, or Persistent **Clin Assoc Prof Suresh Chandran, KKH**	
	Update on New Therapeutic Therapies for Congenital Hyperinsulinism **Prof Khalid Hussain, Sidra Medicine, Qatar**	
	Q & A Session	

Time	Programme	
10:50 - 11:15	Morning Tea Break and Poster Judging	
11:15 - 12:30	**Symposium 2A: Beyond the Stethoscope – Psychosocial Well-Being for the Child and Young Person**	**Nursing Symposium 2B: Transformative Nursing Care - From First Breath to Final Comfort**
	Venue: Waterfront Ballroom	**Venue: Riverfront Ballroom**
	Session Chair: Dr Samuel Lim Zhi Rui, KKH	**Session Chairs: Ms Lai Liling & Ms Jingyi Wu**
	Youth Well-Being Questionnaire - Integrating Psychosocial Screening of the Adolescent in Time Scarce Paediatric Settings **Dr Angelina Ang Su Yin, KKH**	Skin Care Protocol for Extremely Preterm Infants Less than 26 weeks of Gestational Age **Ms Charlene Wimala, KKH**
	Psychosocial Screening for Neurodiverse Young People **Dr Wong Chui Mae, KKH**	Moving Maternal and Child Health in the Community **Ms Khoo Shimin, KKH**
	Moving Towards Recovery-Oriented Youth Mental Health Care **Ms Ng Chia Ling Gloria, Singapore Children's Society**	KKH Mobile Inpatient Care (MIC) @ Home **Ms Lee Li Hsien, KKH**
	Community & Hospital-based Psychosocial Interventions for Children and Young People **Dr Lois Teo, KKH**	Palliative and Supportive Care for Children with Complex Needs **Ms Nur Aliza Binte Kamsan & Ms Sania Binte Mohamad Jonid, NUH**
	Q&A Session	Q&A Session
12:45 - 13:45	**Industry Lunch Symposium – Sponsored by Danone** C-section Related Gut Dysbiosis and Long-Term Health Risks **Dr Chiang Wen Chin, Chiang Children's Allergy & Asthma Clinic** Nutritional Strategies to Restore Gut Health After C-Section **Prof. Marion Aw, NUH** **Session Chair: Prof Anne Goh, KKH**	**Industry Lunch Symposium – Sponsored by Novartis** Advancing SMA Care: Newborn Screening and Future Frontiers in Treatment **A/Prof Stacey Tay, NUH, Dr Jocelyn Lim, KKH, Clin A/Prof Tan Ee Shien, KKH**
14:00 - 15:30	**Symposium 3A: Ethics: Withdrawing or Withholding Life Sustaining Interventions**	**Symposium 3B: Fits, Faints & Funny Turns in Children**
	Venue: Waterfront Ballroom	**Venue: Riverfront Ballroom**
	Session Chair: Prof Roy Joseph, NUH	**Session Chair: Dr Khoo Zi Xean, KKH**
	Newborn Infants in the Borderline of Viability **Panel Discussion: Dr Srinivas Bolisetty (Australia), A/Prof Agnihotri Biswas (NUH), Dr Quek Bin Huey (KKH), Dr Poon Woei Bing (SGH) & Prof Azanna Kamar (Malaysia)**	Pediatrician's Perspective **Dr Yeo Wee Song, KidsNexus Paediatric Centre**
	Newborn Infants with Severe Hypoxic Ischemic Encephalopathy **Dr Vijay Baral, SGH**	Neurologist's Perspective **Prof Ong Hian Tat, NUH**
	Withdrawal of Clinically Assisted Hydration & Nutrition for a Terminally Ill Infant? **Dr Chong Poh Heng, HCA Hospice Care**	Cardiologist's Perspective **Dr Charmaine Chan, KKH**
	Q&A Session	Q&A Session
15:30 - 15:45	Afternoon Tea Break & Poster Viewing	

Time	Programme	
15:45 - 17:15	**Symposium 4A: Practical Paediatrics 1**	**Symposium 4B: Measuring What Matters: Patient- and Parent-Reported Outcomes in Paediatrics**
	Venue: Waterfront Ballroom	**Venue: Riverfront Ballroom**
	Session Chair: A/Prof Jonathan Choo, KKH	**Session Chair: Prof Tan Kok Hian, KKH**
	Management of Kawasaki Disease – What's New in 2025? **Prof Quek Swee Chye, NUH**	Overview of Quality-of-Life Measures in the NICU **A/Prof Zubair Amin, NUH**
	Rheumatological Conditions in Children in Outpatient Settings **Dr Teh Kai Liang, KKH**	Quality of Life Measures in the CICU **Ms Poh Pei Fen, KKH**
	Recurrent Infections - When to Suspect Inborn Errors of Immunity **Dr Bianca Chan, KKH**	Patient and Parent Reported Outcomes in Paediatrics **Dr Felicia Ang, SingHealth Health Services Research (Duke-NUS)**
	Q&A Session	Quality of Life Measures in Illustrative Paediatric Conditions **Dr Yvonne Ng, NUH**
		Q&A Session
18:30 - 21:30	**18th College of Paediatrics and Child Health Lecture & Dinner** (Separate Dinner Ticket Required) Evolution of Paediatric Respiratory Medicine and Allergy over the Last Few Decades in Singapore **Professor Anne Goh Eng Neo, Paediatric Allergy Service and Respiratory Medicine Service, KKH** **Awards Ceremony & College Dinner**	

Day 3: 13th September 2025, Saturday

Time	Programme	
08:00 - 08:30	Registration	
08:30 - 09:30	**Venue: Waterfront Ballroom**	
	Plenary Session 3: Stuart Gan Memorial Lecture Gene Therapy for Inborn Errors of Immunity **Prof Fabio Candotti, University of Lausanne Hospital, Switzerland** **Session Chair: Dr Liew Woei Kang, Private Pediatrician and Immunologist**	
	Plenary Session 4: Overview of Childhood Diabetes **Prof Khalid Hussain, Sidra Medicine, Qatar** **Session Chair: Prof Fabian Yap, KKH**	
09:30 - 10:40	**Symposium 5A: Neonatal Nutrition**	**Symposium 5B: Paediatric Gastro-Enterology**
	Venue: Waterfront Ballroom	**Venue: Riverfront Ballroom**
	Session Chair: A/Prof Daisy Chan, SGH	**Session Chair: Dr Christopher Ho, KKH**
	Growing Strong: Setting the Right Growth Targets for Preterm Infants **Dr Srinivas Bolisetty, Royal Hospital for Women, Australia**	Functional Gastrointestinal Disorders in Infancy (FGID) **Dr Tan Li Nien Michelle, NUH**
	Post-Discharge Screening of Very Preterm Infants **Dr Ong Chengsi, Dietitian, KKH**	Recurrent Abdominal Pain in Children **A/Prof Marion Aw, NUH**
	Preterm Nutrition and Long-Term Outcomes **A/Prof Chua Mei Chien, KKH**	Nutritional and Pharmacologic Management of Short Bowel Syndrome **Dr Veena Logarajah, KKH**
	Q&A Session	Q&A Session
10:40 - 11:00	Morning Tea Break & Poster Viewing	
11:00 - 12:15	**Symposium 6A: Practical Paediatrics 2**	**Symposium 6B: Insights from the Delivery Room**
	Venue: Waterfront Ballroom	**Venue: Riverfront Ballroom**
	Session Chair: Dr Lee Le Ye, Private Pediatrician and Neonatologist	**Session Chair: A/Prof Yeo Cheo Lian, SGH**
	Common Eye Problems for Paediatricians **Dr Yien Lai, NUH**	Delayed Cord Clamping in Term & Preterm Infants **Dr Odattil Geetha, KKH**
	Nail and Hair Disorders in Children **Dr Valerie Ho, KKH**	Kangaroo Mother Care from Delivery Room: Impact on Growth and Neurodevelopment **Dr Socorro De Leon-Mendoza, Philippines**
	Common ENT Problems in Children **Dr Chan Ching Yee, KKH**	Q&A Session
	Q&A Session	Interest Group Meeting on Hypoglycemia in Newborn Infants **A/Prof Suresh Chandran, Prof Khalid Hussain, Prof Fabian Yap, Prof Azanna Kamar**

Time	Programme	
12:30 - 13:30	**Industry Lunch Symposium - Sponsored by Sanofi** RSV Burden of Disease: Globally and in Singapore **Dr Khoo Poh Choo, KKH** The Nirsevimab Story: Clinical Efficacy and Real-World Effectiveness in RSV Protection **Prof Lee Bee Wah, Mount Elizabeth Medical Centre** **Session Chair: Prof Victor Samuel Rajadurai, KKH**	**Industry Lunch Symposium - Sponsored by AstraZeneca** Updates on Influenza Vaccination **Dr Jenny Tang, SBCC Baby & Child Clinic** **Prof Ivan Hung, University of Hong Kong**
13:30 - 14:30	**Plenary Session 5:** Artificial Intelligence and the Future of Neonatal Care **Prof Azanna Kamar, University of Malaya, Malaysia** **Plenary Session 6:** The Story of Preterm Infants: Contemporary Outcomes of Extremely Preterm Infants in Australia and New Zealand **Dr Srinivas Bolisetty, Royal Hospital for Women, Australia** **Session Chair: Dr Khoo Poh Choo, KKH**	
14:30 - 15:30	**Symposium 7A: Ethical Issues in Adolescence**	**Symposium 7B: Tackling the Storm of Sleep challenges in Infants & Children**
	Venue: Waterfront Ballroom	**Venue: Riverfront Ballroom**
	Session Chair: Dr Varughese Mary, NUH	**Session Chair: Dr Yip Wai Yan, KKH**
	Gender Identity Development Issues **A/Prof Oh Jean Yin, KKH**	Sleep Disordered Breathing in Early Ages of Life: Feasibility and Clinical Utility of Daytime PSGs **Dr Dimple Goel, Perth Children's Hospital, Australia**
	Consent and Confidentiality Issues in Adolescents **Dr Kumudhini Rajasegaran, KKH**	Healthy Sleep Habits in Children: Why it is important? **Dr Ting Chun Yi, KKH**
	Refusal of Treatment by Adolescents: Ethical & Legal Aspects **Ms Vanessa Lim, Dentons Rodyk & Davidson LLP**	Poor Sleeping Habits in Children: What Can We Do? **Ms Jessie Ooh, NUH**
	Q&A Session	Q&A Session
15:30 - 16:00	**Venue: Riverfront Ballroom**	
	Industry Tea Symposium Sponsored by Pfizer Protecting Newborns from RSV via Maternal Immunization – from Clinical Studies to Real-World Evidence **Clin Prof Anne Goh Eng Neo, KKH** **Session Chair: Dr Odattil Geetha, KKH**	

Time	Programme	
16:00 - 17:15	**Symposium 8A: Term Baby: Respiratory Distress Due to Uncommon Causes**	**Symposium 8B: Developmental Paediatrics**
	Venue: Waterfront Ballroom	**Venue: Riverfront Ballroom**
	Session Chair: A/Prof Suresh Chandran, KKH	**Session Chair: Dr Tan Pih Lin, KKH**
	Antenatal Diagnosis & Intervention of Pulmonary Malformations **Dr Grace Ng, KKH**	Identification and Support for Preschool Children with Emotional and Behavioural Difficulties **Dr Yeleswarapu Sita Padmini, KKH**
	Congenital Pulmonary Airway Malformation: Varied Presentations **Asso Prof Michael Lim, NUH**	Learning Disorders in School Age Children **Adj Associate Prof Jennifer Kiing, NUH**
	Diffuse Lung Disease in Infants **Dr Teoh Oon Hoe, KKH**	Supporting Children with Special Needs in the Hospital Environment **Adj Asst Prof Sylvia Choo, KKH**
	Q&A Session	Q&A Session

ABSTRACTS

YOUNG INVESTIGATOR AWARD PRESENTATIONS

Investigating the Performance Characteristics of the Modified Checklist for Autism in Toddlers (M-CHAT) in Very Low Birth Weight (VLBW) Children

Roxanna Rae En KOH[1], Erica Nuriyah FADZIULAH[2], Bin Huey QUEK[1,3], Poh Choo KHOO[1,3], Chui Mae WONG[1,3,4]

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

OBJECTIVES: To determine the accuracy of the M-CHAT-R in screening for autism in VLBW children, and to identify the best discriminating signs of autism.

METHODS: Data on M-CHAT-R screening and subsequent neurodevelopmental diagnoses was extracted for all VLBW children born from 2014 to 2016. Sensitivity, specificity, positive predictive (PPV), and negative predictive values (NPV) for the M-CHAT-R were computed, using three different scoring methods: Total, Critical 6, and a new local method (Sing-CHAT) which uses only 8 items. Fisher's exact test was used to determine which items were better at discriminating between children with autism and those without.

RESULTS: Of 622 eligible children, 68 died before discharge and only 316 underwent M-CHAT-R screening. 22 (7.0%) were diagnosed with autism. M-CHAT-R sensitivity ranged from 0.42-0.49, but specificity was high at 0.86-0.97. The Sing-CHAT scoring method performed as well as the Total method in terms of specificity, positive predictive value and negative predictive value. The best discriminating items differed to those reported in other countries.

CONCLUSION: Autism is 7 times more prevalent in the VLBW cohort. The shorter Sing-CHAT version could be a more efficient and equally reliable alternative to the full M-CHAT-R, and is based on locally-determined better discriminating items.

Novel Insights into Atopic March Trajectories Using Unsupervised Machine Learning on GUSTO Birth Cohort

Javier Ng[1], Gaik Chin Yap[1], Elizabeth Huiwen Tham[1,2], Evelyn Xiu Ling Loo[3], Lynette P.C. Shek[1,2], Anne Goh[4], Oon Hoe Teoh[4], Jerry Chan Kok Yen[5], Kok Hian Tan[5], Yap-Seng Chong[6], Keith M. Godfrey[7], Bee Wah Lee[1], Le Duc Huy Ta[1]

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OBJECTIVES: Growing literature has suggested the "atopic march" hypothesis cannot encompass the wide range of atopic disease progressions, restricting its utility in mitigating risk factors. We instead propose that atopy manifests along distinct longitudinal trajectories, or "states", each characterised by unique risk factors.

METHODS: This study leverages the GUSTO birth cohort to comprehensively examine eczema, wheeze, rhinitis, and FA. A total of 986 mother-child pairs were followed from pregnancy, with atopy-like disorder diagnoses in children made at three-month intervals during the first two years, and subsequently annually up to 8 years. Longitudinal trajectories of all 4 allergic diseases were modelled with Hidden Markov Models (HMMs). Associations between risk factors and identified trajectories were analysed using chi-squared tests.

RESULTS: HMM results showed 4 distinct trajectories: (Group 1) Non-atopic healthy (n=629, 63.8%); (Group 2) Non-atopic rhinitis (n=221, 22.4%); (Group 3) Atopic respiratory - predominantly wheeze with concomitant eczema and rhinitis (n=38, 3.9%) and (Group 4) Atopic march - predominantly eczema with concomitant wheeze and rhinitis (n=98, 9.9%). Overall prevalence of atopic cases (Groups 3 & 4) was 13.7% among the population, and of these, the conventional atopic march accounted for 72.1%. All non-atopic and atopic trajectories were associated with family history of any atopic disease. Strikingly, "Non-atopic rhinitis" (Group 2) trajectory was associated with male gender. "Atopic respiratory" (Group 3) trajectory was associated with Malay ethnicity, childcare attendance, excessive maternal gestational weight gain, and late dust mite sensitization at 60 and 96 months. "Atopic march" (Group 4) trajectory was associated with Chinese ethnicity, male gender, high income, pet ownership and early dust mite sensitization.

CONCLUSION: Our findings underscore that "atopy" is not a homogeneous march but comprises distinct trajectories, each with its own comorbidity profile and risk-factor signature. This could help clinicians design personalised interventions and mitigate modifiable risk factors.

Beyond Biopsy: The Promise of Serum Intestinal-Fatty Acid Binding Protein (I-FABP) as Non-Invasive Biomarker for Diagnosing and Monitoring Pediatric Celiac Disease

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OBJECTIVES: This systematic review and meta-analysis aims to evaluate diagnostic utility and serum level differences of I-FABP in children with celiac disease compared to healthy controls.

METHODS: This systematic review was conducted based on PRISMA statement, comprised studies sourced from PubMed, Scopus, Cochrane, EBSCOHost, and ProQuest. Studies were included if they reported children with confirmed or suspected celiac disease which eventually confirmed having the disease. The risk of bias was evaluated using the Newcastle-Ottawa Scale and statistical analysis was conducted with RevMan 5.4.1.

RESULTS: Data from 7 studies, with mostly low risk of bias, comprising 385 CD patients and 393 controls were included. The pooled analysis demonstrated I-FABP as a reliable indicator of intestinal epithelial cell damage in children who test positive for celiac disease. Elevated serum I-FABP levels in children with celiac disease compared to healthy controls was obtained with a mean difference of 586.74 pg/mL (95% CI: 557.37–638.46, $p < 0.00001$). High heterogeneity was observed across studies ($I^2 = 98\%$), indicating substantial variation in absolute I-FABP values due to differences in populations and methodologies. Therefore, a subgroup analysis was conducted on studies using the same ELISA kit and protocol within the same country, revealing a mean difference of 406.76 g/mL (95% CI: 315.32–498.20, $p < 0.00001$) with very low heterogeneity ($I^2 = 0\%$). During long-term follow up of the gluten-free diet, most studies also showed a significant decrease of I-FABP levels, supporting I-FABP as a potential monitoring tool.

CONCLUSION: Serum I-FABP is significantly elevated in pediatric patients with celiac disease and shows promise as a non-invasive biomarker for diagnosis. However, substantial heterogeneity across studies suggests the need for standardization of assay methods and further research into age-specific and context-specific cut-off values. Its role in monitoring response to a gluten-free diet warrants further longitudinal validation.

ORAL PRESENTATIONS

Implementing a Remote Continuing Medical Education Curriculum for Pediatricians in a Rural Children's Hospital in Cambodia

Phang Nalinin, MD[1]; Sreyleak Luch, MD[1]; Anik Patel, MD[2]; Andrew Wu, MD, MPH[3,4]

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OBJECTIVES: We aimed to improve physician medical knowledge through implementation of a structured, needs-based pediatric curriculum for clinicians at a resource-limited, rural children's hospital in Cambodia.

METHODS: The curriculum consisted of weekly online didactics and case discussions over 8-week blocks. Three blocks were conducted between May 2024 and February 2025. Didactic sessions, performed in English and Khmer, included either open-source, pre-recorded lectures tailored to low-resource settings or live video presentations by international partners. Case-based discussions were led by participating clinicians. Quizzes and feedback surveys were distributed online. Independent t-tests or Wilcoxon rank sum tests were used to compare pre- and post-quiz scores. Descriptive statistics summarized learner demographics and feedback.

RESULTS: Eighteen physicians attended at least one class. Most had <10 years of clinical experience (72%) and 67% reported intermediate English proficiency. Of the 24 classes, 71% (n=17) were attended by 10-13 physician learners. Quiz scores improved across all sessions, with statistically significant gains in "Arrythmias Part 2", "Nephrotic Syndrome", "Cerebral Malaria" and "Neonatal Hypoxic Ischemic Encephalopathy". Among 12 physician survey respondents, 100% wanted the curriculum to continue, 83% said this will improve their patient care, 75% felt encouraged to teach their peers more often, and 67% reported higher confidence in adhering to evidence-based practice. Feedback led to several adaptations: moving classes from a weekday to the weekend for better attendance; presenting quizzes in both Khmer and English; and keeping quizzes as homework assignments (versus live immediately before and after didactics). Learners also requested more case-based examples, advanced access to teaching slides, and for English-speaking instructors to speak more slowly.

CONCLUSION: A hybrid, case-based pediatric curriculum utilizing open-source content and international collaboration is feasible and well-received in resource-limited settings. Improvements in quiz performance and learner feedback suggest potential for enhancing applied clinical knowledge and practice.

Strategies in Enhancing the Microbiota in Breast Milk to Promote Infant Gut Health: A Pilot Prospective Exploratory Study

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OBJECTIVES:

1. To determine if revitalizing pasteurized breast milk (PEBM) with inoculating raw breast milk (RBM) to PEBM will reintroduce sufficient probiotic Bifidobacterium breve (Bb) without increasing the growth of pathogenic bacteria
2. To determine if revitalizing PEBM with Bifidobacterium breve-enriched breast milk substitute (Bb-BMS) will introduce sufficiently Bb as a probiotic.

METHODS:

A pilot prospective observational study comparing two interventions conducted in the NICU of HCTM. A total of 44 samples were divided into two groups (n=22 each).

- **Group 1:** 1 mL of RBM added to 9 mL PEBM (10% v/v).
- **Group 2:** 0.28g of *B. breve* M-16V added to 10 mL PEBM (5 × 10^7 CFU/day).

Samples were mixed and cultured on MRS agar anaerobically, and on Blood agar, MacConkey agar and SDA agar aerobically, at 0-, 1.5-, and 3-hours incubation (37°C, 5% CO_2) to detect Bb, Lactobacillus GG, bacterial pathogens, and fungi.

RESULTS:

	PEBM+RBM			
Name of Bacteria	**Mean Colony Count (CFU/ml)**			**Number (N=22)**
	Incubation	**0 H**	**1.5 H**	**3 H**	
Probiotic					
Bifidobacterium-breve		840	750	710	12 (54%)
Lactobacillus GG		1100	740	720	13 (59%)
Pathogenic Bacteria					
Staphylococcus sp		850	1280	1760	15 (68%)
Klebsiella sp		190	440	890	4 (18%); 6 (27%); 7(32%)
Bacillus sp		450	1060	1450	3 (14%)
Acinetobacter sp		30	90	1200	1 (4.5%)
Fungi					
Candida sp		150	180	220	1 (4.5%)
Aspergillus fumigatus		20	20	20	1 (4.5%)

Table 1: Group 1 – Raw BM Inoculation

		PEBM+Bb-BMS			
Name of Bacteria		**Mean Colony Count (CFU/ml)**			**N (%)**
Probiotic	**Incubation Time**	**0 H**	**1.5 H**	**3 H**	
Bifidobacterium-breve		>2000	>2000	>2000	22 (100%)

*No pathogenic bacteria were cultured.
Table 2: Group 2 – Bb-BMS

CONCLUSION:
Revitalization with RBM reintroduce probiotics but is associated with increased risk of pathogenic bacterial proliferation. In contrast, Bb-BMS offers a safer and stable alternative for probiotic supplementation into EBM.

ACKNOWLEDGEMENT
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Epicutaneous Immunotherapy in the Fight Against Pediatric Peanut Allergy: A Systematic Review and Meta-Analysis

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OBJECTIVES: The management of peanut allergy in children is conventionally constricted to allergen avoidance and emergency preparedness. Advances in novel therapy of peanut allergy in children, including epicutaneous immunotherapy (EPIT), offer a promising strategy to target the underlying immune response that facilitates allergic desensitization. Our meta-analysis aims to evaluate the efficacy and safety of EPIT compared to placebo for peanut allergy in children.

METHODS: The literature search was conducted according to the PRISMA flowchart on 4 databases. Eligible studies included randomized controlled trials (RCTs) that met the subsequent criteria: (1) Patients: children 0-18 years diagnosed with peanut allergy, (2) Interventions: EPIT administered as peanut-protein patches at doses of 100 µg or 250 µg, (3) Comparisons: placebo patches, (4) Outcomes: desensitization to peanut allergy and adverse events (AE) related to the interventions. The Cochrane Risk of Bias 2.0 was utilized to assess the quality of studies. Statistical analyses were conducted with Revman 5.4.1 software.

RESULTS: Nine RCTs involving 3023 children were analyzed in this study. A significant desensitization was reported in the EPIT group (RR: 2.07, 95%CI: 1.50-2.87, p<0.0001), particularly the 250 µg-dose group (RR: 2.04, 95%CI: 1.45-2.86, p<0.0001) compared to placebo. Moreover, a significant desensitization to peanut allergy in children with atopic comorbidities was reported in the EPIT group (RR: 2.08, 95%CI: 1.73-2.51, p<0.00001) compared to placebo. An increase in incidence of AE was reported in the EPIT group (RR: 1.46, 95%CI: 1.19-1.79, p 0.0003); however, no significant difference was observed in incidence of serious AE (RR: 2.08, 95%CI: 0.74-5.85, p 0.17) and systemic AE (RR: 2.04, 95%CI: 0.99-4.21, p 0.05).

CONCLUSION: EPIT induced desensitization in children with peanut allergy, hence could serve as a novel therapy in pediatric peanut allergy. Noteworthy, EPIT increased the incidence of AE, and further studies on the long-term safety of EPIT were expected.

A 2x2 Factorial Randomized Controlled Trial Evaluating WHO Caregiver Skills Training and a Locally Developed In-Person Parent Mediated Training Workshop for Families of Children with Autism Spectrum Disorder

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OBJECTIVES: To evaluate the effectiveness of the WHO Caregiver Skills Training Programme (WHO-CST), delivered via e-learning, compared to and combined with a locally developed in-person parent-mediated workshop (PW), on parenting confidence, parental mental health, and social-behavioural outcomes in children with autism.

METHODS: In this open-label, single-centre, 2×2 factorial randomized controlled trial, 99 children aged 2.5-6 years with autism and their parents were recruited from the Child Development Centre at Sarawak General Hospital. Participants were randomized into four groups: waitlist control, e-learning only, PW only, or both. Outcomes were assessed pre- and post-intervention using the Parent Sense of Competence–Revised (PSOC-R), Depression Anxiety Stress Scales–21 (DASS-21), Strengths and Difficulties Questionnaire (SDQ), and Social Responsiveness Scale (SRS). Wilcoxon signed-rank test was used to determine improvements of the full sample, while Mann-Whitney U test and linear regression with post-hoc Bonferonni were used to compare outcomes of the four interventions.

RESULTS: Of 99 parent–child dyads, 93 completed post-assessment. The median child age was 4.55 years; 77% were boys. Among parents, 70% were mothers and 57% had tertiary education. Per-protocol adherence was higher among those attending in-person training (62%) than those completing e-learning (43%), although this was not significant (p=0.178). Across the full sample, significant improvements were observed in total SDQ (+1.74 [SD 5.21]) and SRS (+2.42 [SD 8.03]) scores, particularly peer problems (+1.85 [SD 1.00]) and restricted interests and repetitive behaviours (+3.88 [SD 9.41]).Compared with the waitlist group, only the PW group demonstrated substantial improvement in parenting efficacy (ß=8.39, 95% Cl 2.62-14.16, p=0.005) and parenting satisfaction (ß=4.39, 95% Cl 0.48-8.39, p=0.028).

CONCLUSION: Improvements in child behaviour and social responsiveness were observed across all groups, including the waitlist group. However, only the in-person workshop improved parenting confidence. These findings highlight the value of structured, in-person parent-mediated training for families of children with autism.

POSTER ABSTRACTS

PO – 002

An Unusual Case of Intestinal Malrotation with 180-Degree Partial Volvulus in an Extremely Preterm Neonate

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The classic clinical manifestations of neonatal malrotation include acute bilious vomiting with abdominal distension, supported by radiological evidence of bowel dilatation or malposition. Presentation in premature neonates is often non-specific, leading to delayed diagnosis. Diagnosis of intestinal malrotation with volvulus is time-sensitive, especially in premature neonates who have greater morbidity compared to term neonates.

We report an unusual case of intestinal malrotation with 180 degrees volvulus in an extremely low birth weight neonate. The boy was born at 24weeks weighing 705g. He developed multiple complications related to extreme prematurity including respiratory distress syndrome and persistent ductus arteriosus which failed to close despite 1 course of paracetamol and 2 courses of ibuprofen, eventually requiring surgical ligation on day 27. He was tube-fed 1-2 ml 2hourly mother's own milk. The neonate had episodic bile-stained gastric residuals and vomiting with intermittent asymptomatic days. There was limited evidence to suggest a mechanical obstruction given the absence of abdominal distension and daily spontaneous passage of stools. Serial abdominal radiographs were unremarkable.

This case was a diagnostic odyssey navigating through the masquerades of feed intolerance due to immature peristalsis in a premature neonate, relative mesenteric ischemia from a hemodynamic patent ductus arteriosus and ileus due to sepsis. He was eventually confirmed to have intestinal malrotation with 180 degrees midgut volvulus on radiological imaging and surgical laparotomy. He underwent Ladd's procedure and appendectomy on day 37, recovering uneventfully and tolerating full enteral feeds 45 days later.

The case underscores the challenges of diagnosis of intestinal malrotation with volvulus. A 360-degree or greater volvulus is more often cited. Literature lacks descriptions of cases involving a 180-degree partial volvulus. This case highlights the need to recognise 180-degree partial volvulus as a significant clinical entity in the presentation of intermittent greenish gastric aspirates and vomiting with no abdominal distension.

PO – 003

Humidified Heated High Flow Nasal Cannula Versus Bubble Nasal CPAP As Initial Respiratory Support for Preterm Infants

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BACKGROUND: Humidified, heated, high flow nasal cannula (HHHFNC) has become increasingly used alongside conventional bubble nasal CPAP (nCPAP) in preterm infants with respiratory distress syndrome (RDS). Although promising results have been observed in the post extubation phase, data regarding its usage as initial therapy compared to bubble nCPAP in preterm infants with RDS remain controversial.

AIM: To determine the effectiveness and complications of HHHFNC as initial respiratory support for preterm infants

OBJECTIVE: to access the effectiveness of HHHFNC and bubble nCPAP alongside their complications and compare the effectiveness of these two respiratory support modes as initial therapy for preterm infants with RDS

METHODS: From 1st January 2018 to 31st December 2019, 70 preterm newborn infants between 28 – 34 weeks gestation with RDS were randomized to receive either HHHFNC or bubble nCPAP after taking parental consents. Each treatment modality was considered effective if there was no treatment failure requiring endotracheal intubation and mechanical ventilation within 72 hours of initiating the assigned respiratory support. Complications related to each treatment group including pneumothorax, nasal septum trauma, IVH, hypotension and complications of preterm infants such as hyperbilirubinemia, anaemia, electrolyte imbalance and sepsis were analysed.

RESULTS: Treatment failure rate was found to be (20%) in HHHFNC group and (17.1%) in bubble nCPAP group (p= 0.94). Pneumothorax was found more in HHHFNC group (8.6%) compared to (0%) in bubble nCPAP group (p= 0.239) where nasal septum trauma was found significantly lower in HHHFNC group (0%) than in bubble nCPAP group (22.9%) (p=0.005).

CONCLUSION AND SUSTAINABILITY: HHHFNC was as effective as bubble nCPAP and well tolerated as initial respiratory support to preterm infants (28-34 weeks) with moderate RDS although pneumothorax was observed in HHHFNC group in the present study.

PO – 005

The Impact of Growth Hormone Therapy on Quality of Life of Children with Small for Gestational Age and Idiopathic Short Stature

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OBJECTIVES: Growth hormone therapy is indicated for use in children born small-for-gestational-age (SGA), and increasingly for idiopathic short stature (ISS), a heterogenous condition with height below 2 standard deviations of the mean for age and sex, without identifiable causes. The outcomes in final height for ISS/SGA are more variable. The impact of GH therapy on the quality of life (QOL) of individuals with ISS/SGA is less established. A systematic review was conducted to evaluate if GH therapy improves QOL in these conditions.

METHODS: A PRISMA-compliant systematic review was conducted using PubMed, Embase, CINAHL, PsycINFO, and Cochrane. Inclusion criteria were primary studies of patients <18 years with ISS/SGA who received GH therapy, with QOL measured pre-and-post GH therapy. The Joanna-Briggs Institute Critical Appraisal tools were used to assess study quality. Qualitative thematic summaries of the results were presented with the GRADE strength of evidence.

RESULTS: Three studies evaluated effects of GH on QOL in ISS (n=85) and 6 studies on SGA(n=302). Significant improvements in change in QOL with GH therapy were shown in 2 of 3 studies on ISS, and 5 of 7 studies on SGA. For ISS, the mean improvement in QOL scores post-GH was 13.1(SD 11.6); improvements were across all QOL subdomains. Parent-reported scores were higher than child-reported (GRADE:low). For SGA, GH therapy led to improvements in QOL across all domains compared to no therapy, and appeared better when initiated before puberty (GRADE:low). QOL scores were marginally better with GH dose at 66 mcg/kg/day compared to 33 mcg/kg/day (GRADE:low).

CONCLUSION: GH therapy appears to improve QOL in patients with ISS/SGA, but quality of evidence remains low. GH therapy may be offered to these patients where clinically indicated, with potential benefits in QOL improvements beyond height gain.

PO – 006

Is Autism Spectrum Disorder Associated with Earlier Onset of Puberty and a Higher Prevalence of Precocious Puberty? A Systematic Review of the Literature

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BACKGROUND/AIM: Globally, a clear trend towards earlier pubertal onset has been observed over the past few decades, with no single aetiology identified for this. Autism spectrum disorder (ASD) has been reported in several studies to be associated with precocious puberty. This can potentially exacerbate the psychological stress experienced by individuals with ASD during adolescence. This systematic review explored the association between pubertal onset and tempo and a diagnosis of ASD, compared to typically-developing children.

METHODS: A PRISMA-compliant systematic review was conducted across PubMed, Embase and Cochrane. The inclusion criteria were primary studies that reported on pubertal timing and/ or prevalence of precocious puberty between individuals with and without ASD. The quality of individual studies was assessed using the Joanna Briggs Institute Critical Appraisal Tools. The evidence was synthesized based on the Grading of Recommendations Assessment, Development and Evaluation (GRADE) criteria to provide very low, low, moderate or high certainty of evidence (COE) for the association between pubertal timing and ASD.

RESULTS: Nine observational studies (42,347 subjects with ASD; 136,347 controls) were included. Three of the largest studies reported significantly higher rates of precocious puberty among children with ASD (GRADE: moderate COE). Seven of 9 studies showed an association between ASD and earlier pubertal onset, particularly in females. (GRADE: very low to low COE) The evidence on pubertal tempo was limited and inconclusive. (GRADE: very low to low COE) The heterogeneity among study characteristics precluded a meta-analysis. While exact aetiologies were not directly studied, themes on endocrine, genetic or psychosocial factors emerged as potential contributors to a multifactorial aetiology.

CONCLUSION: There appears to be a trend towards earlier onset puberty and an increased incidence of precocious puberty among children with ASD. Understanding the nature of this association is crucial to increase support for these individuals during puberty, where psycho-emotional challenges may be exacerbated.

PO – 007

Hemodynamic Influence on the Efficacy of Early Acetaminophen Therapy for Patent Ductus Arteriosus (PDA) in Extreme Preterm Infants

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OBJECTIVES: This study aims to identify hemodynamic influence on the success of early Acetaminophen therapy for PDA in preterm infants born <28 weeks' gestation.

METHODS: A single center retrospective study (Feb 2021 to Oct 2024). Clinical and echocardiographic data on preterm infants <28 weeks' gestation with hemodynamically significant PDA (defined as per unit protocol) treated with early Acetaminophen (therapy within 2 weeks of life) were collected and compared between those with closed and persistent PDA. Infants with major congenital/cardiac disorders were excluded.

RESULTS: Seventy infants received early Acetaminophen. The mean gestational age was 26.17 ± 1.41 weeks and birth weight 789.31 ± 198.49g. 21 (30%) had successful PDA closure whereas 49 (70%) had persistent PDA. The group with successful PDA closure had higher gestational age (27.11 ± 1.44 vs. 25.73 ± 1.19 weeks, p = 0.001), were small for gestational age (SGA) (38% vs 14%, p = 0.02, 95% CI 0.08–0.98) and had maternal pre-eclampsia (18% vs 7%, p = 0.01,95% CI 0.08–0.75). Echocardiographic parameters showed significantly lower pre-treatment diastolic velocity (0.36 ± 0.17 m/s vs. 0.51 ± 0.30 m/s, p = 0.02), left ventricular end-systolic diameter (7.71 ± 1.21 vs. 8.39 ± 1.36 mm, p = 0.04), velocities across the main pulmonary artery (MPA) (0.66 ± 0.17 vs. 0.83 ± 0.26 m/s, p = 0.003), ascending (0.82 ± 0.21 m/s vs. 0.95 ± 0.26 m/s, p = 0.03), and descending aorta Doppler velocities (0.88 ± 0.19 m/s vs. 1.10 ± 0.28 m/s, p = 0.001) among closed PDA. Logistic regression identified gestational age, SGA and higher MPA Vmax as independent predictors of ductal closure.

CONCLUSION: Infants with significant Doppler abnormalities had limited success with Acetaminophen therapy. Higher gestational age, SGA and lower MPA velocity predicted the likelihood of successful PDA closure.

PO – 009

Predictive Ability of the Hammersmith Neonatal Neurological Examination (HNNE) for Identifying Neurodevelopmental Impairment in Extremely Preterm Infants at 2-Years Corrected Age

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OBJECTIVES: The Hammersmith Neonatal Neurological Examination (HNNE) is widely used to assess early neurological function in preterm infants, but its long-term predictive value remains underexplored. We aimed to evaluate the predictive ability of HNNE at term-corrected age (TCA) in forecasting motor, cognitive, and language impairments at 2-years corrected age (CA).

METHODS: We evaluated 88 infants born before 29 weeks of gestation and/or weighing less than 1250 grams at Singapore General Hospital, all of whom underwent the HNNE at TCA of 37^{+0} – 41^{+6} weeks and were assessed at 2-years CA using Bayley Scales of Infant and Toddler Development (BSID). Statistical analyses were performed to determine the diagnostic accuracy of HNNE.

RESULTS: Lower HNNE scores were significantly associated with poorer motor outcomes (median score 20.3; p = 0.04). The HNNE demonstrated moderate diagnostic performance in predicting critical motor impairment, with a sensitivity of 75.0%, specificity of 64.5% and an AUC of 0.80. Lower HNNE scores also increased the odds of critical motor impairment by 40.3%. When compared to motor outcome, predictive performance for cognitive and language outcomes was weaker, with lower sensitivity, specificity, and AUC curves – Cognitive: 66.7%, 61.9%, 0.73; Language: 44.4%, 63.0%, 0.62.

CONCLUSION: Our study demonstrated that the HNNE could effectively predict critical motor impairment and moderately predict critical cognitive impairment at 2-years CA in extremely preterm infants. Future studies assessing individual HNNE subscales and their integration with complementary tools to improve comprehensive neurodevelopmental risk stratification.

PO – 010

Satisfaction with Telemedicine Consultations Versus In-Person Consultations Among Caregivers of Children with Neurodevelopmental Disorders

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BACKGROUND/AIM: The use of telemedicine has accelerated following the Covid-19 pandemic. Our study aimed to compare satisfaction with in-person consultations (IC) and tele-consultations (video, VC; or phone, PC) among caregivers of children with neurodevelopmental disorders.

METHODS: The study was conducted in a tertiary developmental-behavioural paediatrics service. Caregivers of all patients attending a doctor's follow-up appointment, regardless of consultation mode, were invited to complete an anonymized online survey. Data were collected about caregiver and child characteristics, mode of consultation and satisfaction across several measures on a Likert scale.

RESULTS: From September 2024 to January 2025, 249 survey responses were received. 73.5% of respondents were mothers. 71.1% had tertiary-level education. The children's main diagnoses were autism (31.7%), language delay (31.7%), learning disorder (9.2%) and ADHD (8.4%). 195 (78.3%) had attended IC, 16.5% VC and 13 (5.2%) PC.

Satisfaction scores for punctuality, convenience, ease of preparation, clarity of communication, confidentiality, effectiveness of consult, and meeting of needs were significantly higher for VC and PC than for IC (all $p<0.05$). There were no significant differences between satisfaction scores for VC and PC.

Frequently identified advantages for tele-consultations included reduced need to travel (90.7%) or take leave (63.0%), shorter wait time (77.8%) and child not having to miss school or intervention (48.1%). A low rate of disadvantages was reported, such as connection problems (16.7%), needs inadequately addressed (16.7%) and inability of doctor to examine the child (14.8%).

CONCLUSION: Tele-consultations are a satisfactory alternative to in-person visits for selected children with neurodevelopmental disorders.

PO – 011

The Impact of Growth Hormone Therapy on Quality of Life of Children with Growth Hormone Deficiency

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OBJECTIVES: Growth hormone (GH) replacement has been the cornerstone treatment for individuals with GH deficiency (GHD), with the aim of improving final height and body composition. GH therapy is administered largely via daily subcutaneous injections which may be burdensome. A systematic review was conducted to evaluate if GH therapy improves the quality of life (QOL) of individuals with GHD.

METHODS: A PRISMA-compliant systematic review was conducted using PubMed, Embase, CINAHL, PsycINFO, and Cochrane. Inclusion criteria included primary studies involving patients <18 years with GHD on GH therapy, where measures of QOL were reported before and after therapy, published in English. The Joanna-Briggs Institute Critical Appraisal tools were used to assess study quality. Meta-analysis and qualitative thematic summaries of the results were presented with the GRADE strength of evidence.

RESULTS: Nine studies comprising 798 individuals with GHD and 1,332 controls were included. Eight of these had reported improvements in total QOL scores post-GH therapy. The mean improvement in QOL scores post-GH therapy was 5.82 (S.D. 3.62). The improvements were reported across the various QOL subdomains of physical, psychosocial and emotional QOL. While both self and parent-reported QOL scores showed improvement in QOL with GH therapy, parent-reported scores were consistently lower than child-reported scores (GRADE: moderate). The improvement in QOL between those with acquired vs. isolated GHD were not significantly different (GRADE: low) based on 2 studies, while weekly somatotrogon compared to daily somatotropin injections had better improvement in QOL scores for those >7 years old (GRADE: low). Children with GHD who had more severe height deficit (height SDS <3.0) at the start of treatment had better improvement in QOL scores (GRADE: moderate).

CONCLUSION: GH therapy improves overall QOL in children with GHD from all aetiologies, in particular if there is severe height deficits pre-therapy or in those with acquired GHD.

PO – 015

Tri-ponderal Mass Index as a Screening Tool for Central Obesity and Hypertension Among Adolescent Schoolchildren

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OBJECTIVES:
1. To evaluate the predictive ability of Tri-ponderal Mass Index (TMI) for assessing central obesity and hypertension in adolescents aged 14-18 years.
2. To estimate the prevalence of central obesity and hypertension among adolescent schoolchildren.

METHODS: This cross-sectional study involved 444 adolescents (aged 14-18 years) from Kerala, selected through simple random sampling between June 2022 and June 2023. Anthropometric measurements (weight, height, waist circumference) and blood pressure were recorded. TMI (kg/m^3) and BMI (kg/m^2) were calculated, with central obesity defined by waist circumference >90th percentile (International Obesity Task Force) and waist-to-height ratio >0.5. Hypertension was diagnosed based on AAP guidelines. ROC analysis assessed the ability of TMI and BMI to identify central obesity.

RESULTS: The prevalence of central obesity based on waist circumference >90th percentile was 3.4%, 10.8 % by at risk for metabolic syndrome waist circumference >70th percentile, while the waist-to-height ratio identified 19.4%. Hypertension was found in 10.6%, with 12.4% exhibiting elevated blood pressure. TMI showed higher specificity (93%) than BMI (79.5%) in detecting central obesity, although BMI had greater sensitivity (100%) than TMI (86.7%). TMI also outperformed BMI in identifying metabolic risk (WC ≥ 70th percentile), with a higher specificity (96.5% for TMI vs 84.8% for BMI). TMI is better at identifying hypertension with higher specificity (94.5%) compared to BMI (83.4%). ROC analysis gave a TMI cut off 14.4 for males and 14.6 for females that effectively discriminated central obesity.

CONCLUSION: TMI proves to be a more specific and reliable tool for assessing central obesity compared to BMI and demonstrates a stronger correlation associated with hypertension and increased metabolic risk. This study highlights the increasing prevalence of central obesity and hypertension in adolescents, emphasizing the need for early intervention. Incorporating TMI into routine screening can enhance identification and enable timely, targeted interventions for at-risk adolescents.

PO – 016

Physical Activity, Obesity, and Cognitive Function: Insights from a Cross-Sectional Study on Rural School-going Adolescents

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OBJECTIVES:
1. To determine the relationship between physical activity and cognitive function among rural school-going adolescents of age 14-16 years.
2. To determine the relationship between obesity and cognitive function among rural school-going adolescents.
3. To determine the relationship between physical activity and scholastic performance among rural school-going adolescents.

METHODS: This cross-sectional study, conducted from December 2021 to December 2022, involved 200 adolescents (ages 14-16) from rural schools. Physical activity was measured using the Previous Day Physical Activity Recall (PDPAR), a self-report tool assessing after-school activity. Cognitive function was evaluated using the Modified Mini-Mental State Examination (MMSE), while Body Mass Index (BMI) was calculated via standard anthropometric methods. Scholastic performance was based on grades from the previous academic year. Correlation analysis was conducted to examine the relationships between these factors.

RESULTS: Among the 200 participants, 54.5% were girls and 45.5% were boys. Most (80.5%) had a normal BMI, while 14% were overweight and 5.5% obese. Physical activity varied: 61.5% engaged in moderate, 38% in light, and 19% in vigorous activity. A moderate positive correlation ($r_s = 0.34$, $p < 0.001$) was found between physical activity and cognitive function, with 79.7% of moderately active adolescents showing good cognitive performance. Conversely, obese and overweight adolescents had poorer cognitive function, with a moderate negative correlation ($r_s = -0.41$, $p < 0.001$) between BMI and cognitive performance. Duration of outdoor activity and junk food consumption were significantly associated with cognitive function, while sleep duration and screen time had no meaningful impact.

CONCLUSION: Physical activity is positively associated with cognitive function in adolescents, with more active adolescents demonstrating better cognitive performance. Obesity and overweight are negatively associated with cognitive function, while physical activity has minimal effect on scholastic performance. Promoting outdoor activity and healthier eating habits may enhance cognitive development in rural adolescents.

PO – 017

A Rescreening Protocol for Congenital Hypothyroidism in Premature Babies in the Neonatal Intensive Care Unit

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OBJECTIVES: Neonatal thyroid homeostasis is essential for physiological function and long-term neurodevelopmental outcomes. Congenital hypothyroidism (CH) is largely detectable with appropriate screening. Prevailing CH screening based on cord TSH may have limitations in premature neonates, risking missed cases of CH. This study reported the findings of a newly implemented TSH rescreening protocol for premature and sick newborns.

METHODS: Since April 2023, neonates admitted to the NICU for >14 days are eligible for rescreening. Thyroid function tests were done at 2 weeks (if cord TSH >10mIU/L), 4 weeks and monthly until discharge. This study was an analysis of this protocol over a 2-year period. Comparative statistics were used to compare those with and without CH. Multivariate logistic regression analysis was performed to identify significant risk factors for CH.

RESULTS: 147 (87.0%) out of 169 eligible neonates born <33 weeks gestational age (GA) were screened. The incidence of CH in this group was 9.5% (n=16), with the highest incidence amongst those born at 28 weeks GA (25%). All 16 CH cases had normal cord TSH and were asymptomatic at birth. Diagnosis was solely detected via rescreening**.** Three of the 16 CH cases had transient hypothyroxinemia of prematurity with thyroxine weaned off by 18 months old. Eleven of the CH cases who underwent a thyroid ultrasound showed the presence of a normal thyroid gland. Using multivariable logistic regression including GA, presence of sepsis, perinatal asphyxia or positive family history of thyroid disorders, none of the variables were significantly predictive of CH.

CONCLUSION: Current cord TSH screening fails to identify many premature neonates who develop CH, as evidenced by normal initial screens in all cases diagnosed via rescreening. Given the high incidence of CH in this cohort, TSH rescreening protocols for premature infants are recommended to prevent under-diagnosis of CH.

PO – 018

Prospective Association Between Social Skills at 7-years and Primary School Leaving Examination (PSLE) Achievement Levels

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OBJECTIVES: In Singapore, academic pressure to achieve optimal results in Primary School Leaving Examination (PSLE) is high. Parents often focus on academic learning opportunities (i.e., tuition) and intellectual ability. This study aimed to understand the extent to which socioemotional competence contributes to PSLE. Specifically, we examined whether social competence at 7 years of age was associated with PSLE Achievement Level (AL).

METHODS: Data were from Growing Up in Singapore Towards healthy Outcomes (GUSTO), a Singapore population-based, prospective pregnancy-birth cohort. Social skills were reported by parents using the Social Responsiveness Scale (SRS) at 7 years. At the same 7-year visit, children underwent the Wechsler Abbreviated Scale of Intelligence (WASI), which produced a standard score (Mean = 100, SD = 15) for cognitive functioning. At 12-13 years, parents and children self-reported PSLE AL, which was cross-checked with data from MOE. Using linear regression and mediation analyses, we examined the relations between SRS social scores, WASI-2 cognitive scores, and PSLE AL.

RESULTS: Complete data from 510 participants were included. After controlling for maternal age, household income, maternal education, gestational age, and early home cognitive environment (i.e., 4-year shared reading and 3-year screen time), all subscales of SRS, including Social Awareness, Cognition, Communication, and Motivation, were associated with PSLE AL, with Social Communication contributing the most (β=0.28, p<0.001). Maternal education level (in 2 categories) was a significant predictor of PSLE AL (β= -0.70, p<0.001). Mediation analysis showed that the association between maternal education level and PSLE AL was mediated by Social Communication (Average Causal Mediated Effect = 0.15, p<0.001).

CONCLUSION: Whilst intellectual ability remains a significant factor contributing to PSLE Als, a modifiable factor of PSLE AL achievement is social competence, especially in social communication. For at-risk children whose mothers are less educated, social skills may be important to support in early primary years to improve academic achievement.

PO – 019

Delayed Cord Clamping in Preterm Infants: A Quality Improvement Initiative

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OBJECTIVES: Delayed cord clamping (DCC) is standard practice for term infants, but its implementation among preterm infants has remained inconsistent despite well-established benefits. This Quality Improvement initiative aims to increase DCC rates in infants born at <33 weeks' gestation by 20% over 13 months.

METHODS: Baseline data from July 2023 to April 2024 showed only 30% of eligible preterm infants received DCC. A pre-intervention survey and root cause analysis identified key barriers, including logistical challenges during night shifts, patient-related limitations and inconsistent clinician practice arising from varied opinions, fatigue, and lack of confidence. Nurses reported limited awareness and perceived DCC as outside their scope. Education gaps, outdated protocols, poor documentation, and ineffective communication further hindered compliance.

Targeted interventions were implemented using Plan-Do-Study-Act cycles. Collaboration was established with the Obstetrics and Gynaecology department. The DCC protocol was updated in alignment with international guidelines and disseminated. Compliance was reinforced through daily reminders, follow-up discussions, and emphasis on clear documentations. Stakeholder engagement was central: doctors and nurses were educated through teaching sessions, instructional videos, printed posters with QR codes linking to video demonstration, and a dedicated section on the Labour Ward and Perinatal Bulletin. Post intervention survey was conducted to assess the project's impact: 91% of respondents reported routinely remembering to perform DCC, up from 46%, and 59% frequently requested DCC, compared to 14% pre-intervention.

RESULTS: The median DCC rate improved to 71% from 30% during the intervention period (May 2024–May 2025), exceeding the original target.

CONCLUSION: A structured, multidisciplinary approach, and engaging stakeholders in refining the protocol and processes, improved awareness and confidence in performing DCC, increasing DCC rates among preterm infants. Sustained efforts through education, protocol reinforcement, and audits are ongoing. Future studies will evaluate the impact of improved DCC rates on clinical outcomes, including neonatal mortality and transfusion needs.

PO – 021

Effect of Community-Based Kangaroo Mother Care on Neonatal Mortality: A Systematic Review and Meta-Analysis

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OBJECTIVES: Neonatal mortality accounts for nearly half of under-five deaths globally. Kangaroo Mother Care (KMC) is a low-cost, high-impact intervention for preterm and low birth weight (LBW) newborns. Most studies on KMC have been hospital-based. Community-based KMC (CKMC) offers a potentially safe alternative in areas with high homebirth rates and LBW deliveries. This review synthesizes existing randomized trials to determine whether CKMC decreases neonatal mortality compared to routine newborn care.

METHODS: A random-effects meta-analysis was conducted comparing neonates exposed to CKMC versus standard newborn care. The primary outcome was neonatal mortality; secondary outcomes included weight gain, wasting, stunting, breastfeeding practices, morbidity and hospitalization. Databases searched include PubMed, CENTRAL, ClinicalTrials.gov, LILACS, MEDLINE, and others. Four studies met the inclusion criteria and underwent risk of bias assessment and meta-analysis with subgroup analysis for LBW infants.

RESULTS: CKMC reduces neonatal mortality in LBW infants by 28% [RR 0.72, 95% CI 0.58–0.89; p=0.003, I^2=0], but showed no significant effect on overall neonatal mortality [RR 0.81, CI 0.60–1.09; p=0.16, I^2=62%]. It significantly increases exclusive breastfeeding rates at 6 months [RR 7.03, 95% CI (5.61, 8.80); p<0.0001, I^2=0%] and lowers the incidence of possible serious bacterial infection (PSBI) [RR 0.81, 95% CI (0.66, 0.99), p=0.04, I^2=86%). No statistically significant effect were seen in reducing wasting [RR 0.84, 95% CI (0.65, 1.09); p = 0.20], stunting [RR 0.90, 95% CI (0.64, 1.25); p = 0.53], or hospitalization [RR 0.22, 95% CI (0.01, 8.71); p= 0.42].

CONCLUSION: The evidence suggests that CKMC reduces neonatal mortality in LBW infants, decreases the incidence of PSBI, and increases exclusive breastfeeding at 6 months of life. For effective implementation, CKMC must integrate with facility-based services. Successful CKMC depends on quality training and support, appropriate health financing, and community mobilization.

PO – 022

Cycled Lighting versus Continuous Near Darkness on Growth among Very Preterm Neonates: A Meta-Analysis

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OBJECTIVES: Optimizing NICU environment to limit complications of prematurity is paramount. Benefits and harms of various lighting options in preterm infants have not been elucidated. This analysis summarizes existing randomized trials to determine which lighting control method increases growth among very preterm neonates.

METHODS: A random-effects meta-analysis was conducted comparing neonates exposed to cycled lighting versus continuous near darkness. Databases searched include PubMed, CENTRAL, ClinicalTrials.gov, LILACS, MEDLINE, and others. Four studies met the inclusion criteria and underwent risk assessment and meta-analysis.

RESULTS: There was no significant difference in daily weight gain during neonatal care [MD 2.84g/day; 95%CI (-0.67,6.36), p=0.11], cumulative per week [MD -2.43g/week, 95%CI (-11.97,7.11) p=0.62], time to achieve full feeding [MD 0.10days, 95%CI (-1.39,1.6), p= 0.89], duration of oxygen support [MD –1.85days, 95%CI (-12.92,9.22) p=0.74], mechanical ventilator [MD -1.16days, 95%CI (-3.49,1.17); p=0.33] and the length of hospital stay [MD -5.27days, 95%CI (-11.17,0.62), p=0.08]. There is little to no effect of either intervention on development of retinopathy of prematurity (RR 1.04, 95%CI (0.18,6.03) p=0.96).

CONCLUSION: There is low evidence to support that cycled lighting is more beneficial than continuous near darkness on growth. Further studies comparing these two interventions should be explored.

PO – 023

Role of Ultrasound-guided Peripheral Intravenous Cannulations (USG-PIV) by Paediatric Medicine Hospitalists in Children with Difficult Peripheral Venous Access

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BACKGROUND/AIM: Difficult peripheral venous access is a challenge in paediatric care, owing to patient, disease and treatment factors. It is distressing for both patients and caregivers. Clinical studies indicate only 53-75.6% of children are successfully cannulated on first attempt, with infants having the highest failure rate. In 2008, the Difficult Intravascular Access (DIVA) score was developed to identify and stratify such individuals. Our study reviewed the success rate of USG-PIV cannulation in this cohort.

METHODS: This is a single-center prospective audit that enrolled 63 children under 16 years old with difficult venous access[1] requiring a PIV admitted from 11 October 2024 to 11 March 2025 at KKH. It involved 2 Hospitalists, who underwent mixed-modality training by Paediatric Anaesthetists. The primary outcome(s) were first-pass and overall success rate. Secondary outcomes included time taken for insertion and longevity of PIV. Qualitative data from parents was collected regarding their experience post-discharge by an independent team.

RESULTS: A total of 63 children were assessed. All had DIVA score >/=4, stratified by age. 29 children (46%) were male. Median age was 39 months (1-192 months), with 22 children under 1 year (35%).

First-pass success rate was 40/63 (63.5%), and overall success rate 57/63 (90.5%). 39% of USG-PIV attempts took <15 mins. This is comparable to current literature. In a qualitative survey with parents, all rated 'better experience' with USG-PIV and expressed preference for ultrasound guidance for future procedures.

CONCLUSION: These findings suggest USG-PIV technique ensures a high success rate, shorter time spent and improvement in patient experience. Appropriate assessment of patient characteristics, ultrasound accessibility and feasibility of staff training are imperative to guide implementation of increased uptake of USG-PIV on a larger scale in a hospital setting, with ongoing training for paediatric hospitalist trainees and nurses to aim for improved quality of care and patient experience in the setting of patients with difficult venous access.

PO – 024

Unequal Protection: Severe Combined Immunodeficiency and Oral Polio Vaccine

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An Indonesian girl, first child of non-consanguineous parents, developed generalised maculopapular rash at three months old, and febrile encephalopathy with acute flaccid paralysis at 4 months of age. Microbiological workup was negative, and inflammatory markers were unremarkable. Investigations revealed hypogammaglobulinemia (IgG< 1.09 g/L), marked eosinophilia (7554 cells/uL), and initially low T cell counts which resolved on repeat testing. After initial treatment with broad-spectrum antibiotics, immunoglobulins and corticosteroids, there was some clinical improvement. On transfer to Singapore, detailed immunophenotyping revealed profound T cell lymphocytopenia with the vast majority being memory rather than naïve cells, and absent B cells. On exclusion of transplacental maternal engraftment, the clinical diagnosis of severe combined immunodeficiency (SCID) with Omenn syndrome was made, and eventually supported with genetic testing.

As detailed vaccination history revealed that she received oral poliovirus vaccine (OPV) at day 8 of life, vaccine-associated paralytic poliomyelitis (VAPP) with polio encephalitis was suspected, and eventually confirmed with neuro-imaging and positive enterovirus PCR in the cerebral spinal fluid; Sabin-like poliovirus serotype I was isolated from stool. Hematopoietic stem cell transplantation (HSCT) was offered but declined by the family given the extent of irreversible neurological damage, and high mortality and financial burden associated with HSCT. The family opted for palliative care, and the child died at 8 months old.

The lack of newborn screening for SCID, together with the continual usage of OPV in the routine childhood vaccination programme in most lower to middle income countries is the perfect storm for severe VAPP in children born with inborn errors of immunity (IEI) in these settings. This case highlights 1) the urgent need to strengthen diagnostic capabilities in resource-limited settings, 2) that transition from OPV to inactivated polio vaccine (IPV) is a public health priority, and 3) implementation of SCID newborn screening is still heterogenous in South-east Asia.

PO – 025

Profile and Outcome of Teenage Pregnancy Cases in a Tertiary Hospital: A Retrospective Cross-Sectional Study

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OBJECTIVES: Teenage pregnancy is a global public health issue, posing risks to both mother and newborn. Adolescent mothers are at risk of complications, while their infants are more susceptible to low birth weight, prematurity, and severe conditions. This study examines the clinicodemographic profile of teenage mothers and their correlation with neonatal outcomes to enhance maternal and neonatal care.

METHODS: A retrospective cross-sectional study using medical records of teenage mothers (ages 10-19) delivered at Mariano Marcos Memorial Hospital and Medical Center from January 1, 2017 to December 31, 2019. Maternal demographics and clinical characteristics, with neonatal demographics and clinical outcomes, were collected and analyzed using statistical methods to determine significant correlations.

RESULTS: A total of 278 teenage pregnancies were reviewed. Most were between 17-19 years old, 96% unmarried, and primarily from District II (60%). The majority were primigravid (87%), with adequate prenatal care visits (83%) and normal ultrasound findings (51%), while abnormalities such as oligohydramnios and IUGR were uncommon. Majority delivered through normal vaginal delivery (71%) and 44% had infectious medical conditions while 17% were non-infectious.

Most neonates were male (54%), APGAR scores between 7 and 10, delivered at term (90%) with an average birth weight of 2.7kg. However, 26% were low birth weight and 10% were premature. Majority were born uncomplicated (96%), while congenital anomalies and neonatal death (1%) were primarily associated with congenital anomalies and complications such as sepsis.

Statistical analysis revealed that maternal demographic and clinical characteristics significantly correlated with the mode of delivery.

CONCLUSION: This study outlined the clinicodemographic profile and outcomes of teenage pregnancies at a tertiary hospital. Most mothers were late adolescents from urban areas, with normal BMI and adequate prenatal care. Neonates were predominantly male, term, with normal birth weights and APGAR scores. Vaginal delivery, the most common mode, was significantly associated with favorable neonatal outcomes. While most neonates were discharged uncomplicated, some had comorbidities and succumbed to pneumonia and sepsis.

PO – 026

Oral and Targeted Therapies for Relapsed/Refractory Langerhans Cell Histiocytosis: A Single-Center Experience from NUH (2020–2025)

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OBJECTIVES: To describe the outcomes of relapsed or refractory Langerhans Cell Histiocytosis (LCH) patients treated with oral or targeted agents at a tertiary centre, with emphasis on cost-effective and accessible treatment options for patients from low- and middle-income countries (LMICs).

METHODS: We retrospectively reviewed pediatric LCH cases at NUH (2020 January–2025 May) requiring second-line therapy. Treatment regimens included oral 6-mercaptopurine (6MP) and/or methotrexate (MTX), vemurafenib/dabrafenib, or intravenous (IV) zoledronate. Molecular testing for BRAF V600E was performed where possible. Clinical and radiologic responses, tolerance, and monitoring strategies were documented.

RESULTS: A total of 32 patients were seen for LCH in NUH from 2020 to 2025 May. Twenty-six patients were originally from Vietnam, one from Indonesia, one from the United States and four from Singapore. Median age at diagnosis of LCH was at 28.5 months of age with a Male: Female sex ratio of 2.2. This was consistent with large scale demographics.

At diagnosis, 9 patients had single system unifocal disease (25%), 4 had multifocal bone (12.5%), 14 had multisystem risk organ negative involvement (43.75%), and 6 had multisystem risk organ positive involvement (18.75%). BRAFV600E was detected in 7/32 patients (21.87%)

In of 23 out of 32 patients (71%) had received prior treatment before coming to our institution.18 out of 23 (78%) patients needed further treatment in view of active disease.

Of the 18 patients who were treated for relapsed/active LCH:

- Oral 6MP and MTX: 9/18 patients were started on 6MP and MTX therapy for relapsed LCH. One of whom was given concomitant IV zoledronate as below. 7/9 (77%) had multisystem LCH, 1/9 (11%) had high risk multisystem LCH, 2/9 (22%) had confirmed BRAFV600E mutation. 7/9 (77%) of patients had response to therapy, 2/9 (22%) patients had stable disease. None had progressive disease.

- Oral Vemurafenib/Dabrafenib: 6/18 patients were treated with oral vemurafenib/dabrafenib – 1/6 on dabrafenib, 5/6 on vemurafenib. 6/6 (100%) had multisystem disease. 4/6 (66%) of these patients had high risk multisystem LCH involvement. 4/6 (66%) of these patients had proven BRAFV600E mutation, for the remainder circulating blood BRAFV600E was sent but negative and histology was not assessed for BRAFV600E. 100% of them 4/6 (66%) of these patients had response to vemurafenib/dabrafenib. 2/6 (33%) of these patients had stable disease.

- IV Zoledronate: 4/18 patients received IV Zoledronate. 2/4 (50%) of them had multisystem disease. None of them had high risk organ involvement. 1/4 (25%) were BRAFV600E+. 4/4 had response to treatment.

CONCLUSION: Oral 6MP/MTX, targeted BRAF inhibitors, and IV bisphosphonates are effective and feasible options for relapsed/refractory LCH, particularly in LMIC contexts. Treatment should be individualized based on clinical behaviour and molecular findings, with emphasis on minimizing toxicity and improving access to care

PO – 027

Differentiation of Positional Plagiocephaly and Lambdoid Synostosis Using Low-Dose CT: A Study on the Prevalence of Unilateral Lambdoid Synostosis

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BACKGROUND: Unilateral lambdoid synostosis is considered an extremely rare condition, with an estimated incidence of approximately 1 in 300,000 live births. Due to concerns about radiation exposure, CT imaging has traditionally been avoided for diagnosis. However, since 2023, our institution has introduced low-dose CT imaging using a tin filter, allowing for significant reduction in radiation exposure while enabling differentiation between positional plagiocephaly and craniosynostosis.

OBJECTIVE: To investigate the prevalence of unilateral lambdoid synostosis by diagnosing infants with severe cranial deformities using low-dose CT, and to re-evaluate the rarity of this condition.

METHODS: We retrospectively reviewed cases from July 2022 to June 2025 at our cranial shape outpatient clinic. Infants diagnosed with severe cranial deformities who underwent low-dose CT were included. The number of patients diagnosed with unilateral lambdoid synostosis was divided by the number of live births during the same period to calculate the estimated prevalence.

RESULTS: During the study period, 345 infants visited our cranial shape clinic. Among them, 66 underwent low-dose CT due to severe cranial deformities. Two cases were diagnosed with unilateral lambdoid synostosis. The total number of live births at our region during this period was 30,105, yielding an estimated prevalence of approximately 1 in 15,000.

CONCLUSION: The prevalence of unilateral lambdoid synostosis in our cohort was approximately 20 times higher than traditionally cited in textbooks. When evaluating occipital plagiocephaly, clinicians should consider craniosynostosis in the differential diagnosis. Low-dose CT imaging serves as a valuable diagnostic tool that balances safety with accuracy.

PO – 028

Correlation Between Adult Attention Deficit Hyperactivity Disorder (ADHD) and Adverse Childhood Experiences (ACE) of their Offspring

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OBJECTIVES:

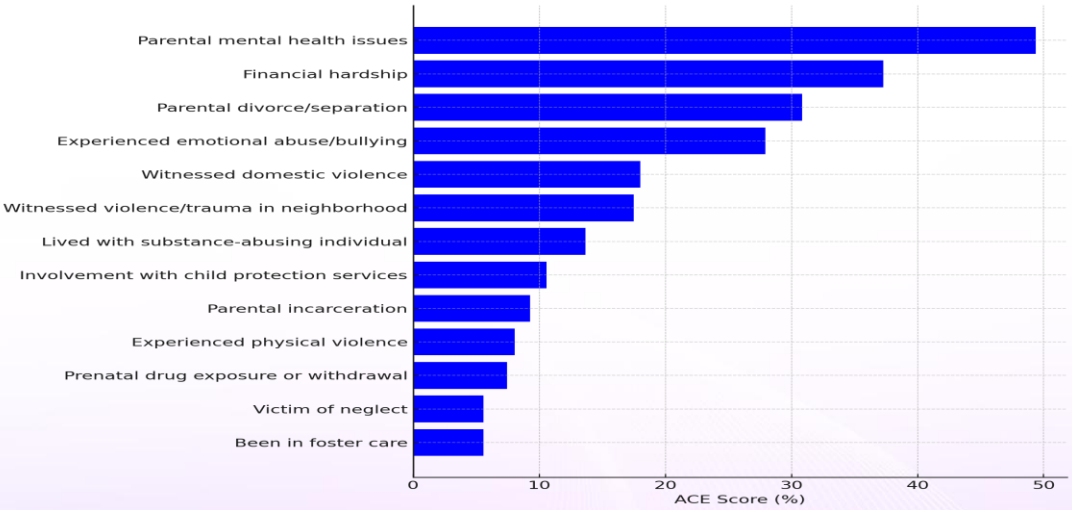
- Children exposed to ≥ 4 Adverse Childhood Experiences (ACEs) have higher rates of complex trauma, emotional regulation, cognitive deficits and increased risk of childhood ADHD [1,2].
- Relationship between parental ADHD symptoms and children's ACE exposure remains under-explored.
- This study investigates the association between parental ADHD and child ACE scores.

METHODS:

- Online survey of 162 caregivers (84% female, mean age 37 years) attending paediatric hospital or clinic.
- Validated screening tools were used to assess: Adult ADHD symptoms and Child ACE scores.
- Logistic regression analysis, adjusted for sociodemographic factors.

RESULTS:

- Higher parental ADHD symptom scores are significantly associated with increased ACE of their offspring (dose-response relationship).
- Moderate parental ADHD symptoms (scores 10-19) associated with 2.7 times greater odds of child ACE ≥4 (CI 1.0–7.1).
- High parental ADHD symptoms (scores ≥20) associated with 5.3 times greater odds (CI 1.5–18.6).
- – Each incremental increase in parental ADHD score increased odds of ≥4 ACEs in children by 9% (OR = 1.09, CI 1.03–1.17).
- Specific parental symptoms, notably inattention (p = 0.005) and irritability (p = 0.002), significantly associated with elevated ACE scores in children.



CONCLUSION:

- Parental ADHD symptom severity is significantly associated with elevated ACE scores in their children.
- Screening prospective parents for ADHD symptoms could facilitate early intervention and reduce ACEs, improving long-term child developmental outcomes.

PO – 029

Effectiveness of the Lifestyle InTervention for Everyone (LITE) Programme in Weight Management for Singaporean Children with Overweight and Obesity

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OBJECTIVES: Family-based interventions combining dietary, physical activity and behavioural interventions over at least 26 hours a week, are currently recommended as the best practice in weight management for children younger than 12 years old. The Lifestyle InTervention for Everyone (LITE) programme pioneers such family-based weight management interventions in Singapore. Our study aims to determine its effectiveness in a) reducing the children's BMI z-score at 3 and 6 months post programme and b) increasing their fruits and vegetable intake and exercise duration 6 months post-programme, as compared to children receiving standard care.

METHODS: 100 children between 6 and 12 years old were recruited from KK Women's and Children's Hospital Weight Management Clinic (WMC) from May 2022 to October 2024, and underwent randomised allocation into the LITE programme vis-à-vis standard care. Children in the LITE programme underwent regular family-based sessions introducing them to physical activity and healthy eating on top of reviews with their paediatricians at the WMC as per those receiving standard care. Preliminary findings are based on 73 participants who have completed the programme for more than 6 months.

RESULTS: While there was significant reduction in the BMI z-score among children who completed the LITE programme at 3 months as opposed to those receiving standard care (-0.092 units; 95% CI, -0.151 to -0.003, p=0.003), there was no difference at 6 months (-0.030 units; 95% CI, -0.101 to 0.041, p= 0.404). There were higher odds of taking 2 servings of fruits or vegetables in the LITE group compared to children under standard care (odds ratio 7.60; 95% CI 1.22 to 47.48, p=0.030) at 6 months post programme. There was no significant difference in moderate to physical activity level between the 2 groups.

CONCLUSION: The family-based LITE programme showed short-term effectiveness in reducing the BMI for children with overweight and obesity and promoting healthy eating habits.

PO – 030

Ward-based Pediatrics Advanced Practice Nurses (APNs) in Singapore

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OBJECTIVES: APNs collaborate closely with physicians to deliver complex nursing care to address health issues. As of 2023, Singapore has 28 pediatric APNs at KK Women's and Children's Hospital (KKH). KKH implemented ward-based APNs in inpatient settings in 2016, overseeing patient care from admission to discharge without a dedicated cubicle. This model improved care coordination, patient satisfaction, and efficiency (Xu et al., 2022). However, in 2024, the model evolved into a cubicle ward-based APN where APNs manage a dedicated cubicle with six patients.

METHODS: Retrospective data from April to December 2023 was collected on six pediatric cubicle ward-based APNs across three pediatric medical wards. Data include patient numbers, procedures performed, and follow-up care, recorded using standardized form.

RESULTS: 1898 paediatrics patients were managed in APN-led cubicles, including 137 new admissions. Common conditions treated were upper respiratory tract infection (389 cases, 20.4%), bronchiolitis/bronchitis (257 cases, 13.5%), and pneumonia (251 cases, 13.2%). Procedures performed include blood taking (197 cases, 39%), venipuncture (198 cases, 39.7%), finger/heel prick (67 cases, 13.4%), and in-out catheterization (36 cases, 7.2%). Thirteen patients (0.7%) received follow-up care at the GPAPN clinic, a general paediatrics acute care clinic managed by ward-based APNs. While collaborating with multidisciplinary teams to optimize care, streamlining care delivery, APNs also conduct teaching sessions to support nursing staff through education and mentorship.

CONCLUSION: The integration of cubicle ward-based APNs have enabled them to assume responsibilities traditionally held by junior doctors, thereby improving patient satisfaction, care quality, and efficiency. This model promotes holistic and continuity of care, simplifies workload tracking with its pre-destinated patients, and ensures consistent care delivery by dedicated personnel. While the introduction of cubicle ward-based APNs highlights their capability to take on expanded roles within the ward, challenges such as role clarification and acceptance remain. Future studies will explore these challenges to optimize APN's contribution to healthcare delivery.

PO – 031

Improving Management of Early Term Infants: An Evidence-Based Guideline for a Neonatal Unit

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OBJECTIVES: Early term infants (37+0 weeks to 38+6 weeks) constitute 15-31% of all births globally. They face disproportionately higher rates of respiratory morbidity, hypoglycaemia, jaundice and breastfeeding challenges compared to full-term infants. These risks often go unaddressed in standard care pathways treating all ≥37 week infants similarly. We aim to develop a clinical guideline tailored to early term infants promoting earlier detection, intervention and improved outcomes.

METHODS: A comprehensive literature review (2010-2025) was conducted, examining respiratory outcomes, glycaemic profiles, bilirubin dynamics and feeding support in early term infants. Local clinical practices were examined, followed by synthesis of evidence-informed interventions. A draft guideline was developed, focusing on risk stratification, monitoring and family centered care.

RESULTS: Early term infants have higher rates of respiratory morbidity, hypoglycaemia (up to 59% within 48 hours), and jaundice requiring phototherapy. Breastfeeding initiation and duration are also reduced, particularly infants admitted to NICU without early lactation support. There is no existing clinical guideline specifically for early term infants.

To address these, a clinical guideline was developed recommending: identification of early term infants at birth; one hourly vitals monitoring for the first 6 hours; 6 hourly POCT blood glucose monitoring for 48 hours; high risk classification for jaundice with 12 hourly transcutaneous bilirubin checks; routine parental counselling and proactive lactation consultant support within 24 hours of birth. These measures aim to improve early detection, reduce complications and support better outcomes for these infants.

CONCLUSION: Implementation of a structured guideline acknowledges early term infants as a unique at risk group. The guideline operationalises enhanced monitoring and targeted support to reduce morbidity and improve breastfeeding challenges. Next steps include staff training, guideline integration, audit cycles and evaluation of clinical impact.

PO – 032

Utility of Overnight Pulse Oximetry in Clinical Decision Making Regarding Respiratory Support in Ex-prem Babies with Bronchopulmonary Dysplasia (BPD)

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OBJECTIVES: Bronchopulmonary Dysplasia (BPD) is the most common complication of prematurity, with severe BPD requiring careful oxygenation monitoring during neonatal period. While pulse oximetry is routinely performed as part of usual care, the utility of formal overnight pulse oximetry in guiding respiratory support decisions remains unclear.
To evaluate the utility of overnight pulse oximetry in clinical decision-making regarding respiratory support for ex-premature infants with BPD. Secondary aims included comparing outcomes between sequential studies and establishing baseline oximetry values across postmenstrual ages.

METHODS: Retrospective cohort analysis of 173 overnight pulse oximetry studies conducted in 74 ex-premature infants with BPD (2018-2024). Overnight pulse oximetry was performed using Masimo Radical-7 Pulse Oximeter with 2-second signal averaging time. Data collected included oximetry indices: mean peripheral oxygen saturation(SpO2), SpO2 nadir, desaturation index, and percentage time spent below 90%. Changes in respiratory support based on oximetry data were recorded. Sequential studies were analyzed for differences in oximetry indices and baseline values established across postmenstrual age groups.

RESULTS: 88% had severe BPD. While 39% infants needed changes in respiratory support (35% increased, 4% decreased) based on first oximetry study, only 28.4% needed changes in respiratory support (19.7% increased, 8.7% decreased) in the repeat studies. Significant improvements in nadir SpO2 (76% vs 85%, p=0.0004) and desaturation index (30.4 vs 16.6, p=0.0001) were noted after repeating the oximetry studies. On multivariate analysis birth weight, gestational age and time of study had no significant impact on oximetry parameters. Baseline data demonstrated progressive improvement in oxygenation stability with maturity.

CONCLUSION: Overnight pulse oximetry demonstrated its utility in titrating respiratory support, leading to changes in respiratory support in substantial proportion of infants thus allowing safe discharge home with optimal respiratory status. This study will help to formulate a protocol to adjust respiratory support before home. Large prospective studies are needed to evaluate long-term benefits and cost-effectiveness.

PO – 033

A Rare Case of Anaphylaxis Caused by Mint-containing Toothpaste in a Child: A Case Report

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INTRODUCTION: Toothpaste, being a widely used household product, is generally well tolerated. There have been few cases of toothpaste allergy reported thus far and known cases usually present as type IV hypersensitivity reactions with localized symptoms[1-4]. However, immediate-type anaphylaxis is less commonly reported[5]. This report describes the first case of anaphylaxis to mint-containing toothpaste in a paediatric patient.

CASE REPORT: We present a case of a 9-year-old boy with a history of allergic rhinoconjunctivitis and localized allergic reactions to toothpaste, who developed anaphylaxis after using a mint-containing toothpaste. Shortly after brushing his teeth, he developed generalized urticaria, angioedema, and respiratory distress, requiring immediate medical intervention. A skin prick test revealed a positive reaction to mint leaves, suggesting that mint was the causative allergen.

DISCUSSION: Although there are many potential allergenic chemicals found in toothpaste, the frequency of allergic reactions to toothpaste is relatively low[4]. Mint allergy is also rarely reported, with most documented cases being type IV hypersensitivity localised reactions[1-4], rarely anaphylaxis.

As such, we describe a rare case of paediatric IgE-mediated anaphylaxis to mint. Given his prior mild reactions to toothpaste, it is likely that repeated mucosal exposure led to buccal sensitization, ultimately triggering systemic anaphylaxis.
Mint belongs to the *Labiatae* family. Other spices belonging to *Labiatae* family include basil, oregano and thyme. A case report described three patients with systemic allergic reactions to oregano and thyme, who also had positive skin prick test and specific IgE test to mint[6]. This raises a potential for cross-reactivity between mint and other spices.

CONCLUSION: This case highlights the potential for anaphylactic reactions to toothpaste, emphasizing the importance of considering oral hygiene products as potential allergens in patients with unexplained allergic episodes. Increased awareness of uncommon allergens, such as mint in toothpaste, may aid in timely identification and management of anaphylaxis.

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PO – 034

The Plagiocentre@KKH: A Multidisciplinary Pilot Project for the Management of Infant Positional Plagiocephaly and Brachycephaly

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OBJECTIVES: The study assessed the feasibility of a multidisciplinary service (Plagiocentre@KKH) for managing moderate-to-severe infant positional plagiocephaly and/or brachycephaly within a pediatric tertiary hospital. We hypothesized a formalized pathway would improve cranial symmetry outcomes, enhance parental satisfaction and meet escalating local demand.

METHODS: The Plagiocentre was established at KK Women's and Children's Hospital in June 2024. A structured guideline was formalized by a team of Neonatologists, Physiotherapists, and Orthotists. Infants presenting with moderate to severe plagiocephaly or brachycephaly, aged 4-8 months and under the care of any physician at KKH, were referred for further management. Developmental assessments, physical examinations and standardized Cranial Vault Asymmetry Index (CVAI) and Cephalic Index (CI) measurements were performed. Management involved parental education, exercises for torticollis and/or helmet therapy. Data on cranial measurements and parental satisfaction were collected over 12 months.

RESULTS: From June 2024 to June 2025, 134 infants were referred to the Plagiocentre. All infants met inclusion criteria. At assessment, 67.1% presented with plagiocephaly (29% moderate, 20.2% severe, 17.7% very severe) and 35.4% had combined plagiocephaly and brachycephaly. 60.8%of the cohort presented with brachycephaly.68.7% of the infants had concomitant torticollis. Of the 134 infants, 79 (58.9%) required helmet therapy and 41% improved with conservative management. Of the 79 infants, only 64 infants received helmet therapy. Factors precluding helmet therapy included parental reluctance, conservative management preference, financial considerations and head shape improvement. Mean age for helmet therapy initiation was 6.5 months.32 infants completed helmet therapy at time of analysis. Mean duration of helmet therapy was 2.85 months. Mean CVAI reduced from 9.58 to 4.44 $\pm$ 2.08 (normal <3.5). Brachycephalic infants' mean CI improved from 96.1(moderate) to 90.75 $\pm$ 2.69 (normal<90). Mean parental satisfaction for head shape was 4.3 (1-5 scale), with at least 55% being very satisfied or satisfied with the service.

CONCLUSION: Treatment with helmet therapy significantly improved head shape. A 53.65% reduction in plagiocephaly was observed post-treatment. Brachycephalic infants demonstrated an 87.70% correction of their mean CI towards normal head shape. The successful implementation of this clinic highlights its feasibility in managing infants with flat head.

PO – 035

Evaluating the Body Project Training Programme: Educator Perspectives on Acceptability and Feasibility in Singapore Schools

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BACKGROUND/AIM: Body dissatisfaction, stemming from perceived discrepancy between one's actual and internalised ideal body image, is increasingly prevalent among adolescent females in Singapore. It is associated with heightened risk of mental health conditions such as disordered eating, depressive symptoms, and suicidal thoughts. Preventive interventions promoting body acceptance are needed but remain limited in Singapore. The Body Project, an empirically supported cognitive-dissonance-based eating disorder prevention programme was adapted for implementation in Singapore schools, to improve body image dissatisfaction and reduce eating disorders. Training programmes were conducted for teachers to facilitate school-based delivery after adaptation of the Body Project to local school-based context. This study evaluates the feasibility and acceptability of the training programme to support implementation of the Body Project in schools.

METHODS: After completion of a 2-day Body Project training spanning 13 hours, led by Master Trainers in Body Project training, educators rated their satisfaction and quality of the training on a 4-point Likert scale. They also participated in focus group discussions to discuss their perspectives on the relevance and feasibility of implementing the programme in schools. Focus groups were transcribed and analysed using standard qualitative methods.

RESULTS: The programme was well accepted amongst the educators, with 100% of participants rating the training between good to excellent and 97% of participants were satisfied with the training. Thematic analysis of the focus group discussions revealed key themes including support for the programme's relevance, intention, and enhancement of facilitator's confidence in running the programme. However, concerns were raised regarding sustaining the engagement of students in the sessions and a need for further adaptation to school-based setting.

CONCLUSION: Overall, the Body Project training is largely acceptable and feasible to educators, with promising potential to improve body image among adolescent girls in Singapore. Further suggestions could be adopted for a more effective school implementation.

PO – 036

Intravenous Immunoglobulin as a Salvage Therapy in Refractory Pediatric Cutaneous Polyarteritis Nodosa

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OBJECTIVES: Cutaneous polyarteritis nodosa (cPAN) is a localized form of polyarteritis nodosa (PAN), a necrotizing vasculitis affecting small- and medium-sized arteries. Reports of pediatric cPAN are rare, and those with fever or neurological symptoms often follow a refractory course. Treatment options for refractory cPAN in children remain limited, and there are few reports on the efficacy of intravenous immunoglobulin (IVIG) in such cases.

METHODS: A 5-year-old girl developed a skin rash on her right elbow 7 months prior to admission, which gradually spread to the left arm and face. Three weeks before admission, she began to experience recurrent fever, mandibular swelling with difficulty in oral intake, and lower limb pain leading to impaired ambulation. Physical examination revealed livedo reticularis, erythema, and purpura with tenderness, along with cervical lymphadenopathy. Laboratory tests showed significant inflammatory markers. Autoantibodies were negative, and no internal organ involvement was found.
Skin biopsy demonstrated necrotizing vasculitis of small- to medium-sized arteries, leading to a diagnosis of cPAN with fever. She was initially treated with methylprednisolone pulse therapy followed by oral prednisolone, which partially improved her symptoms. However, inflammatory markers remained elevated, and skin induration persisted, suggesting a refractory disease course.

RESULTS: A second course of steroid pulse therapy was administered, followed by one course of IVIG and oral azathioprine, resulting in clinical improvement. Upon tapering prednisolone, skin lesions recurred with induration. Two additional courses of IVIG resolved the relapse, and no further flares occurred despite tapering both prednisolone and azathioprine.

CONCLUSION: We report a pediatric case of refractory cPAN where IVIG was effective in controlling skin symptoms resistant to corticosteroids and immunosuppressants. IVIG may serve as a valuable second-line or salvage therapy for refractory pediatric cPAN.

PO – 037

Two-Year Neurodevelopmental Outcome in Children Born Extremely Premature

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OBJECTIVES:

1. To describe the 2-year neurodevelopmental outcome of preterm children born at < 28 weeks of gestational age (GA)
2. To compare the neurodevelopmental outcome of infants born at 24-26 weeks with a historical cohort

METHODS: The outcomes of surviving infants born at 23-27 weeks gestation from 2017 to 2022 and managed at National University Hospital, Singapore were evaluated clinically at corrected age of 2 years, by retrospective audit of medical records with predefined criteria:
Mild neurodevelopmental impairment (NDI) - hearing loss not requiring amplification, eye abnormalities except blindness, cerebral palsy with gross motor function classification system (GMFCS) ⩽2, and <6-months delay in 1 developmental domain.
Moderate-severe NDI - hearing loss with amplification, <6/60 visual acuity, cerebral palsy with GMFCS ⩾3 and ≥6 months delay or <6 months delay in ≥2 developmental domains.

Outcome classification was based on worst determinant in any one of the four categories.

RESULTS: 101 infants were born extremely preterm with birthweight ranging from 212 to 1268 grams. The overall survival to discharge rate was to 81% (82/101). The survival rate was 72% at 23-25 weeks and 89% at 26-27weeks of GA.

73/82 surviving infants (89%) were clinically evaluated at 2 years; 63% had no/mild NDI. Moderate-severe NDI occurred in 37% of infants. None of the infants had blindness, 24% had hearing difficulties (8% required amplification) and 4% had cerebral palsy.

Comparing with historical cohort of infants born at 24-26 weeks during 2001-2013 (N=82), the rates of hearing loss requiring amplification (6% vs 4%), and blindness (1% vs 0%) were similar but cerebral palsy rate improved in the current cohort (10% vs 4%).

CONCLUSION: The overall survival of extreme preterm infants has improved over the years. Among survivors, two-third of infants had no or mild neurodevelopmental impairment. The incidence of cerebral palsy has decreased over the years.

PO – 038

Isolated Hypertrophic Cardiomyopathy as a Neonatal Presentation of the Congenital Neuromuscular Variant of Glycogen Storage Disease Type IV: Diagnostic Challenges and a Case Report of a Rare Metabolic Cardiomyopathy

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BACKGROUND: Glycogen storage disease type IV (GSD IV) is a rare autosomal recessive disorder caused by deficiency of glycogen branching enzyme (GBE), leading to the accumulation of abnormal polyglucosan bodies. The congenital neuromuscular variant is the most severe form, typically presenting in the neonatal period with hypotonia, respiratory failure, and dilated cardiomyopathy. Cardiac involvement as the primary manifestation is rare and often under-recognized.

CASE PRESENTATION: We report a male preterm infant who presented in the early neonatal period with severe respiratory distress and heart failure. Echocardiography revealed marked biventricular hypertrophic cardiomyopathy (HCM). There were no initial neurological abnormalities. Investigations to determine syndromic, genetic and metabolic causes of neonatal HCM, were done. Whole exome sequencing identified compound heterozygous variants in the GBE1 gene: one known pathogenic and one novel variant. Enzyme analysis demonstrated markedly reduced GBE activity. Myocardial histopathology showed periodic acid–Schiff (PAS)-positive and diastase-resistant inclusions, consistent with polyglucosan accumulation. Over time, the infant developed progressive hypotonia and areflexia, raising suspicion for an underlying neuromuscular disorder.

DISCUSSION: This case represents an unusual presentation of the congenital neuromuscular variant of GSD IV, with cardiac involvement—specifically HCM—appearing as the initial and predominant feature. While dilated cardiomyopathy is more typically associated with this subtype, hypertrophic forms are rarely described. The delayed onset of neurological symptoms further obscured the diagnosis, underscoring the variability in clinical presentation.

CONCLUSION: This case expands the phenotypic spectrum of congenital neuromuscular GSD IV and highlights the need to consider metabolic etiologies in neonates presenting with unexplained hypertrophic cardiomyopathy. Early genetic and enzymatic evaluation is essential for accurate diagnosis, family counseling, and potential future therapeutic interventions.

PO – 039

The Relationship Between Red Cell Distribution Width and Early-Onset Neonatal Sepsis in Late Preterm Neonates born 35 to <37 weeks: A Retrospective Cross-sectional Study

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OBJECTIVES: Neonatal sepsis is one of the leading causes of morbidity and mortality in newborns. Diagnosis is challenging because of its nonspecific signs and symptoms. Late preterm neonates are at greater risk for morbidity due to their physiological immaturity, and undergo septic workup more often than term neonates. Red cell distribution width has been found to have promising diagnostic role in adult sepsis. There is potential in extending its role to the neonatal population. This study aims to determine the relationship between RDW and neonatal sepsis in late preterm neonates born 35 to <37 weeks age of gestation.

METHODS: A retrospective descriptive cross-sectional study design was done. Demographic data such as sex, age of gestation, birth weight and mode of delivery were recorded. The presence of clinical signs of sepsis and intrapartum risk factors were recorded. Unpaired t-test was used to compare the RDW between the two groups. One-way ANOVA was done to compare RDW in those with intrapartum risk factors versus those without.

RESULTS: 193 participants were included - 120 healthy and 73 with sepsis. Respiratory distress was the most common clinical sign. Majority of those with intrapartum risk factors were born to mothers with infection during labor and delivery. Similar hemoglobin, WBC and platelet counts were identified among the sample. There is a significant difference between the RDW value of healthy newborns (16.42 + 1.32) than that of septic newborns (16.96 + 1.93); p = 0.037.

CONCLUSION: The study found that septic newborns have higher RDW than their healthy counterparts. RDW value could potentially be an additional biomarker to aid in the diagnosis of neonatal sepsis in the late preterm population.

PO – 041

Effect Of Maternal Affectionate and Non-Affectionate Touch on Infant Exploration

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OBJECTIVES: Previous studies indicate maternal touch can exert important physiological and psychosocial effects on infant development, mediated in part through the oxytocin system. However, touch effects on infant cognition, particularly in the context of exploration and exploitation behaviors, are less understood. Exploration in infancy consists of sensory and motor activities that help infants engage with their environment, whereas exploitation, which emerges later, relies on familiar actions and prior knowledge to maximize efficiency. We seek to examine how maternal affectionate (MA) and non-affectionate (MNA) touch influences infant's propensity for and pattern of physical exploration. A-priori it was predicted that higher frequency and duration of maternal affectionate touch (e.g., gentle strokes, hugs) will be positively related to infant exploration.

METHODS: The study involved 40 mother-infant dyads: Infants (M = 16.77 months, SD = 4.88); Mothers (M = 32.04 years, SD = 7.20). Physical exploration was coded during a Free-play Task and assessed using metrics of switching behaviour and entropy (diversity of behaviours). Similarly, MA and MNA touch metrics were coded during the Free play task in the context of naturalistic mother-child interactions.

RESULTS: Contrary to prediction, our results revealed significant negative relationships between duration of MA touch and infant exploratory behaviors. Specifically infants who received more maternal affectionate touch showed greater entropy in their transitions between locations, reflecting more varied and flexible switching patterns (from familiar to novel locations/regions). Conversely, MNA touch was observed to have no significant relationship with infant exploration.

CONCLUSION: These results suggest that maternal affectionate touch is related to a more exploitative pattern of infant behaviour, characterized by a lower likelihood of location shifting, and a more structured pattern of interaction with the physical environment. We hypothesise that this "exploitative shift" could be potentiated by maternal affectionate touch, which increases the social reward value of repeating familiar behaviours rather than novelty seeking.

PO – 042

A Sustained Reduction in the Rate of Severe Intraventricular Hemorrhage in Very Low Birth Weight Infants: A novel Quality Improvement Project in a Large Perinatal-neonatal Centre in Asia.

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OBJECTIVES: Severe intraventricular hemorrhage (SIVH (SIVH) is a leading cause of poor neuro-developmental outcomes in very low birth weight (≤ 1.5 kg, VLBW) infants. The study aims to reduce the rate of SIVH in very low birth weight (VLBW) infants admitted to level III C Neonatal Intensive Care Unit (NICU) in Singapore.

METHODS: VLBW infants admitted to NICU from 2011 to 2021(n=2215) were categorized into four periods: a) Pre-intervention (2011 to 2012), b) Intervention (2013 to 2017), c) Post-intervention (2018 to 2019), and d) Sustainment (2020 to 2021) periods respectively. A multidisciplinary team identified key drivers for SIVH and a set of care bundles involving eight protocolized interventions was applied. Infants with SIVH were analyzed with an RC-PCS process (Root Cause - Process Compliance - System), which includes a structured checklist by a Quality Assurance committee and recommendations were implemented in the unit to modify practices. Data were collected prospectively, and univariate and multivariate logistic regression analyses were conducted.

RESULTS: Of 2215 Infants who met the study criteria, detailed data was collected from 1370 infants (1000 in intervention period and 370 in post-intervention period). The mean gestational age was 28.6 weeks. The rate of SIVH was 5.9 % in the pre-intervention period and 4.4 and 1.9 % (adjusted OR 0.266, p= 0.006) in the intervention and the post-intervention periods, respectively. The rate of SIVH in the sustainment period was 2.7%. The reduced SIVH was associated with reduced mortality, adherence to process measures, and no change in balancing measures.

CONCLUSION: A multipronged modified Quality Improvement (QI) approach implementing an evidence-based SIVH prevention bundle and RC-PC-S analysis was associated with a sustained significant reduction in rate of SIVH in VLBW infants. RC-PC-S is a potential QI tool for reducing severe IVH and other key neonatal morbidities in VLBW infants.

PO – 043

Improving Discharge Care for Children with Acute Wheeze: A Retrospective Audit

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OBJECTIVES: Acute wheeze is a common cause of unplanned paediatric emergency presentations. Effective discharge planning, including safety-netting, treatment advice, and follow-up, supports recovery and reduces readmissions. Standardised care bundles aim to ensure safe and consistent discharge, yet implementation is often variable. This audit evaluated current practice and identified areas for improvement.

METHODS: A retrospective audit was conducted in the Clinical Decision Unit of a tertiary paediatric hospital between August 2023 and January 2024. All children presenting with wheeze documented in the emergency department record were included. Data was extracted from electronic records on demographics, acute management, and discharge processes.

RESULTS: A total of 537 admissions were reviewed (mean age 3.9 ± 3.1 years). The most common reason for attendance was unspecified viral infection (316/537, 58.8%). Median ED length of stay was 6.1 hours (IQR 3–9), with a median of 1 ED attendance (IQR 0–2) and 1 inpatient stay (IQR 0–2) over 12 months. Inhaler technique was documented in 219/537 (40.8%) cases, discharge checklist completion was partial in 23/537 (4.3%) and complete in 6/537 (1.1%). Corticosteroids were administered in 496/537 (92.4%), and wheeze plans were provided in 495/537 (92.2%). Preventer therapy was unchanged in 101/537 (18.8%), started in 52/537 (9.7%), and increased in 19/537 (3.5%). Documentation of inhaler technique was associated with wheeze plan provision ($p = 0.011$), and preventer prescription was strongly associated with follow-up ($p < 0.001$).

CONCLUSION: We identified variation in discharge care, particularly in inhaler technique documentation and checklist completion. Standardising these processes and ensuring consistent preventer prescribing may improve follow-up and reduce readmissions, highlighting clear targets for quality improvement interventions.

PO – 044

Needs Analysis of Community Youth Mental Health Providers in Early Identification and Intervention for Youths with Eating Disorder

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BACKGROUND/AIM: Eating disorders (ED) have severe physical and psychological consequences, with rising prevalence among youths in Singapore. Early identification and intervention can improve outcomes and reduce disease burden. However, there is a gap in an early identification and intervention programme for eating disorders tailored for community youth mental health providers. This study aimed to assess the needs of community partners in an early identification and intervention training programme for ED. Specifically, it examined participants' self-perceived knowledge, skills, and needs in identifying and intervening with EDs in young people.

METHODS: An online survey was conducted with 39 participants from 6 social service agencies before the training. Participants rated their understanding of eating disorders on a 5-point Likert scale and identified gaps in knowledge and skills needed to support affected young people. A post-training survey and focus group will follow.

RESULTS: Of the 39 participants, 69% rated their understanding of eating disorders as "fair". Knowledge gaps included: 1) recognising signs and symptoms of ED, 2) understanding the complications of ED. Skill gaps identified were: 1) addressing ED concerns with youths and caregivers, 2) counselling for body image issues. This pre-training programme survey findings highlight a gap in community partners 'knowledge and skills in early identification and intervention of ED.

CONCLUSION: This study provides important insights for the design of the first community-based early identification and intervention training programme for ED to improve treatment outcomes for youths with ED in Singapore.

PO – 045

Assessing Usability and Acceptability: Pilot Testing of a Co-developed mHealth (mobile health) App for Families of Children with Obesity

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OBJECTIVES: Childhood obesity is increasing in Singapore, with long-term health consequences. We aim to co-develop a behavioural theory based and user-centred mHealth app, using the Integrate, Design, Assess, and Share (IDEAS) framework by engaging perspectives from different stakeholders to bridge existing support gaps. We also aim to evaluate the app's usability, acceptability and engagement through pilot testing.

METHODS: A clinician-led co-design approach was completed with a multidisciplinary team using the IDEAS framework. This involved four phases: Phase 1-stakeholder engagement/ committee formation, Phase 2-app content development through focus group and expert panel discussions, Phase 3-prototype app creation/feedback and Phase 4-piloting the minimum viable product (MVP) by parent users and evaluation through questionnaire and interviews. A fully functional MVP was completed in January 2025. Eight parents were recruited between September 2024-April 2025 for pilot testing.

RESULTS: All eight parents have completed pilot-testing of the mHealth app, the Mobile Application Rating Scale (uMARS) and interviews on their perceptions of the app. Usability and acceptability were determined from the uMARS score in the domains of engagement, functionality, aesthetics, information, overall quality and perceived impact. Engagement median score was 3.51, functional median score was 3.75, aesthetics median score was 3.67 and information median score was 4. Overall, the app quality median score was 3.71 and perceived impact median score of 4.08. Parents have found the health tracking app helpful in promoting healthy habits, though challenges with time commitment, limited food database, and app functionality were noted. Results from uMARS and the interviews are used to further improve the app, with refinements of the app undergoing currently.

CONCLUSION: An evidence-based, theory-driven mHealth app developed using IDEAS framework shows potential in engaging families of children with obesity. The mhealth app can increase scalability of multidisciplinary care in community settings for families of children with obesity.

PO – 047

Effects of Permissive Hypercapnia on Duration of Ventilation and Reintubation Rate in Preterm Neonates: A Systematic Review and Meta-Analysis

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OBJECTIVES: Permissive hypercapnia has been proposed as a lung-protective strategy in preterm neonates, yet its effect on ventilation duration and reintubation rates remains uncertain due to discordant findings. This study aimed to systematically evaluate and quantify these outcomes compared to normocapnia through a comprehensive meta-analysis.

METHODS: We conducted a systematic review and meta-analysis according to PRISMA guidelines. Eligible studies were RCTs and cohort studies comparing permissive hypercapnia versus normocapnia in preterm neonates on mechanical ventilation. We systematically searched PubMed, Scopus, ScienceDirect, EBSCO, Wiley, and Cochrane using predefined keywords for articles up to June 2025. Outcomes of interest included duration of ventilation and reintubation rate. Four reviewers independently screened studies and extracted data. Risk of bias was assessed using ROB 2.0 for RCTs and ROBINS-I for cohort studies. Meta-analysis was performed using a random-effects model in Review Manager 5.4.1.

RESULTS: This review included five randomized controlled trials and one cohort study, involving a total of 1140 preterm newborns. Our analysis indicates that permissive hypercapnia (PH) is associated with a significantly shorter duration of ventilation, with a pooled mean difference of -3.87 days (95% CI: -6.16 – (-1.59), p = 0.0009), and no observed heterogeneity (I^2 = 0%). Although the reintubation rate is lower in the PH group, the difference is not statistically significant (OR 0.85; 95% CI: 0.63 – 1.15; p = 0.29; I^2 = 0%). Additionally, two studies reported fewer patients remaining on tracheal ventilation on day 14 in the PH group compared to the non-PH group.

CONCLUSION: Our meta-analysis suggests that permissive hypercapnia significantly reduces ventilation duration, but it does not significantly impact the rate of reintubation. These findings should be considered along with current knowledge on complications that can arise from PH.

PO – 049

Clinical Spectrum of Congenital Hypothyroidism in Term and Late Preterm Infants. A Single Center Experience.

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OBJECTIVES: The current study aims to identify maternal risk factors and clinical spectrum of congenital hypothyroidism (CH) among term and late preterm infants.

METHODS: A single-center retrospective cohort study (2001-2025). All infants born after 35 weeks of gestation with diagnosis of congenital hypothyroidism were included.

RESULTS: A total of 106 (77%) term infants and 32 (23%) late preterm infants were analysed. 77 (56%) were male, 126 (91%) were singletons and 29 (21%) were born small for gestational age. 30 Infants had history of maternal thyroid disorders - 23 (17%) had hypothyroidism and 7 (5%) had hyperthyroidism. Elevated cord blood TSH levels were present in 64 (46%) infants and the other 74 (54%) infants had late-onset CH.

Ultrasound (51%) and isotope study (42%) of the thyroid gland were done in 105 infants (76%). Isotope studies were normal in 32 infants. 74 (54%) infants were diagnosed as dyshormonogenesis, 22 (16%) lingual or ectopic thyroid, and 7 (5%) thyroid agenesis. Associated congenital malformations were present in 25 (18%) infants. Early replacement therapy was started in all 137 cases upon confirmation of the diagnosis. Therapy was weaned and stopped in 15 (11%) infants by 3 to 3.5 years of age and considered as transient CH. Subsequently, the remaining 30 (22%) infants were successfully weaned off medications at the mean age of 6.2±3.85 years of age.

Long term follow-up revealed isolated motor delay in 2 (1%), cerebral palsy in 1 (1%), global developmental delay in 11 (8%), autism spectrum disorder in 8 (6%) and attention deficit hyperactivity disorder in 2 (1%).

CONCLUSION: Dyshormonogenesis was most common cause of CH in our cohort. Cord TSH was able to recognize CH in 48% of cases. Continued thyroid function evaluation in high-risk infants (maternal thyroid disorders) is crucial to recognize delayed onset primary congenital hypothyroidism.

PO – 050

The Incidence, Diagnosis and Clinical Spectrum of Congenital Hypothyroidism in Preterm Infants Born <35 Weeks. A Single Center Experience.

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OBJECTIVES: The study aims to evaluate the prevalence of congenital hypothyroidism (CH), clinical spectrum and long-term outcome among preterm infants born <35 weeks.

METHODS: A single-center retrospective cohort study (2003-2025). Available data for infants born before 35 weeks of gestation with diagnosis of CH were included. Criteria for the diagnosis of CH: TSH >10mIU/L[1] on two occasions 2 weeks apart, with or without the presence of low free T4 levels.

RESULTS: A total of 75 preterm infants were diagnosed and received thyroid supplementation during the study period. 45 (60%) were male, 23 (31%) were twins. Mean gestational age was 29.83 ±3.03 weeks with mean birth weight of 1215.12±470.18 grams. 62 (83%) infants were born via emergency Caesarean delivery. Only 8 (11%) infants had history of maternal thyroid disorders - 2 had hypothyroidism and 6 had hyperthyroidism. Elevated cord blood TSH levels (mean 121.70±184.97) were present in only 4 (5%) infants, while 60 infants (80%) had late-onset CH with the mean day 14 TSH level of 12.51±7.81.

Post-natally. 66 (88%) infants had respiratory complications, 39 (52%) had persistent PDA and 4 (5%) had hypospadias. 23 infants had thyroid ultrasound and 3 infants had isotope study which indicated dyshormonogenesis. Thyroid replacement therapy was started in all 75 cases at diagnosis, at mean age of 33.79 ± 19.82 days. Therapy was successfully weaned and stopped in 11 (15%) infants at the mean age of 4.8±5.57 years of age, with the other infants still under follow-up.

Long term follow-up revealed isolated motor delay in 2 (3%), cerebral palsy in 1 (1%), global developmental delay in 7 (9%), isolated speech delay in 3 (4%) and autism spectrum disorder in 2 (3%).

CONCLUSION: CH has high prevalence among twins. Long-term streamlined follow up is needed for infants with CH to optimize growth and development.

[1]Hashemipour, M. et al. Screening of congenital hypothyroidism in preterm, low birth weight and very low birth weight neonates: A systematic review. *Pediatrics & Neonatology*, 2018. *59*(1), 3–14.

PO – 051

Unroofed Coronary Sinus in a Neonate – A Rare and Unusual Interatrial Communication

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OBJECTIVES: To report a clinical presentation of a rare cardiac anomaly with unusual interatrial communication- unroofed coronary sinus (UCS) in a neonate.

CASE DETAILS: We present a case of UCS diagnosed in a 1-week-old term neonate who presented with recurrent desaturation episodes, persistent oxygen requirements and fair suck. Further evaluation with transthoracic echocardiogram (TTE) with agitated saline contrast study revealed a persistent left superior vena cava (PLSVC) and complete unroofed coronary sinus, small atrial septal defect and patent foramen ovale. He was subsequently discharged well on room air without medications, with corrective surgical intervention planned. The presentation and available literature on UCS in the neonatal population is extremely rare.

DISCUSSION: UCS is a rare cardiac anomaly that makes up less than 1% of atrial septal defects. It is commonly associated with PLSVC. Our findings suggest that UCS with PLSVC can present in infants with low oxygen saturation levels due to the presence of a right-to-left shunt. If PLSVC is present, the systemic venous return drains aberrantly into the left atrium, resulting in low saturations. TTE is a key diagnostic imaging modality. Agitated saline contrast study, used in conjunction with TTE, is important in this case to demonstrate flow into the left atrium and to exclude the innominate vein. Other diagnostic modalities include transesophageal echocardiogram and CT coronary angiogram, which also aid surgical planning. Surgical intervention is required, with various surgical techniques reported in literature. Choice of corrective surgical intervention depends on UCS subtype, type and severity of concomitant cardiac defects.

CONCLUSION: Diagnosis of UCS in the neonatal population is difficult due to the non-specificity of symptoms. Clinical suspicion should be high in patients with persistent unexplained oxygen requirements with a structurally normal heart. Early diagnosis is crucial given potential complications of thromboembolic phenomena and brain abscesses, and for procedural planning.

PO – 053

Aortic Doppler Velocity as Marker of Biventricular Output in Very Preterm Infants with or without PDA.

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OBJECTIVES: The quantitative estimation of left ventricular output (LVO) and right ventricular output (RVO) in neonatal period is technically challenging and time consuming due to presence of shunts and lung disease. We aimed to correlate the aortic and main pulmonary artery (MPA) Doppler velocity (Vmax) with LVO and RVO in preterm neonates before and after patent ductus arteriosus (PDA) ligation. We hypothesize that aortic and pulmonary artery Doppler velocities can be used as simple and surrogate markers of LVO and RVO irrespective of presence of PDA.

METHODS: Single centre prospective observation study conducted between Jan 2023- Jan 2024. Infants with hemodynamically significant PDA were included. Infants with major congenital anomalies were excluded. The echocardiogram data of infants who underwent PDA ligation (before and after) were collected and analysed. The Doppler velocity of aortic outflow and MPA were correlated with LVO and RVO. The output calculation was based on RV and LV output velocity time integral and diameter.

RESULTS: Ten infants underwent PDA ligation during the study period. Mean gestational age was 24.8±1.1 weeks, mean birth weight was 735±139grams. The mean age of PDA ligation was 30.6±4.7 weeks. A Pearson product moment correlation test between aortic Vmax and LVO showed high positive correlation ($r=0.856$, $p<0.001$). The correlation between aortic Vmax and RVO was moderate positive correlation ($r= 0.6$, $p=0.04$). MPA Vmax showed no correlation with LVO ($r= 0.1$, $p=0.9$) and RVO ($r= 0.3$, $p=0.2$). The aortic Vmax of 0.8m/s corresponded to LVO of 300ml/kg/min, velocity of 1m/s corresponds to 300-500ml/kg/min and 1.4m/s corresponded to high cardiac output state with LVO >600ml/kg/min. Aorta Vmax <0.5m/s was associated LVO <150ml/kg/min.

CONCLUSION: Aortic Vmax is a simple echocardiographic parameter which can be used as a surrogate marker of LVO and RVO in neonatal population with or without PDA. This finding needs to be validated with larger sample size.

PO – 055

Value of Less Invasive Surfactant Administration Among Very Preterm Infants with Moderate Respiratory Distress Syndrome

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OBJECTIVES: Evaluate the impact of less invasive surfactant therapy on short term outcomes in infants between 28-32 weeks gestational age with moderate respiratory distress syndrome (RDS).

METHODS: This retrospective audit included very preterm infants born between 2019-2025, requiring only a single dose of Surfactant Replacement Therapy (SRT) either by Intubation (Classic) or LISA. Infants requiring 2 or more doses of surfactant were deemed to have severe RDS. The analyses were performed with a linear, quantile or logistic regression depending on the outcome by SPSS version 31.

RESULTS: 17.4% of 321 infants born at 28-32 weeks of gestation were treated for respiratory distress syndrome with a single dose of surfactant. Among them 38 (68%) infants received surfactant by Intubation and 18 (32%) infants by LISA method. Indications of surfactant therapy was as per institutional protocol. Intubated babies predominantly received Calfactant. Infants in the LISA cohort received Poractant alpha.

Baseline risks and characteristics were similar between the Classic and LISA groups: Mean gestational age 30.03 ± 1.53 and 30.28 ± 1.45, birth weight 1423.97 ± 388.4 and 1521.44 ± 389.88. No significant differences were found in APGAR score at 5th min, GDM, PPROM, PIH, Oligohydramnios and antenatal corticosteroid use.

Median days of invasive ventilation was significantly more in Classic 1 (1-3) compared to LISA 0 (0-0), p = 0.005. Regression analysis demonstrated, a significantly lower invasive ventilation days in LISA group. However non-invasive ventilation days were similar between the groups. Total duration of TPN, days to achieve 100ml/kg enteral feeds, length of hospital stay were not significantly different. Incidence of any stage of ROP, PDA requiring treatment and NEC were low in the entire cohort and comparable between the two groups.

All babies survived to discharge. There was no significant difference of any BPD grade between Classic 7 (18.4%) and LISA group 4 (22.2%), p = 0.49.

CONCLUSION: Among preterm babies at 28-32 weeks gestation with moderate RDS, LISA significantly reduces invasive ventilation days without affecting other short-term outcomes including non-invasive ventilation days or any grade of BPD. Reduced need of invasive mechanical ventilation is a valuable goal for both parents and healthcare workers.

PO – 057

Fungal Pneumonia in Immunocompromised Pediatric Patients: A Single Institution 16 years' Experience

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OBJECTIVES: To study the epidemiology and clinical outcomes of immunocompromised children admitted with fungal pneumonia in our tertiary pediatric hospital over the past 16 years.

METHODS: Medical records of immunocompromised patients with fungal pneumonia referred to the Pediatric Infectious Disease Service between January 2008 to February 2024 were included. Demographic data, type of immunodeficiency, diagnostic work-up, treatment received and clinical outcomes were collected from the service database.

RESULTS: Fifty-seven patients (male, n=32, 56%; median age – 9 years) were included in the study. Majority (n=51, 89%) had secondary immunodeficiency, including 21 (37%) HSCT patients. Sixteen patients (28%) were on anti-fungal prophylaxis. Thirty-three patients were neutropenic (57%) and 30 (90%) patients had prolonged neutropenia (neutrophil count $<0.5x10^9/L$ > 7 days). Forty-eight (84%) and 16 (28.1%) patients underwent bronchoalveolar lavage (BAL) and lung biopsy respectively. Microbiological diagnosis was obtained in 28 cases (49%), based on fungal culture or PCR from BAL, endotracheal tube aspirate and lung biopsy, or positive blood culture. The most common fungus isolated was Aspergillus spp. (n=17, Aspergillus fumigatus, n=9), followed by Candida spp. (n=11), Pneumocystis jirovecii (n=7), Trichosporon spp. (n=3) and *Curvularia* (n=1). In total, 18 patients were diagnosed with proven or probable pulmonary aspergillosis based on the EORTC classification, while 3 met criteria for proven *Candida* infection.

Viral and/or bacterial co-infection occurred in 33 cases (57%). In cases where microbiological diagnoses were obtained, all received appropriate targeted antifungal treatment during their hospitalization. Severe disease was common, with 28 patients (49%) needing ICU admission and mortality occurring in 14 (25%) patients. Fungal pneumonia was the direct cause of death in 9 patients (64.3%), with 6 (66.7%) due to aspergillosis.

CONCLUSION: Aspergillus spp. was the most common cause of fungal pneumonia in immunocompromised children in our institution. High morbidity and mortality is observed in immunocompromised children with fungal pneumonia, especially with pulmonary aspergillosis.

PO – 058

Empowering Caregivers and Improving Family Outcomes of Children with Developmental Needs and Persons with Disabilities Through Novel Adaptation of the Routine-based Model in CAREwell Programme

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CaringSG Ltd

OBJECTIVES: Caregiver well-being and family outcomes are key determinants of outcomes in children with developmental needs and persons with disabilities, yet these are often overlooked in intervention framework prioritized for addressing dependents' needs. The CAREwell programme seek to address this gap through innovative adaption of the Routine-based Model (RBM) to provide dyadic and family-centred support for caregivers and their dependents. The CAREwell programme was piloted in 2022-2024 under the auspice of the Singapore's Alliance for Action initiatives, commissioned by the Ministry of Social and Family Development and Ministry of Culture, Community and Youth. The programmed is supported by the National Council of Social Services, SG Enable and President Challenge. In this paper, we report the mixed method evaluation of the CAREwell programme.

METHODS: Caregivers of children with developmental needs and persons with disabilities were enrolled prospectively following eligibility screening, informed consent and surveyed before and after the CAREwell programme. Validated instruments such as the Family Outcome Survey-Revised (FOS-R), section A of the Carer well-being and support questionnaire, WHOQOL-BREF and 6-item Zarit Burden Interview, and qualitative open-ended questions were included in participant surveys. Quantitative data was analyzed using paired t-test in STAT14.2.

RESULTS: 67 caregivers completed the CAREwell programme. Among respondent caregivers, there was statistically significant improvement in 4 of 5 domains and 18 of 24 items of the FOS-R. Caregiver well-being, caregiving burden and quality of life in physical, psychological and social relationship domains also improved. More than 70% of caregivers reported improvement in confidence and competencies as caregivers.

CONCLUSION: The CAREwell programme improves family outcomes, caregivers' well-being and quality of life, and reduces caregiving burden. This study provides proof-of-concept for the CAREwell programme and highlights the benefits of RBM in improving caregiver, family and dependent outcomes among children with developmental needs and persons with disabilities.

PO – 059

Prevalence of Serious Bacterial Infections and Performance of Inflammatory Markers in Febrile Infants with and Without Proven Viral Illness

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OBJECTIVES: Febrile infants ≤90 days old with proven viral infections who may have concurrent serious bacterial infections (SBIs) remain a diagnostic dilemma. We aimed to compare the prevalence of SBIs and evaluate the performance of inflammatory markers in predicting SBIs between infants with and without proven viral illness.

METHODS: We conducted a secondary analysis of febrile infants ≤90 days old presenting with temperature ≥38°C to KK Hospital Children's Emergency between 1 December 2017 and 31 July 2022. We compared SBI prevalence and the performance of white blood cell (WBC), C-reactive protein (CRP), procalcitonin (PCT), and absolute neutrophil count (ANC) between infants with and without proven viral illness.

RESULTS: Among 1783 infants, 261 (14.6%) had SBIs, and 653 (36.6%) had proven viral infections. The prevalence of SBI was lower in infants with proven viral illness compared with those without (5.05% vs 20.2%, p<0.001, OR=0.211, 95% CI 0.144 to 0.308). In both groups, CRP >20 mg/L had the highest sensitivity (60.6%, 95% CI 42.1% to 77.1% and 67.0%, 95% CI 60.4% to 73.0% for those with proven illness and those without) and ANC >10×10^9/L demonstrated the highest specificity (98.1%, 95% CI 96.7% to 99.1% and 93.1%, 95% CI 91.2% to 94.8%, for those with proven illness and those without) in predicting SBIs. Using current thresholds, WBC, ANC, CRP and PCT performed with greater specificity but lower sensitivity among those with proven viral illness compared with those without. Differences in AUCs between both groups for the four inflammatory markers were only statistically significant with ANC >10×10^9/L.

CONCLUSION: Although febrile infants ≤90 days old with proven viral illnesses, compared with those without, were at lower risk of SBIs, current inflammatory marker thresholds may result in missed SBIs in this subgroup.

PO – 060

Risk Factors for Intraventricular Hemorrhage in Preterm Infants: A Systematic Review and Meta-Analysis

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OBJECTIVES: Intraventricular hemorrhage (IVH) is one of the most common types of brain injury in preterm infants, which affects 15-20%, with potential long-term adverse neurodevelopmental outcomes. The purpose of this study is to identify the risk factors for IVH in preterm infants.

METHODS: We searched PubMed, Embase, and Web of Science literature databases using keywords:“risk factor" AND "intraventricular" OR "periventricular" OR "peri-intraventricular" OR "germinal matrix" OR cerebroventricular AND "preterm neonate" from inception to October 2024. The meta-analysis included all published studies that investigated preterm infants and reported primary data that could be used to measure the association between exposure of risk factors and the presence of IVH. Odds ratios (ORs) for each risk factor were pooled from the selected studies. For each potential risk factor, the fixed or random-effects model was used to compare the risk of developing IVH.

RESULTS: The initial search yielded 2885 records of which 47 articles underwent full-text evaluation,which identified 8 articles and a total of 4511 infants that were included. The findings of the meta-analysis showed that lower gestational age, asphyxia, and neonatal infection exposure were significantly associated with all grades IVH(OR 1.92, 95% CI 1.61–2.30;OR 2.78, 95% CI 1.87–4.12;OR 2.46, 95% CI 2.14–2.81).Infants whose mother had been given full course of antenatal steroids (OR0.32, 95% CI 0.21-0.49) had a significantly lower risk of developing IVH.

CONCLUSION: Lower gestational age, asphyxia, and neonatal infection were associated with an increased risk of IVH, whereas full course of antenatal steroids had a protective role against developing IVH.

PO – 061

Risk Factors of Mortality of Late Onset Sepsis Caused by Extended Spectrum Beta Lactamase Producing Bacteria

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OBJECTIVES: High incidence of Sepsis due to Bacteria with Extended spectrum beta lactamase (ESBL) production cause significant neonatal mortality. These bacterial also cause antimicrobial resistance mechanism in the neonatal intensive care unit (NICU). Controlling risk factors is important in reducing morbidity and mortality as well as providing guidance for antibiotic selection. This study aims to determine the risk factors of mortality of ESBL producing bacteria.

METHODS: A retrospective case study of ESBL-colonized infants conducted in the NICU of Sardjito Hospital in 2024. Epidemiological, laboratory, and clinical data were extracted from medical files. Bivariate and multivariate analyses were used to assess associations between mortality in ESBL group and possible clinical risk factors.

RESULTS: Among 94 infants with ESBL positive group, 48 of them were survived and the other 46 were deceased. Klebsiella pneumoniae bacteria were the most common pathogens identified, with 87.2% (n=87). Bivariate analysis showed association of gestational age, mechanical invasive ventilation, parenteral nutrition (PN) administration, thrombocytopenia, and leukocytopenia with mortality in sepsis due to ESBL bacterial ($P < 0.05$). Multivariable analysis yielded only possible association of TPN utilization and thrombocytopenia (hazard ratio [HR 1.99, 95% confidence interval [95%CI] 1.15-4.73; HR 5.84, 95%CI 3.25-10.58, respectively) with mortality.

CONCLUSION: Parenteral nutrition administration and thrombocytopenia are predictive factors for mortality in late onset sepsis caused by ESBL bacteria.

PO – 063

Spontaneous Intestinal Perforation (SIP)- Retrospective audit at Singapore General Hospital

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AIM:

- To describe patient characteristics of VLBW infants with SIP
- To assess outcomes associated with SIP.

METHODS: Retrospective audit of VLBW infants admitted to SGH NICU, 2020 – 2024 (n=235), Incidence of Spontaneous intestinal perforation (n=5) was 2.1%.

RESULTS: Risk factors associated with babies with SIP were antenatal & postnatal risk factors. In the antenatal risk factors, 3/5 babies had nil or incomplete antenatal corticosteroids. Presence of chorioamnionitis was not statistically significant.

Postnatal risk factors include babies requiring medical treatment of PDA, lower birthweight, babies needing extensive resuscitation including intubation at birth, babies with higher incidence of Hypotension and increased incidence of late-onset culture-proven sepsis. Though prematurity is recognized as a known risk factor, our audit did not show statistical significance for gestational age.

Neonatal morbidities and mortality outcomes were similar among the SIP and non-SIP cohorts. Only interesting outcome noted in our audit was the statistically significant incidence of neonatal cholestasis in the SIP cohort.

CONCLUSION: Increased vigilance in babies with risk factors like PDA (Choice of medication to treat PDA), Sepsis, hypotension (use of inotropes) in a premature baby with lower birthweight would help us identify babies who are at risk for SIP and manage appropriately.

PO – 064

In-house Vision Screening for Children with Developmental and Behavioural Concerns: A Quality Improvement Project (QIP) in Singapore

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OBJECTIVES: To implement and study the effectiveness of a Quality Improvement Project (QIP) to provide in-house vision screening within a developmental paediatric clinic. Prior to this, children were referred to Ophthalmology for vision screening. Traditional vision screening methods such as alphabet-based vision tests are often unsuccessful in children with developmental delays.

METHODS: The QIP was implemented in May 2019 with developmental nurses trained to administer the Kay Picture Test to patients (aged 3 to 6 years old with no prior vision screening done) with any developmental or behavioural diagnosis seen at the Child Development Unit. We subsequently conducted a retrospective medical record review of patients who underwent in-house screening from May 2019 to December 2021. Participants included children with autism, global developmental delay (GDD), single-domain delays, behavioural issues and learning difficulties.

RESULTS: The sample comprised 384 children (mean age: 58 months +/- 12 months, 73% males (n= 282). The majority (92%, n= 352) passed the screening. Among the 32 children who failed, developmental diagnoses included: global developmental delay (n=8), behavioural issues (n=8), and autism (n=8). There was no significant difference in the proportion who failed screening based on developmental diagnoses. There was a trend to suggest that a higher proportion of children with delayed Intellectual Quotient (IQ) / Developmental Quotient (DQ) failed vision screening compared to those with normal IQ / DQ (15% in children with delayed IQ vs 7% in children with normal IQ, p = 0.054). Of the 22 children who eventually attended Ophthalmology follow-up, most (n= 21) had abnormal eye diagnoses including myopia (n=8), astigmatism (n=5), and amblyopia (n=5).

CONCLUSION: In-house vision screening within a developmental paediatric clinic was successfully completed and accurately identified children who needed further specialist care. This QIP eliminated the need for unnecessary Ophthalmology referrals and contributed to optimal use of resource.

PO – 066

The Role of Palliative Radiotherapy as Adjuvant Therapy for Pain Control in Pediatric Oncology Patients: A Systematic Review and Meta-Analysis

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OBJECTIVES: The primary aim of this systematic review is to identify and evaluate the current evidence base for palliative RT to treat cancer pain in children and adolescents.

METHODS: The PRISMA guidelines were used. MEDLINE, Embase, Web of Science, CINAHL, and Cochrane Library databases were searched from the earliest publication to February 3, 2025. Following the assessment of heterogeneity across studies, a random-effects model was used for all outcomes, and a meta-analysis was conducted on baseline characteristics to determine contributing factors to pain relief.

RESULTS: Seven eligible observational retrospective (5 cohort & 2 cross-sectional) studies (n= 63 patients/235 metastatic sites/139 palliative RT courses), published between 2003 and 2024, were included. Using the Newcastle-Ottawa scale, four were good quality and three were fair quality studies. Overall GRADE (Grading of Recommendations, Assessment, Development and Evaluation) evidence was moderate in all seven studies. Palliative RT was associated with a 77.9% ([95% CI 71.19-84.64], p=0.37) reduction in pain when used as an adjuvant therapy across all seven studies. This was not a statistically significant result, and there was moderate heterogeneity (I2=61.3%). A bubble plot did not show a significant trend of improvement of pain with palliative RT over time. The subgroup analysis showed that it was associated with 80.02 ([95% CI 69.89-90.14], p=0.89) reduction of pain in patients with bony lesions across two studies (n= 19 metastatic sites/41 courses). A reduction in opioid use was observed in 43.2% ([95% CI 31.76- 54.73], p=0.41) across two studies (n= 52 patients/17 palliative RT courses).

CONCLUSION: Available evidence did not provide sufficient evidence to show palliative RT reduced pain. Palliative RT can be a powerful tool for the palliation of cancer pain in children, especially in bone pain. A multimodal and multidisciplinary approach should be undertaken to evaluate its utility in the context of each patient.

PO – 067

Efficacy and Safety of Clesrovimab, An Investigational RSV Antibody, In Healthy Preterm and Full-Term Infants: Subgroup Analyses of A Phase 2B/3 Trial (CLEVER)

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Presented by Eriko Yamada[3] on behalf of the author Merck & Co., Inc., Rahway, NJ, USA

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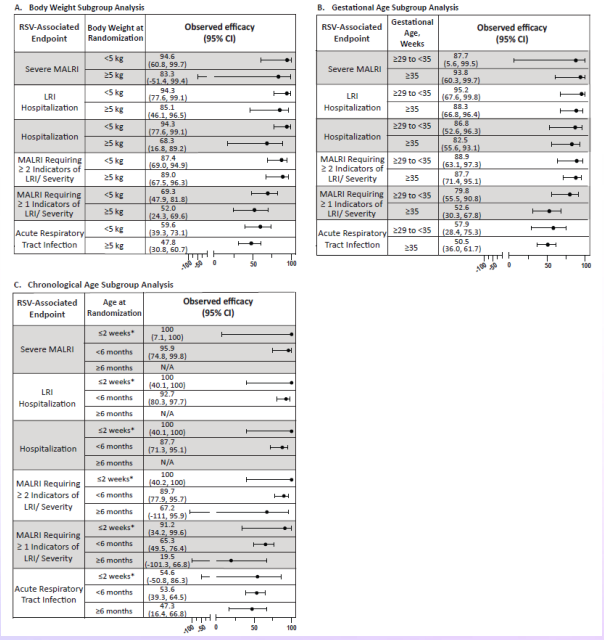
OBJECTIVES: In the phase 2b/3 trial, CLEVER (MK-1654-004; NCT04767373), clesrovimab, an investigational, long-acting monoclonal antibody, reduced the incidence of respiratory syncytial virus (RSV)–associated medically attended lower respiratory tract infection (MALRI) and RSV-associated hospitalization in infants, compared with placebo. We report results from the subgroup analyses of CLEVER.

METHODS: Infants were randomized 2:1 to receive 1 dose of clesrovimab (105 mg) or placebo. Subgroup analyses were performed by gestational age (early and moderate preterm [≥29 to <35 weeks] or late preterm and full-term [≥35 weeks]), chronological age at randomization (<6 months or ≥6 months), and body weight at randomization (<5 kg or ≥5 kg).

RESULTS: Overall, 2412 participants received clesrovimab and 1202 received placebo. The observed clesrovimab efficacies for RSV-associated MALRI requiring ≥1 or ≥2 indicators of LRI/severity; hospitalization; severe MALRI; LRI hospitalization; and acute respiratory tract infection were generally comparable across the subgroups analyzed, with overlapping 95% CIs in all instances (Figure 1), and consistent with those in the overall population. The observed clesrovimab efficacy tended to increase with increasing endpoint severity; this was also observed within the subgroups analyzed. The point estimate of clesrovimab efficacy relative to placebo for RSV-associated MALRI requiring ≥1 indicator of LRI/severity was higher in early/moderate preterm infants (9/417 vs 21/208), in participants aged <6 months (47/1915 vs 66/963), and in participants weighing <5 kg (23/860 vs 36/428), compared with their counterparts in the same subgroup categories (Figure 1). Within each subgroup analyzed, safety results (including injection site reactions, systemic, intervention-related, and serious adverse events) were generally comparable between intervention groups.

CONCLUSION: The results of this analysis support the efficacy of clesrovimab in healthy infants, independent of weight or gestational or chronological age.

Figure 1. Efficacy of clesrovimab relative to placebo through days 1 to 150 post dosing stratified by body weight (A), gestational age (B), and chronological age (C)



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