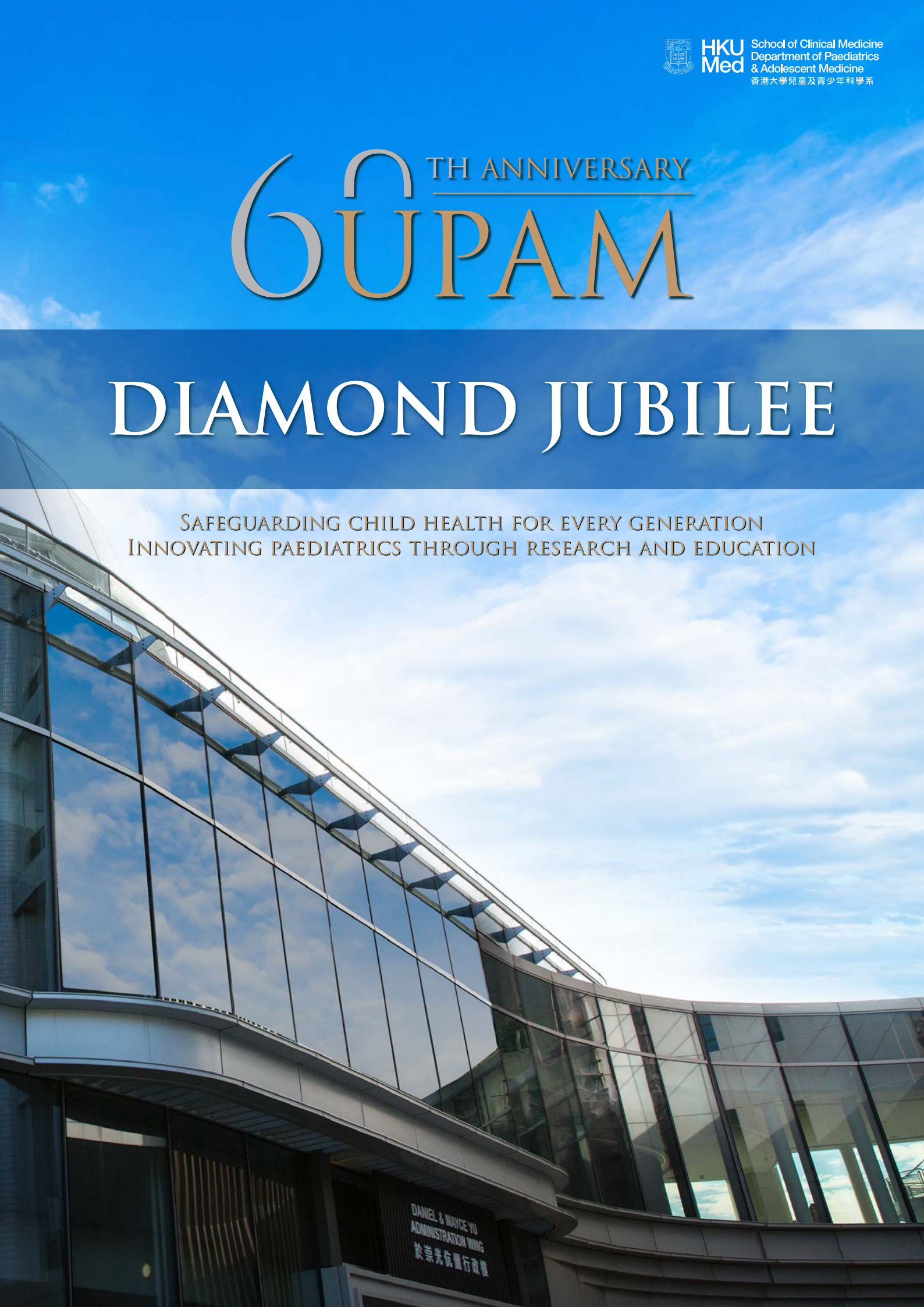
HKU Med School of Clinical Medicine
Department of Paediatrics & Adolescent Medicine
香港大學兒童及青少年科學系

60TH ANNIVERSARY
DPAM

DIAMOND JUBILEE

SAFEGUARDING CHILD HEALTH FOR EVERY GENERATION
INNOVATING PAEDIATRICS THROUGH RESEARCH AND EDUCATION



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"Safeguarding child health for every generation, innovating Paediatrics through research and education."

60TH ANNIVERSARY
UPAM

Welcome **Message**

Professor
Yiu-Fai CHEUNG

Chairperson
Department of Paediatrics and
Adolescent Medicine
The University of Hong Kong

"Safeguarding child health for every generation, innovating Paediatrics through research and education." This is imprinted on the hearts of every staff and alumni of the Department of Paediatrics and Adolescent Medicine of HKUMed. With the swift passage of time, the Department of Paediatrics and Adolescent Medicine of HKUMed is celebrating its sixtieth anniversary. The remarkable evolution from a small Paediatric Unit six decades ago to a nationally and internationally recognized Department of Paediatrics and Adolescent Medicines attests to the selflessness of generations of Departmental members in achieving our missions. To this day, our Department remains true to our vision to provide the finest care for children and their families through science and humanities. Through devotion, we provide paediatric care of the highest quality; through education, we nurture successors of our field; and through research, we create translatable knowledge. This Diamond Jubilee Scientific Symposium celebrates the research achievements, discoveries, and dedication of our staff, students, and alumni. We gather together to share knowledge, exchange ideas, and forge new collaborations with friends, old and new, from major national and international centres. We are cognizant of the importance of collaboration and we shall work together to ensure a brighter future of our children. As we celebrate our Diamond Jubilee, we recommit ourselves to our core values of integrity and unwavering dedication to our mission. We strive to ensure that our Department remains at the forefront of paediatric and adolescent medicine for generations to come. Amid the era of artificial intelligence, big data and metrics, we pledge to continue to embrace a human-centred approach to our patients, our students, and our UPAM family members!

OC **Members**

Prof.
Yiu-Fai CHEUNG

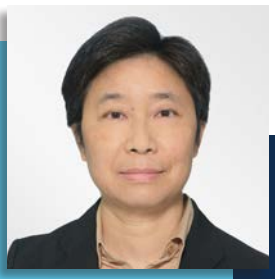
Co-Chair
Organizing
Committee

Dr.
So-Lun LEE

Co-Chair
Organizing
Committee

Prof.
Wing-Hang LEUNG

Co-Chair
Organizing
Committee



Dr.
Stella CHIM

Chair
Finance
Sub-Committee

Prof.
Patrick IP

Deputy Chair
Finance
Sub-Committee

Dr.
Pamela LEE

Chair
Publications
Sub-Committee

Dr.
David SOO

Deputy Chair
Publications
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Dr.
Anthony LIU

Co-Chair
Scientific
Sub-Committee

Dr.
Ka-Ka SIU

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Scientific
Sub-Committee

Dr.
Mabel WONG

Deputy Chair
Scientific
Sub-Committee

Dr.
Grace POON

Chair
Social
Sub-Committee

Dr.
Queenie SEE

Deputy Chair
Social
Sub-Committee

Members of Organizingz Committee

Finance Sub-Committee

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Dr. CL LAU
Ms. M KAN
Ms. SK SHUM
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Dr. W WONG

Scientific Sub-Committee

Prof. YL LAU
Dr. J HUNG
Dr. K JALAL
Dr. E LU
Dr. W WONG
Ms. GS CHIU
Ms. P KAN

Social Sub-Committee

Dr. CC HO
Dr. C MOK
Ms. A NG
Ms. K SIN
Ms. KM WOOT

Program

Opening Ceremony:

09:00 - 09:30

Venue: Lecture Theatre 3

Plenary Session 1:

09:30 - 10:00

Venue: Lecture Theatre 3

Chairs

Yiu Fai CHEUNG &
Wing Hang LEUNG

Thymus development and function: New insight from basic and clinical research

Professor

Georg A HOLLÄNDER

Plenary Session 2:

10:00 - 10:30

Venue: Lecture Theatre 3

Chairs

Yiu Fai CHEUNG &
Wing Hang LEUNG

Rare disease diagnosis, treatment and research in China: Advancements and Prospects
中國罕見病診療和研究：進步與展望

Professor

Zhang SHUYANG

Tea break

10:30 - 10:45

Symposium 1: System Resources to Discover Novel Immunologic Diseases and to Track Respiratory Pathogens (Sponsored by Pfizer)

10:45 - 11:45

Venue: Lecture Theatre 3

Chairs

Wenwei TU &
So Lun LEE

- Autosomal dominant gain-of-function mutations in LCP1 cause syndromic neutropenia and immunodeficiency
- A national system for precision diagnosis and treatment of immunologic diseases in children
- Laboratory aspects of respiratory syncytial virus in Hong Kong

Speaker

Xiaodong ZHAO, Mingsheng MA, Janice LO

Symposium 2: Community Paediatrics

10:45 - 11:45

Venue: Lecture Theatre 2

Chairs

Anita Man Ching TSANG &
Patrick IP

- Mental health support to children and adolescents
- Preparation for the new era of mandatory reporting of child abuse
- Effective interventions to improve child health and development

Speaker

Ching Choi LAM, Alex WONG, Patrick IP

Symposium 3: Big Data in Small Kids (Sponsored by AstraZeneca)

11:45 - 12:45

Venue: Lecture Theatre 3

Chairs

Chap Yung YEUNG &
Nai Shun TSOI

Birth cohort and structural birth defects research
出生队列在结构性出生缺陷研究中的临床意义

Wenhao ZHOU: Newborn genome project
新生儿基因组计划

Creating a registry of rare, but not so rare, disease: the HKU-SZ experience

Speaker

Huimin XIA, Wenhao ZHOU, Michael TO

Symposium 4: From Hospital to Community Child Health

11:45 - 12:45

Venue: Lecture Theatre 2

Chairs

Khair JALAL &
Maisie KAN

A Family-Based Smoking Cessation Study Quit-for-Kids (QFK) to Prevent Secondhand Exposure in Children: Findings of A Pilot Qualitative Study on Mothers' Perceptions of Their Husbands Smoking at Home

Transitional care in PNICU

Care for patients with medical complexity at DKCH

Speaker

Sophia CHAN, Pilta KAN / Susan CHIU,
Choi Wan WONG

Lunch

12:30 - 14:15

Lunch Symposium (Sponsored by MSD)

12:45 - 13:45

Venue: Lecture Theatre 3 & 4

Moderatorst

Chun Bong CHOW &
Mike Yat Wah KWAN

60 years of childhood vaccination in Hong Kong

Speaker

Yu Lung LAU, Jaime S ROSA DUQUE,
Jeffery Ching Ho CHAN

Oral / Poster Presentation

13:45 - 14:30

Venue:Lecture Theatre 3 (Oral) /
Exhibition Area (Poster)

Leadership Roundtable

14:30 - 15:30

Venue: Lecture Theatre 3

Moderatorst

Yiu Fai CHEUNG &
Tsz Leung LEE

5-minute presentations

Training the next generation of paediatricians and paediatric subspecialists in China

Paediatric research in Greater Bay Area - The role of Guanghzou Women and Children's Medical Center

The One-Stop research platform in Chongqing National Clinical Research Centre for Child Health and Disease

Networking with Children's Hospital in the Greater Bay Area and beyond

Subspecialty development in paediatrics: the Hong Kong scene

Edtech in undergraduate and postgraduate education

Speaker

Kun SUN, Wenhao ZHOU, Xiaodong ZHAO, Tsz Leung LEE, Chi Kong LI, Yiu Fai CHEUNG

30-minute panel discussion

Panelists

Tianyou WANG, Kun SUN, Wenhao ZHOU, Xiaodong ZHAO, Chi Kong LI

Yu Lung LAU

Symposium 5: The Lifelong Tango of Childhood Conditions

15:30 - 16:30

Venue: Lecture Theatre 3

Chairs

Stella CHIM &
Yen Chow TSAO

- Advancing of congenital heart disease patients through life from the womb
- Skating of childhood cancer survivors on ice
- Snoring the way from child- to adulthood

Speaker

Kun SUN, Tianyou WANG, Albert Martin LI

Symposium 6: Catch and Intervene Early (Sponsored by Novartis)

15:30 - 16:30

Venue: Lecture Theatre 2

Chairs

Louis Chung Kai LOW &
Cheuk Wing FUNG

- Newborn screening of inborn errors of metabolism: a historical perspective
- Newborn screening in Hong Kong: IEI, IEM and SMA
- Newborn screening with TRECs/KRECs in Mainland China
- Screening of inborn errors of immunodeficiency: why, when, and how?

Speaker

Grace POON, Chloe MAK, Huawei MAO, Pamela LEE

Tea break

16:30 - 16:45

Symposium 7: Transwarp to the Future of PanorOmic Sciences (Sponsored by Roche)

16:45 - 17:45

Venue: Lecture Theatre 3

Chairs

Godfrey Chi Fung CHAN & Wanling YANG

- Neuromuscular disease: Where does the future lie?
- Omics in paediatrics: Is this the prime time?
- Insights into CAR-T cell: targeting both tumor and immune cells in the tumor immune microenvironment

Speaker

Sophelia CHAN, Brian CHUNG, Wing Keung CHAN

Symposium 8: Unique Paediatric Programmes Make a Difference

16:45 - 17:45

Venue: Lecture Theatre 2

Chairs

Mabel Siu Chun WONG & Alvin Chi Chung HO

- Paediatric long term ventilator care program in Hong Kong: Experience & reflections
- Neonatal and paediatric surgeries: The past, present, and the future
- From child assessment to rehabilitation: The mission of DKCH
- Developing a programme for children with acquired brain injury: The challenges and gratification

Speaker

Christy CHAU, Kenneth WONG, Victoria TAO, Winnie TSO

Invited **Speaker**

Prof. Georg A. HOLLÄNDER

Head of Paediatrics, University of Oxford, United Kingdom
Department of Biosystems and Engineering, ETH Zurich, Switzerland
Botnar Research Centre for Child Health, ETH Zurich & University of Basel, Switzerland

Prof. Georg A HOLLÄNDER was trained in both Paediatrics and Experimental Immunology in Switzerland and the U.S. He held academic positions at Harvard Medical School, Boston, US and the University of Basel, Switzerland, before he joined the University of Oxford in 2010 as the Hoffmann and Action Research Professor of Developmental Medicine, and the Head of the Department of Paediatrics. In Oxford, he has created the Institute of Developmental and Regenerative Medicine (IDRM) which focuses on the cellular and molecular mechanisms that underpin developmental biology as essential to our understanding of both human health and disease. In addition to his leadership role in Oxford, he is since 2019 also Director of the Botnar Research Centre for Child Health, University of Basel and ETH Zürich, and formally holds academic appointments in both Switzerland and the UK. He is Fellow of the Academy of Medical Sciences and a Corresponding Member of the Swiss Academy of Medical Sciences (SAMS). He holds a Visiting Professorship at the Institute for Genome Research, The University of Tokushima, Japan, and is a member of national and international advisory boards, and supervisory boards of academic institutions and companies.

Thymus development and function: New insight from basic and clinical research

Background and aims

The thymus provides the physiological microenvironment for the development of T lymphocytes and is therefore essential for the successful establishment and maintenance of the immune system's capacity to distinguish between vital self and injurious non-self. This fundamental competence is primarily instructed by thymic epithelial cells (TECs) whose differentiation and functions are still incompletely understood albeit critically controlled by the master regulator FOXN1. Congenital and acquired pathologies affecting TEC differentiation and function are increasingly diagnosed, yet the precise molecular mechanisms underpinning these diseases remain incompletely understood.

Methods

Based on clinical observations of babies presenting with severe T lymphopenia and thymic aplasia, gene sequencing studies at single cell resolution, molecular in vitro studies, dynamic as well as multiplex imaging investigations and studies using experimental transgenic mouse models were undertaken to investigate thymus organogenesis and function under physiological conditions and in the presence of specific gene gain- and loss-of-function mutations implicated in clinically observed thymus pathologies.

Results

Data will be presented detailing (i) the unique features of the thymus microenvironment under physiologic conditions and (ii) how the TEC master regulator FOXN1 is differentially regulated during thymus organogenesis whilst participating in multimolecular nuclear condensates essential for the factor's transcriptional activity. Next (iii), analyses of the thymus of mice will be shown that express a mouse orthologue of a dominant negative FOXN1 mutant initially observed in an athymic patient demonstrating impaired TEC differentiation and revealing a gene dose dependency for individual TEC subtypes.

Conclusions

These studies have unraveled how FOXN1 operates as a transcription factor and defined the molecular basis for a new primary immunodeficiency.

Invited **Speaker**

Prof. Shuyang ZHANG

President, Peking Union Medical College Hospital (CAMS)
Beijing, China

Prof. Shuyang ZHANG is the President of Peking Union Medical College Hospital (PUMCH) and the Vice President of Chinese Academy of Medical Sciences & Peking Union Medical College (CAMS&PUMC). She is a chief physician, professor, and doctoral supervisor of internal medicine. She mainly engages in basic and clinical research and new drug development of cardiovascular diseases and rare diseases. She is a representative to the 14th National People's Congress, and also serves as the Chair of the Chinese Society of Rare Diseases of Chinese Medical Association.

Rare Disease Diagnosis, Treatment and Research in China: Advancements and Prospects

Rare diseases are a group of diseases with a small number of patients and a low incidence rate, and there are more than 60 million patients in China. Due to the rarity and variety of rare diseases, the diagnosis and treatment of rare diseases are facing three major challenges: difficult diagnosis, difficult treatment and poor homogeneity of diagnosis and treatment. Peking Union Medical College Hospital (PUMCH) is committed to building China's rare disease diagnosis and treatment system and comprehensively improving the level of rare disease diagnosis and treatment. In order to deal with the difficulty of diagnosis, PUMCH has (1) established the Department of Rare Disease Medicine and set up a joint outpatient clinic for rare diseases; (2) vigorously promoted the multidisciplinary (MDT) collaboration model for rare diseases; (3) promoted the application of genetic testing in the diagnosis of rare diseases; and (4) explored the use of artificial intelligence tools to assist primary hospitals in the identification of rare diseases to reduce the misdiagnosis of omissions and shorten the time to diagnosis. In order to cope with the difficulty of treatment, we have made every effort to crack the dilemma of druglessness for most rare diseases through initiatives such as (1) promoting the accessibility of marketed drugs; (2) vigorously conducting clinical trials of drugs for rare diseases; and (3) accelerating the exploration of the application of gene therapy in rare diseases. In order to cope with the poor homogeneity of diagnosis and treatment, we have promoted the improvement of the homogeneity of diagnosis and treatment of rare diseases through the construction of a national quality control system for rare disease diagnosis and treatment and the compilation of the Guidelines for the Diagnosis and Treatment of Rare Diseases. As a infrastructure for scientific and technological innovation, we have promoted the construction of China's rare disease big data system and the application of artificial intelligence in the field of rare diseases. At the same time, relying on the Rare Disease Branch of the Chinese Medical Association and the Chinese Alliance of Rare Disease, we continue to strengthen multi-party collaboration and enhance international exchanges. Through the above efforts, integrating resources and focusing on pain points, we will strive to realize early detection, early diagnosis, early treatment, manageability, availability and affordability of rare diseases.

Prof. Xiaodong ZHAO

重医附属儿童医院党委副书记

赵晓东，教授、主任医师，博导，重医附属儿童医院党委副书记。获国家 " 万人计划 " 领军人才、百千万人才工程国家级人选、国家卫生健康突出贡献中青年专家、获国务院特殊津贴、科技部中青年科技创新领军人才等。近十年带领全国同行构建我国原发性免疫缺陷病（PID）防治体系，研发新治疗手段，全面提高临床诊治水平；并开展 PID 发病机制研究，解析人体免疫系统运行机制，取得数个原创性研究成果。

Autosomal dominant gain-of-function mutations in LCP1 cause syndromic neutropenia and immunodeficiency

The actin cytoskeleton plays crucial roles in immune cells. Immunodeficiencies associated with defects in the actin cytoskeleton are known as Immuno-actinopathies. In this study, we examined three patients carrying heterozygous missense mutations (L362F, A365D) in the LCP1 gene. These patients presented with recurrent infections, allergies, neutropenia, and lymphocytopenia. Analysis of bone marrow neutrophils and their precursor cells revealed a tetraploid karyotype and developmental arrest. In addition, peripheral blood neutrophils displayed a maturation disorder and increased apoptosis. The in vitro differentiation of patient-derived pluripotent stem cells, along with single-cell transcriptome sequencing analysis of patient bone marrow mononuclear cells, confirmed the intrinsic differentiation and maturation defects observed in the patients' neutrophils. The peripheral blood T and B cells of the patients not only exhibited reduced quantities but also demonstrated functional defects, indicating combined immunodeficiency. Furthermore, in vitro cell models demonstrated that L362F and A365D mutations resulted in an increased aggregation of F-actin, signifying a gain-of-function mutation. Moreover, LCP1+/L362F knock-in mice replicate specific patient symptoms, thus establishing a causal link between the patient's genotype and clinical phenotype. In summary, this study uncovered a novel immunodeficiency syndrome caused by gain-of-function mutations in LCP1, with the characteristics of neutropenia and lymphocytopenia, which we named ALIDS.

Invited **Speaker**

Prof. Mingsheng MA

Deputy Director of Pediatrics,
Department of Pediatrics, Peking Union Medical College Hospital,
Chinese Academy of Medical Sciences
Beijing, China

Prof. Ma specializes in the diagnosis and treatment of pediatric immune diseases such as auto-inflammatory diseases, juvenile idiopathic arthritis, as well as other rare genetic conditions in children like Prader-Willi syndrome and glycogen storage diseases. He has contributed to several national research projects, including the National Key Research & Development Program on Precision Diagnosis and Treatment for Pediatric Immune Diseases. Dr. Ma has been recognized for his work with the Young Researcher Award from the Asian Society for Pediatric Research. He is a prolific author with publications in well-known scientific journals and is renowned for his commitment to improving the lives of children with complex and rare medical conditions.

A national system for precision diagnosis and treatment of immunologic diseases in children

Immunology is closely linked to nearly all pediatric subspecialties and plays a key role in children's health. Immunologic diseases in children differ from adult disorders in their complexity and heterogeneity, resulting in greater difficulties in clinical management. Recognizing the importance of precision medicine in this field, a national research program was launched with support from the Ministry of Science and Technology of China, aiming to establish the first national system dedicated for precision management of pediatric immunologic diseases, which leverages state-of-art biomedical and informatic technologies to integrate nationwide multi-dimensional medical data for patient stratification, biomarker identification, early warning signs development, and novel genes discovery. With this background, Chinese Alliance of Pediatric Rheumatic & Immunologic Diseases (CAPRID) was launched in 2022 to connect 114 top-tier hospitals across the country, and a nationwide data-driven research infrastructure was established, including national disease registries, standardized medical databases with accompanying data standard, and a follow-up mobile application, enabling cross-institutional network research and long-term patient follow-up. Three autoimmune disorders (juvenile idiopathic arthritis, systemic lupus erythematosus, and ANCA-associated vasculitis) and one large group of inborn errors of immunity (monogenic lupus) were selected to exemplify the nationwide collaboration under this research network, which results in the identification of more than twenty biomarkers empowered by multi-omic data integration, and first-ever national epidemiology investigations in this field in China. Using advanced machine learning techniques, we have built novel models to differentiate arthritis imitators and to identify the monogenic SLE from classic ones. The Chinese largest pediatric autoimmune disease multicenter cohorts have also been established, enabling the development of risk stratification models and the discovery of three novel genes associated with monogenic SLE. Clinical trials are well underway to optimize treatment plans for lupus nephritis and Sjogren's disease. With five national guidelines published, and many innovative publications, patents, and softwares developed, CAPRID will continue to foster excellence in the clinical management, research and education in this ever-expanding pediatric field and is actively devoted to global collaboration.

Dr. Janice LO

Consultant Medical Microbiologist and
Head of the Public Health Laboratory Services Branch,
Centre for Health Protection

Dr. Janice LO has over 30 years' experience in the clinical microbiology and virology laboratory setting. She is currently Consultant Medical Microbiologist and Head of the Public Health Laboratory Services Branch, Centre for Health Protection, Department of Health, Hong Kong. Dr. Lo's interest is in the application of laboratory techniques in public health for infectious disease surveillance, control and prevention.

Laboratory aspects of RSV in Hong Kong

This presentation will cover laboratory aspects of RSV in Hong Kong. Various parameters will be examined, including laboratory testing methodology, seasonality, demographics, and data trends. Future prospects in laboratory diagnosis and surveillance strategies will be discussed in light of developments in the field, with respect to clinical management and public health disease control and prevention.

Invited **Speaker**

Dr. Ching Choi LAM

Member of Executive Council; Chairman of the Advisory Committee on Mental Health;
CEO of Haven of Hope Christian Service
Hong Kong

Dr. LAM is a specialist in paediatric and community medicine and is currently Chief Executive Officer of Haven of Hope Christian Service. Under Dr Lam's leadership, Haven of Hope Christian Service has advocated the "Healthy City" concept since 1997 in the Sai Kung district in Hong Kong.

With his extensive knowledge of local public health policies and services, Dr Lam has sat on multiple statutory and advisory bodies. He is a non-official member of the Executive Council of the HKSAR Government and has been a member of the Hospital Governing Committee of the Haven of Hope Hospital since 1997. A staunch advocate of community care for the elders, he heads the Elderly Care Service Industry Training Advisory Committee, advising the Government on related policy reforms. In addition, Dr Lam serves as a member of the Steering Committee on Primary Healthcare Development of the Health Bureau and is a member of the Supervisory Board and Nominating Committee of the Hong Kong Housing Society.

Recently, Dr Lam has also been appointed as the Chairman of the Advisory Committee on Mental Health, the Steering Committee on Review of Manpower for Healthcare Services in Residential Care Homes and the Healthcare & Wellness Training Board of the Vocational Training Council.

Dr Lam was honoured by the HKSAR Government with the Justice of Peace in 2003 and Silver Bauhinia Star in 2019. In 2018, apart from receiving Honorary Fellowship from Lingnan University, he received the Ageing Asia Global Ageing Influencer Award (Special Recognitions) in recognition of his devotion to public services and his influence on policy-making for the global ageing trend.

Mental health support to children and adolescents

In recent years, Hong Kong has witnessed a concerning rise in mental health issues and suicide rates among its youth population. Factors such as intense academic pressure, depression, family issues, and social isolation have contributed to the growing prevalence of mental health illness.

Efforts to address mental health issues among young people must prioritize prevention and early intervention. By targeting the root causes of mental health concerns, interventions can be developed to mitigate the onset and severity of mental health issues. This requires a multi-faceted approach that involves collaboration among medical professionals, teachers, parents, and social workers. Such medical-educational-social collaboration can enable early detection of mental health issues, facilitate timely referrals, and ensure a continuum of care for students. Through collective action, a supportive environment that reduces stigma can be created, and in turn, increase young people's willingness to seek help for their mental health concerns. Examples of collaboration will be shared in the presentation.

By focusing on prevention, early intervention, and fostering medical-social collaboration, we can enhance mental health support systems and promote the well-being of young people.

Invited **Speaker**

Mr. Kwok Chun Alex WONG

Department of the Hong Kong Special Administrative Region Government,
Deputy Director of Social Welfare (Services)
Hong Kong

Mr WONG joined the Social Welfare Department of the Hong Kong Special Administrative Region Government in June 1988. He held office as Assistant Director of Social Welfare (Subventions) from March 2018 to September 2021, and as Assistant Director of Social Welfare (Youth and Corrections) from September 2021 to February 2023. Since February 2023, Mr WONG has taken up the post of Deputy Director of Social Welfare (Services), taking care of the planning and development of social welfare services. He is currently the Chairperson of the Inter-departmental Task Force on Reporting System and Training for Mandatory Reporting on Child Abuse Cases.

Preparation for the new era of mandatory reporting of child abuse

The Government attaches great importance to safeguarding the best interests of children and firmly believes that every child should be protected from harm or abuse. To better protect children, setting up of a mandatory reporting regime for child abuse cases was announced by the Chief Executive in the 2022 Policy Address. The Mandatory Reporting of Child Abuse Bill (the Bill) was introduced into the Legislative Council on 14 June 2023 to mandate specified professionals to report serious child abuse/harm for early detection and intervention in the interest of the child involved.

Children are vulnerable to abuse and neglect, as they may not be able to seek help or provide accounts of what had happened to them. The harms resulted from child abuse may negatively affect a child's physical and psychological development for a lifetime, or even fatal in some cases. The Bill seeks to ensure early detection of and intervention into serious child abuse/harm cases to achieve the policy objective of child protection. To this end, the cross-sectoral support and collaborative efforts of relevant professionals from social welfare, education and healthcare sector is indispensable. To dovetail with and make preparation for the Bill's enactment, the Government has put in place and will continue to strengthen various supporting measures, including launch of an e-learning platform to provide training for the relevant professionals, increasing the supply of emergency child care places, strengthening the publicity and public education on child protection and setting up of the reporting channel. The Government has also kicked start the formulation of the Mandated Reporter Guide which relevant professionals from the three sectors have been actively engaged in the formulation process. For making good preparation to cast a strong-built safety net for the children in need, cross-sectoral effort and participation is pivotal.

Prof. Patrick IP

Clinical Professor, Department of Paediatrics & Adolescent Medicine,
School of Clinical Medicine, The University of Hong Kong
Honorary Consultant in Paediatrics, Queen Mary Hospital & Hong Kong Children's Hospital
Hong Kong

Prof. Patrick IP is a Clinical Professor of Department of Paediatrics & Adolescent Medicine, The University of Hong Kong and an Honorary Consultant in Paediatrics, Queen Mary Hospital and Hong Kong Children's Hospital. He also appointed by HKSAR as Non-official member in Hong Kong Commission on Children, Advisory Committee on Mental Health, Steering Committee on Prevention and Management of Non-Communicable Diseases. He was awarded Outstanding Asian Paediatrician Award in 2022.

Prof Ip is a specialist pediatrician with special interest in Child Health, Neurology and Developmental Behavioral Paediatrics. He is an expert in early childhood development and has been working for UNICEF and China Development Research Foundation (CDRF) on various child health projects in East Asia Pacific Region as well as in Greater China. Prof Ip has much experience and publications on early childhood development, neurodevelopmental disorders, and global health issues. He has been one of the key coordinators of integrated child health service between hospital and the community and coordinated the Comprehensive Child Development Service (CCDS) of Hospital Authority since its implementation in 2006 until he joined the University of Hong Kong in 2009. He is an appointed tutor of the Association for Research in Infant and Child Development, United Kingdom and the official trainer of Griffith's Mental Developmental Scale. His research focus on different dimensions of Community Child Health including early brain development, early intervention, underprivileged children, safeguarding children, child abuse, child mental health, disability and rehabilitation, public health & health promotion.

Effective Interventions to improve Child Health and Development

Leading research in neuroscience shows that human brain is not mature at birth and can be changed by early life experience and relationships with family and other important persons in the environment. There are emerging evidence suggesting the importance of key environmental determinants affecting child health, development, and psychosocial well-being. How a child turns out to be is the outcome of the transaction and interactions between his biological constitution and the environment. WHO expert group suggests factors including nutrition, health, home, and family environment playing a key role in holistic development and learning of children. Early life adversities in particular family dysfunction, under-stimulation and child abuse have significant long-term impact on children's physical and mental health well-being. Robust scientific studies using socioeconomic model showed that the yield of capital investment in human life drops exponentially as age increases while early childhood being the most critical period with the highest return of investment. Evidence-based interventions in childhood have proved to be the most cost-effective investment in human life which help to support children and their families in timely manner and prevent the occurrence of many serious health and developmental problems. Awareness of the public and key stakeholders would aid in the formulation of relevant practices and guide future policy to ensure equitable health opportunities for every child.

Physical inactivity, obesity, sleep, and visual problems have become a major concern on children globally in recent years. Children who have good sleep hygiene and physical exercise, proper use of electronic devices, and with quality parent-child interactive play are more resilient during the COVID pandemic. Cultural changes in the society have been associated with significant negative impact on child growth, physical fitness, and lifestyles. The number of overweight/obese children in Hong Kong rose to 5%, 20%, and 24% for preschoolers, primary schoolers, and secondary schoolers respectively in recent years. Recent study showed that school closures during COVID pandemic have contributed to this trend, as children have had less physical activity and increased screen time, leading to a higher risk of obesity. Our data revealed that the obesity remission rate in children declined significantly in recent years, which is a major concern as obesity is a dynamic process that involves the balance between new cases and remission from overweight or obesity. Data analysis demonstrated the detrimental impact of the COVID-19 pandemic on children's BMI status, while children with pre-existing overweight/obesity are more at risk of gaining additional weight. To combat this critical issue, professionals should join hands to promote healthier lifestyle and physical activities as well as avoid overuse of electronic devices.

Environmental risks that children are particularly vulnerable to start at the embryonic stage usually continue through adulthood. This lecture will cover the evidence-based childhood intervention programs which are effective to address the emerging needs of children and improve the health and holistic development of young generation, and to bridge the gap in child health, development, and psychosocial wellbeing. The effectiveness of the first clinical trial on multi-component parenting intervention to improve social-emotional development of children in low-income families and the sports mentorship program to improve physical and mental health of teenagers would also be examined and discussed as illustrative examples. The study findings offer professionals, stakeholders and policymakers evidence-based recommendations for developing effective interventions in a Chinese cultural context to attain the goal of improving child health and development in Hong Kong and other Chinese communities.

Invited **Speaker**

Prof. Huimin XIA

Chair Surgeon at Guangzhou Women and Children's Medical Center,
Guangzhou Medical University
Guangzhou, China

Prof. Huimin XIA is the Chair Surgeon at Guangzhou Women and Children's Medical Center, Clinical Professor of Pediatric Surgery and doctoral supervisor at Guangzhou Medical University. He is the Director of the Guangdong Provincial Key Laboratory of Structural Birth Defect Diseases and President-to-elect of Pediatric Surgery Society of the Chinese Medical Association.

He has been engaged in the development of high-quality cohorts for maternal and child health diseases and established the Guangzhou Birth Cohort. He focuses on the research of the mechanisms and innovative diagnostic and treatment technologies of structural birth defect diseases. He is the principle investigator of several NSFC general and key projects, provincial key research and development plans, with over 20 million research grant. He has received Soong Ching Ling Pediatrics Award, several provincial and ministerial level medical science and technology awards. In the past five years, he is the first of corresponding author of over 80 peer-reviewed publications in journals such as Nature, Nature Medicine, Nature Reviews Materials, Cell, and J Hepatology.

The Role of Birth Cohorts in Structural Birth Defects

The Born in Guangzhou Cohort Study (BIGCS) is a large-scale prospective study in southern China to investigate the impacts of social, biological and environmental influences on pregnancy and child health and development. Initiated in 2012, the study has successfully recruited over 57,000 pairs of mothers and children by 2023. More than 2,700,000 biological samples have been obtained from participants. BIGCS has established a research platform that provides valuable information such as allele frequency, functional annotation, and comparisons to global populations. This talk will use Hirschsprung disease research as an example to discuss the role of birth cohorts in structural birth defects research.

Invited **Speaker**

Prof. Wenhao ZHOU

President of Guangzhou Women and Children's Medical Center

Prof. ZHOU Wenhao is the president of Guangzhou Women and Children's Medical Center, clinical professor of Pediatrics, doctor supervisor at Guangzhou Medical University. Professor Zhou served as the President of the Neonatology Group of the Pediatric Society of the Chinese Medical Association, Vice President of the Medical Genetics Society of the Chinese Physician Association, President-to-elect of the Rare Disease Society of the Shanghai Medical Association. Professor Zhou is a world renowned practitioner and researcher in neonatology. His research focuses on clinical management of critical neonatal illnesses, neonatal brain diseases and rare diseases. He has established the China Neonatal Neurocritical Care Alliance and the China Neonatal Genome Project. He is the principle investigator 15 National Major Research and Development Grants and NSFC Key Projects. He is the author of more than 185 peer-reviewed scientific publications. He received the First Prize of Shanghai Science and Technology Progress Award, the Chinese Medical Award, and the Second Prize in Science and Technology of the Ministry of Education.

Newborn genome project

Chinese Neonatal Network (CHNN) conducts high quality leading multi-disciplinary, collaborative research dedicated to the improvement of neonatal-perinatal health and health care nationally and internationally. By 2023, 105 tertiary NICUs participated in CHNN, covering all provinces in mainland China. CHNN initiated the Chinese Newborn Genome Project (CNGP), Newborn Undiagnosed Genetic Research Project and set up the Multicenter Neonatal Cohort.

Prof. Michael TO

Clinical Associate Professor, Department of Orthopaedics of Traumatology,
University of Hong Kong

Prof. Michael TO is an orthopaedic surgeon and a clinical associate professor of the University of Hong Kong. He graduated from the University of Hong Kong in 1999 and obtained his orthopaedic fellowship in 2006. His clinical expertise is in paediatric orthopaedic surgery treating children with congenital limb and spinal deformities. He is the Chief of Service of the Center in the HKU Shenzhen Hospital and has established the largest referral center for patients with rare bone diseases in the southern China. He is currently the deputy director of the Guangdong provincial quality control center for rare diseases.

Creating a registry of rare, but not so rare, disease: the HKU-SZ experience

Background and aims

Rare diseases are medical conditions that affect a small proportion of the population. In China, more than 60 million people are estimated to have rare diseases. These diseases pose many challenges for diagnosis, management, and public awareness. Many rare disease patients in China face high costs of treatment and medication, which prevent them from seeking medical help. Moreover, the dispersed population makes it difficult to establish a patient registry for rare diseases.

Methods

HKU Shenzhen Hospital set up the rare bone disease centre in 2014. The centre collaborated with the government, network hospitals, patient support groups, and charitable organizations to provide comprehensive care to the patients. The centre also used electronic platforms to educate the public about rare diseases. Furthermore, the centre established a multidisciplinary team (MDT) to provide better care for these diseases that affect multiple organs. The centre also assisted patients with financial difficulties to obtain financial support from charitable foundations for their treatments.

Results

Over the past 10 years, HKU Shenzhen Hospital has built one of the largest rare bone disease patient registries in the Greater Bay Area. The registry includes thousands of patients with rare and less rare bone diseases, such as osteogenesis imperfecta, achondroplasia, neurofibromatosis, and metabolic bone diseases. The registry not only helped to understand the patients' condition better, but also created opportunities for research and clinical trials.

Conclusion

HKU Shenzhen Hospital has demonstrated the feasibility and effectiveness of establishing a rare bone disease centre and registry in China. The centre has improved the quality of care and outcomes for the patients, as well as increased the public awareness and knowledge of rare diseases. The centre has also contributed to the advancement of scientific research and clinical innovation in the field of rare bone diseases. The centre serves as a model and a platform for collaboration and exchange among different stakeholders in the rare disease community.

Invited **Speaker**

Prof. Sophia CHAN

Professor, School of Nursing, The University of Hong Kong
Hong Kong

Prof. Sophia CHAN is currently Professor in Nursing, Senior Advisor to the President's Office at The University of Hong Kong, Director of HKU Primary Health Care Academy and Policy Convenor of the HKUMed Primary Health Care Collaboratory. She was appointed by the HKSAR Government to be the Secretary for Food and Health (SFH) from 2017 – 2022. During her tenure as the SFH, not only has she been fighting the COVID-19 pandemic over 2.5 years, she had also made exemplary efforts and policy initiatives in protecting and promoting the health of the population through major policy initiatives such as embarking on a new journey in primary health care by developing District Health Centres (DHCs) in all 18 districts in Hong Kong. Professor Chan is one of the leading Nurse Scientists locally and internationally and was named among the world's top 2% most cited scientists in her specialty areas by Stanford University in 2020. She has always been the top-funded researcher in HKU School of Nursing and has led many external competitive grants including GRF, HMRF, and commissioned grants from the Government, Hong Kong Jockey Club and key foundations and organisations locally and internationally. She is a pioneer and founding directors of a number of signature research and training programmes in tobacco dependency therapeutic interventions, and her findings has transformed smoking cessation services and tobacco control policies.

A Family-Based Smoking Cessation Study Quit-for-Kids (QFK) to Prevent Secondhand Exposure in Children: Findings of A Pilot Qualitative Study on Mothers' Perceptions of Their Husbands Smoking at Home

Background

There is no safe level of second-hand smoke (SHS) exposure, yet 1/3 of children worldwide were exposed to SHS. Specifically designed, family-based smoking cessation interventions are critical to increase the awareness of parents and improve the health of the children. With the Generous support of Lee Hysan Foundation, we designed the first family based smoking cessation project "Quit-for-Kids" (QFK) aiming to protect children from the harmful effects of SHS from their smoking family members and to help the smoker quit.

Purpose

We report findings of Phase 1 of a randomized controlled trial (QFK), aiming to explore qualitatively the SHS exposure in children and protective measures in Hong Kong families, to guide the development of a family-based interventions in assisting smoking cessation.

Methods

Non-smoking mothers of children living with a smoking partner (n=8), who had participated in previous HKU smoking cessation trials in 2020 or 2021 but remained smoking at 6 months follow up, were recruited for the semi-structured qualitative interview, which focuses on father's smoking behaviours, children's exposure to SHS, and mother's actions in protecting children from SHS exposure. Thematic framework analysis was used to analyze the transcripts.

Results

Four main themes emerged from the 8 interviews: (1) father's indoor smoking behaviour, (2) non-smoking mother's knowledge and beliefs on indoor SHS exposure, (3) efforts to contain smoking inside the home, and (4) support from family members and other resources. Fathers showed heavy nicotine dependence with stress and entrenched habits frequently cited as reasons for indoor smoking and barriers to quitting. Although non-smoking mothers have some understanding of the risks associated with SHS, there was a lack of support in family-based cessation, with mothers highlighting the need for structured family-based support to facilitate and motivate their partners' efforts for successful cessation.

Conclusion

Non-smoking mothers understand the harms of SHS, but experienced difficulties in eliminate SHS at home due to fathers' failure in smoking cessation and lack of family-based health advice and support. This RCT which aims to test a comprehensive family-based intervention that focus on providing counseling and mHealth support for both the smoker the non-smoking partner is much needed to increase abstinence and maintaining a smoke-free home for children.

Invited **Speaker**

Ms. Pilta KAN

Advanced Practice Nurse,
Paediatrics and Adolescent Medicine, Queen Mary Hospital
Hong Kong

I was promoted to APN for 15 years, appointed as ANC in 2022 and took up the role of NC in Dec 2023. As a configure team member of Computer Information System since 2002, I took up the role of project coordinator to coordinate software upgrade in 2021 and new clinical block. In 2013, I participated overseas scholarship program to explore Paediatric emergency transport; and organized several transport workshops after training. Recently, I actively participated in organizing staff training program and transitional program to paediatric patients.

Ms. Susan CHIU

Associate Nurse Consultant,
Department of Paediatrics and Adolescent Medicine, Queen Mary Hospital
Hong Kong

GS CHIU is an Associate Nurse Consultant with experience in management and leadership nursing role and provided expert advice on clinical practice. She committed to increase the quality of patient care through evidence based practice and collaboration with multi-disciplinary team. She collaborated and led several projects to improve the outcome of patients, including the CQI projects on safe practice in NICU and reducing perioperative hypothermia in infants requiring surgery. In addition, Gee Shuen also shared the project outcome in different forums (e.g. Medication Safety forum, HKWC EBNP forum) to drive positive change and contribute to the advancement of nursing and healthcare practice.

A Departmental Collaborative Transitional Care Program in PNICU

Introduction

As advancement of medical knowledge and technology happen over the past decade, patient's outcome improved with better survival rates. However, some patients require lifelong multi-system medical or technology support to maintain their survival. Care of medical complex children involve specialised care and coordination among multi-disciplinary team in health care system. If they can receive care at home with comfortable environment surrounded by loved ones, their well-being and quality of life can be greatly improved. Transition a medically complex child is not an easy pathway. The aim of this program is to facilitate the process to transition the medical complex baby or child to go home or rehabilitation unit.

Methodology

Retrospective review on the discharge progress from clinical information system in Paediatric and Neonatal Intensive Care Unit (PNICU) were performed. Literature review was done to identify the gap and provide improvement strategies. The strategies included:

1) Early identification the need for medical intervention
2) Standardize the workflow to enhance the discharge preparation and transition planning
3) Collaborate with other disciplines on transitional planning and align care between different paediatric units
4) Empower caregivers on caring medically complex child by providing comprehensive parent education program and information
5) Provide technological and psycho-social support to caregivers during the transitional care program

Results

Four children aged from 4-month-old to 15 years old discharged to home within two months after commencing the collaborative transitional care program on central line management and home parenteral nutrition care from December 2022 to March 2024.

Conclusion

Four medical complex children had already discharged successfully from PNICU after the program, and two children aged 5-month-old and 6 years old are planning to receive transitional care program on central line and home parenteral nutrition care in PNICU. A departmental collaboration transitional care program in PNICU is essential to facilitate a medically complex baby or child transition from PNICU to home or other institute successfully.

Invited **Speaker**

Ms. Choi Wan WONG

Ward Manager, Department of Paediatric Ward at The Duchess of Kent Children's Hospital
Hong Kong

Choi Wan WONG is a Registered Nurse and has over 15 years of experience in nursing field. She obtained her Bachelor of Science in Nursing and Master of Science in Nursing from The Hong Kong Polytechnic University. She joined The Duchess of Kent Children's Hospital since her graduation from nursing study. She is currently the Ward Manager of Paediatric Ward at The Duchess of Kent Children's Hospital.

A Departmental Collaborative Transitional Care Program in PNICU

Patients with medical complexity are defined as patients with one or more complex chronic conditions that are often multisystem and severe. They are functionally limited and often dependent on medical technologies. Patients require long term ventilator support (VAC) are a vulnerable population among the group. To pave the road for these patients home, a ventilator care program was established at The Duchess of Kent Children's Hospital in 1997. Our primary goal is to provide one-stop multi-disciplinary service of rehabilitation and to help these medically-complex patients reintegrate to the community. A VAC clinical care pathway is adopted to facilitate a smooth transition from hospital to community and assist VAC to return home. The care pathway maps the patient journey from hospital to discharge to post-discharge, and guides the delivery of consistent and comprehensive services by clinicians, nurses and allied health professionals. Each member of the team has a distinctive role in the program. We aim to improve quality of life of VAC, assist in developing VAC's potentials, prevent complications, and to provide educational training to carers to tackle the complex care of the VAC.

Invited **Speaker**

Prof. Yu Lung LAU, JP, BBS

Doris Zimmern Professor in Community Child Health
Chair Professor of Paediatrics
Hong Kong

Prof. Lau is a member of the WHO (WPRO) Technical Advisory Group for Immunisation and Vaccine Preventable Diseases as well as a member of the Regional Certification Commission for the Certification of Poliomyelitis Eradication in the Western Pacific. He is the Chair of Scientific Committee on Vaccine Preventable Diseases and initiated universal childhood PCV vaccination as Chair of Working Group on Pneumococcal Vaccination.

Prof. Jaime Sou Da Rosa Duque

Assistant Professor of Paediatrics and Adolescent Medicine,
The University of Hong Kong
Hong Kong

Member of the Working Group on Pneumococcal Vaccination (WGPV), Centre for Health Protection, Department of Health, Hong Kong, SAR, China

Member of the National Committee for the Certification of Wild Poliovirus Eradication in Hong Kong (NCC), Centre for Health Protection, Department of Health, Hong Kong, SAR, China

Mr. Ching Ho Jeffery CHAN

MBBS / MRes[Med] Student
Hong Kong

Current research topic on measles and rubella vaccine failure among young adults

60 Years of Childhood Vaccination in Hong Kong

Vaccine-preventable diseases (VPD) result in significant mortality and morbidity globally. Effective and safe vaccines against VPD can contribute enormously to reducing disease burden when introduced as a public health intervention.

With the introduction of the Hong Kong Childhood Immunisation Program (HKCIP) in the 1960s, such vaccines became universally accessible and have conferred protection to children throughout our community. Over the past 60 years, the HKCIP has undergone significant changes due to rapid medical advancements. To date, there are six vaccines (BCG vaccine, hepatitis B vaccine, DTaP-IPV vaccine, pneumococcal vaccines, measles, mumps, rubella & varicella vaccines and human papillomavirus vaccine) included in the HKCIP, targeting 12 pathogens. Furthermore, there are other vaccination programs offered to children, such as The Seasonal Influenza Vaccination Subsidy Scheme and COVID-19 Vaccination Programme.

In this seminar, we will discuss landmark changes in the HKCIP and the remarkable achievements our Department has contributed over these past 60 years.

Invited **Speaker**

Prof. Kun SUN

President of Xinhua Hospital SJTU School of Medicine,
President of Xinhua Children's Hospital and
Dean of Pediatrics Department of SJTU School of Medicine
China

Prof. Kun SUN, chief physician, professor, MD/PhD supervisor, own the prestige of special allowance under the State Council. He is the President of Xinhua Hospital SJTU School of Medicine, President of Xinhua Children's Hospital and Dean of Pediatrics Department of SJTU School of Medicine.

Prof. Kun SUN is an expert in pediatric cardiology and pediatrics in China. He has long been engaged in research on the etiology, imaging diagnosis, interventional therapy of pediatric cardiovascular diseases, as well as the diagnosis and treatment of perinatal and infant congenital heart disease.

He created a non-invasive diagnostic system for congenital heart disease in fetuses and children, successfully implemented the first intrauterine interventional treatment of severe fetal aortic stenosis in China, pioneered the sequential treatment model for children's congenital heart disease from the fetal stage, and took the lead in carrying out the "One Thousand Days in Early Life Programme". He integrated the research, diagnosis and multidisciplinary intrauterine treatment model for fetal diseases, and created In utero pediatrics to provide children with full life cycle health services.

He is leading or has led more than 30 research projects, including , NSFC projects, “973 Plan” Project, National 863 project, Key Projects of Ministry of Science and Technology, etc. He has published 388 academic papers on domestic or international journals, among which 65 papers have been collected by SCI, with a total impact factor of 163.7 points.

Training the next generation of pediatricians and pediatric subspecialists in China

1) The New Challenges Faced by Pediatric Education in China

The proposal of the "three-child" policy, coupled with the continuous decline in birth rates and aging population in recent years, has posed new challenges to the demand and training of the next generation of pediatricians. Meanwhile, the rapid development of artificial intelligence has brought impacts and changes to traditional medical education models.

2) The Mission and Responsibility of Pediatricians in Future

The promotion and popularization of the national concept of "great health" has extended the responsibilities of pediatricians from "treating diseases" to "treating diseases before they occur". The rise of in Utero pediatrics has elevated the screening, identification, and intervention of early life of in Utero diseases to a new height. Strengthening the linkage among medical education, research and clinical activities between top Schools of Medicine and children's hospitals at home and abroad, and achieving a dynamic balance between continuously empowering the improvement of grassroots pediatric medical level seems to be more and more important. It is also urgent to promote the research and development of "child-friendly" medical devices and clinical drugs.

3) Some Thoughts on Cultivating the next generation of Pediatric Talents

The future pediatricians and pediatric subspecialties require versatile talents with interdisciplinary knowledge reserves such as medicine, engineering, artificial intelligence, and even psychology. It is also necessary to have a broader international perspective and the ability for lifelong self-learning. For medical education providers, it is extremely challenging. We need to break away from traditional medical education models and thinking, focus on "big education" and "lifelong self-learning", and provide more scientific and advanced educational resources and concepts. At the same time, it is necessary to balance the stratification of general education and specialized education, in order to provide more comprehensive and accurate medical services.

Invited **Speaker**

Prof. Wenhao ZHOU

President of Guangzhou Women and Children's Medical Center,
Clinical Professor of Pediatrics, Guangzhou Medical University
China

Prof. Wenhao ZHOU Wenhao is the president of Guangzhou Women and Children's Medical Center, clinical professor of Pediatrics, doctor supervisor at Guangzhou Medical University. Professor Zhou served as the President of the Neonatology Group of the Pediatric Society of the Chinese Medical Association, Vice President of the Medical Genetics Society of the Chinese Physician Association, President-to-elect of the Rare Disease Society of the Shanghai Medical Association. Professor Zhou is a world renowned practitioner and researcher in neonatology. His research focuses on clinical management of critical neonatal illnesses, neonatal brain diseases and rare diseases. He has established the China Neonatal Neurocritical Care Alliance and the China Neonatal Genome Project. He is the principle investigator 15 National Major Research and Development Grants and NSFC Key Projects. He is the author of more than 185 peer-reviewed scientific publications. He received the First Prize of Shanghai Science and Technology Progress Award, the Chinese Medical Award, and the Second Prize in Science and Technology of the Ministry of Education.

Paediatric research in Greater Bay Area - The role of Guangzhou Women and Children s Medical Center

Guangzhou Women and Children's Medical Center in Guangzhou is a major hub for women's and children's healthcare. It is fostering innovation and international cooperation, while also blending medical practice and groundbreaking research. GWCMC attract global clinicians and researchers, with its unique advantages in large-scale birth cohort and disease cohorts detailed clinical and biological data and its dedication to children's health and treatment.

Invited **Speaker**

Prof. Xiaodong ZHAO

重医附属儿童医院党委副书记

赵晓东，教授、主任医师，博导，重医附属儿童医院党委副书记。获国家 " 万人计划 " 领军人才、百千万人才工程国家级人选、国家卫生健康突出贡献中青年专家、获国务院特殊津贴、科技部中青年科技创新领军人才等。近十年带领全国同行构建我国原发性免疫缺陷病（PID）防治体系，研发新治疗手段，全面提高临床诊治水平；并开展 PID 发病机制研究，解析人体免疫系统运行机制，取得数个原创性研究成果。

Dr. Tsz Leung LEE, MH

Hospital Chief Executive of the Hong Kong Children's Hospital
Hong Kong

Dr. LEE started his clinical career as paediatrician in the Department of Paediatrics and Adolescent Medicine, Queen Mary Hospital. He later worked as Deputy Hospital Chief Executive of Queen Mary Hospital, Hong Kong. In 2014, Dr Lee worked as Chief Manager in the Department of Quality and Standards of the Quality and Safety Division, Hospital Authority Head Office. From 2016 onwards, he is appointed as Hospital Chief Executive, Hong Kong Children's Hospital. He is also the co-chairman of HA Coordinating Committee in Paediatrics.

Networking with Children's Hospital in the Greater Bay Area and Beyond

Upon service commencement of the Hong Kong Children's Hospital (HKCH) since Dec 2018, paediatric services in the public sector have been operated under a hub-and-spoke model. HKCH serves as a tertiary referral centre for complex, serious and uncommon paediatric cases requiring multidisciplinary management and works closely with regional hospitals to form a coordinated and coherent paediatric service network.

HKCH provides a full spectrum of paediatric sub-specialties and surgical specialties services with dedicated infrastructure for research, teaching and training. With its professional and committed clinical and supporting teams, HKCH has achieved various milestones in the past five years, such as accomplishing projects assigned by the Government, implementing corporate-wide programs and becoming the only provider of a number of services in Hong Kong.

In addition to the effort in consolidating the services locally, HKCH actively establishes network with China and overseas children's hospitals in the clinical, research and training perspectives. Since 2019, HKCH Hospital Chief Executive has been an active institutional member of the Children's Hospital's International Executive Forum (CHIEF), alongside with the Chief Executive Officers from the world's leading children's hospitals. To facilitate knowledge exchange and experience sharing, HKCH will participate in the regular online multidisciplinary team meeting organized by the Peking Union Medical College Hospital and at the same time, colleagues from Mainland and Macau will join the monthly hospital grand round arranged by the HKCH Simulation Training Centre. There are also doctors from Macau, Shanghai, Malaysia and Thailand who join the clinical teams in HKCH as visiting doctors under the overseas doctors' exchange programs. The special nature of HKCH and the dedicated infrastructure like Clinical Trial Centre and research laboratories facilitate both clinical and laboratory research studies as well.

To reinforce its role as a "super-connector", HKCH will continue to look for collaboration opportunities and expand its network with China and overseas children's hospitals.

Invited **Speaker**

Prof. Chi Kong LI

Research Professor, Department of Paediatrics,
The Chinese University of Hong Kong
Hong Kong

Prof. Chi-kong LI currently is Research Professor at Department of Paediatrics of The Chinese University of Hong Kong, and honorary consultant at Prince of Wales Hospital and Hong Kong Children's Hospital. He had been Chief of Service of Department of Paediatrics, Prince of Wales Hospital from 2004 to 2014. He was the past Continental President of Asia of International Society of Pediatric Oncology. He is the Director of Committee of Subspecialty Boards of Hong Kong College of Paediatricians. Dr Li serves as panel chair of the Public Complaint Committee, and member of Hospital Governing Committee of QEH, Hospital Authority.

Subspecialty development in Paediatrics: the Hong Kong scene

The Hong Kong College of Paediatricians under the Hong Kong Academy of Medicine started the structured training programme for paediatricians since 1993. Subspecialty training with recognised curriculum has been implemented in many overseas countries. Our College decided to establish subspecialty training since 2004 under the leadership of Dr. CHAN Chok-wan. It took nearly 10 years to get the consensus from the paediatric community to formulate the first subspecialty training. Paediatric Immunology, Allergy and Infectious Diseases (PIAID) was approved in June 2013, and then followed by another 6 subspecialty boards. It is anticipated to have more subspecialty boards to be established in the coming years. There are challenges in maintaining a high quality training for the subspecialty fellows. Decreased number of trainers in a training unit due to retirement or resignation may cause interruption of a training unit. The trainees also face difficulty in finding rotation training at different centres as mandated by the training curriculum. The declining of birth rates in recent years may also pose challenges to some subspecialties such as reduction of procedure number. Some subspecialty areas have very limited number of patients that may not be sufficient for a training programme with multiple training units. Centralisation of service at one site or a mega-cluster programme may be an option. There is also debate on strengthening general paediatric training or further subspecialisation as the priority of training needs for our paediatricians. The Royal College of Paediatrics and Child Health has developed Special Interest (SPIN) modules under various subspecialties, and this is now under discussion in Hong Kong. Despite the above challenges, we believe a structured training programme in various subspecialties is to the best benefit to our children.

Prof. Yiu-Fai CHEUNG

Chairperson
Department of Paediatrics and Adolescent Medicine,
The University of Hong Kong
Hong Kong

Prof. CHEUNG is a clinician specialising in paediatric cardiology, a clinical researcher and a teacher. He graduated from the University of Hong Kong (HKU) in 1990, received his Doctorate of Medicine in 2004, became a full professor in HKU in 2007, and was awarded the Faculty Teaching Medal. He is currently Service Head of Cardiology at Hong Kong Children's Hospital and Bryan Lin Professor of Paediatric Cardiology of the LKS Faculty of Medicine, University of Hong Kong. He provides specialist clinical service for children with heart disease at Hong Kong Children's Hospital. His scope of research encompasses paediatric and adult congenital heart disease, acquired heart disease in children, and vascular function in health and disease in the young. He has written more than 200 peer-reviewed papers, 3 books and 10 book chapters, and delivered more than 200 invited lectures. He is ranked the world's top 2% most-cited scientist based on the 2021, 2022 and 2023 Stanford ranking list. He has served as an Assistant Dean in Research at the Faculty of Medicine, HKU, Chief Editor of the Hong Kong Journal of Paediatrics, and examiner of undergraduate and postgraduate professional medical examinations in Hong Kong, Singapore and Malaysia. He is appointed as the Chairperson of the Department of Paediatrics & Adolescent Medicine, HKU in February 2024.

Edtech in Undergraduate and Postgraduate Medical Education

Education technology, EdTech, involves the use of computer hardware, software, digital resources, and other technological tools to enhance the teaching and learning processes. The spectrum of EdTech applications and platforms is expanding and includes: i) digital learning management system, ii) e- and mobile learning platforms, iii) gamification, iv) simulation and extended reality, and v) artificial intelligence. The introduction of EdTech, which is gaining momentum in undergraduate and postgraduate teaching and learning, has led to a paradigm shift in the landscape of medical education.

The integration of EdTech may enhance undergraduate and postgraduate medical education in the following domains: i) self-directed learning, ii) accessibility and flexibility in learning, iii) individualized learning and feedback, iv) utilization of immersive innovative methods, vi) continuous evaluation and feedback, and vii) promotion of lifelong learning. Integration of education technology in undergraduate and postgraduate medical education holds immense potential to transform medical education, equipping future generations of healthcare professionals the necessary skills to navigate the evolving healthcare landscape.

Invited **Speaker**

Prof. Kun SUN

President of Xinhua Hospital SJTU School of Medicine,
President of Xinhua Children's Hospital and
Dean of Pediatrics Department of SJTU School of Medicine
China

Prof. Kun SUN, chief physician, professor, MD/PhD supervisor, own the prestige of special allowance under the State Council. He is the President of Xinhua Hospital SJTU School of Medicine, President of Xinhua Children's Hospital and Dean of Pediatrics Department of SJTU School of Medicine.

Prof. Kun SUN is an expert in pediatric cardiology and pediatrics in China. He has long been engaged in research on the etiology, imaging diagnosis, interventional therapy of pediatric cardiovascular diseases, as well as the diagnosis and treatment of perinatal and infant congenital heart disease.

He created a non-invasive diagnostic system for congenital heart disease in fetuses and children, successfully implemented the first intrauterine interventional treatment of severe fetal aortic stenosis in China, pioneered the sequential treatment model for children's congenital heart disease from the fetal stage, and took the lead in carrying out the "One Thousand Days in Early Life Programme". He integrated the research, diagnosis and multidisciplinary intrauterine treatment model for fetal diseases, and created In utero pediatrics to provide children with full life cycle health services.

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Advancing of congenital heart disease patients through life from the womb

Background and aims

Congenital heart disease (CHD) remains a significant challenge in pediatric healthcare, affecting the lifelong health and quality of life of affected individuals. It is posited by scholars that early primary intrauterine cardiac anomalies may hinder heart development, causing irreversible secondary structural changes, thus highlighting the importance of focusing on prenatal diagnosis and fetal interventions for congenital heart disease. With the continuous advancement of fetal echocardiography, fetal cardiac intervention within the womb has increasingly become a reality, providing many children with critical congenital heart defects the opportunity for survival.

Methods

Our approach combined a comprehensive review of current fetal interventions for CHD with insights from clinical practice of Xinhua hospital, focusing on the treatment of specific types of congenital heart defects. We will delineate a series of emblematic cases to comprehensively evaluate the indications, contraindications, and prognostic outcomes associated with fetal cardiac interventions for congenital heart disease.

Results

The success rate of fetal aortic stenosis intervention techniques is reported at 82%, with a range from 73% to 94%. The incidence of fetal demise ranges from 6% to 9.8%, as compared to a 17% rate reported in international registries. Data from Boston Children's Hospital indicate that the technical success rate of fetal pulmonary valve balloon valvuloplasty ranges between 60% to 69%. Biventricular circulation was established in 4 cases, accounting for 44.4%. Five fetal cardiac interventions carried out at Xinhua Hospital achieved technical success, although one procedure experienced a failed attempt at puncturing the pulmonary valve, with no further attempts pursued.

Conclusions

In experienced, large medical centers, fetal cardiac intervention techniques have the potential to mitigate life-threatening conditions in fetuses, alleviate symptoms, and improve long-term prognoses, while posing minimal risk to the mother. However, fetal cardiac intervention is still in its nascent stages, with a long road ahead. There is a necessity for stringent control over surgical indications, an increased focus on ethical considerations, and the accumulation of more data and experience. The advance through life for patients with CHD can begin from the womb, with early interventions playing a pivotal role in shaping their future.

Invited **Speaker**

Prof. Tianyou WANG

Beijing Children's Hospital Affiliated to Capital Medical University
Beijing, China

主任医师、二级教授、博士生导师
国务院特贴、亚洲卓越儿科医师奖、中国儿科医师奖、国之名医获得者
中华医学会理事
中华医学会儿科分会主任委员
中国医师协会儿科医师分会副主任委员
中国医促会儿科分会主任委员
国家卫生健康委儿童合理化用药专家委员会主委
中华儿科杂志总编辑
中国小儿血液与肿瘤杂志总编辑
中国小儿循证医学杂志、中国实用儿科杂志、
中国小儿急救杂志副主编
Word journal of pediatric 杂志编委

Prof. Albert Martin LI

Chairman, Department of Paediatrics, The Chinese University of Hong Kong
Hong Kong

Albert LI is a Professor of Paediatrics and Chairman of the Department of Paediatrics at the Chinese University of Hong Kong. He qualified from the University of Cardiff and received postgraduate training at King's College Hospital and the Great Ormond Street Hospital before joining the Department of Paediatrics at the Prince of Wales Hospital. Professor Li has established a strong research interest in the field of sleep-disordered breathing, especially obstructive sleep apnoea.

Snoring the way from child- to adulthood

Snoring is a sound from vibrating upper airway structures secondary to obstructed air movement during breathing while sleeping. The prevalence of snoring is around 10% in the paediatric population, and it is the most important symptom of obstructive sleep apnoea (OSA). OSA is on the severe end of the sleep-disordered breathing spectrum, and if untreated, it can lead to a variety of complications, namely neurobehaviour deficits, metabolic disturbance and cardiovascular abnormalities. In this presentation, the speaker will share with the audience his research over the past 20 years that focuses on blood pressure in children with OSA. He will put forward the evidence for a positive relationship between childhood OSA and elevated blood pressure and even hypertension, using data from his cross-sectional and longitudinal studies.

Invited **Speaker**

Dr. Grace POON

Consultant and Honorary Clinical Associate Professor,
Department of Paediatrics and Adolescent Medicine,
The University of Hong Kong, Queen Mary Hospital,
China

Dr. Grace POON is a Consultant in Paediatrics at Queen Mary Hospital and an Honorary Clinical Associate Professor in the Department of Paediatrics and Adolescent Medicine of LKS Faculty of Medicine at The University of Hong Kong. She received her MBBS from the United Medical and Dental Schools of Guy's and St Thomas's Hospitals, University of London in United Kingdom and returned to Hong Kong to complete her paediatric training. She developed a subspecialty interest in paediatric endocrinology and metabolic medicine. She was the President of the Hong Kong Society of Inborn Errors of Metabolism and a Member of the Task Force for the Pilot Study of Newborn Screening for Inborn Errors of Metabolism.

Newborn screening of inborn errors of metabolism: a historical perspective

Newborn screening for inborn errors of metabolism is a public health program aiming for early identification of serious but treatable metabolic conditions.

Timely treatment aims to prevent catastrophic effect and to ameliorate the clinical consequence of the disease. It can improve the quality of life for the affected individuals and reduce the burden on the healthcare service of the society.

Dr. Chloe MAK

Consultant Pathologist,
Laboratory Director of Newborn Screening Laboratory, HKCH

Dr Chloe MAK graduated from the University of Hong Kong for her medical degree in 1999. She was awarded PhD in 2008 in the Chinese University of Hong Kong and MD in 2012 in HKU respectively. Her PhD project was molecular genetics of Wilson disease and her MD project was on inborn errors of metabolism and expanded newborn screening. She was admitted to the Fellowship in Chemical Pathology, the Hong Kong College of Pathologists in 2006. She obtained double scopes of practice in both chemical pathology and genetic pathology from the Royal College of Pathologists of Australasia. She also had a MSc in Health & Hospital Management by the University of Birmingham. Chloe is active in academics with awards like RCPA Outstanding Teaching Award, Fellowship of the European Society of Human Genetics, Overseas Fellowship of the Japanese Society for Inherited Metabolic Diseases and HA outstanding team award. She has more than 110 publications and is reviewer of various journals. She is currently the consultant pathologist and the laboratory diretor of newborn screening laboratory in HKCH.

Newborn screening in Hong Kong: IEI, IEM and SMA

Newborn screening (NBS) is a vital preventive measure in healthcare, enabling the early detection and intervention of various biochemical disorders. This abstract provides a concise overview of the development of NBS in Hong Kong, with a particular focus on IEI, IEM and SMA, its challenges, and recent breakthroughs.

The expansion of NBS since 2000 has been driven by the advent of Tandem Mass Spectrometry (TMS), enabling one-test-many-diseases screening with high sensitivity (SN) and specificity (SP) rates of 99% and 99.995%, respectively, for numerous amino acid, organic acid, and fatty acid oxidation disorders. However, challenges arise from screening apparently healthy infants without symptoms, requiring tight turnaround times (TAT), high-throughput capabilities, cost-effectiveness, and measures to reduce false positives (FP) and false negatives (FN). Recent advancements in mass spectrometry (LCMSMS) and genetic testing (NGS) have expanded the scope of NBS. Examples of NBS applications include multiplexing, quality assurance, ratio and pattern recognition, and the use of artificial intelligence in TMS for inborn errors of metabolism (IEM). Additionally, tests for severe combined immunodeficiency (SCID) using T-cell receptor excision circles (TREC), and spinal muscular atrophy (SMA) with SMN1 and SMN2 gene analysis have presented challenges such as imprecision and false positives.

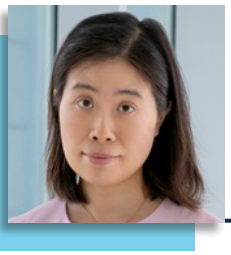
The evolving landscape of NBS includes confirmation tests, second-tier tests, and first-tier screening tests, including the measurement of biochemical markers such as methylmalonic acid, methylcitric acid, total homocysteine, 17OHP, androstenedione, 21-deoxycortisol and next generation sequencing. In conclusion, NBS in Hong Kong has witnessed significant progress, transforming into a successful preventive medicine practice. The recent breakthroughs in TMS and genetic testing have revolutionized NBS, paving the way for the detection and management of a multitude of disorders in newborns. Efforts to address challenges and improve screening methodologies continue to shape the future of NBS.

Invited **Speaker**

Prof. Huawei MAO, MD, PhD

Head, Department of Immunology, Deputy director, Center for Cell & Immune Therapy
Director, Center for Rare Diseases, National Center for Children's Health of China Beijing Children's Hospital, Capital Medical University
China

Prof. MAO is the Chair of Genetics & Genomics WP of APSID, vice president of Pediatricians Committee of Beijing Medical Doctor Association, vice chair of youth committee of Chinese Society of Pediatric Immunology, and standing member of Rare Disease Committee of Chinese Hospital Association. He provides clinical services for children with inborn errors of immunity, rheumatologic and autoinflammatory diseases. His research focuses on the precision diagnosis and treatment of these diseases. He received a series of academic awards such as first prize of National Maternal and Child Health Science & Technology Award, Award for Outstanding Contribution to PID in China, and Rare Disease Medicine Contribution Award, Young Scholar Award of China Birth Defects Intervention and Assistance Foundation, etc.



Prof. Pamela LEE

Associate Professor, Department of Paediatrics & Adolescent Medicine,
School of Clinical Medicine, HKU
Hong Kong

Prof. Pamela LEE is a paediatric immunologist specializing in Primary Immunodeficiencies (PID) and Haematopoietic Stem Cell Transplantation (HSCT). Upon return from a 2-year sabbatical in University College London Institute of Child Health in 2012, she formed her research team investigating the mechanisms of immune dysregulation, host defense and cellular immunotherapy in the context of PID, fungal infections and malignancies. Dr Lee have served as Education Coordinator in the Department from 2017-2023, she was appointed as Assistant Dean (Clinical Curriculum) in 2018, being responsible for MBBS curriculum administrations, design and implementation of the '140+ Curriculum Reform', as well as professional development of medical educators. Dr Lee is the first recipient of the Rosie Young 90 Medal for Outstanding Young Woman Scholar (2021). With a commitment to promote mindful living and student wellness, she was appointed as the Inaugural Master, D.H. Chen College of Jockey Club Student Village IV (July 2023) which is the first student residential college on HKU campus dedicated to sharing compassion-based values.

Screening of inborn errors of immunity: why, when and how?

Population-based newborn screening for severe combined immunodeficiency (SCID) has brought about significant improvement in the survival and outcome of babies born with SCID. Newborn screening using T-cell receptor excision circle (TREC) and / or kappa-deleting recombination excision circles (KREC) enables detection of T- and B-lymphocyte related immune deficiencies. Given the success and safety of curative procedures such as haematopoietic stem cell transplantation and gene therapy for SCID when preformed in infants with minimal disease burden, it is tempting to explore the option of screening and early intervention for other forms of primary immunodeficiencies (PIDs). There are ongoing initiatives to evaluate the feasibility of newborn genomic screening using different next generation sequencing approaches on a large-scale, population based framework targeting on detection of rare disease which early therapeutic interventions can be translated into meaningful improvement in health and quality of life. This talk explores the potential roles of newborn genomic screening in understanding the natural course of PIDs, its impact on the diagnostic journey, and the complexities involving technical, ethical and legal aspects that need to be considered.

Invited **Speaker**

Prof. Sophelia CHAN

Clinical Associate Professor, Paediatrics & Adolescent Medicine,
The University of Hong Kong
Hong Kong

Prof. Sophelia CHAN is the Clinical Associate Professor in Paediatric Neurology at the University of Hong Kong. Specializing in Paediatrics, she focuses on rare neuromuscular disorders, clinical care improvement, and stem cell disease models. Dr. Chan is the principal investigator of numerous international clinical trials and leads various NMD programs in Hong Kong. She has published over 60 articles and received multiple awards. Currently, she serves as President of the Hong Kong Society of Neuromuscular Diseases, an executive board member of the Asian Oceanian Myology Centre, and a committee member of the World Muscle Society's Inclusion, Equity, and Diversity initiative.

Neuromuscular diseases: Where does the future lie?
Symposium 7: Transwarp to Future of PanorOmic Sciences

Neuromuscular diseases (NMDs) are a diverse group of conditions characterised by primary lesions in the peripheral nervous system, which include the anterior horn cell, peripheral nerve, neuromuscular junction, and muscle. In Paediatrics, most of these disorders have genetic origins. Over the last 20 years, tremendous progress has been made in the genetic diagnosis and the development of novel therapies for these debilitating conditions, transforming their natural history and offering new hopes for affected children and their families. Newborn screening efforts have also provided valuable data that underscores the significance of early treatment in young children with inherited neuromuscular conditions. The upcoming talk will explain how healthcare and scientific teams in the NMD field achieved the current success at the same time to explore the continue strive for even greater advancements in the treatment and care for NMD patients. This progress will be illustrated through a few exemplary NMDs, showcasing the dedication and innovation driving improvements in patient care.

Prof. Hon Yi Brian CHUNG

Clinical Associate Professor, Department of Paediatrics of Adolescent Medicine, HKU
Hong Kong Children's Hospital
Hong Kong

Hon Yi Brian CHUNG is a Clinical Associate Professor of the Department of Paediatrics & Adolescent Medicine, School of Clinical Medicine, LKS Faculty of Medicine, the University of Hong Kong (HKU). Brian is an Honorary Consultant Geneticist for the Hong Kong Children's Hospital, Queen Mary Hospital, Duchess of Kent Children's Hospital and the Clinical Genetic Services (Department of Health), Hong Kong. He is currently the President-Elect of the Asia Pacific Society of Human Genetics. Brian trained at HKU (2000-2006) and University of Toronto (the Hospital for Sick Children, 2007-2010), specializing in Paediatrics and Clinical Genetics. He is a fellow of the Canadian College of Medical Geneticists and was a founding fellow of the subspecialty of Genetics & Genomics (Paediatrics) of the Hong Kong Academy of Medicine (HKAM). His research focuses on (1) the clinical application of whole genome technologies, (2) clinical genetics & genetic counselling and (3) precision medicine and multi-omics. He received the Best Young Investigator Prize of the Hong Kong College of Paediatricians in 2017. Brian is responsible for the Paediatric and the new Precision Medicine (Clinical) curriculum of the Faculty of Medicine in HKU. In recognition of his effective and innovative teaching, Brian received a 2018 Faculty Teaching Medal and an HKU 2019 Outstanding Teaching Award. He was also involved in drafting the postgraduate training curriculum of the subspecialty of Genetics & Genomics (Paediatrics) of HKAM in 2017, and has served on the Working Group of the Hong Kong Hospital Authority Strategic Service Framework for Genetic & Genomic Services. Since 2021, Brian has been designated as the Chief Scientific Officer at the Hong Kong Genome Institute and oversees research developments for the Hong Kong Genome Project.

Omics in Paediatrics: Is this the prime time?

Author(s)

Chung Hon Yin, Brian

Affiliation(s)

Clinical Associate Professor, Department of Paediatrics and Adolescent Medicine, Li Ka Shing Faculty of Medicine, The University of Hong Kong

Abstract

Omics in Paediatrics: Is this the prime time?

Rare diseases (RDs) affect a significant proportion of the population, with an estimated prevalence of 4-5% worldwide and 1.5% in Hong Kong. The diagnosis of RDs can be challenging, often involving a prolonged and expensive diagnostic odyssey.

The advent of genetic and genomic technologies has revolutionized the diagnosis of RDs. The HKU Paediatric Exome Sequencing Project, launched in 2011, has achieved a diagnostic rate of 53%, significantly enhancing the diagnostic armamentarium for RDs. This project has also laid the foundation for the application of whole genome sequencing technologies in Hong Kong, such as the territory-wide Hong Kong Genome Project (HKGP).

Through international collaboration, the Clinical Genetics Team has made significant contributions to the discovery of new syndromes, including MN1 C-terminal truncation syndrome, CC2D1A-related heterotaxy, and DDX39B-related neurodevelopmental disorder. Extending the power of genomic technologies, pharmacogenomics studies have also been carried out to identify genetic variants that influence drug response in Hong Kong Chinese.

Looking beyond genome, multi-omics approaches including RNA Sequencing and proteomics, are being used to identify new diagnostic markers and deciphering mendelian diseases. Moreover, the application of artificial intelligence (AI) in medical diagnosis has the potential to further improve the diagnosis of RDs and facilitate the discovery of new syndromes.

The application of omics technologies is not only limited to RDs, but is also being actively expanded other conditions including cancers. Multi-omics analysis has the potential to identify new biomarkers, therapeutic targets, and personalized treatment strategies for a wide range of diseases, leading to improvement in clinical outcomes of patients.

Invited **Speaker**

Dr. Wing Keung CHAN

Assistant Professor of Internal Medicine,
Division of Hematology at The Ohio State University
USA

Dr. Wing K. CHAN, an Assistant Professor of Internal Medicine, Division of Hematology at The Ohio State University, has focused on cancer immunotherapy, particularly antibody engineering and cellular therapies like CAR-T/NK therapy. He obtained his PhD from UPAM, HKU, and completed postdoctoral trainings at St. Jude Children's Research Hospital and The Ohio State University. In addition, he has experience in leading process development and clinical translation of CAR-T and NK cell therapies, ensuring FDA regulation compliance in industrial settings. His lab aims to innovate immuno-strategies using synthetic biology and genetic engineering to treat hematological malignancies and solid tumors.

Insights into CAR-T cell: targeting both tumor and immune cells in the tumor immune microenvironment

CD19-targeted chimeric antigen receptor T cells (CAR-Ts) have transformed the landscape of cellular immunotherapy for refractory B-cell malignancies like B-cell Non-Hodgkin's lymphoma and B-cell acute lymphoblastic leukemia. Despite achieving high rates of complete remissions, the occurrence of relapses, with 50% occurring within the first year, remains a significant challenge, underscoring the necessity for innovative CAR-T cell products. Two distinct patterns of relapse are identified: (i) Antigen-negative relapses, stemming from the loss of the target antigen, and (ii) antigen-positive relapses, which result from insufficient persistence or impaired function of the CAR-Ts. Approaches to overcome these two hurdles include the identification of novel targets expressed on CD19-negative tumor cells and pro-tumoral immune cells, such as tumor-associated macrophages (TAM) in the tumor microenvironment of several aggressive lymphomas. Through unbiased single cell RNA sequencing data analyses and confirmation with high-dimensional spectral flow cytometry, we notably identified CD74-ligand receptor pairs exhibited the highest expression among all potential ligand-receptor pairs between TAM and lymphoma cells. Importantly, CD74 is expressed on both CD19 positive and negative lymphoma cells, indicating its potential as a promising onco-target. Therefore, we have rationally designed and developed a novel anti-CD74 CAR with optimized binding affinity and cytolytic functions in preclinical aggressive lymphoma models. Process development on CAR-T cell manufacturing via both viral and non-viral methodologies has been in progress to facilitate the translation of this innovative cell therapy. Our in-house cGMP cell therapy manufacturing facility has the capability to expedite this translation process.

Invited **Speaker**

Dr. Shuk-Kuen Christy CHAU

Consultant, Paediatrics of Adolescent Medicine
Duchess of Kent Children's Hospital
Hong Kong

Dr. Shuk-Kuen Christy CHAU graduated from the University of Hong Kong with an MBBS degree. With a passion for pediatric care, she pursued specialized training in the field of Pediatric Respirology Medicine, becoming the First Fellow and Trainer in this discipline accredited by the Hong Kong College of Paediatricians in 2016. She was also certified as Sleep Medicine Specialist by the World Association of Sleep Medicine. Driven by a commitment to staying at the forefront of her field, she sought overseas training in the field of pediatric home ventilation. She holds the post of Consultant in the Duchess of Kent Children's Hospital at Sandy Bay and is currently the physician in-charge of both the paediatric respiratory and sleep service in her department. In her role, she also actively involves in both teaching and research, with a no of publications in peer-reviewed journals.

Paediatric long term ventilator care program in Hong Kong: Experience & reflectionsz

Advances in medical technology and critical care have improved the survival rates of children with complex medical conditions. As a result, the number of children requiring long-term ventilation is increasing locally, consistent with the worldwide trend. By recognizing this growing need, DKCH as a rehabilitation hospital, runs one of the two designated paediatric ventilation programs in Hong Kong under the Hospital Authority.

An interdisciplinary team approach is crucial to provide comprehensive training and holistic care to meet the complex medical needs of this unique group of patients. Our program aims to ensure that children receive appropriate and effective respiratory support tailored to their specific underlying conditions, maximize their developmental potential, facilitate hospital discharge through structural caregiver training, and establish partnerships with community partners for streamlined transition to home care.

The success of a pediatric home ventilation program relies on effective collaboration and teamwork among healthcare professionals from various disciplines. Engaging the family in decision-making, care planning, and ongoing management helps ensure that the care provided aligns with the child's and family's goals, values, and preferences. Some experiences and reflections that can be learned from running a pediatric home ventilation program would be shared. Enhancing community support, developing a transitional care program, and obtaining policy support are important future directions.

Prof. Kenneth KY WONG

Clinical Professor and Chief of Paediatric Surgery in the Department of Surgery,
The University of Hong Kong
Hong Kong

Prof. Kenneth WONG received medical degree from University of Edinburgh and his Ph.D degree in immunology at Imperial College. He is currently Clinical Professor and Chief of Paediatric Surgery in the Department of Surgery, HKU.

He is an internationally renowned paediatric surgeon with clinical interests in neonatal surgery, advanced laparoscopic/ robotic surgery, and thoracic surgery.

He has been co-project leader in "Laparoscopic Workshops for Paedaitric Surgeons in China" since 2007 and has helped train over 2500 Chinese paediatric surgeons. In 2023, his team was awarded the Hospital Authority Outstanding team award for Neonatal Surgical Service.

He has published over 230 papers in peer-reviewed journals and has an h-index of 41. He serves as Founding Editor-in-Chief for Journal of Pediatric Surgery Open, and is Associate Editor for Journal of Pediatric Surgery, Frontiers Pediatrics and BMC Pediatrics. He has been invited and given over 100 invited lectures worldwide.

Prof. Wong is the President-Elect of Pacific Association of Pediatric Surgeons (PAPS) and Asian Association of Pediatric Surgeons (AAPS).

Neonatal and paediatric surgeries: The past, present, and the future

Paediatric surgery as an individual specialty only started taking shape in the early 1900s in the USA. In Hong Kong, the establishment of the first paediatric surgery unit was in 1967, and neonatal surgery unit subsequently in 1968, at Queen Mary Hospital. In a little over 50 years, the standard of surgical care for children in Hong Kong has improved tremendously and is now considered as one of the best in the world. In this talk, we will revisit this journey taken, through efforts from past and present surgeons, and also look forward to a bright future in our next generation.

Invited **Speaker**

Dr. Qinchen Victoria TAO

Associate Consultant, Paediatrics and Adolescent Medicine,
Queen Mary Hospital
Hong Kong

Dr. Qinchen Victoria TAO is a dedicated paediatrician with a fellowship in the subspecialty of Developmental-Behavioural Pediatrics. Her journey in medicine began at Peking University, China, where she completed her medical degree in 2000. She joined QMH PAED in 2010 and currently holds the position of Associate Consultant at DKCH. Her passion for helping children with disabilities led her to pursue overseas training under the HA Corporate Scholarship for Paediatric Rehabilitation. Her career interests further developed in paediatric rehabilitation, complex care, and palliative care. She believes in providing holistic care that addresses the special needs of her young patients.

From Child assessment to rehabilitation: The mission of DKCH

Background

DKCH is the only paediatric rehabilitation hospital in Hong Kong and the only child assessment centre under the Hospital Authority. It is accredited by the Hong Kong College of Paediatricians as a training centre for developmental-behavioural paediatrics (DBP). In addition to managing common developmental problems, we specialise in comprehensive rehabilitation services for children with various medical challenges. Our goal is to help them achieve their full developmental potential and support their integration into community life.

Abstract

Our department at DKCH provides interim rehabilitation services to bridge the gap between hospital and home care for children who have experienced deconditioning due to serious illnesses or those with congenital or chronic debilitating diseases. Our multidisciplinary program is organised in medical treatments, rehabilitation therapies, behavioural interventions, equipment/device training, as well as socio-economic and emotional support. We emphasise on caregivers training to empower the families especially in managing complex medical conditions. Our hospital-based DBP subspecialty model enables us to assess the impact of the disease on a child's physical, cognitive, emotional, and social development. It allows our multidisciplinary team to design individualised rehabilitation programs and collaborate closely with families, educators, and NGO groups to ensure continuous support and appropriate accommodations at different recovery stages. Our commitment to holistic care extends to cases with guarded prognoses, involving input from chaplains and our community palliative care partners. We stand by families, providing support and assisting them in navigating the challenges associated with conditions from developmental disorders to life-limiting diseases.

Conclusion

We provide comprehensive developmental assessment services and specialised rehabilitation for children with diverse developmental and medical challenges using a holistic approach. Further work to keep up with advancements in rehabilitation technology will be required.

Behavioural Paediatrics & Neurohabilitation

Year	Events
1962	Prof C Elaine Field was appointed as the first Professor of Paediatrics. She started the Child Health Service in the Department.
1969	Dr WY Lui first joined the department as a medical officer in 1965 and then as a lecturer in 1696 Child neurology began, when the department first started s a specialty clinic in Sai Ying Pun Jockey Club Clinic. Dr Lui has been invited by Dr L Hsu to participate in the Joint Cerebral Palsy Clinic.
1978	Dr FM Baber joined the Department, under the leadership of Prof JH Hutchison, and together with Dr CW Chan developed a developmental screening program for Chinese childern. The screening test was adopted by the MCHC of the Medical and Health Department sinced 1978 to screen all preschool children in the community.
1980	A Child Development Centre wa proposed by Prof CY Yeung.
1982	A neurology clinic was started every Friday pm at the Duchess of Kent Childern's Hospital, atteneded by Drs WY lui, FM Baber, L Low or MY Cheng.
1985	A new Child Assessment Centre (CAC) was started at the Duchess of Kent Childern's Hospital by Dr V Wong as Lecturer after her training in UK.
1987	Child Assessment Centre was officially opened.
1994	A new Child Development Centre (CDC) was started at the Duchess of Kent Childern's Hospital by Prof V Wong for early intervention of disabled children.
1998	Child Habilitation Institute (CHI) was proposed by Prof V Wong to the Hospital Authority and officially opened.
? 2000	The Attention Deficit Hyperactivity Disorders (ADHD) medications & titration program was established by Dr Ada Yung.
2013	DKCAC is one of the key centres that participated in the Griffiths Development Scales Chinese (GDS-C) validation.
2013	Accreditation by the HK College of Paediatricians for Developmental Behavioural Paediatrics (DBP).
2016	The Paediatric Acquired Brain Injury (ABI) program was established by Dr. Winnie Tso.
?	Management of children with behavioral feeding problems in feeding clinic led by Dr Vicky Tao, Dr. Stephen Lau & allied health professionals.
2017	Introduced the Circle of Security (CoS) program to DKCAC to improve infant mental health.
?	DKCAC service enhancement - shortened waiting time to facilitate early diagnosis and intervention for children with developmental disorders.
2023	Won the Hong Kong West Cluster Outstanding Team award.
2023	Won the Hospital Authority Merit Team award.

Invited **Speaker**

Dr. Winnie TSO

Assistant Dean (community engagement) of the LKS Faculty of Medicine,
Clinical Assistant Professor,
Department of Paediatrics & Adolescent Medicine, The University of Hong Kong
Hong Kong

Dr. TSO is a developmental paediatrician with special interests in neurorehabilitation for children with acquired brain injuries. She is the Assistant Dean (community engagement) of the LKS Faculty of Medicine, University of Hong Kong (HKU) and clinical assistant professor at the Department of Paediatrics & Adolescent Medicine, HKU. Dr Tso leads the Paediatric Acquired Brain Injury Program at the Duchess of Kent Children's Hospital and the Hong Kong Children's Hospital in Hong Kong. She is also a principal investigator at the State Key Laboratory of Brain & Cognitive Sciences, HKU and has been conducting numerous research in the field of paediatric acquired brain injuries. She is a governor of the International Brain Injury Association.

Developing a program for children with acquired brain injury: The challenges and gratification

Background and aims

Brain injury is the leading cause of disability and death in children and adolescents. Acquired brain injury (ABI) can result from a variety of etiologies including traumatic brain injury, infection, stroke, hypoxia, tumour, neurosurgical intervention, or other central nervous system (CMS) treatments e.g. cranial irradiation. Children with ABI often suffer from physical, intellectual disabilities, emotional and behavioral problems leading to lifelong consequences. The Paediatric ABI Program has been set up at the Duchess of Kent Child Assessment Centre (DKCAC) since 2016. The program provides a one-stop, holistic and comprehensive rehabilitation care for children with ABI as well as support for their caregivers & families. Developmental, functional and educational outcomes of children and adolescents who had joined the ABI program will be reviewed and the associated risk factors investigated. To further improve the wellbeing of children with ABI, novel and innovative rehabilitation strategies will be discussed.

Methods

Basic demographic data, clinical characteristics and outcome data of children/ adolescents who had joined the paediatric ABI program will be reviewed.

Results

Data from 82 children/ adolescents from the ABI program were analyzed. The mean age of brain injury was 4.25 years, range 2-21 years old. Children with ABI due to infection of the central nervous system were associated with poorer motor and cognitive outcomes, they also had higher risk of seizure. A high proportion of brain tumour survivors or children with traumatic brain injuries suffered from mental disorders. Children under the ABI program had significant improvement in functional outcome after rehabilitation.

Conclusions

Children and adolescents with ABI would benefit from early intervention and intensive rehabilitation via an inter-disciplinary approach. Long term follow-up and monitoring for late effects from brain injuries would be advised.

Abstract **Content**

Oral Abstract

Poster Abstract

01	Yin CHENG	DMD gene correction and drug therapies to rescue the dysregulated calcium handling gene in patient-specific in vitro cardiomyocyte disease model of X-linked dilated cardiomyopathy
02	Xiao DANG	A systematic analysis revealing the shared and specific genetic mechanisms among 15 autoimmune diseases
03	Qin Ying LIM	Clinical outcomes of patients with suspected allergies to COVID-19 vaccines BNT162b2 and CoronaVac at two paediatric allergy centres
04	Xinfang MIAO	Identifying a possible mechanism for Sudden Infant Death with Dysgenesis of Testes Syndrome (SIDDT)
05	Chun Hing SHE	Revealing the Genetic Underpinnings of Neuromuscular Diseases: Applying Next-Generation Sequencing to Unravel Complex Cases
06	Suet Kam SHUM	Intranasal Dexmedetomidine as a Sedative for Paediatric Procedural Sedation in Day Center

Oral

Altered transcriptomic profile and increased arrhythmogenicity in tetralogy of Fallot with DiGeorge syndrome

Author(s)

Chun-Ho Chan[1], PhD, Yin-Yu Lam[1], PhD, Nicodemus Wong[1], PhD, Lin Geng[1], PhD, Jilin Zhang[2], PhD, Virpi Ahola[2], PhD, Aman Zare[2], PhD, Ronald Adolphus Li[2,6], PhD, Fredrik Lanner[3,4,5], PhD, Wendy Keung[6], PhD, Yiu-Fai Cheung*[1,2,6,] MD

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Background and aims

Tetralogy of Fallot (TOF) is the most common cyanotic congenital heart disease. Despite total surgical correction with relief of right ventricular outflow obstruction and repair of the ventricular septal defect, late complications including arrhythmias and ventricular dysfunction may occur. Interestingly, these adverse cardiovascular events have been reported to be more common in TOF patients with DiGeorge (DG) syndrome than those without (ND). However, the difficulty in obtaining the cardiac biopsy and the potential secondary remodeling to the structural defects complicate the identification of any intrinsic defects in the cardiomyocytes.

Methods

To identify possible intrinsic defects of cardiomyocytes (CM) in TOF patients, we successfully reprogrammed human induced pluripotent stem cells (hiPSC) from 2 TOF-DG, 2 TOF-ND patients and 2 healthy controls. We subsequently differentiated hiPSC-CMs and iPSC-cardiac progenitors (hiPSC-CPs) for transcriptomic analysis. hiPSC-CMs were constructed into human cardiac anisotropic sheets (hCAS) for further electrophysiological assessment.

Results

We successfully differentiated hiPSC-CMs and hiPSC-CPs from patients and control group with high purity. Transcriptomic analysis revealed impaired ventricular gene expression and ectopic neural gene expression in TOF-DG-hiPSC-CMs. The alteration in the transcriptomic profile was evident in the hiPSC-CPs as marked by RGS13 expression. Electrophysiological assessment further revealed significantly higher incidence of reentry arrhythmia in TOF-DG-hiPSC-CMs.

Conclusions

These transcriptomic and functional alterations, which occur in the absence of structural defects are unique to TOF-DG but not TOF-ND, may contribute to the reported adverse cardiac outcomes in TOF-DG patients.

Oral

Comparative Analysis In Understanding And Improving Food Allergen Labelling Regulations Globally: Using Hong Kong As An Illustration

Author(s)

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Department of Paediatrics and Adolescent Medicine, School of Clinical Medicine, The University of Hong Kong, Hong Kong, China

Background and aims

Food allergy can be life-threatening and can only be prevented by avoiding the triggering food. Food label plays a crucial role in protecting allergic patients. The objective of this paper is to address four important concerns that demand attention in the realm of food labelling: the list of allergens necessitating disclosure; items presently exempted from labelling; the use of precautionary allergen labelling ("PAL"); and finally, the readability of food labels.

Methods

Food labelling laws and regulations were obtained from the official documents/websites of Hong Kong, China, Japan, European Union, United States, Singapore, Republic of Korea, United Kingdom and Australia/ New Zealand. Reports of World Health Organization (“WHO”) and relevant research papers were referenced. Comparison of food labelling regulations was summarised, with Hong Kong as the subject of analysis.

Results

Despite WHO proposed a new priority allergen list redefining some terms, most countries/regions still using the older definitions. Discrepancies between Western and Asian countries were noted. Asian countries do not require compulsory disclosure of sesame, and most do not provide a specific definition for "tree nuts." Allergen list also reflects variations in dietary consumption patterns and behaviours among regions. Items presently exempted from labelling should be revised to meet the social needs. PAL becomes an unstandardized, excessively utilized communication and reform is needed. Thresholds established by WHO lay the foundation of formulating global PAL policies. All countries/regions find the tiny font size to be acceptable. Pictorial representations of allergen could be a means to enhance protection.

Conclusions

Our analysis uses Hong Kong to illustrate reasoning behind setting the priority allergen list and necessary refinements needed. We advocate pictorial representation of allergens that is comprehensible to individuals from diverse backgrounds.

Oral

The Central Role of Natural Killer Cells in Mediating Acute Myocarditis after mRNA COVID-19 Vaccination

Author(s)

Hing Wai Tsang, Mike Yat Wah Kwan, Gilbert T Chua, Sabrina Siu Ling Tsao, Keith Tsz Suen Tung, Godfrey Chi Fung Chan, Wing Hang Leung and Patrick Ip

Affiliation(s)

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Background and aims

Mechanisms of acute myocarditis soon after mRNA COVID-19 vaccinations remain unclear, it has been widely speculated that a dysregulated host immune response to the vaccine and its components may contribute to this adverse event. In this study, we aimed to investigate the immune mechanisms of post-mRNA vaccination myocarditis, leading to a central hypothesis that NK cells played a key role in its pathogenesis, compatible with the previous observations that NK cells could be activated by mRNA vaccination.

Methods

A representative Han Chinese patient cohort composed of 60 adolescents, confirmed to be myocarditis according to Brighton Collaboration Case Definition of Myocarditis and Pericarditis after mRNA COVID-19 vaccination were recruited and compared to 10 age-matched vaccination response controls, who received the mRNA COVID-19 vaccine within a similar time frame and 10 healthy non-vaccinated (baseline) controls were also included in the study. Pro-inflammatory cytokines, genotyping and immunophenotyping were measured, typed and compared in the obtained samples.

Results

Phenotypically, high levels of serum cytokines pivotal for NK cells, including IL-1β, IFN-α2, IL-12 and IFN-γ, were observed in post-vaccination myocarditis patients, who also had high percentage of CD57+ NK cells in blood which in turn correlated positively with elevated levels of cardiac troponin T. Abundance of CD57+ NK subset was particularly prominent in male and in those after the 2nd dose of vaccination. Genotypically, killer-cell immunoglobulin-like receptor *KIR2DL5B(-)/KIR2DS3(+)/KIR2DS5(-)/KIR2DS4del(+)* was a risk haplotype, in addition to single nucleotide polymorphisms related to NK cell-specific expression quantitative trait loci (eQTL) *DNAM-1* and *FuT11*, which also correlated with cTnT levels in post-vaccination myocarditis patients.

Conclusions

Collectively, these data suggest that NK cell activation by mRNA COVID-19 vaccine contributed to the pathogenesis of acute myocarditis in genetically and epidemiologically vulnerable subjects.

Oral

Quantitative analysis of brain volumes and cortex maturation among the extremely preterm infants with enlarged subarachnoid space

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Background and aims

To explore the effect of enlarged subarachnoid space (ESS) on developing brain of extremely preterm infants.

Methods

This is a retrospective study which has enrolled almost 120 extremely preterm infants, those infants were divided into two groups: ESS group and no-ESS group, and the criteria for ESS was defined as the sinus-cortex width (SCW) longer than 3.5 mm on brain MRI at term equivalent age (TEA). After the segmentation of brain tissues and cortex via FSL and Freesurfer, the volumetric indexes (CSF, white matter, gray matter) and 4 key cortex maturation indexes (surface thickness, area, volume, curvature) can be extracted accurately.

Results

ESS group had greater cranial cavity than no-ESS group(403.82±45.20 vs 380.15±39.22ml), and this difference was mostly derived from the enlarged extra-brain space on ESS group. The difference of volume of cerebral parenchyma was not significant(311.23±22.4 vs 305.26±21.78ml). In term of cortex maturation, the surface area and mean curvature were found to be having significant difference between two groups while surface thickness and volume were not involved.

Conclusions

ESS did not occupy the space of brain growth but can impair the normal trajectory of cortex development among extremely preterm infants.

Oral

Unraveling Transcriptomic Signatures and Dysregulated Pathways in Systemic Lupus Erythematosus Across Disease States

Author(s)

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Background and aims

This study aims to elucidate the transcriptomic signatures and dysregulated pathways in patients with Systemic Lupus Erythematosus (SLE), with a particular focus on those persisting during disease remission.

Methods

We conducted bulk RNA-sequencing of peripheral blood mononuclear cells (PBMCs) from a well-defined cohort comprising 26 remission patients meeting the Low Lupus Disease Activity State (LLDAS) criteria, 76 patients experiencing disease flares, and 15 healthy controls. To elucidate immune signature changes associated with varying disease states, we performed extensive analyses, including the identification of differentially expressed genes and pathways, as well as the construction of protein-protein interaction networks.

Results

Several transcriptomic features recovered during remission compared to the active disease state, including down-regulation of plasma and cell cycle signatures, as well as up-regulation of lymphocytes. However, specific innate immune response signatures, such as the interferon (IFN) signature, and gene modules involved in chromatin structure modification, persisted across different disease states. Drug repurposing analysis revealed certain drug classes that can target these persistent signatures, potentially preventing disease relapse.

Conclusions

Our comprehensive transcriptomic study revealed gene expression signatures for SLE in both active and remission states. The discovery of gene expression modules persisting in the remission stage may shed light on the underlying mechanisms of vulnerability to relapse in these patients, providing valuable insights for their treatment.

Oral

An unbiased approach to detect mutations in homologous sequences from next-generation sequencing data

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Background and aims

The detection of variants in homologous sequences has long been a challenge in data analysis since the advent of next-generation sequencing. Limited read length and fragment size often result in high ambiguity when mapping read pairs originating from homologous sequences back to the reference genome, leading to their discard by modern variant callers. Though this issue cannot be fully resolved due to the lack of sequence information in short-read pairs, we have developed a bioinformatics tool called HSrecall to address the problem systematically in scenarios where the recall rate is more critical than the precision rate, such as molecular diagnosis of rare diseases.

Methods & Results

To help extend the molecular diagnosis inspection range to homologous regions, HSrecall performs serial steps tailored for every input alignment file. Based on whole genome assembly comparison results, HSrecall will generate a robust homologous sequence network with a resolution up to the fragment size of the input alignment file for the corresponding human reference assembly. Within the user-specified target regions, the subset overlapping homologous sequences will have all reads forcibly realigned to it from their homologous counterparts. To reduce the false positives, misaligned reads are then identified using a heuristic soft clustering model that takes into account both the haplotypes and base qualities of the reads. Finally, the use of an in-house cohort database is recommended to help accurately distinguish rare variants from common ones. Following these steps, HSrecall achieves a sensitivity of approximately 94% and a well-controlled false positive count within exome-overlapping homologous sequences.

Conclusions

Currently, HSrecall stands as the most robust open-source tool for unbiased detection of genetic defects in homologous regions, such as paralogous genes or genes with pseudo-copies, without the need for additional wet-lab assays. Its application holds significant value in the molecular diagnosis of various Mendelian diseases.

Moderated **Poster**

DMD gene correction and drug therapies to rescue the dysregulated calcium handling gene in patient-specific in vitro cardiomyocyte disease model of X-linked dilated cardiomyopathy.

Author(s)

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Background and aims

X-linked dilated cardiomyopathy (XLDCM) is a lethal disease of dystrophinopathy caused by *DMD* mutation. Currently, there are no effective treatments. Patients with XLDCM often die in their late teens or early adult years due to severe heart failure if heart transplantation is not available. Studies have suggested that abnormal calcium influx and disrupted calcium handling in the cardiomyocytes are a direct consequence of an altered dystrophin-glycoprotein complex in dystrophinopathy, leading to cardiac cell damage. Membrane stabilizers protected against stress-induced mechanical damage to the cell membrane, and stabilizing damaged membranes could prevent calcium overload and heart muscle cell death. Additionally, histone deacetylases inhibitors have been found to help calcium balance through handling of calcium modulation. Now, we aimed to establish an XLDCM patient induced pluripotent stem cells (iPSCs) derived cardiomyocytes as a disease model to study the underlying pathophysiological mechanisms, and the potential therapeutic effect of mutation correction and drug screening by using this in vitro disease model.

Methods

We established an XLDCM-iPSCs disease model from an XLDCM patient and an isogenic *DMD* gene-corrected line with CRISPR-Cas9, and a healthy control for the generation of cardiomyocytes (CMs). We characterized the disease model with immunohistochemistry staining, q-PCR, western blotting, and intracellular calcium transient analysis. We also performed drug screening by applying Poloxamer 188 (a membrane sealant) and Trichostatin A (a pan histone deacetylase inhibitor) to the disease model.

Results

We found the established XLDCM patient-derived iPSC-CMs exhibited dystrophin deficiency, membrane instability, abnormal calcium handling, and reduced natriuretic peptides expression. The mutation correction reversed the pathologies. Treatment of XLDCM iPSC-CMs with Poloxamer 188 and Trichostatin A also improved membrane stability and rescued the dysregulated calcium handling.

Conclusions

Our current study demonstrated the importance of dystrophin restoration and restoration of calcium handling in the therapeutic pathway for XLDCM related to *DMD* mutation.

Moderated **Poster**

A systematic analysis revealing the shared and specific genetic mechanisms among 15 autoimmune diseases

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Background and aims

Genome-wide association studies (GWAS) have identified thousands of genetic loci associated with various autoimmune diseases(ADs), nearly half of which are shared across multiple traits, highlighting pervasive genetic sharing among ADs and providing insights into common genetic factors contributing to disease development. However, a more comprehensive understanding of the specific or shared association mechanisms, target genes, and cellular contexts underlying these diseases requires further investigation.

Methods

We defined loci and association signals based on linkage disequilibrium (LD) and integrated multimodal genomic data, employing five evidence-based strategies to prioritize candidate target genes and three evidence-based scoring schemes to identify relevant cell types associated with these signals. We ranked the target genes for each autoimmune disease and constructed a protein-protein interaction (PPI) network to identify common and specific functional modules of ADs.

Results

Our analysis revealed that locus-sharing (approximately 51%) is more prevalent than signal-sharing (approximately 14.7%), highlighting the different regulatory mechanisms among ADs. Furthermore, we identified 503 disease-sharing genes out of the 1,554 top-tier target genes for these diseases. Additionally, we discovered 215 disease-associated genes that may function in different cell types for certain ADs, such as IL10, IL12RB2/IL23R, and SYNGR1. This suggests that different signals related to certain diseases may target the same gene but function in different cell types, playing specific regulatory roles. The PPI network analysis revealed common functions in ADs, including T-cell differentiation, MHC antigen processing, and Interferon/Interleukin Signaling. However, we also identified specific functions in certain diseases, such as complement and coagulation cascades in SLE and keratinocytes in psoriasis. These findings provide valuable insights for drug repurposing targeting common functions and identifying novel drug targets specific to certain functions.

Conclusions

Our study utilized multimodal genomic data to prioritize target genes and identify the relevant immune cell types associated with signals for 15 autoimmune diseases. Additionally, we performed the PPI analysis to uncover similarities and differences among these diseases, providing valuable insights into the genetic mechanisms underlying autoimmune diseases.

Moderated **Poster**

Clinical outcomes of patients with suspected allergies to COVID-19 vaccines BNT162b2 and CoronaVac at two paediatric allergy centres

Author(s)

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Background and aims

Adverse effects following immunisations (AEFI) due to COVID-19 vaccination contribute to vaccine hesitancy and poses a major obstacle for achieving high coverage. We aimed to evaluate clinical outcomes of patients referred to two paediatric allergy centres for concerns of COVID-19 vaccine AEFI.

Methods

Patients referred to Queen Mary Hospital and Hong Kong Children's Hospital for COVID-19 vaccine AEFI concerns between March 2021 and October 2022 were reviewed retrospectively. Collected data included patient demographics, clinical characteristics, outcomes of previous COVID-19 vaccination, recommendation after consultation, and, if available, outcomes of revaccination.

Results

163 patients (96 males, median age 14 years) were included and separated into two groups based on the absence (n=89, 54.6%) or presence (n=74, 45.4%) of previous COVID-19 vaccination AEFI. The most common reason for referral without previous COVID-19 vaccination AEFI was other suspected drug allergy in 58 patients (35.6%). All of these patients were recommended for COVID-19 vaccination, of which 93.9% proceeded in accordance and tolerated vaccination. Of those with previous COVID-19 vaccine AEFI, the most common presentation was delayed cutaneous reaction in 60 patients (37.0%), and 1 child (0.6%) had suspected anaphylactic reaction. Of this group, 6 patients (8.1%) were advised to postpone their next COVID-19 vaccine, while 77.6% tolerated subsequent vaccination to the same or alternate type of COVID-19 vaccine. The most common AEFI on revaccination was urticaria (72.7%). AEFI on revaccination was significantly associated with history of spontaneous urticaria/angioedema (p=0.033, OR 5.55, 95% CI 1.35-22.77) and previous urticaria following COVID-19 vaccination (p=0.017, OR 5.9, 95% CI 1.36-25.66).

Conclusions

Most children, even those with atopic comorbidities or previous COVID-19 vaccine AEFI, can tolerate vaccination/revaccination. Children with a history of urticaria related or unrelated to COVID-19 vaccine are at a higher risk for COVID-19 vaccine AEFI, although these were manageable by our immunology service.

Moderated **Poster**

Identifying a possible mechanism for Sudden Infant Death with Dysgenesis of Testes Syndrome (SIDDT)

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Background and aims

SIDDT is caused by loss-of-function mutations of TSPYL1 gene which was firstly reported in 2004. It is characterized by sudden cardiac or respiratory arrest, disordered testicular development, neurologic dysfunction and patients die in the first year of life. However, so far how mutations of TSPYL1 cause SIDDT is unknown. Previously, we found that the level of TSPYL2 increased upon TSPYL1 knockdown (KD) through Transforming growth factor β (TGFβ) signalling in vitro. Therefore, we aimed to decipher TSPYL1 function in vivo and contribute to the understanding of pathology of SIDDT.

Methods

We used lentivirus system to generate TSPYL1 KD in mouse embryonic fibroblasts (MEF). We verified TGFβ target genes by qPCR and Western Blot. We also generated *Tspyl1* knockout (KO) mice and compared the disease phenotype with SIDDT patients. Then we collected lung tissue at different days of embryonic and postnatal stage. Histological analysis was also done at postnatal day 14. To identify the function of TSPYL2 upon TSPYL1 deficiency, we generated double KO mice.

Results

We found the TSPYL1 KD in MEF increased the transcript of TGFβ target genes and also increased the expression of TSPYL2. Although the *Tspyl1* KO mouse model cannot represent SIDDT, it was still helpful for identifying TSPYL1 function. We found that *Tspyl1* KO mice had pre-weaning lethality and had disease phenotypes such as small size and hypothermia. However, the lethal phenotype of *Tspyl1* KO can be completely rescued by loss of TSPYL2. We also detected increased TSPYL2 proteins in *Tspyl1*$^{-/-}$ lung samples collected from 0-, 7- and 14-day old KO mice. Abnormal alveolarization was found in *Tspyl1* KO mice.

Conclusions

TSPYL1 acted as a vital regulator to suppress TSPYL2 expression through TGFβ signalling *in vivo*.

Moderated **Poster**

Revealing the Genetic Underpinnings of Neuromuscular Diseases: Applying Next-Generation Sequencing to Unravel Complex Cases

Author(s)

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Background and aims

Given the clinical heterogeneity of neuromuscular disorders (NMD), a significant number of NMD lack a confirmed genetic diagnosis despite extensive consultations and assessments. Whole genome sequencing (WGS) offers the potential to overcome this diagnostic barrier and shorten the diagnostic odyssey. However, conventional approaches relied on automated pathogenicity annotations using public databases and rarely involved structural variants. In this study, we present three families of difficult-to-diagnose NMD cases, where all previous genetic tests (Gene panels/whole exome sequencing) were negative.

Methods

Complement to short variant association evaluations using public databases such as ClinVar, we leveraged trio WGS data to 1) re-evaluate variants of unknown significance, 2) re-assess variant pathogenicity using public databases and ACMG/AMP guidelines, 3) identify putative structural variants for orthogonal validation, and 4) enhance variant discovery by excluding Mendelian errors.

Results

Patient 1 was initially suspected of congenital muscular dystrophy with contractures and deteriorating course. WGS identified two variants in *LAMA2*: a frameshift mutation c.2049_2050del,p.Arg683Serfs*21 (Exomiser ACMG: Pathogenic, ClinVar: VUS), and a splice acceptor loss mutation c.3038-7G>A (ClinVar: Pathogenic). Patient 2 had a primary diagnosis of congenital myopathy. WGS identified a heterozygous 500kb deletion spanning transportin 3 (*TNPO3*), consistent with LGMD1F/LGMDD2 which have autosomal dominant inheritance (AD) and can present with myopathic phenotypes. Patients 3 and 4 were clinically suspected of congenital muscular dystrophy and mitochondrial disorder. We discovered a heterozygous 28Mb deletion including *SYNE2* suggestive of EDMD2/EDMD5, both AD and consistent with patients' disease phenotypes.

Conclusions

We demonstrated that the inclusion of rigorous structural variant analysis and manual inspection of VUS improves diagnostic yields for NMD cases. Our integrated genomic approach provides novel insights into these previously unresolved cases. Continued application of these genome sequencing and analysis strategies holds promise to bring resolution to many more challenging NMD cases that have eluded diagnosis to date.

Moderated **Poster**

Intranasal Dexmedetomidine as a Sedative for Paediatric Procedural Sedation in Day Center

Author(s)

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Background and aims

Chloral hydrate is commonly used as sedative in our day center to facilitate nonpainful diagnostic procedure. However, it is not successful in 10% of the children and not as effective in older children. It can cause respiratory depression due to airway obstruction. Dexmedetomidine has a significant lower risk of respiratory depression and haemodynamic changes. It is often used by the intranasal route for procedural sedation. We have changed our clinical practice to use intranasal Dexmedetomidine as sedative for non-invasive procedure sedation since July 2023. This study aims to evaluate the efficacy and safety of intranasal dexmedetomidine as sedative medication for non-invasive procedure sedation.

Methods

This is a prospective observational study performed in a tertiary paediatric day center. Subjects were included for admission day ward to prepare for non-invasive procedure (i.e., radiologic imaging, echocardiogram and brainstem auditory evoked potentials). On the admission day, day center resident would perform sedation evaluation for each subject. The risk of sedation has been explained to parents and consent is obtained. We created a data base capturing all the relevant demographics and events for children undergoing non-invasive procedures.

IN DEX at a dose of 2-3mcg/kg, with a maximum dose of 200mcg was divided into 2 equal doses and administer using an IN mucosal atomization device 30 minutes before the scheduled procedure time. Subjects were included if they were 1 month to 18 years old with ASA score I and II. We excluded subjects had a history of cardiac disease, had an ASA score of III to IV and subjects who had to undergo painful and invasive procedure.

Results

Twenty-two subjects underwent non-invasive procedural sedation with IN DEX were recruited. The mean age and weight were 8 months and 7 kg respectively. All subjects were classified as low sedation risk. Twenty-one subjects (95.5%) were successfully sedated using IN DEX. One subject (4.5%) failed sedation with IN DEX and given additional intravenous Midazolam. One subject was observed desaturation and required supplementary oxygen therapy. There were no observed cardiovascular, pulmonary or gastric events in this study. However, the sample size is small and single center experience which weaken the evidence of conclusion. In future, more sample size and multicenter sampling would be benefit for study outcome.

Conclusions

IN DEX is effective in providing procedural sedation when used for non-invasive paediatric procedural sedation. It was not associated with a high incidence of adverse effect.

Abstract

Neurodevelopmental Disorders in Paediatric Brain Tumour Survivors

Author(s)

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Background and aims

The neurocognitive outcomes of pediatric brain tumor survivors (PBTS) have been extensively studied but the prevalence of neurodevelopmental disorders (NDDs) such as autism spectrum disorder (ASD) or attention-deficit hyperactivity disorder (ADHD) is less clear. This study aims to examine the prevalence of NDD, emotional problems (anxiety, depression, stress) and risk factors associated with the above-mentioned issues in PBTS.

Methods

A retrospective study of PBTS (n=274) diagnosed between 2005 and 2020 was conducted using the clinical data extracted from the Clinical Management System of the public hospitals in Hong Kong.

Results

29/274 patients (10.58%) had ADHD, 19/274 patients (6.93%) had ASD, and 12/274 patients (4.38%) were diagnosed with intellectual disability (ID), indicating a higher prevalence of NDDs in the PBTS cohort compared with the general population. An overlapping diagnostic outcome of NDDs was also found in the cohort. Epileptic seizure was associated with the risk of intellectual disability($p<0.001$). Logistic regression demonstrated that patients receiving chemotherapy or RT were susceptible to emotional problems (OR = 3.22, $p=0.015$ for chemotherapy; OR = 2.84, $p=0.021$ for RT). Neuro-behavioural problems were associated with longer follow-up time (OR = 7.87, $p=0.005$).

Conclusions

PBTS are at risk of neurodevelopmental disorders. Long-term monitoring will benefit their developmental, emotional and behavioral outcomes.

Abstract

Functional characterization of Myoneurin (MYNN) in H2O2 induced cellular oxidative stress model

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Background and aims

Telomere length is considered an indicator of cellular age and a biomarker of health status. Short telomeres have been associated with higher risk of age-related diseases. Myoneurin (*MYNN*), as a gene with unreported functions, has been identified as a gene associated with telomere biology, but its exact role is still unknown. This study aims to explore the involvement of *MYNN* in telomere function using an in-vitro oxidative stress model.

Methods

Mesenchymal stem cell culture was used to conduct the study. Cellular stress was induced by treating cultures with 200uM and 1mM of H_2O_2 for two hours, following with a recovery period to imitate the cells under oxidative stress. Telomere length was assessed using real-time PCR and expressed as the T/S ratio. MYNN mRNA expression was measured using real-time PCR, while protein expression was analyzed through western blotting. The cellular localization of MYNN protein was detected using fluorescence microscopy.

Results

The examination of *MYNN* response in H_2O_2 treated cultures revealed a significant increase in MYNN mRNA and protein expression in a dose-dependent manner in response to the oxidative stress induced by H2O2, compared to the control culture ($p=0.0254$ in 200uM and $p=0.0043$ in 1mM, respectively). Moreover, it was observed that MYNN protein primarily localized in the nucleus and co-localized with telomeres only in the stressed MSC nuclei. Importantly, the H_2O_2 treated MSC cultures exhibited a dose-dependent elongation of telomeres, which correlated with the observed levels of *MYNN* expression, suggesting a beneficial role of *MYNN* in telomere function during oxidative stress.

Conclusions

The preliminary results of this study suggest that *MYNN* may have a counteractive function by modifying telomeres during cellular stress. This finding provides a potential new candidate for understanding telomere biology and life expectancy research in the future.

Abstract

Severe therapy resistant asthma in a teenager successfully managed with biologics

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Background and aims

A few biologics have been used to treat severe asthma in adult patients extending to children in US and Europe, however, there was limited experience of its use in paediatric asthma patients locally. We present a case of severe therapy resistant asthma (STRA) where traditional interventions were unable to effectively control symptoms. He responded well to anti-IgE humanized monoclonal antibody omalizumab.

Case description

Mesenchymal stem cell culture was used to conduct the study. Cellular stress was induced by treating cultures with 200uM and 1mM of H_2O_2 for two hours, following with a recovery period to imitate the cells under oxidative stress. Telomere length was assessed using real-time PCR and expressed as the T/S ratio. MYNN mRNA expression was measured using real-time PCR, while protein expression was analyzed through western blotting. The cellular localization of MYNN protein was detected using fluorescence microscopy.

Results

The examination of *MYNN* response in H_2O_2 treated cultures revealed a significant increase in MYNN mRNA and protein expression in a dose-dependent manner in response to the oxidative stress induced by H2O2, compared to the control culture (p=0.0254 in 200uM and p=0.0043 in 1mM, respectively). Moreover, it was observed that MYNN protein primarily localized in the nucleus and co-localized with telomeres only in the stressed MSC nuclei. Importantly, the H_2O_2 treated MSC cultures exhibited a dose-dependent elongation of telomeres, which correlated with the observed levels of *MYNN* expression, suggesting a beneficial role of *MYNN* in telomere function during oxidative stress.

Conclusions

The preliminary results of this study suggest that *MYNN* may have a counteractive function by modifying telomeres during cellular stress. This finding provides a potential new candidate for understanding telomere biology and life expectancy research in the future.

Abstract

Humoral and Cellular Immunogenicity of a fourth dose of COVID-19 Vaccine in Children with Chronic Kidney Disease

Author(s)

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Background and aims

While COVID-19 still remains pandemic, people with immunocompromised states are susceptible to infection, including patients with chronic kidney disease (CKD). Although COVID-19 vaccines are known to be effective in preventing transmission, there is limited evidence about the immunogenicity of a fourth dose of COVID-19 vaccine as a booster, especially in CKD patients.

Methods

We provided a fourth dose of BNT162b2 as a COVID-19 booster to pediatric CKD patients with or without immunosuppressive medications, dialysis, or kidney transplant. Dosage was 0.1mL and 0.3mL for patients aged 5-11 and 11-18 years old respectively. Blood was taken at pre-dose 4, 1-month post-booster and 6-months post-booster for humoral and cellular immunogenicity evaluation. Humoral responses were assessed using wild-type spike receptor-binding domain (S-RBD) IgG enzyme-linked immunosorbent assay (ELISA) and surrogate virus neutralization test (sVNT). ELISA shows the binding antibody levels and sVNT reflects the antibody neutralization function. Cellular responses were assessed by measuring antiviral IFN-γ+ expressing helper ($CD4^+$) or cytotoxic ($CD8^+$) T cell responses. These were assessed by intracellular cytokine staining on flow cytometry after stimulation with SARS-CoV-2 15-m23 peptide pool.

Results

22 patients were included for evaluation. At 1-month post-booster, S-RBD IgG level increased significantly compared to pre-dose 4 (geometric mean S-RBD level: 2.417 vs 3.067; P=0.0064) but the antibody neutralization function did not exhibit significant changes. For T cell responses, there were significant increases in S-specific IFN-γ^+ $CD4^+$ (geometric mean frequency: 0.0083 vs 0.0565; P=0.0106) and $CD8^+$ (geometric mean frequency: 0.0108 vs 0.0505; P=0.0285) T cell responses. At 6-months post-booster, there were no significant differences in humoral and cellular responses compared to pre-dose 4. No severe adverse reactions were reported by patients after receiving the booster.

Conclusions

A fourth dose of COVID-19 vaccine is immunogenic and safe, but the response is short term. Pediatric CKD patients may consider taking a booster before going to high-risk area.

Abstract

Impact of Dog-Assisted Therapeutic Intervention on Children with Autism Spectrum Disorder

Author(s)

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Background and aims

Recent research indicates that animal-assisted intervention (AAI) holds promise as a treatment method for children with autism spectrum disorder (ASD). However, there is limited understanding of how dog-assisted therapeutic (DAT) intervention affects multi-dimensional capabilities and overall well-being in children with ASD in Hong Kong.

This study aims to evaluate the effectiveness of DAT in enhancing communication, social-emotional development, and overall well-being in children with ASD in Hong Kong.

Methods

Four children aged between 9 and 13 years participated in a structured 8-session AAI dog training program. Pre- and post-intervention assessments of language ability, behaviour, and human-dog bonding were conducted by an experienced special education teacher involved in the training. The Paediatric Quality of Life Inventory scale was used to evaluate parents' perceptions of their child's health-related quality of life. Social-emotional development was measured using the Strengths and Difficulties Questionnaire, completed by the child's teacher.

Results

All participants showed significant improvement in language, behaviour, human-dog interaction, physical health (pre-mean vs. post-mean: 72.7 vs. 93.8), and psychosocial health (pre-mean vs. post-mean: 51.2 vs. 68.8). Evidence of improvement in children's social-emotional development was observed through reduced total difficulties (pre-mean vs. post-mean: 21.5 vs. 13.3) and positive changes in several subscale classifications, such as transitions from "abnormal → normal/borderline."

Conclusions

This study suggests that DAT intervention is a promising approach for children with ASD in Hong Kong, contributing to their mental health and overall well-being. Further research is needed to generalize the results to a larger population.

Abstract

Interaction between right atrial function reserve and liver stiffness after complete repair of Tetralogy of Fallot: an exercise echocardiographic study

Author(s)

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Background and aims

This study tested the hypothesis that right atrial reserve capacity is limited in patients with repaired Tetralogy of Fallot (TOF) and explore its relationships with right ventricular function and liver stiffness.

Methods

9 patients (45% male) aged 19.1 ± 3.9 at 16.6±4.7 years after repair and 10 controls (60% male) were studied. RA mechanics was assessed by speckle-tracking echocardiography (STE) at rest and during bicycle exercise, with quantification of positive, negative, and total strain, and strain rates at ventricular systole (aSRs), early diastole (aSRed), and atrial contraction (aSRac). Right atrial function reserve (RAFR) is calculated as (ΔRA total strain x [1-1/ RA total strain at baseline]). RV diastolic function was quantified using Doppler interrogation and STE. Hepatic shear wave velocity (c) and tissue elasticity (E) were measured using two-dimensional shear wave elastography.

Results

At rest, patients had significantly lower RA positive, negative and total strain, aSRs, aSRed, and aSRac than control subjects (all P<0.05). Shear wave velocity and hepatic E value were significantly higher in patients than controls (P<0.05 for both). Compared with controls, patients had significantly lower RA positive, negative and total strain, aSRs, aSRed, and aSRac at exercise (all P<0.05). No significant difference in hepatic shear wave velocity and tissue elasticity were found between patients and control subjects at exercise (all P>0.05). Both baseline liver stiffness indices correlated negatively with RAFR, RA positive and total strain at exercise (p<0.05 for all). RV function parameters, including baseline trans-tricuspid early and late diastolic inflow velocity (E, A), systolic, early and late diastolic tricuspid annular velocity (s, e, a), E/e ratio, RV systolic and diastolic reserve correlated significantly with RA positive and total strain at exercise (P<0.05 for all).

Conclusions

In young adults with repaired TOF, right atrial function reserve is impaired, and is associated with increased liver stiffness and RV dysfunction.

Keywords

Liver stiffness, right atrial mechanics, tetralogy of Fallot, exercise

Abstract

Use of ChatGPT-4 to Explain Kawasaki Disease to Parents and Paediatric Trainees

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Background and aims

This study aims to determine the usefulness of Chat Generative Pre- Trained Transformer -4 (ChatGPT-4) in explaining Kawasaki Disease (KD) and its management to parents and paediatric trainees managing KD patients.

Methods

We created 2 sets of clinical scenarios. In the first set, ChatGPT-4 was instructed to respond to 10 questions based on enquiries from parents of KD patients. Responses were scored in terms of "factual accuracy", "coherence", "comprehensiveness", and "humaneness" by 3 paediatric cardiologists using Likert scale of 0-10. Readability were calculated using Flesch reading-ease test. In the second set, ChatGPT-4 was instructed to respond to 8 KD-related questions based on enquiries from paediatric trainees. Responses are graded based on "relevance", "reliability" and "comprehensiveness" using Likert scale of 0-10 by 3 paediatric cardiologists independently. Reviewers would determine whether major advice from chatGPT-4 would be adopted in clinical judgement.

Results

For parent-targeted responses, ChatGPT-4 achieved the highest scores in 'humaneness' (median 9.00, IQR 8.00 to 9.00) and 'coherence' (median 8.00, IQR 7.00 to 8.00). Inaccurate information regarding disease prognosis, also actions and prescription of medications and surgery is found in 80% of scenarios. Missing information regarding long-term coronary complications, antiplatelet management and cardiac assessments is found in all 10 scenarios. Mean readability of parent-targeted responses is 71.70 ± 6.26, a readability level easily understood by 12-year-olds. For paediatrician-targeted responses, ChatGPT-4 achieved the highest scores in 'relevance' (median 9.50, IQR 7.25 to 9.0). Inaccurate information regarding coronary interventions, patient education and immunization recommendations is spotted in 37.5% of the scenarios. Missing information regarding patient education and stress imaging is found in 25% of the scenarios. All reviewers would adopt ChatGPT-4's advice in 87.5% of the scenarios.

Conclusions

ChatGPT-4 has significant limitations in accuracy and lacks salient information when providing KD recommendations for parents and paediatric trainees.

Keywords

ChatGPT-4, Kawasaki Disease

Abstract

RNA sequencing demonstrates novel CRCP gene defect in a family with atypical hemolytic uremic syndrome (aHUS)

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Introduction

aHUS is a rare kidney disease. It is one type of HUS which arises when blood clots block small blood vessels in the kidney and is usually caused by a mutation in the genes involving in the immune system. Infection from viruses or bacteria is one of the aHUS triggers that cause symptoms in the human body. The CRCP gene codes for a subunit of DNA-dependent RNA polymerase III (POL III), which is a DNA sensor found in the cytosol that transcribes AT-rich viral dsDNA into RIG-I-stimulatory 5'-ppp dsRNA and induces downstream antiviral type I and III interferon (IFN) gene expression, as well as a transcriptional machinery that produces tRNAs, 5S rRNAs and other small untranslated RNAs in nucleus. The gene also codes for receptor component protein (RCP), a component of calcitonin gene-related peptide (CGRP) receptor found in cell membrane.

Methods

We extracted genomic DNA and RNA from the blood drawn from two siblings who experienced recurrent aHUS triggered by severe viral infections since early childhood. The extracted DNA was subjected to whole exome sequencing (WES) to identify gene variants in the patients. Sanger sequencing (seq) was done to validate the sequence of mRNA transcript variants. We used mRNA seq to look at the level of CRCP gene expression and alternative splicing events in the patients. To investigate whether the patients had abnormalities in POL III function, rRNA-depleted RNA sequencing and small RNA sequencing were carried out to examine the expression level of POL III transcribed genes.

Results

By WES, we identified the same compound heterozygous mutation in the CRCP gene in the two siblings. Through Sanger sequencing, we were able to confirm that an acceptor splice site mutation in each patient caused a skipping of exon 3 while a missense mutation produced a single nucleotide change in their corresponding mRNA transcripts. Our mRNA seq data showed that the patients had more defectively spliced transcripts but also higher levels of IFN gene expression compared to healthy controls. Our rRNA-depleted RNA seq and small RNA seq results revealed that the patients had reduced expression of tRNA.

Conclusions

Our data demonstrated a novel CRCP gene defect in a family with atypical hemolytic uremic syndrome (aHUS)

Abstract

The Prevalence and Functional Outcome of Children with Stroke

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Background and aims

Stroke is one of the leading neurological disorders requiring medical emergency. Although this medical condition is well-known for its life-threatening properties to adults, stroke also affects neonates, children, and young adults.

The objective of our study is to investigate the prevalence and mortality of stroke in the Hong Kong pediatric population between 2006 and 2020.

Methods

The birth cohorts between 2006 and 2020 in public hospitals would be retrieved from the Clinical Data Analysis and Reporting System (*CDARS*). The birth cohorts would undergo further selection, only those registered with at least one of the following diagnosis codes using *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9)* 430, 431, 432, 433, 434, 435, 437 would be selected as samples. The data of mothers of the selected birth cohorts will also be retrieved to analyze the birth characteristics and neonatal conditions of the children.

Results

The analysis of the data revealed that the prevalence of childhood stroke between 2006 and 2020 is 0.122%, and the prevalence is on a slightly rising trend from 2006 to 2020, with estimates increasing from 50 to 142 per 100,000 children. The mortality rate of childhood stroke between 2006 and 2020 is 5.2%.

In terms of stroke type, the prevalence of ischemic stroke is relatively lower compared to hemorrhagic stroke among children. Hemorrhagic stroke is the more common type of stroke among children, accounting for 91.2% of cases, while ischemic stroke accounts for 8.81%. In terms of post-stroke outcome, cognitive and neuropsychiatric outcomes are found to be more frequent than motor outcomes, accounting for 8.5% and 9.8% respectively. The incidence of pediatric stroke is also found to be significantly higher in boys compared to girls.

Conclusions

This study enhances our understanding of the epidemiology of pediatric stroke in recent years in Hong Kong, and provides a crucial foundation for enhancing the well-being of children affected by stroke.

Abstract

Intensive inpatient pulmonary rehabilitation in a paediatric patient with progressive bronchiolitis obliterans syndrome post-haematopoietic stem cell transplantation

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Background and aims

Chronic graft-versus-host disease of the lung is a significant complication of haematopoietic stem cell transplantation (HSCT). The most serious form is bronchiolitis obliterans syndrome (BOS), which results in progressive fibrosis of terminal bronchioles and fixed airflow obstruction. The disease is characterized by severe lung function decline, with a reported 5-year survival of only 13%. Pulmonary rehabilitation (PR) as a treatment adjunct for BOS has not been well reported, especially in the paediatric population. We report a case of a 16-year-old boy with a history of aplastic anaemia, who developed post-HSCT BOS. He experienced rapid lung function decline within one year despite the use of multiple immunosuppressants. He developed dyspnoea on exertion and required 3 L/min nasal oxygen, and was put on list for lung transplantation. He was referred to our unit for PR.

Methods

The patient underwent 8 weeks of inpatient multidisciplinary PR. This included an intensive regimen of muscle strengthening and breathing exercises twice daily, together with nutritional and psychological counselling. Assessments were performed at baseline, 4 and 8 weeks after PR. These included spirometry (FEV1 and FVC), assessment of muscle strength (MIP and MEP), 6-minute walk test (6MWT), body composition analysis (BCA), and health-related quality of life outcomes including the Pediatric Quality of Life Inventory (PedsQL) and modified Medical Research Council (mMRC) dyspnoea scale.

Results

The patient demonstrated improvements in all outcome measures (table 1). After 8 weeks of PR, there was improvement in spirometry parameters, respiratory muscle strength, 6MWT and nutritional status. Total PedsQL score improved, with the most significant improvements in the physical functioning domain. mMRC scale also decreased, which suggested reduced breathlessness during day-to-day activities.

Table 1. Outcomes at baseline, 4 weeks and 8 weeks after pulmonary rehabilitation

Spirometry	Baseline	8 weeks	8 weeks
FEV_1, ml (% predicted, z-score)	500 (15, -6.337)	600 (18, -6.130)	650 (19, -6.025)
FVC_1, ml (% predicted, z-score)	1420 (40, -5.122)	1510 (43, -4.898)	1920 (54, -3.883)
FEV_1/FVC, % (% predicted, z-score)	35 (38, -5.572)	39 (42, -5.376)	33 (35, -5.623)
MIP, cm H_2O (% predicted)	58 (51)	64 (54)	62 (54)
MEP, cm H_2O (% predicted)	49 (32)	74 (56)	85 (56)
6MWT, metres (% centile)	398 (<3)	487 (<3)	452 (<3)
Body weight (kg)	33.4	35.4	35.8
Skeletal muscle mass (%)	15.3	16.4	16.5
PedsQL score (total)	49	63	72
Physical functioning	31	59	72
Emotional functioning	80	75	75
School functioning	65	75	85
School functioning	30	45	55
mMRC dyspnoea scale	3	3	1

(Abbreviations: FEV_1: forced expiratory volume in one second, FVC: forced vital capacity, MIP: maximal inspiratory pressure, MEP: maximal expiratory pressure, PEF: peak expiratory flow, 6MWT: six minute walk test, mMRC dyspnea scale: Modified Medical Research Council Dyspnea Scale)

Conclusions

We illustrate the effectiveness of a multidisciplinary PR for a paediatric patient with severe post-HSCT BOS. This program leads to improvement in exercise capacity, lung function, nutrition and quality of life.

Abstract

Investigation of Lactobacillus, Lactate, and pH changes in regulating Human Endometrial Receptivity and predicti ng Pregnancy outcomes

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Background and aims

WHO 2020 estimated that 48 million couples and 186 million individuals are living with infertility globally. Recent studies suggested that the microbiome, especially the Lactobacillus-dominant (LD) environment in the uterus affects embryo implantation and pregnancy outcome in IVF patients. Lactobacilli produce bacteriocins, lactic acid and hydrogen peroxide to suppress the growth of some pathogenic bacteria, re-establishes the normal microbiota and normal vaginal pH. To understand the mechanism of the pH and lactates inside the uterus on embryo implantation, we conducted experiments on Ishikawa and BeWo cells which resemble endometrium and embryos.

Methods

In this study, we used various methods to investigate the role of lactate (D- & L-form) and pH on embryo implantation using the spheroid-endometrial co-culture model and studied the invasion and cytokine production of the endometrial epithelial cells. Concurrently, we employed Next-Generation Sequencing (NGS) analysis to investigate the composition and characteristics of uterine fluid and vaginal fluid samples obtained from the patients.

Results

We demonstrated that high lactate concentrations (>10mM) inhibit the cell viability and proliferation of the human endometrial epithelial Ishikawa and trophoblastic BeWo cells. Culture media at pH 6.1 (acidic), 7.2-7.4 (neutral), and 8.1 (alkaline) conditions did not affect the spheroid attachment on the treated Ishikawa cells. Moreover, high lactate concentrations (>10mM) inhibited the invasion of trophoblastic BeWo by the treated Ishikawa cells, as well as tube formation (angiogenesis) in the treated human endothelial HUVEC cells. D- & L-lactate induce the production of cytokines including TIMPs, MMPs, IL6, IL6R, and Th1 and Th2 cytokines. Taken together, our in vitro studies suggested that high lactate concentrations, but not pH6.1-8.1, did not favour spheroid attachment

Conclusions

To sum up, our in vitro studies suggested that Lactobacillus and Bifidobacteriaceae is most abundant bacteria inside uterine and vaginal fluid. However, high lactate concentrations, but not pH 6.4-8.1, do not significant effect on spheroid attachment. The underlying molecular mechanism of how the LD microenvironment favour pregnancy outcome could be due to changes in cytokines and secretome that modulate endometrial receptivity and immune responses in pregnancy.

Abstract

Five years outcomes of perioperative anaphylaxis among Paediatric patients in Hong Kong

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Background and aims

Perioperative anaphylaxis (PA) is a rare but life-threatening, hypersensitivity reaction that remains a diagnostic challenge in children. Conventional allergy investigations for PA are often limited by the properties of these specific agents. Drug provocation test (DPT) is usually unavailable or even impossible to perform with GA agents except in a few highly specialized centers. Therefore, we rely on adjunctive test such as skin prick tests (SPT), basophil activation test (BAT) and specific immunoglobulin (Ig) E test (sIgE) to aid diagnosis of drug allergy. Our objective is to evaluate the clinical characteristics and the comparative performance of diagnostic tools (e.g. SPT, BAT and sIgE) in the investigation of perioperative anaphylaxis in children.

Methods

Paediatrics patients (0-18 years old) with a diagnosis of PA over a 5-year period were recruited into the study. We reviewed the medical records, tryptase elevation, and diagnostic tests including ST, BAT and sIgE.

Results

In 10 patients with PA, diagnosis was reached in 9 of the cases. The most common culprits identified were neuromuscular blocking agents (70%) and Beta lactams (20%). Skin testing was able to yield positive results in all 9/9 (100%) tested patients, whilst BAT yielded positive results only 2/10 (20%) of our patients. sIgE yielded positive results in 2/7 (29%) patients. In all 9 patients who underwent testing for tryptase, there was a significant rise in all tested patients.

Conclusions

Neuromuscular blocking agents were the most common culprit class of drugs in paediatric cases of periperative anaphylaxis. ST remains the diagnostic modality that identified almost all of the culprit drugs, while basophil activation test can be considered for initial screening to narrow the drugs to focus on for SPT. As some children are uncooperative with the labour-intensive ST, further research is urgently needed to develop better diagnostic tools for perioperative anaphylaxis.

Abstract

A zebra or a unicorn- a Chinese boy with McLeod Phenotype Chronic Granulomatous Disease (CGD)

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Abstract

Chronic granulomatous disease (CGD) is a rare inborn error of immunity caused by defective NADPH oxidase system. X-linked CGD caused by CYBB (gp91phox) mutation accounts for 70% of CGD. In gross CYBB deletion, it can involve the adjacent XK gene, resulting in the rare McLeod phenotype with a risk of haemolytic anaemia on repeated transfusion due to allo-sensitization. Potential curvative treatment implications includes haematopoietic stem cell transplantation (HSCT). We reported a Chinese boy with recurrent bacterial infections and inflammation who was diagnosed as X-linked CGD based on reduced neutrophil oxidative burst activity on Dihydrorhodamine test (DHR) and absent gp91phox expression (figure 1) at 10 months. Acanthocytosis on the peripheral blood smear examination and an absence of Kx antigen of red blood cells (RBCs) supported a diagnosis of Mcleod phenotype. The underlying genetic lesion of a gross hemizygous deletion in the X chromosome encompassing the entire XK gene and the first 3 exons of CYBB gene was detected using next generation sequencing. The phenotypic abnormalities were corrected after a successful HSCT. In summary, we described phenotypic and genetic findings in a boy with McLeod phenotype CGD boy, and the change of blood parameters post-HSCT.

Abstract

Longitudinal follow-up on the telomere length and inflammatory markers among child patients admitted to the Paediatric Intensive Care Unit

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Background and aims

Advancement in the paediatric intensive care has transitioned from saving lives to saving better, more functional lives. Despite the optimal care and support provided, admission to the Paediatirc Intensive Care Unit (PICU) remains highly stressful for patients. Additionally, 25% of PICU patients experience a decline in health status and overall well-being. Stress-related biological markers, such as inflammation marker and telomere length, can provide insights into cellular health and overall patient health status. This study aims to investigate factors affecting telomere length and inflammation markers levels in PICU patients.

Methods

A total of 75 Chinese children, aged 2 to 18 years old, were admitted to the Hong Kong Children's Hospital PICU during November 2021 – November 2022. Buccal swab and peripheral blood samples were taken upon PICU admission, at PICU discharge, at hospital discharge, and 6-months after PICU discharge. Interleukin levels were determined from the blood plasma, and telomere length was measured from buccal cells genomic DNA. Biomarkers were compared among patients based on gender, underlying diagnosis group and length of stay (LOS) in PICU.

Results

No significant differences were found in the interleukins (IL) level and telomere length (TL) based on gender and underlying diagnosis group (Oncology, Cardiac and Others). However, patients with higher baseline IL-18 levels were more likely to have a LOS greater than 3 days (LOS >3days: 1051.5; LOS<3days: 666.6, p = 0.038). Patients with LOS >3days (TL=35.2) exhibited shorter telomere length at PICU discharge compared to those with a LOS <3days (TL=46.2) (p = 0.012).

Conclusions

Preliminary findings suggest that patient with a LOS>3 day have higher IL-18 levels at baseline and shorter telomere length at PICU discharge. Further investigation is required to understand the relationship between these biomarkers, patients' quality of life, and parental emotional well-being. Understanding these associations may help enhance care strategies to support rehabilitation of PICU patients.

Abstract

Debilitating osteochondral manifestations in a patient with congenital insensitivity to pain with anhidrosis (CIPA) due to NTRK1 mutation

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Background and aims

Congenital insensitivity to pain with anhidrosis (CIPA) is a rare autosomal recessive disorder causes by mutations in *NTRK1* gene encoding the tropomyosin receptor kinase A (TrkA) protein. Here we report a female patient with *NTRK1*-related CIPA with severe osteochondral complications. We also performed a literature search on cases of NTRK1-related CIPA.

Methods

We systematically collected the information from the medical health record of a girl with CIPA having compound heterozygous mutations of *NTRK1* gene: c.2089 G>A (p.Gly697Lys) and c.744 del (p.Leu249*) . To further study the clinical spectrum of bone and joint disorders of NTRK1-related CIPA, we reviewed literature of reported NTRK1-related CIPA cases published on or before 2020.

Results

The girl with CIPA has cardinal presentations of recurrent unexplained pyrexia, inability to sweat, insensitivity to pain with self-mutilation behaviour and mild cognitive impairment. She also had debilitating osteochondral complications with history of bone fractures, recurrent multiple joints effusion with arthropathy, and vertebral collapse with acute spinal cord compression required urgent spinal surgery. Investigations confirmed the non-inflammatory nature of the effusion, normal bone mineral density and negative autoimmune, inflammatory and bone resorption markers. The literature review confirms over half of the NTRK1-related CIPA reported cases had bone and or joint problems. Weight-bearing joints are commonly involved. Fractures in the long bones, small bones, spine and jaw bones were reported. Computational modelling and bioinformatics analysis proposed the mutation effect on TrkA binding with downstream proteins (PLCG1; GRB2; SHC1) that were reported to be related to bone homeostasis.

Conclusions

Our findings suggest that osteo-arthropathic involvement is common in patients with NTRK1-related CIPA, highlighting the important role of NTRK1 in skeletal health. Further research in combination of computation modelling with in vivo validation could help to better understand the underlying mechanisms for the development of effective treatments for CIPA patients.

Abstract

Navigating the Journey to Successful Oral Feeding in Preterm Infants

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Background and aims

Transition of preterm infants with underdeveloped feeding skills from tube to oral feeding is challenging. Oral motor training is the key in this process, aiding weight gain and enabling earlier discharge. This study investigates how a structured oral motor training program promotes safe and effective oral feeding in preterm infants.

Methods

Preterm infants under 32 weeks postmenstrual age (PMA) at Queen Mary Hospital were included. Non-nutritive sucking (NNS) assessments started when infants reached 32 weeks PMA, followed by daily feeding readiness and oral motor assessments. When the readiness cutoff was surpassed, nutritive sucking (NS) assessments and individualized oral feeding interventions were conducted until full oral feeding was achieved.

Results

Sixty-nine preterm infants (mean PMA of 29.15 weeks, mean weight 1.08 kg) were studied in 2018-2019. NNS assessments began at mean PMA of 32.56 weeks (mean weight 1.42 kg) and NS assessments at mean PMA of 34.67 weeks (mean weight 1.76 kg). First full oral feed was at mean PMA of 35.59 weeks (mean weight 1.89 kg), and full oral feeding was attained at mean PMA of 36.42 weeks (mean weight 2.03 kg).

Conclusions

Infants are generally ready for oral feeding by 35 weeks PMA and achieve full oral intake around 37.1 weeks PMA. This study demonstrates a structured oral motor training program promotes earlier initiation of oral feeding (34.67 weeks PMA) and achievement of full oral feeding (36.42 weeks PMA), facilitating a successful oral feeding transition and reducing the length of stay of preterm infants.

Abstract

Exploring the Mental Health and Resilience of Youth Diagnosed with Hemophilia: A Scoping Review

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Background and aims

Hemophilia is a significant bleeding disorder characterized by a deficiency in or presence of defective coagulation factors. Since severe hemophilia is typically inherited and diagnosed at an early age, this chronic disease poses social, emotional, and physical challenges for youths with ongoing needs for coping. The Resilience in Illness Model (RIM) proposed by Haase et al. (2014) suggested that resilience could be an important regulator of various factors in supporting youths to cope with chronic medical conditions (i.e. promoting perceived social support, courageous coping and reducing illness-related distress). However, current research that explores the role of resilience in managing hemophilia among youths is scarce. Thus, a systemic scoping review was conducted, which aims to explore the relationship between mental health and resilience in adolescents and young adults (ages 10-24) diagnosed with hemophilia.

Methods

A systematic scoping review was conducted for which three databases were screened: Ovid MEDLINE, Ovid Embase, and PsycInfo. Our search strategy and inclusion/exclusion criteria yielded the initial studies. With duplicates removed, 209 studies were screened for titles and abstracts. 31 studies were included for full-text screening and 7 studies were selected for data extraction and final inclusion.

Results

Resilience was found to be protective against psychological distress and promote mental health among youths with hemophilia. Specifically, coping strategies such as practicing spirituality (i.e. faith identification and belief in "divine mercy"), participation in physical activity, and the presence of social support systems were found to be the most effective in promoting resilience within this population.

Conclusions

Given the significance of resilience in the relationship between hemophilia and mental health outcomes, implementation of resilience-oriented interventions into the clinical practice of hemophilia should be considered. Recommendations are made to expand research to consider resource support, including digital mental health technologies, that could be integrated into pediatric care to develop a daily resilience routine.

Abstract

Randomized controlled trial comparing the efficacy and safety of mydriatic microdrops over standard dose mydriatics for pupil dilation in retinopathy of prematurity examination.

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Background and aims

1. To determine whether microdrops Mydrin-P demonstrates similar efficacy as standard Mydrin –P eyedrops applied to neonates undergoing retinopathy of prematurity (ROP) screening exams
2. To ascertain the optimal time for eye examination after administration of mydriatics.
3. To assess whether the cardiovascular, respiratory and gastrointestinal adverse effects differ between microdrops and standard dose Mydrin-P.

Methods

A prospective, randomized controlled study was conducted from August, 2022 to March, 2023 in the neonatal intensive care unit in Queen Mary Hospital, Hong Kong. Preterm infants were randomized to receive either the standard Mydrin-P eyedrops or the mydriatic microdrops which contained around one-third of the standard Mydrin-P dosage. The primary outcome measured whether a successful ROP examination was conducted. Secondary outcomes included pupil diameters at baselines, 30 minutes, 60 minutes, 120 minutes after eyedrops instillation and at the time of ROP exam as well as adverse effects followed by the mydriatics administration.

Results

A total of 18 patients were enrolled in this study with total 46 episodes of ROP recorded. All episodes with microdrops instillation led to successful ROP exams. There was no statistically significant difference between standard eyedrops and microdrops in determining the success of ROP exam (p=0.233). Mean pupil diameter did not differ between the microdrops and standard eyedrops group. At the time of ROP exam, the mean pupil diameter is 5.47mm in the standard eyedrops group and 5.73mm in the microdrops group. The optimal time for ROP exam was 60 minutes to 120 minutes after first dose of mydriatic.

Conclusions

Microdrops have similar efficacy compared to standard Mydrin-P eyedrops.

Abstract

Dystrophin expression and epigenetic drug treatment restore dysregulated gene expressions in XLDCM patient-derived cardiomyocytes disease modelcardiomyocytes disease model

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Background and aims

X-linked dilated cardiomyopathy (XLDCM), caused by *DMD* mutation, is characterized by early onset of severe heart failure with no or minimal skeletal muscle weakness. Without heart transplantation, this disease results in premature death. We previously established an XLDCM patient-specific induced pluripotent stem cell (iPSC)-derived cardiomyocytes (CMs) disease model to study the pathophysiological mechanism, and the impacts of mutation correction and drug therapy. We observed that *DMD* gene correction by CRISPR-Cas9 in XLDCM iPSC-CMs restored dystrophin expression and remediate calcium handling defects. We also found that the application of Trichostatin A (TSA, a pan histone deacetylase inhibitor, an epigenetic drug) improved XLDCM iPSC-CMs calcium handling.

Methods

To investigate the transcriptomic differences underlying the cardiac pathology in XLDCM and the transcriptional changes mediated by *DMD* correction and TSA treatment, we performed RNA-seq on healthy control, XLDCM, *DMD* corrected and TSA-treated XLDCM iPSC-CMs.

Results

Transcriptomic analysis revealed that the genes responsible for cardiac contractility and calcium handling were dysregulated in XLDCM iPSC-CMs. However, when the *DMD* mutation was corrected, or the cells were treated with TSA, these gene expressions were restored to normal levels. Additionally, genes related to extracellular matrix (ECM) and cell adhesion were largely dysregulated in XLDCM iPSC-CMs but were also restored after *DMD* mutation correction. Interestingly, a significant amount of ECM and cell adhesion genes were only enriched in the CMs derived from *DMD* corrected iPSCs, providing new targets for future study.

Conclusions

In conclusion, this study indicates that restoring the dystrophin expression and treatment with an epigenetic drug improve the XLDCM disease phenotype in iPSC-CMs by restoring dysregulated gene expressions.

Abstract

Neurophysiological Characteristics of Preterm Born Children after infancy: A Meta-Analysis of EEG Studies

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Background and aims

Preterm birth, defined as birth before 37 gestational weeks and puts the child at risk of neurocognitive deficits. Although early intervention may have prognostic potential, there is a lack of consensus in the literature towards which electrophysiological markers are abnormal in preterm children compared to term born children. Furthermore, although EEG has been widely used as a monitoring method during infancy period, whether such abnormality persist after the age of 2 is unclear. Our study strives to summarize the EEG, AERP, and VERP electrophysiological parameters currently available to investigate markers which may have clinical potential in detecting brain wave abnormalities.

Methods

The search strategy followed the Preferred Reporting Items for Systemic Reviews and Meta-Analyses (PRISMA) guidelines using databases PubMed, PsycINFO, Medline, and Scopus between May 1st 2020 to June 1st 2023. Exclusion criteria included children younger than 2 or older than 18, children with pre-existing medical conditions (e.g., cerebral palsy), and studies without term controls. The original search resulted in 4420 papers, 20 of which were included in the final quantitative meta-analysis.

Results

The spectrum power analysis showed a positive correlation between increased delta power in preterm children compared to term control. The auditory ERP parameters P1, P3, N1, and MMN show condition dependent results, with a greater P1 response in term born children in a standard auditory task. Finally, the visual ERP showed a greater P1 response in term born children.

Conclusions

The present study looked at the potential for electrophysiological markers to detect brain wave in premature children. Overall, there were three parameters that showed significant differences in spectral power, AERP, and VERP studies that could reliably differentiate between preterm, and term born groups even after the age of 2.

Abstract

Incidence and Risk Factors of Bronchopulmonary Dysplasia in Very Low Birth Weight Infants: A Ten-Year Retrospective Study

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Background and aims

Bronchopulmonary dysplasia (BPD) remains a significant respiratory complication among very low birth weight (VLBW) infants, despite advances in perinatal care. Early prediction of BPD and identification of high-risk infants can facilitate timely interventions and improve outcomes. This retrospective study aimed to estimate the incidence of BPD in VLBW infants over a ten-year period, identify risk factors associated with different severities of BPD, and evaluate factors related to home oxygen therapy.

Methods

Medical records and data from a neonatal database were reviewed for live-born infants with a birth weight ≤1500 grams, excluding those with major congenital anomalies or who died before 36 weeks postmenstrual age (PMA). The incidence of BPD and its severity were assessed based on oxygen supplementation requirements. Various perinatal factors were analyzed, including gestational age, birth weight, prenatal care, ventilation strategies, and complications.

Results

A total of 620 VLBW infants were included in the study, with 49.6% developing BPD. Among them, 36.4% had mild BPD, 53.6% had moderate BPD, and 9.7% had severe BPD. The incidence of BPD varied across different gestational age and birth weight groups. Apart from well-studied factors eg lower gestational age, lower birth weight, and chorioamnionitis, our analysis revealed significant associations between BPD development and need of red cell transfusion. The study also observed changes in ventilation strategies over the ten-year period such as higher intubation threshold during initial stabilization, implementation of new ventilation methods such as neurally adjusted ventilatory assist (NAVA) ventilation, and less invasive means of surfactant administration.

Conclusions

This ten-year retrospective study provides insights into the incidence and risk factors of BPD in VLBW infants. The findings highlight the importance of early prediction, monitoring, and appropriate interventions to improve outcomes for high-risk infants. The study also emphasizes the need for ongoing assessment of prevention and treatment strategies for BPD in neonatal units.

Abstract

Carriage prevalence of antimicrobial resistance amongst children and their caregivers in Hong Kong

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Background and aims

Antimicrobial resistance (AMR) carriage poses multifactorial threats to public health. However, current local data on AMR carriage and antimicrobial use in community and family settings is limited. We aimed to investigate the prevalence of four WHO drug-resistant prioritized pathogens, including *Streptococcus pneumoniae*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, and *Escherichia* coli in children and their caregivers, outlining the potential AMR risk in Hong Kong.

Methods

Nasal swabs were collected from caregivers (N=306) and their children (N=324), while rectal (N=308) and/or stool samples(N=22) were collected from children. Samples were plated onto 5% sheep blood agar and screened for *S. pneumoniae, S. aureus, K. pneumoniae* and *E. coli.* Bacteria were identified and confirmed using selective medium and IMVIC tests.

Results

The most prevalent bacteria found in both caregivers and children's nasal samples was *S. aureus,* with 22.8% and 28.3% carriage respectively, and 12.9% and 15.4% of those being methicillin-resistant *S. aureus* (MRSA). *E. coli* and *K. pneumoniae* were most prevalent in child stool samples, with 68.2% and 13.6% carriage respectively, and were also detected in rectal samples. *S. pneumoniae* carriage was low, with only 0.45% of child nasal samples testing positive. Pairing analysis showed that 32 pairs of caregivers and children samples both carried S. aureus, and 4 paired samples carried MRSA, indicating a potential route of antibiotics resistance bacterial transmission from caregivers to children.

Conclusions

The notable presence of *S. aureus, K. pneumoniae* and *E. coli* amongst caregivers and their children indicate potential community AMR prevalence of these priority pathogens. Our study also proposed a transmission route of methicillin-resistant *S. aureus* in both caregivers and children. The paediatric population remains a vulnerable group in AMR carriage. Thus, further investigations into these pathogen's potential antibiotic resistance is warranted to monitor AMR prevalence and reduce the transmission within family communities in Hong Kong.

Abstract

Revealing the Genetic Underpinnings of Neuromuscular Diseases: Applying Next-Generation Sequencing to Unravel Complex Cases

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Background and aims

Given the clinical heterogeneity of neuromuscular disorders (NMD), a significant number of NMD cases lack a confirmed genetic diagnosis despite extensive consultations and assessments. Genome sequencing offers the potential to overcome this diagnostic barrier and shorten the diagnostic odyssey. However, conventional approaches primarily focused on short variant associations, relying on protocols such as GATK and DeepVariant, while structural variants were rarely studied. In this study, we present three families of difficult-to-diagnose NMD cases, where target gene and/or whole exome sequencing failed to identify a genetic mutation that correlates well with the disease phenotype.

Methods

Complement to short variant association evaluations using public databases such as ClinVar, we leveraged trio whole genome sequencing data to 1) re-evaluate variants of unknown significance, 2) re-assess variant pathogenicity using public databases and ACMG/AMP guidelines, 3) identify putative structural variants for orthogonal validation, and 4) enhance variant discovery by excluding Mendelian errors.

Results

The current study revealed three putative variants in four affected individuals, including one biallelic loss of *LAMA2* (one frameshift (c.2049_2050del/p.Arg683Serfs*21) and one splice acceptor loss mutation (c.3038-7G>A)), one 500kb deletion spanning *TNPO3*, and one 28Mb deletion spanning *SYNE2*. All identified genetic variants are consistent with manifested phenotypes.

Conclusions

Our study identified two substitutions in *LAMA2* and two structural variants spanning *TNPO3* and *SYNE2*, which were missed by other prior genetic tests/exome sequencing. We demonstrated that the inclusion of rigorous structural variant analysis and manual inspection of VUS when leveraging trio sequencing data improves diagnostic yields for NMD cases. While orthogonal validation is pending, our integrated genomic approach provides novel insights into these previously unresolved cases. Continued application of these genome sequencing and analysis strategies holds promise to bring resolution to many more challenging NMD cases that have eluded diagnosis to date.

Abstract

Waiving Consent for Pediatric Research Using Pre-collected Data to Avoid Bias and Allow Big Data Analytics

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Background and aims

Opt-in consent is usually required for health research, but is also known to introduce selection bias. Research shows that requiring parental consent may lead to sampling bias and inaccurate policy recommendations in pediatric research. It is proposed that consent be waived in secondary use of pre-collected health data. However, laws and research ethics policies differ significantly in this regard. This inconsistency may create obstacles for pediatric research involving Big Data analytics as well as confusion for cross-border collaborations. This study aims to explore the potential implications of consent laws and policies for observational pediatric research.

Methods

This study conducts a comparative study of laws and research policies regarding consent in secondary data use in the EU, mainland China, and Hong Kong.

Results

The study finds that the consent requirements in the three jurisdictions vary in their degree of restrictiveness. Mainland China strictly requires separate opt-in consent for each use of health data. Hong Kong allows research to proceed without consent if it uses existing data for a purpose compatible with the original purpose at collection. The EU provides the broadest exemption to consent, allowing unconsented research if suitable safeguards are in place. Among the three approaches, the EU is most friendly to observational pediatric research using Big Data analytics.

Conclusions

In view of promoting pediatric research involving extensive data input (e.g. precision medicine or genomics research) and avoiding selection bias, the consent policies in Hong Kong can learn from the EU regime by providing broader exemptions to consent in observational studies using pre-collected data and stipulating appropriate safeguards. Researchers in Hong Kong should also take note of the stricter compliance requirements for research involving mainland China subjects.

Abstract

A Scoping Review Of Dietary Sugar Intake And Early Childhood Health

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Background and aims

Excessive dietary sugar intake can lead to adverse health outcomes, particularly an increased risk of non-communicable diseases. Investigation of the potential effects of sugar intake during early childhood is essential, as this is when children are first exposed to dietary sugars. This study aims to review the existing research to explore the significance of dietary sugar intake during early childhood.

Methods

A scoping review was performed on PubMed to identify relevant literature regarding the association between dietary sugar intake during infancy and/or toddlerhood and health outcomes. A list of search terms was used: (sugar* OR "sugar-sweetened beverages" OR "sweetened beverages") AND (diet* OR intake OR food OR nutr*) AND (infan* OR toddler* OR "early childhood").

Results

The initial search retrieved a total of 2752 articles. A preliminary screening was performed until saturation of results relating to the outcomes of dietary sugar consumption. As a result, 24 articles were reviewed.

The findings suggest that excessive dietary sugars during infancy and toddlerhood is associated with poor metabolic health outcomes and early childhood caries. Emerging evidence indicates that sugars consumption may contribute to other adverse health outcomes throughout later childhood. Higher sugar intake during toddlerhood is associated with allergy and asthma traits. Higher adherence to sugar-sweetened beverages and sugary food is linked to cognitive impairment, ADHD symptoms, and emotional symptoms. Additionally, frequent consumption of dietary sugars during early childhood can persist until later childhood and is related to poor dietary quality in subsequent years.

Conclusions

A growing body of evidence suggests that early childhood sugar consumption can have enduring effects on various health conditions such as allergy, asthma, and impaired neurodevelopment. Such consumption patterns may persist into later childhood and contribute to additional health problems. Further studies are encouraged to investigate the long-lasting effects of early dietary sugar consumption.

Abstract

The Effects Of Adequate Dietary Intake And Sodium Intake On Sleep Duration And Quality Of Pregnant Women

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Background and aims

Poor sleep quality during pregnancy can lead to adverse maternal and offspring's health outcomes. Household income is often associated with sleep quality, but dietary factors can also interfere with this association. This study aims to investigate the association between dietary adequacy and sleep quality among pregnant women.

Methods

This study recruited 500 pregnant women at 25 to 35 weeks gestation from the antenatal clinic of local public hospitals. The Pittsburgh Sleep Quality Index (PSQI) and the electronic version of the Food Frequency Questionnaire (eFFQ) were administered. Adequate dietary intake was assessed by comparing the daily serving of food groups to local guidelines, and sodium intake was represented by the Diet Quality Index-International (DQI-I) moderation score.

Results

Sleep duration significantly differed based on the number of daily serving recommendations for food groups met ($F(3,493)=3.857$, $p=0.010$). After adjusting for participant's age at enrolment and number of pregnancy weeks, higher monthly household income was associated with lower overall PSQI sleep quality score ($\beta = -0.10$, $p=0.029$). The mediation analysis with further adjustment for adherence to a balanced diet showed that DQI-I moderation sodium score accounted for a small yet significant portion of this association ($\beta = -0.01$, 95%CI [-0.03, -0.001]).

Conclusions

Household income is associated with sleep quality, partially due to the impact of food choices and sodium intake. Adequate dietary intake can interfere with sleep duration and counteract this association. Findings indicate the importance of a balanced diet with limited sodium intake on sleep quality during pregnancy to promote offspring's health.

Abstract

Education on administration of Intranasal Mucosal Atomization Device in pediatric patients

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Background and aims

The Mucosal Atomization Device (MAD) can offer many advantages to patients and health care workers like it is ease of use which only requires simple techniques. It could be easily applied on patients with difficult intravenous access and under situations that are emergency like seizure. Drug deliveries to the highly vascularized nasal mucosa could enhance the effect in achieving the optimal sedation and analgesia during procedures and avoiding the absorption-limiting effects of first pass metabolism. However, poor techniques may directly reduce the effectiveness of drug absorption in patients Therefore, a proper and standardized education of the MAD drug administration toward nurses is required for enhancing the knowledge of MAD drug administration. The objective of our study aims 1. To develop educational programme for nurses to enhance the knowledge of use of MAD. 2. To standardize the procedure steps in using MAD by educational programme. 3. To improve the competency of nurse to give medications via MAD.

Methods

The target group of this project was all PICU nurses in QMH. A pretest- and posttest design study was adopted to evaluate the effectiveness of educational programmes on enhancing nurses' knowledge in use of MAD for drug administration.

Results and conclusions

Among 28 participants, more than 70% of them had experiences on applying intranasal drugs by using MAD. However, data showed that the average score of the level of competency to give intranasal medications via MAD was 4.4 out of 10. After the training, they were asked to complete the assessment again. The average level of competency was raised to 8.75 out of 10. Therefore, it proved that establishment and introduction of educational programme toward nurses could greatly enhance the competency of MAD drug administration.

Abstract

The Protective Role of Vitamin D in mRNA COVID-19 Vaccine-related Myocarditis

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Background and aims

Vitamin D, a steroid hormone, plays a role in modulating the immune response, with its deficiency linked to increased autoimmunity and susceptibility to infections. The exact pathogenic mechanism of mRNA-based vaccine myocarditis remains unclear, but it is widely speculated that a dysregulated host immune response, including NK cell over-activation, may contribute to this adverse event.

Our study aimed to investigate the potential immunomodulatory role of vitamin D in the onset risk and associated exaggerated immune response in vaccine-related myocarditis.

Methods

We recruited a representative Chinese patient cohort of 60 adolescents, aged 12-17 years, who were diagnosed with myocarditis within a median of 3 days following the BNT162b2 vaccination. Vitamin D measurements by Liquid-Chromatography Tandem Mass Spectrometry (LC/MS-MS), genotyping, and immunophenotyping by flow cytometry were performed on the obtained samples and compared with 10 vaccinated non-myocarditis controls.

Results

Serum vitamin D levels and related genetic variants were associated with the risk of developing vaccine side effects. A higher prevalence of vitamin D deficiency/insufficiency and lower 25(OH)D levels were observed in patients compared to the control group, correlating with cardiac troponin T levels within patients. Genotypically, the GCrs7041A and its encoded GC2 isoform constituted a risk haplotype, while GC1S appeared to be protective. Mechanistically, vitamin D modulates exaggerated inflammation by reducing pro-inflammatory cytokine production pivotal for NK cells and its activation CD69+ subset, with the abundance of the activation subset was found negatively correlated with serum 25(OH)D concentrations within patients.

Conclusions

Vitamin D is a potentially protective factor associated with vaccine myocarditis due to its fundamental anti-inflammatory effects.

Abstract

Nursing enhancement programme on prevention of unplanned extubation

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Background and aims

Patients with endotracheal intubation are common in pediatric intensive care units(PICU). However, unplanned extubation (UE) is one of the most frequent complications associated with airway management. It may lead to serious complications, or even death.

The aims of the programme is to 1.identify contributing factors of unplanned extubation in a PICU of a regional hospital, and 2. Enhance nurses' awareness in the prevention of unplanned extubation and to improve the quality of care to intubated patients.

Methods

Date of the past UE events during 2017 to 2020 in the PICU of a regional hospital was collected. The contributing factors of these UE incidents were identified and analyzed. A nursing enhancement program was developed and incorporated with the findings and proposed preventive measures. All nurses of this PICU were recruited in the training.

Results

There were several contributing factors of UE listed in literature review, including inadequate sedation, age <2 years old, improper use of restraints, loosing tape, no standardized ETT care technique, nurse-to-patient ration. Data collected from regional hospital matched the contributing factors as listed in literature review.

The nurses performed better in the identical post-test questionnaire. Furthermore, there is no more UE event in PICU for 2 years after the programme.

Conclusions

Unplanned extubation may cause several adverse consequences, but it is preventable. The education programme could reinforce the knowledge and increase the awareness of nurses.

Abstract

A quality improvement project to achieve early initiation of parenteral nutrition to newborn preterm infants in QMH NICU

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Background and aims

Preterm infants required parenteral nutrition(PN) to meet their nutritional requirements if they cannot tolerate sufficient enteral feeds. PN should be initiated promptly after birth to improve growth outcomes. When tailor-made PN is not available, ready-made standard PN will be used. Long transit time of standard TPN from pharmacy to NICU caused delayed initiation of PN. Therefore, a quality improvement project was started in December 2022.

The aims of this project are:

(1) Reduce the time of initiation of PN of newborn preterm infants by 30%

(2) Reduce the non-value added time from acquisition to administration of standard PN by 30 minutes

(3) No incidence due to expired PN or inappropriate storage temperature of PN

(4) Reduce staff workload related to acquisition of standard PN

Methods

1) A multidisciplinary workgroup was formed to discuss this project.

2) Nurses and pharmacists collaborated and developed a standardized workflow, which included:
   - Change of storage location of standard PN from pharmacy to NICU
   - Regular monitoring of the storage temperature PN
   - Mechanism for checking expiry date and replenishment of standard PN

3) The workflow was implemented on 1/2/2023. A retrospective chart review was performed from October 2022 to May 2023.

Results

1) The time of initiation of PN reduced by 1.75 hours, which was 31%.

2) The non-value-added time from acquisition to administration of PN was reduced by 35 minutes.

3) No incidence related to inappropriate storage temperature of standard PN or expired standard PN.

4) Staffs' workload was reduced as no hospital porter service was required and a reduction of 10 minutes working time of pharmacist for each acquisition of standard PN.

Conclusions

This program can reduce the time of initiation of PN of newborn preterm infants, non-value-added time from acquisition to administration of standard PN and staff workload without occurrence of adverse event.

Abstract

Oxytocin receptor gene variation rs53576 and peer problems in children from high-risk households

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Background and aims

The oxytocin receptor gene (OXTR) variant rs53576 has been linked to social and emotional behavior. Individuals carrying the G allele (AG/GG) have been found to exhibit higher levels of general sociality compared to those homozygous for the A allele. However, studies have identified gender differences in this association, specifically highlighting smaller inter-individual differences in oxytocinergic function among females. Furthermore, according to the differential susceptibility theory, individuals who are considered vulnerable can be influenced both negatively and positively by environmental factors. As such, G allele carriers, especially males, may encounter more peer problems due to their higher involvement in social activities. This study aimed to examine the relationship between the OXTR rs53576 polymorphism and peer problems in children from high-risk households.

Methods

From a local young mother support program, a total of 28 children (13 boys and 15 girls) between the ages of 6 and 13 years were recruited for this study. The mothers of these children completed the peer problem subscale of the Strength and Difficulties Questionnaires. Furthermore, buccal swab samples were collected from the child participants and genotyped for OXTR rs53576.

Results

In the overall sample, children carrying the G allele (AG/GG) of rs53576 (n=13, mean(SD) = 3.31 (1.84)) exhibited more peer problems compared to those who were AA homozygotes (n=15, mean(SD) = 1.93(1.16)) (p=.024). Additionally, there was a significant interaction between the OXTR rs53576 polymorphism and gender in relation to peer problems ($F(1,23) = 6.00$, $p = .022$)), indicating that the differences in peer problems between G allele carriers (n=7) and AA homozygotes (n=6) were only significant among males ($\beta = .90$, $p = .022$).

Conclusions

Genetically sociable children may be responsive to both positive and negative aspects of social interactions. It is recommended that these children receive early training in emotional regulation.

Abstract

Introduction of A New Pain Assessment Tool - The Comfortneo Scale in NICU

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Background and aims

Neonatal pain assessment is essential to optimal pain management. The present in our ward is one-dimensional and mainly focus on measuring post-operative pain. We therefore introduce the COMFORTneo scale as a new comprehensive pain scale to provide consistency in measuring and evaluating the presence of pain. Aims of this project were to: (1)Reinforce the importance of regular neonatal pain assessment; (2) Enhance knowledge of nurses on the COMFORTneo scale; (3)Enhance nurses' clinical competencies in performing neonatal pain assessments by using the COMFORTneo scale.

Methods

One group pretest-posttest design was used to evaluate nurses' knowledge of neonatal pain monitoring and the COMFORTneo scale. Small group education talk was delivered to all NICU nurses. Post-test questionnaires were conducted after the talk, and nurses were required to use the scale to evaluate the pain level of infant in 3 selected videos. 30 NICU nurses were recruited by convenience sampling to participate in a trial implementation of the COMFORTneo scale by performing pain assessment on patients simultaneously but independently with the workgroup members.

Results

More participants can point out pain assessment should not only be performed after surgery. 82.5% more participants can point out the importance of regular pain assessment. The nurses' knowledge on the scale improved as all participants can spot all 7 behavioral items included in the scale and the standard time needed for observation. The difference between the COMFORTneo score obtained by workgroup members and participants in post-test and trial implementation had no statistical significance ($p>0.05$), which indicated that participants could use the scale appropriately and competently.

Conclusions

The introduction program successfully raised NICU nurses' awareness and knowledge of neonatal pain monitoring and nurses' clinical competencies in using the scale. We suggest developing a workflow for pain assessment and management including both non-pharmacological and pharmacological intervention with the pediatrician team on the way forward.

Abstract

Assessing Facial Weakness in Facioscapulohumeral Muscular Dystrophy Using an Interpretable Machine Learning Model

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Background and aims

Facioscapulohumeral Muscular Dystrophy (FSHD) is one of the most prevalent neuromuscular disorders. A defining characteristic of FSHD is facial weakness, ranging from minimal weakness to asymmetrical myopathic faces. Timely weakness is pivotal in guiding genetic testing and ensuring precise healthcare. However, identifying facial weakness presents challenges, as it can be easily overlooked or exhibit variations among different observers. This study aims to develop an interpretable machine-learning model for assessing facial weakness in FSHD.

Methods

This prospective study involved genetically-confirmed FSHD patients from the HK Neuromuscular Disorders Patient Registry, covering all public hospitals.[1] Healthy volunteers were recruited as controls at the HKU. Eight facial expressions were acquired from the suggestions in Loonen et al.[2] Subsequently, clinical neurologists assessed weakness according to Comprehensive Clinical Evaluation Form [A1:Severe upper AND lower facial weakness, A2:upper AND lower facial weakness, A3:upper OR lower facial weakness].[3] Utilizing 8 facial expressions and 10 asymmetry features, we developed a machine learning workflow which starts with facial feature extraction, followed by a 2D convolutional layer and Rectified Linear Unit for predictions. Shapley values were utilized to assess the contributions of each expression/asymmetry feature and thus endowed the model interpretability.

Results

In the study, 37 FSHD patients (Category A1:8 patients, A2:15 patients, A3:11 patients) and 27 healthy controls were included. Utilizing 10-fold cross-validation, the model exhibited a mean accuracy of 87.1%±10.2%. Notably, puffing of the cheeks emerged as the most influential facial expression in the model prediction. Furthermore, the model could differentiate and utilize different asymmetry features to distinguish the patients and healthy controls.

Conclusions

The initial findings from the model suggest that machine learning can effectively detect facial weakness with appropriate reasoning. However, further validation using a separate set and larger number of patients and healthy controls is essential to confirm the accuracy and reliability.

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Abstract

Advancing Clinical Research in Neuromuscular Disorders: A Five-Year Review of the Hong Kong Patient Registry (2019-2024)

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Background and aims

Neuromuscular disorders (NMDs) constitute a heterogeneous group of rare diseases that affect the peripheral nervous system. To facilitate robust and reliable research through improved patient enrolment, we established the Hong Kong Neuromuscular Disorders Patient Registry (HKNMDPR). This study aimed to explore and report on the applications from this registry.

Methods

Based on the international Treat-NMD global network, we designed patient and professional-reported questionnaires to collect demographic, clinical, and genetic characteristics. Patient recruitment involved both pediatric and adult NMD clinics in three HKU-affiliated hospitals, with referrals from other hospitals. Additionally, we established an online platform and promoted it through collaboration with Rare Disease Hong Kong (IRB approval number: UW19-356/HKCH-REC-2020-075). The pathogenicity of each variant of uncertain significance (VUS) was assessed using the combined annotation dependent depletion (CADD) tool. A score of ≥20 would be predictive a top 1.0% most pathogenic possible mutation.

Results

As of 25 January 2024, the registry has enrolled 263 NMD patients with >20 different diagnoses (median age: 16.6 years, range: 0.1-82.0 years). 172 patients (65.4%) were male. The most common diagnoses were facioscapulohumeral muscular dystrophy 24.3%, n=64), dystrophinopathies (17.1%, n=45) SMA (15.6%, n=41). Molecular diagnoses were reached for 82.1% of patients (n=216), including peripheral neuropathy (10 genes), congenital myopathy (9 genes), congenital muscular dystrophy (7 genes), congenital myasthenic syndrome (3 genes), and myotonic dystrophy type 1 *(DMPK)*. Eleven patients had VUS that exhibited compatible clinical features (median CADD: 26.3, range:10.8-35.0), with 8 who had CADD ≥20. The registry facilitated 13 clinical studies, including clinical trials, epidemiology, telerehabilitation, treatment outcomes, machine-learning and vaccination studies.

Conclusions

The HKNMDPR contributed research participation and engagement between clinicians and the local NMD network, thereby advancing knowledge to enhance NMD care and treatments. Further collaboration with international networks and inclusion of longitudinal data could further enhance knowledge in NMDs.

Abstract

Psychosocial Difficulties in Hong Kong Preschoolers

Author(s)

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Background and aims

Numerous studies have explored psychosocial difficulties(PD) in school-aged children, but research on PD in preschoolers, a vulnerable group, remains limited. This study aims to investigate factors associated with PD which include externalising problems(EP) such as hot tempers and difficulty concentrating, as well as internalising problems(IP) like many worries and often unhappiness in preschoolers.

Methods

A territory-wide, school-based study was conducted between 2020 and 2022, involving 1926 preschoolers (mean (SD) age:4.39(1.14) years, 49.1% female). Their parents completed a questionnaire encompassing their children's wake-up and bedtime, sleep latency, electronic device usage, parent-child interactions, and PD. Parent-child interactions were assessed using the Chinese parent-child interaction scale and PD using the Strengths and Difficulties Questionnaire, which defines 80% scores as ‘close to average’ based on a UK community survey, this study labeled the remaining 20% scores as ‘at risk’.

Results

In our study cohort, 34.0% of preschoolers were at risk of EP, 66.1% were at risk of IP, notably EP and IP at risk were comorbid 27.8%. Logistic regression analyses indicated that EP were associated with longer sleep latency(OR=1.76, p<0.001), male(OR=1.54, p<0.001), and lower parent-child interaction(OR=0.93, p <0.001), while IP were associated with longer sleep latency (OR=1.72, p<0.05), shorter sleep duration(OR=1.29, p<0.05), male(OR=1.23, p<0.05), longer screen time(OR=1.06, p<0.05), younger age(OR=0.75, p<0.001) and lower parent-child interaction scores (OR=0.96, p <0.001). vaccination studies.

Conclusions

PD are common in Hong Kong preschoolers. Our findings emphasize the importance for parents to increase parent-child recreation and learning activities, and limit screen time to mitigate PD. Parents are also advised to regulate their children’s sleep habits to ensure that their children get enough sleep duration and have shorter sleep latency.

Abstract

PD1^{+}CD4^{+} T cells promote receptor editing and suppress autoreactivity of CD19^{+}CD21^{low} B cells within the lower respiratory airways in adenovirus pneumonia

Author(s)

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Background and aims

Human adenovirus (HAdV) pneumonia poses a major health burden for young children. However, factors that contribute to disease severity remain elusive.

Methods

We analyzed immune cells from bronchoalveolar lavage (BAL) of children with HAdV pneumonia by flow cytometry and single-cell RNA sequencing.

Results

In HAdV pneumonia patients, CD21^{low} B cells were heavily expanded, which was associated with increased autoantibody concentrations and disease severity. Myeloid cells, PD-1^{+}CD4^{+} T helper cells and CD21^{low} B cells formed tertiary lymphoid structures within the respiratory tracts. Myeloid cells promoted autoantibody production by expressing high amounts of B cell activating factor (BAFF). In contrast, PD-1^{+}CD4^{+} T helper cells induced production of IgG_1 and IgG_3 antibodies but suppressed autoreactive IgG production by initiating B cell receptor editing.

Conclusions

This study revealed the cellular components involved in the protective or autoreactive immune pathways in the respiratory tract, and these findings provide potential therapeutic targets for severe HAdV lower respiratory tract infections.

CME/CNE **Accreditations**

CME Credits

College	13/04/2024 (09:00- 18:00)
The Hong Kong College ofAnaesthesiologists	7.5
Hong Kong College of Community Medicine	Pending
The College of Dental Surgeonsof Hong Kong	7
Hong Kong College of Emergency Medicine	6
The Hong Kong College of Family Physicians	5
The Hong Kong College of Obstetricians and Gynaecologists	5
The College of Ophthalmologists of Hong Kong	Pending
The Hong Kong College of Otorhinolaryngologists	3.5
Hong Kong College of Paediatricians	6
The Hong Kong College of Pathologists	7.5
Hong Kong College of Physicians	3
The Hong Kong College of Psychiatrists	Pending
Hong Kong College of Radiologists	Pending
The College of Surgeons of Hong Kong	Pending
CNE Credits	6

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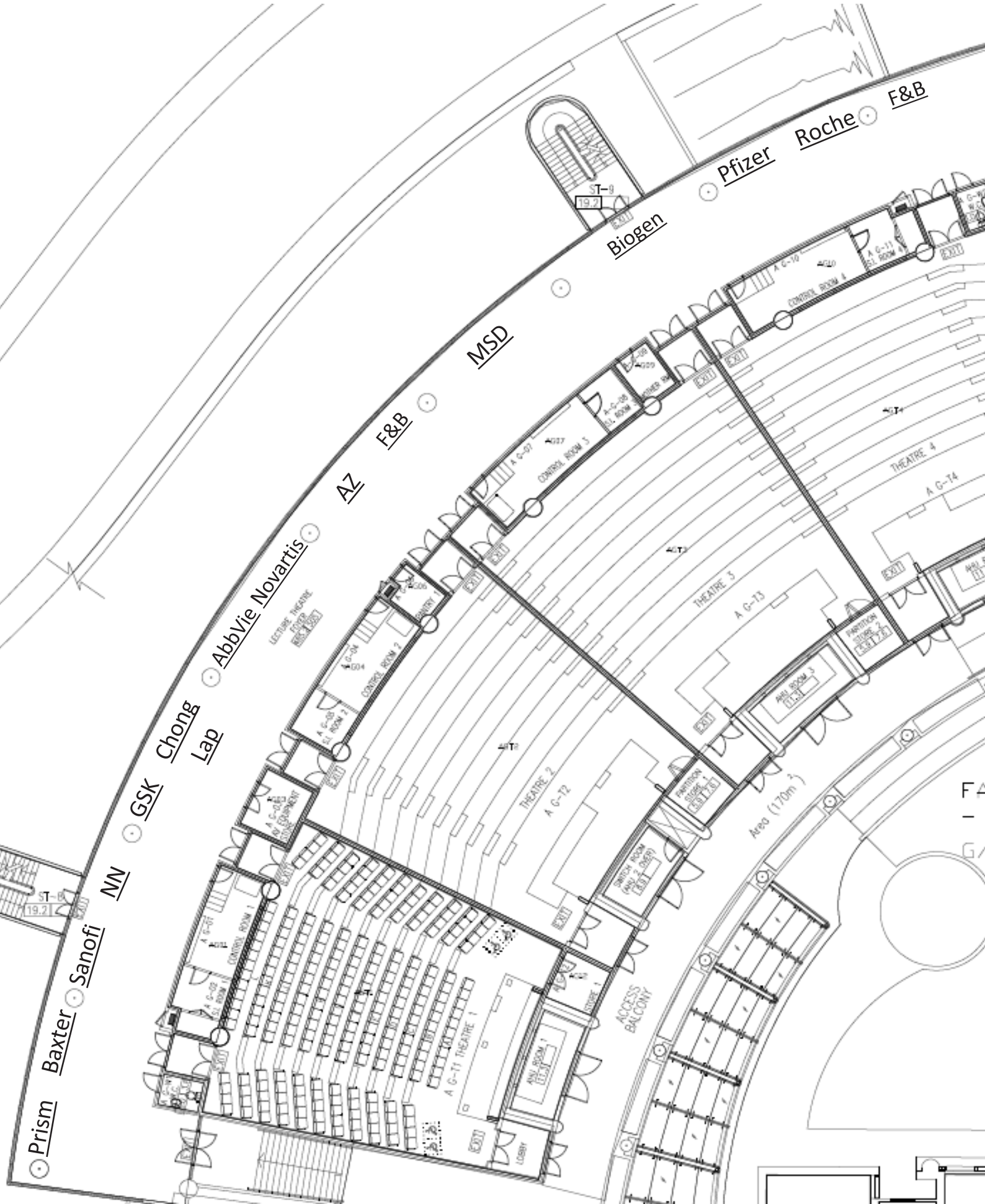

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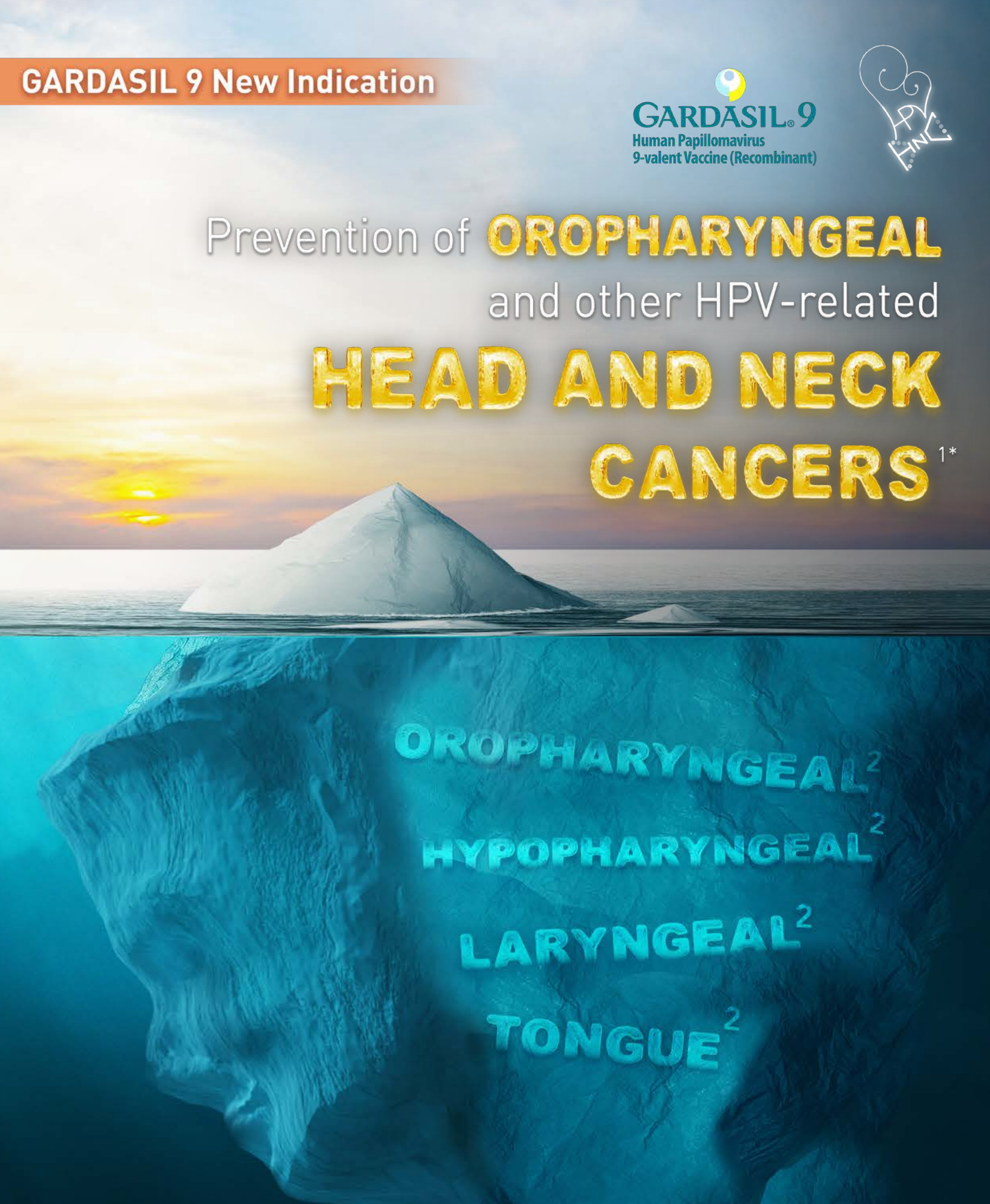
9-valent Vaccine (Recombinant)

Prevention of OROPHARYNGEAL and other HPV-related HEAD AND NECK CANCERS[1*]



*caused by HPV types 16, 18, 31, 33, 45, 52 and 58, from the age of 9 through 45 years

References: 1. Hong Kong Product Circular (GARDASIL® 9 MSD) **2.** Centers for Disease Control and Prevention. Head and Neck Cancers. https://www.cdc.gov/cancer/headneck/index.htm Accessed on: April 13, 2023.

Selected Safety Information Indications: GARDASIL® 9 is indicated for active immunisation of individuals from the age of 9 years against the following HPV diseases: Premalignant lesions and cancers affecting the cervix, vulva, vagina and anus caused by vaccine HPV types. Genital warts (Condyloma acuminata) caused by specific HPV types. GARDASIL® 9 is indicated for active immunisation of individuals from the age of 9 through 45 years against the following HPV diseases: Cancers affecting the oropharynx and other head and neck sites caused by HPV types 16, 18, 31, 33, 45, 52, and 58. **Contraindications:** Hypersensitivity to the active substances or to any of the excipients. Individuals with hypersensitivity after previous administration of GARDASIL® 9 or Gardasil should not receive GARDASIL® 9. **Precautions:** The decision to vaccinate an individual should take into account the risk for previous HPV exposure and potential benefit from vaccination. As with all injectable vaccines, appropriate medical treatment and supervision should always be readily available in case of rare anaphylactic reactions following the administration of the vaccine. Vaccinees should be observed for approximately 15 minutes after vaccination. It is important that procedures are in place to avoid injury from fainting. Vaccination should be postponed in individuals suffering from an acute severe febrile illness. However, the presence of a minor infection, such as a mild upper respiratory tract infection or low-grade fever, is not a contraindication for immunisation. As with any vaccine, vaccination with GARDASIL® 9 may not result in protection in all vaccine recipients. The vaccine will only protect against diseases that are caused by HPV types targeted by the vaccine. Therefore, appropriate precautions against sexually transmitted diseases should continue to be used. The vaccine is for prophylactic use only and has no effect on active HPV infections or established clinical disease. The vaccine has not been shown to have a therapeutic effect. The vaccine is therefore not indicated for treatment of cervical, vulvar, vaginal, anal, oropharyngeal and other head and neck cancers, high-grade cervical, vulvar, vaginal and anal dysplastic lesions or genital warts. It is also not intended to prevent progression of other established HPV-related lesions. GARDASIL® 9 does not prevent lesions due to a vaccine HPV type in individuals infected with that HPV type at the time of vaccination. Vaccination is not a substitute for routine cervical screening. Routine cervical screening remains critically important and should follow local recommendations. There are no data on the use of GARDASIL® 9 in individuals with impaired immune responsiveness. Safety and immunogenicity of a qHPV vaccine have been assessed in individuals aged from 7 to 12 years who are known to be infected with human immunodeficiency virus (HIV). Individuals with impaired immune responsiveness, due to either the use of potent immunosuppressive therapy, a genetic defect, Human Immunodeficiency Virus (HIV) infection, or other causes, may not respond to the vaccine. This vaccine should be given with caution to individuals with thrombocytopaenia or any coagulation disorder because bleeding may occur following an intramuscular administration in these individuals. There are no safety, immunogenicity or efficacy data to support interchangeability of GARDASIL® 9 with bivalent or quadrivalent HPV vaccines. **Adverse events:** The most common adverse reactions observed with GARDASIL® 9 were injection-site adverse reactions and headache. These adverse reactions usually were mild or moderate in intensity. Very common (≥1/10) or common (≥1/100 to <1/10) side effects include headache, injection site pain, swelling or erythema, dizziness, nausea, pyrexia, fatigue, injection site pruritus or bruising, etc. For detailed adverse events, please consult the full prescribing information. **Before prescribing, please consult the full prescribing information.**

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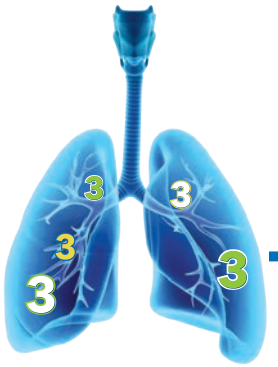

TARGET OUR BURDEN

CHP SCVPD recommended PCV15 over other PCVs[1*]

Included in Hong Kong **Vaccination Subsidy Scheme**[2]

Serotype 3 IPD rebounded in 2023 at **44%**[3]

* under the Hong Kong Childhood Immunisation Programme and the Government Pneumococcal Vaccination Programme

INFANTS

According to a Phase 3 clinical trial in healthy infants aged 42 to 90 days (n=1,720),
When compared to PCV13, Vaxneuvance® induced

~73%

increases IgG GMC against SEROTYPE 3,

GMC Ratio = 1.73 (95% CI: 1.61-1.87)
Superiority criteria: lower bound of the 2-sided 95 % CI for the IgG GMC ratio (V114/PCV13) >1.2

ADULTS

According to Phase 3 clinical trial in adults aged ≥50 years (n=1,202),
When compared to PCV13, Vaxneuvance® induced

~60%

increases IgG GMC against SEROTYPE 3,

GMT Ratio = 1.60 (95% CI: 1.38-1.85)
Superiority criteria: lower bound of the 2-sided 95% CI of GMT ratio >1.2

Vaxneuvance® (PCV15) was noninferior[4a,5a] **to PCV13 for all 13 shared serotype**[4,5]

Vaxneuvance® (PCV15) was SUPERIOR[4b,5c] **to PCV13 for unique serotypes 22F and 33F**[4,5]

Gov Press Release

SCVPD recommendation

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[4a]in terms of OPA GMTs at 30 days postvaccination (lower bound of the 2 sided 95% CI >0.5), [4b]in terms of OPA GMTs and the proportions of participants with a ≥ 4-fold rise at 30 days postvaccination (lower bound of the 2-sided 95% CI >2.0 and 0.1, respectively) [5a]In terms of IgG response rates (proportion of participants meeting the serotype-specific IgG threshold value of ≥ 0.35µg/ml) at 30 days PD3 and IgG GMCs at 30 days PD4. (Non-inferiority criteria: for IgG response rates, the lower bound of the 2-sided 95 % CI for the between-group differences > -10 percentage points; for IgG GMCs, the lower bound of the 2-sided 95 % CI for the V114/PCV13 GMC ratios > 0.5), [5c]In terms of IgG response rates at 30 days PD3 and IgG GMCs at 30 days PD3 and 30 days PD4 (superiority criteria: for IgG response rates and IgG GMCs, the lower bound of the 2-sided 95 % CI for the between-group differences > 10 percentage points and > 2.0, respectively)

Safety Result: Adults: The majority of participants experienced at least 1 adverse event (67.9% after V114 and 58.2% after PCV13). The most frequently reported AEs (>5% of participants in either group) were the solicited events of injection-site pain, injection-site erythema, injection-site swelling, arthralgia, fatigue, headache, and myalgia.[4]
Children: The majority of participants experienced at least 1 adverse event (93.8% after V114 and 92.4% after PCV13). The overall proportions of participants with injection-site, systemic, vaccine-related, and serious AEs were generally comparable between treatment groups. The most common AEs were those solicited in the trial, with the 3 most frequently reported AEs being irritability, somnolence, and injection-site pain.[5]

Abbreviations: Adults: Adults ≥ 50 Years old; CHP: Centre for Health Protection; CI: confidence interval; GMC: geometric mean concentration; GMT: geometric mean titers; Infants: Healthy infants; IPD: invasive pneumococcal disease; OPA: opsonophagocytic activity; PCV13: 13-valent pneumococcal conjugate vaccine; PCV15: 15-valent pneumococcal conjugate vaccine; PD: post-dose; SCVPD: Scientific Committee on Vaccine Preventable Diseases

Study design: This was a phase 3, randomized, double-blind, active comparator- controlled study to evaluate the safety, tolerability, and immunogenicity of VAXNEUVANCE compared to PCV13 in healthy pneumococcal-vaccine naïve adults 50 years of age or older (Protocol V114-019). The study was conducted from June 2019 through March 2020 at 30 sites. The study enrolled 1,202 participants randomized in a 1:1 ratio to receive a single dose of Vaxneuvance (n=602) or PCV13 (n=600). Randomization was stratified by participant age at enrollment. The primary immunogenicity objectives were to compare Vaxneuvance to PCV13 for noninferiority of immune responses at 30 days postvaccination for shared serotypes (noninferiority met when lower bound of the 2 sided 95% CI of the OPA GMT ratio >0.5) and superiority of immune response at 30 days postvaccination for serotypes unique to Vaxneuvance (superiority met when lower bound of the 2-sided 95% CI of the OPA GMT ratio >2, and the lower bound of the 2-sided 95% CI of the difference between the proportions of participants with a ≥ 4-fold rise >0.1). The secondary immunogenicity objective was to assess superiority of immune response for serotype 3 at 30 days postvaccination (superiority met when lower bound of the 2-sided 95% CI of the OPA GMT ratio >1.2, and the lower bound of the 2-sided 95% CI of the difference between the proportions of participants with a ≥4-fold rise >0).[4]

This study was a phase 3, randomized, active comparator-controlled, double-blind study to evaluate the safety, tolerability, and immunogenicity of a 4-dose regimen of Vaxneuvance in healthy infants (protocol V114-029). It was conducted from June 2019 to May 2021. The study enrolled 1720 participants randomized in a 1:1 ratio to receive a 4-dose vaccination regimen of Vaxneuvance (n=858) or PCV13 (n=856). Primary immunogenicity objectives were to compare Vaxneuvance to PCV13 for non-inferiority for all serotypes using anti-PnPs serotype-specific IgG response rates (proportion of participants meeting the serotype-specific IgG threshold value of ≥0.35 Ig/ml) at 30 days PD3 and IgG geometric mean concentrations (GMCs) at 30 days PD3 and 30 days PD4. Serotypes 22F and 33F were compared to the lowest response rate or IgG GMC for any of the 13 shared serotypes among recipients of PCV13, excluding serotype 3. For IgG GMCs, the lower bound of the 2-sided 95% CI for the Vaxneuvance/ PCV13 GMC ratios needed to be >0.5 to meet non-inferiority criteria. Secondary objectives were to compare Vaxneuvance to PCV13 for superiority for IgG against serotypes 3, 22F, and 33F using anti-PnPs serotype-specific IgG response rates at 30 days PD3 and IgG GMCs at 30 days PD3 and 30 days PD4. For IgG response rates and IgG GMCs to serotypes 22F and 33F, the lower bound of the 2-sided 95% CI for the between-group differences needed to be >10 percentage points and >2.0, respectively, to meet superiority criteria. For shared serotype 3, superiority based on IgG response rates and IgG GMCs was demonstrated if the lower bound of the 2-sided 95% CI for the between-group was >0 percentage points and >1.2, respectively.[5]

References: 1. CHP. Frequently Asked Questions on Pneumococcal Vaccination. Available at: https://www.chp.gov.hk/en/features/100770.html. [Accessed on 28 DEC 2023]. 2. CHP. Details of Vaccination Subsidy Scheme - Pneumococcal Vaccination. Available at: https://www.chp.gov.hk/tc/features/103165.html#10004. [Accessed on: 7 DEC 2023]. 3. Centre for Health Protection, Communicable Disease Watch. *IPD* (2015-2023) 4. Platt HL *et al; Vaccine* 2022; 40(1):162-172. doi: 10.1016/j.vaccine.2021.08.049 5. Lupinacci R *et al; Vaccine* 2023;41(5):1142-1152. doi: 10.1016/j. vaccine.2022.12.054. 6. Hong Kong Product Circular, Vaxneuvance, MSD.

Vaxneuvance Selected Safety Information: Indications: • Vaxneuvance is indicated for active immunisation for the prevention of invasive disease, pneumonia and acute otitis media caused by *Streptococcus pneumoniae* in infants, children and adolescents from 6 weeks to less than 18 years of age • Vaxneuvance is indicated for active immunisation for the prevention of invasive disease and pneumonia caused by *Streptococcus pneumoniae* in individuals 18 years of age and older. • The use of Vaxneuvance should be in accordance with official recommendations. **Contraindications:** Hypersensitivity to the active substances, to any of the excipients, or to any diphtheria toxoid-containing vaccine. **Precautions:** • In order to improve the traceability of biological medicinal products, the name and the batch number of the administered product should be clearly recorded. • Vaxneuvance must not be administered intravascularly. • As with all injectable vaccines, appropriate medical treatment and supervision should always be readily available in case of a rare anaphylactic event following the administration of the vaccine. Vaccination should be postponed in individuals suffering from acute severe febrile illness or acute infection. The presence of a minor infection and/or low-grade fever should not delay vaccination. • As with other intramuscular injections, the vaccine should be given with caution to individuals receiving anticoagulant therapy, or to those with thrombocytopenia or any coagulation disorder such as haemophilia. Bleeding or bruising may occur following an intramuscular administration in these individuals. • The potential risk of apnoea and the need for respiratory monitoring for 48-72 hours should be considered when administering the primary immunisation series to very premature infants (born ≤ 28 weeks of gestation) and particularly for those with a previous history of respiratory immaturity. As the benefit of vaccination is high in this group of infants, vaccination generally should not be withheld or delayed. • Immunocompromised individuals, whether due to the use of immuno-suppressive therapy, a genetic defect, HIV infection, or other causes, may have reduced antibody response to active immunisation. • Safety and immunogenicity data for Vaxneuvance are available for individuals living with HIV infection. Safety and immunogenicity data for Vaxneuvance are not available for individuals in other specific immunocompromised groups (e.g., haematopoietic stem cell transplant) and vaccination should be considered on an individual basis. • As with any vaccine, vaccination with Vaxneuvance may not protect all vaccine recipients. Vaxneuvance will only protect against *Streptococcus pneumoniae* serotypes included in the vaccine. • This medicinal product contains less than 1 mmol sodium (23 milligrams) per dose, i.e. essentially 'sodium-free'. **Adverse events**: The most frequently reported adverse reactions following vaccination with Vaxneuvance were solicited. The most frequent adverse reactions were pyrexia, injection-site pain, fatigue, myalgia, headache, injection-site swelling, injection-site erythema and arthralgia. The majority of solicited adverse reactions were mild (based on intensity or size) and of short duration (≤ 3 days); severe reactions (defined as being extremely distressed or unable to do usual activities or size > 7.6 cm) occurred in ≤4.5% of children and adolescents; severe reactions (defined as an event that prevents normal daily activity or size > 10 cm) occurred in ≤1.5% of adults across the clinical program. • Older adults reported fewer adverse reactions than younger adults. • For detailed side effects, please consult the full prescribing information.

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APPROVED Treatment

for paediatric patients aged 3 years and above, with neurofibromatosis type 1 (NF1) and symptomatic, inoperable plexiform neurofibromas (PN)[1]

LESS
TUMOUR VOLUME

MORE
LIVING LIFE

66% of patients achieved ≥ 20% tumour reduction*,†,1

NCI = National Cancer Institute; NF1 = Neurofibromatosis type 1; PN = Plexiform neurofibromas

* According to an analysis of the National Cancer Institute (NCI) data.[1]
† 66% of patients achieved complete response (defined as disappearance of the target PN), or confirmed partial response (defined as ≥20% reduction in PN volume, confirmed at a subsequent tumour assessment within 3–6 months).[1]

Reference: 1. Koselugo Hong Kong Prescribing Information. Nov 2021.

Presentation: Koselugo 10 mg and 25 mg hard capsules (as hydrogen sulfate). **Indications:** Treatment of symptomatic, inoperable plexiform neurofibromas (PN) in paediatric patients with neurofibromatosis type 1 (NF1) aged 3 years and above. **Dosage:** 25mg/m2 of body surface area (BSA), taken orally twice daily. Swallowed whole with water and taken on empty stomach. Continue treatment as long as clinical benefit is observed, or until PN progression or unacceptable toxicity. Interruption and/or dose reduction or permanent discontinuation may be required based on individual safety and tolerability. **Contraindications:** Hypersensitivity to the active substance or excipients; severe hepatic impairment. **Precautions:** Evaluate with echocardiogram for left ventricular ejection fraction (LVEF) before initiation of treatment and at approximately 3-month intervals, or more frequently as clinically indicated. Ophthalmological evaluation prior to treatment initiation and at any time patient reports new visual disturbances. Monitor liver laboratory values, for abnormalities, specifically AST and ALT elevations, before initiation and at least monthly during 6 first months. Skin rash, paronychia and hair changes have been reported. Advise not to take any supplemental vitamin E. Not to administer to patients who are unable or unwilling to swallow the capsule whole due to risk of choking. Not recommended in women of child bearing potential without contraception. Pregnancy. Breast-feeding. Drive and use machines. **Interactions:** Strong and moderate inhibitors of CYP3A4 and CYP2C19, strong and moderate CYP3A4 inducers, OAT3 substrates, supplemental vitamin E. **Undesirable effects:** Vision blurred; Dyspnoea; Vomiting; Diarrhoea; Nausea; Stomatitis; Dry mouth; Rash; Dry skin; Rash acneiform; Paronychia; Hair changes; Asthenic events; Pyrexia; Peripheral oedema; Facial oedema; Blood CPK increased; Hypoalbuminaemia; AST increased; Haemoglobin decreased; ALT increased; Blood creatinine increased; Ejection fraction decreased; Increased blood pressure. **Full local prescribing information is available upon request. API.HK.KOS.0721**

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for patients with paediatric-onset hypophosphatasia (HPP) to treat the bone manifestations of the disease,[1,2] supported by up to 7 years of clinical data.[2-4]

Strensiq® resulted in substantial healing of rachitic chest and improved respiratory function. Its use was associated with improved survival compared with untreated historical controls [1-3]

Long-term treatment with Strensiq® demonstrated early and sustained improvements in bone mineralisation over 7 years [1,2]

Strensiq® has demonstrated improvements in mobility and functional assessments in real-world settings [1]

Strensiq (asfotase alfa) Abbreviated Prescribing Information

Presentation: Each ml of solution contains 40 mg of asfotase alfa. Each vial contains 1.0 ml solution and 40 mg of asfotase alfa (40 mg/ml). **Indication**: For long-term enzyme replacement therapy in patients with paediatric-onset hypophosphatasia to treat the bone manifestations of the disease. **Dosage**: Recommended dosage regimen of asfotase alfa is 2 mg/kg of body weight administered subcutaneously three times per week, or a dosage regimen of 1 mg/kg of body weight administered subcutaneously six times per week. Maximum recommended dose of asfotase alfa is 6 mg/kg/week. **Contraindications**: Severe or life-threatening hypersensitivity to the active substance or to any of the excipients if hypersensitivity is not controllable. **Precautions**: Hypersensitivity reactions; injection reaction; lipodystrophy; craniosynostosis; ectopic calcification; serum parathyroid hormone and calcium; disproportionate weight gain. **Use in Pregnancy**: Asfotase alfa is not recommended during pregnancy and in women of childbearing potential not using contraception. **Adverse Reactions**: Very common (≥10%): Headache, erythema, pain in extremity, injection site reactions, pyrexia, irritability, contusion. Common (≥1% to <10%): Injection site cellulitis, increased tendency to bruise, anaphylactoid reactions, hypersensitivity, hot flush, hypoaesthesia oral, nausea, skin discolouration, skin disorder, myalgia, nephrolithiasis, chills, scar. **Full local prescribing information is available upon request.**

Reference:
1. Strensiq Hong Kong Prescribing Information. Apr 2023.
2. Whyte MP, Simmons JH, Moseley S, et al. Asfotase alfa for infants and young children with hypophosphatasia: 7 year outcomes of a single-arm, open-label, phase 2 extension trial. Lancet Diabetes Endocrinol. 2019;7(2):93-105.
3. Hofmann CE, Harmatz P, Vockley J, et al. Efficacy and Safety of Asfotase Alfa in Infants and Young Children With Hypophosphatasia: A Phase 2 Open-Label Study. J Clin Endocrinol Metab. 2019;104(7):2735-2747. doi:10.1210/jc.2018-02335
4. Kishnani PS, Rockman-Greenberg C, Rauch F, et al. Five-year efficacy and safety of asfotase alfa therapy for adults and adolescents with hypophosphatasia. Bone. 2019;121:149-162. doi:10.1016/j.bone.2018.12.011

Please visit contactazmedical.astrazeneca.com, for (1) enquiring Medical Information (MI), (2) reporting Individual Case Safety Report (ICSR) and/or (3) reporting Product Quality Complaint (PQC) to AstraZeneca Hong Kong Limited.

AstraZeneca 阿斯利康

AstraZeneca Hong Kong Limited
Unit 1-3, 11/F, China Taiping Finance Centre,
18 King Wah Road, North Point, Hong Kong
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HK-10099 27/03/2024

Biogen

SPINRAZA®
(nusinersen) 12 mg solution for injection

INDICATION
SPINRAZA®
is indicated for the treatment
of 5q Spinal Muscular Atrophy (SMA)[1]

UNLOCK THEIR INNER PERFORMER WITH SPINRAZA®

THE FIRST APPROVED DISEASE-MODIFYING TREATMENT FOR INDIVIDUALS WITH SPINAL MUSCULAR ATROPHY (SMA)[2]

†Age at time of photo shoot. The photograph is for illustrative purposes only, and depicts the benefits of the named individual. Individual results may vary.
Prescribing Information: SPINRAZA® (nusinersen) 12 mg/5ml solution for injection

Please refer to the PI for further information. **Indication:** For treatment of 5q Spinal Muscular Atrophy (SMA). **Dosage and administration:** Treatment with Spinraza should only be initiated by a physician with experience in the management of spinal muscular atrophy (SMA). The decision to treat should be based on an individualised expert evaluation of the expected benefits of treatment for that individual, balanced against the potential risk of treatment with Spinraza. Patients with profound hypotonia and respiratory failure at birth, where Spinraza has not been studied, may not experience a clinically meaningful benefit due to severe SMN protein deficiency. Recommended dose is 12mg (5ml) per administration. Initiate as early as possible after diagnosis with 4 loading doses on day 0, 14, 28 and 63. A maintenance dose should be administered once every 4 months thereafter. If a loading dose is delayed or missed Spinraza should be administered as soon as possible, with at least 14 days between doses, and continue dosing at the prescribed frequency. If a maintenance dose is delayed or missed, Spinraza should be administered as soon as possible, and dosing continued every 4 months. Information on long term efficacy is not available. Continuation of therapy should be reviewed regularly and considered on an individual basis depending on the patient's clinical presentation and response to therapy. Spinraza is for intrathecal use by lumbar puncture. Treatment should be administered by health care professionals experienced in performing lumbar punctures. Spinraza is administrated as an intrathecal bolus over 1 to 3 minutes, using a spinal anaesthesia needle. The injection must not be administered in areas of the skin where there are signs of infection or inflammation. It is recommended that the volume of cerebral spinal fluid (CSF), equivalent to the volume of Spinraza to be injected, is removed prior to administration of Spinraza. Sedation and imaging techniques may be required to aid administration, particularly in younger patients and in patients with scoliosis. Aseptic technique should be used when preparing and administering Spinraza. **Special populations:** Spinraza has not been studied in patients with renal impairment nor with hepatic impairment. **Contraindications:** Hypersensitivity to nusinersen or to any of the excipients such as sodium dihydrogen phosphate dihydrate, disodium phosphate, sodium chloride, potassium chloride, calcium chloride dihydrate, magnesium chloride hexahydrate, sodium hydroxide and hydrochloric acid (for pH adjustment) and water for injections. **Special warnings and precautions:** Lumbar puncture: Adverse reactions and complications (e.g., headache, backpain, vomiting). Thrombocytopaenia and coagulation abnormalities, including acute severe thrombocytopaenia, have been observed after administration of other subcutaneous or intravenous antisense oligonucleotides. Appropriate testing is recommended prior to administration if clinically indicated. Renal toxicity observed after administration of other subcutaneous or intravenous antisense oligonucleotides. Appropriate testing is recommended prior to administration if clinically indicated. Further evaluation should be considered for persistent elevated urinary protein. Hydrocephalus not related to meningitis or bleeding has been reported. Some patients were implanted with a ventriculo-peritoneal shunt. In patients with decreased consciousness, evaluation for hydrocephalus should be considered. The benefits and risks of treatment maintenance/use of ventriculo-peritoneal shunt should be carefully considered. **Drug interactions:** No interaction studies have been performed. **Pregnancy and lactation:** As a precaution, avoid use in pregnancy. A benefit-risk evaluation of the use during breastfeeding should be undertaken. There are no data on the potential impacts on fertility in humans. Spinraza has no or negligible influence on the ability to drive and use machines. **Undesirable effects:** In clinical trials, the most commonly reported side effects were associated with lumbar puncture (headache, vomiting and back pain). Meningitis have been observed with unknown frequency from the post marketing setting. Communicating hydrocephalus, aseptic meningitis and hypersensitivity (e.g. angioedema, urticaria and rash) has also been reported. The incidence of treatment-emergent anti-drug antibodies (ADA) was low (4%), yet individual safety data for the treatment-emergent ADA-positive cases were received. See PI for full list of side effects.

Legal classification: Part 1, Schedule 1 & Schedule 3 Poison. Sale Requirement: Prescription only Medicines. Pack size: SPINRAZA 12 mg solution for injection: 1 box containing 1 vial.
Registration number: HK-65896. Certificate Holder: Zuellig Pharma Ltd, 5/F, Berkshire House, Taikoo Place, 25 Westlands Road, Quarry Bay, Hong Kong. Date of last revision of Prescribing Information: May 2021

Adverse events should be reported to Drugsafety-HongKong@biogen.com. Additional information can be found in the package leaflet.

1. SPINRAZA@Summary of Product Characteristics. 2. Shorrock HK, et al. Drugs. 2018;78(3):293-305.
 Date of preparation: Jun 2022. Biogen-172315-HK-06/2022
Rm 45-102, 45th Floor, Lee Garden One, 33 Hysan Avenue, Causeway Bay, Hong Kong

Biogen

SPINRAZA™ (nusinersen) injection 12 mg/5 mL

CLINICAL AND REAL-WORLD STUDIES SHOW

IS POSSIBLE

SPINRAZA™ HELPS PATIENTS DO MORE, COMPARED WITH SHAM-CONTROL AND NATURAL HISTORY[1,2]

Individual results may vary from patient to patient and based on progression of the disease and duration of therapy.

In pivotal randomized controlled trials, SPINRAZA™ demonstrated clinically and statistically meaningful improvements in motor function compared with sham-control.[1]

In supportive and real-world studies, pre-symptomatic patients through adults improved relative to natural history.[1,2]

CARLEE // AGE 11// BAKER
TREATED WITH SPINRAZA FOR 6+ YEARS
"This is hope for her future."

13,000+
PATIENTS
have been treated with SPINRAZA worldwide*

8,500+
CHILDREN
have been treated with SPINRAZA worldwide*

FROM **3 days** TO **80 years old,**[*†]
there's someone from almost every age group who has taken SPINRAZA

*Based on commercial patients, early access patients, and clinical trial participants through May 2022.
†SPINRAZA pivotal studies included patients from 3 days to 16 years of age at first dose, but did not include sufficient numbers of subjects aged 65 and older to determine whether they respond differently from younger patients.
Pictures depicted are inspired by real people living with SMA and are for illustrative purposes only.
SMA=Spinal muscular atrophy. **References: 1.** SPINRAZA™ Summary of Product Characteristics. **2.** Coratti G, et al. Orphanet J Rare Dis. 2021;16:430.

Prescribing Information: SPINRAZA® (nusinersen) 12 mg/5ml solution for injection
Please refer to the PI for further information. Indication: For treatment of 5q Spinal Muscular Atrophy (SMA). Dosage and administration: Treatment with Spinraza should only be initiated by a physician with experience in the management of spinal muscular atrophy (SMA). The decision to treat should be based on an individualised expert evaluation of the expected benefits of treatment for that individual, balanced against the potential risk of treatment with Spinraza. Patients with profound hypotonia and respiratory failure at birth, where Spinraza has not been studied, may not experience a clinically meaningful benefit due to severe SMN protein deficiency. Recommended dose is 12mg (5ml) per administration. Initiate as early as possible after diagnosis with 4 loading doses on day 0, 14, 28 and 63. A maintenance dose should be administered once every 4 months thereafter. If a loading dose is delayed or missed Spinraza should be administered as soon as possible, with at least 14 days between doses, and continue dosing at the prescribed frequency. If a maintenance dose is delayed or missed, Spinraza should be administered as soon as possible, and dosing continued every 4 months. Information on long term efficacy is not available. Continuation of therapy should be reviewed regularly and considered on an individual basis depending on the patient's clinical presentation and response to therapy. Spinraza is for intrathecal use by lumbar puncture. Treatment should be administered by health care professionals experienced in performing lumbar punctures. Spinraza is administrated as an intrathecal bolus over 1 to 3 minutes, using a spinal anaesthesia needle. The injection must not be administered in areas of the skin where there are signs of infection or inflammation. It is recommended that the volume of cerebral spinal fluid (CSF), equivalent to the volume of Spinraza to be injected, is removed prior to administration of Spinraza. Sedation and imaging techniques may be required to aid administration, particularly in younger patients and in patients with scoliosis. Aseptic technique should be used when preparing and administering Spinraza. Special populations: Spinraza has not been studied in patients with renal impairment nor with hepatic impairment. Contraindications: Hypersensitivity to nusinersen or to any of the excipients such as sodium dihydrogen phosphate dihydrate, disodium phosphate, sodium chloride, potassium chloride, calcium chloride dihydrate, magnesium chloride hexahydrate, sodium hydroxide and hydrochloric acid (for pH adjustment) and water for injections. Special warnings and precautions: Lumbar puncture: Adverse reactions and complications (e.g., headache, backpain, vomiting). Thrombocytopaenia and coagulation abnormalities, including acute severe thrombocytopaenia, have been observed after administration of other subcutaneous or intravenous antisense oligonucleotides. Appropriate testing is recommended prior to administration if clinically indicated. Renal toxicity observed after administration of other subcutaneous or intravenous antisense oligonucleotides. Appropriate testing is recommended prior to administration if clinically indicated. Further evaluation should be considered for persistent elevated urinary protein. Hydrocephalus not related to meningitis or bleeding has been reported. Some patients were implanted with a ventriculo-peritoneal shunt. In patients with decreased consciousness, evaluation for hydrocephalus should be considered. The benefits and risks of treatment maintenance/use of ventriculo-peritoneal shunt should be carefully considered. Drug interactions: No interaction studies have been performed. Pregnancy and lactation: As a precaution, avoid use in pregnancy. A benefit-risk evaluation of the use during breastfeeding should be undertaken. There are no data on the potential impacts on fertility in humans. Spinraza has no or negligible influence on the ability to drive and use machines. Undesirable effects: In clinical trials, the most commonly reported side effects were associated with lumbar puncture (headache, vomiting and back pain). Meningitis have been observed with unknown frequency from the post marketing setting. Communicating hydrocephalus, aseptic meningitis and hypersensitivity (e.g. angioedema, urticaria and rash) has also been reported. The incidence of treatment-emergent anti-drug antibodies (ADA) was low (4%), yet individual safety data for the treatment-emergent ADA-positive cases were received. See PI for full list of side effects.Legal classification: Part 1, Schedule 1 & Schedule 3 Poison. Sale Requirement: Prescription only Medicines. Pack size: SPINRAZA 12 mg solution for injection: 1 box containing 1 vial.
Registration number: HK-65896. Certificate Holder: Zuellig Pharma Ltd, 5/F, Berkshire House, Taikoo Place, 25 Westlands Road, Quarry Bay, Hong Kong. Date of last revision of Prescribing Information: May 2021
Adverse events should be reported to medinfohongkong@biogen.com. Additional information can be found in the package leaflet.

Biogen-222952-HK-10/2023

ZOLGENSMA® is a single-dose IV gene therapy designed **to address the genetic root cause of SMA**[1]

Across 5 clinical studies,* and supported by real-world evidence,† ZOLGENSMA® has demonstrated:[2–10]

Unprecedented survival[2–7,11]

Improved bulbar function[2,4,5,8,9,12]

Rapid and sustained improvements in motor function[2–10]

Achievement and maintenance of key motor milestones[2–8,12]

ZOLGENSMA® is indicated for the treatment of patients with 5q spinal muscular atrophy (SMA) with a bi-allelic mutation in the *SMN1* gene and a clinical diagnosis of SMA Type 1, or patients with 5q SMA with a bi-allelic mutation in the *SMN1* gene and up to 3 copies of the *SMN2* gene.[1]

* Data from the completed Phase 1 START trial, the Phase 3 STR1VE-US, STR1VE-EU, and SPR1NT trials, and the ongoing START LTFU therapeutic-dose cohort (n=10), as of the June 11, 2020 data cut.[3–7]

† Data from a real-world observational study of ZOLGENSMA® treatment in 76 older and heavier patients with SMA (mean age at infusion was 16.8 months [range, 0.8–59.0 months], and the mean weight was 9.1 kg [range, 4.0–15.0 kg]), including those who previously received nusinersen (Weiß C, *et al.* 2021).[8] Data from a real-world, retrospective study of ZOLGENSMA® in 21 patients infused at 1–23 months of age in Ohio (Waldrop MA, *et al.* 2020); and a retrospective chart review of 7 patients older than 7 months treated with ZOLGENSMA® at the Children's Hospital of Philadelphia between July 2019 and February 2020 (Matesanz SE, *et al.* 2021).[9,10]

IV=intravenous; LTFU=long-term follow-up; SMA=spinal muscular atrophy; SMN=survival motor neuron.

References: 1. Novartis. ZOLGENSMA® (onasemnogene abeparvovec) Prescribing Information (EU Nov 2022). Revised on 01 Feb 2023. **2.** Mendell JR, *et al. N Engl J Med.* 2017;377(18):1713–22. **3.** Mendell JR, *et al. JAMA Neurol.* 2021;78(7):834-841. **4.** Day JW, *et al. Lancet Neurol.* 2021;20(4):284–93. **5.** Mercuri E, *et al. Lancet Neurol.* 2021;20(10):832–41. **6.** Strauss KA, *et al. Nat Med.* 2022;28(7):1381–9. **7.** Strauss KA, *et al. Nat Med.* 2022;28(7):1390–7. **8.** Weiß C, *et al. Lancet Child Adolesc Health.* 2021;6(1):17–27. **9.** Waldrop MA, *et al. Pediatrics.* 2020;146(3):e20200729. **10.** Matesanz SE, *et al. Pediatr Neurol.* 2021;118:1–5. **11.** Finkel RS, *et al. Neurology.* 2014;83(9):810–7. **12.** Al-Zaidy S, *et al. Pediatr Pulmonol.* 2019;54(2):179–85. **13.** Novartis (2022). Q2 2022 Results. Available at: https://www.novartis.com/sites/novartis_com/files/q2-2022-investor-presentation.pdf. Date accessed: August 2022.

Zolgensma®
Important note: Before prescribing, consult package insert. **Presentation Solution for intravenous infusion:** Each mL contains onasemnogene abeparvovec with a nominal concentration of 2 × 10^{13} vector genomes (vg). Vials will contain an extractable volume of not less than either 5.5 mL or 8.3 mL. **Indications** Zolgensma is indicated for the treatment of: - patients with 5q spinal muscular atrophy (SMA) with a bi-allelic mutation in the SMN1 gene and a clinical diagnosis of SMA Type 1, or - patients with 5q SMA with a bi-allelic mutation in the SMN1 gene and up to 3 copies of the SMN2 gene. **Dosage and administration** Should only be infused by a healthcare professional. Patients should not be re-dosed with Zolgensma. For single-dose intravenous infusion only. The recommended dose is 1.1 × 10^{14} vector genomes (vg)/kg. The appropriate dose and kit is determined by patient body weight. Zolgensma should be postponed in patients with concurrent infections until the infection has resolved or is controlled. Clinical signs or symptoms of infection should not be evident at the time of Zolgensma administration. Prior to Zolgensma infusion, AAV9 antibody testing (retesting may be performed if AAV9 antibody titers are reported as above 1:50), liver function (alanine aminotransferase [ALT], aspartate aminotransferase [AST], total bilirubin), creatinine, complete blood count (including hemoglobin and platelet count), and troponin-I should be conducted at baseline. After Zolgensma infusion, liver function (ALT, AST, total bilirubin), platelet counts, and troponin-I should be conducted on a regular basis. All patients should receive systemic corticosteroids before and after dosing Zolgensma. For complete instructions, refer to the package insert. **Special populations:** ***Renal impairment:*** The safety and efficacy of Zolgensma have not been established in patients with renal impairment. A dose adjustment should not be considered. ***Hepatic impairment:*** Zolgensma therapy should be carefully considered in patients with hepatic impairment. A dose adjustment should not be considered. ***0SMN1/1SMN2 genotype & Anti-AAV9 antibodies:*** No dose adjustment should be considered in patients with a bi-allelic mutation of the *SMN1* gene and only one copy of *SMN2* or in patients with baseline anti-AAV9 antibody titres above 1:50. Pediatric patients: Administration of Zolgensma to premature neonates before reaching full-term gestational age should be carefully considered. There is limited experience in patients 2 years of age and older or with body weight above 13.5 kg. The safety and efficacy of Zolgensma in these patients have not been established. **Method of administration:** For single-dose intravenous infusion only. **Intravenous infusion instructions:** Administer Zolgensma as a slow infusion approximately 60 minutes. It must not be administered as an intravenous push or bolus. For complete preparation and intravenous infusion instructions, refer to the package insert. **Contraindications:** Hypersensitivity to the active substance or to any of the excipients listed in section 6.1 of package insert. **Warnings and precautions** ***♦Advanced SMA:*** The benefit/risk profile of Zolgensma in patients with advanced SMA kept alive through permanent ventilation and without the ability to thrive is not established. ***♦Hepatotoxicity:*** Administration of AAV vector may result in aminotransferase elevations, which may be serious. Acute serious liver injury and acute liver failure have occurred. Patients with pre-existing hepatic impairment or acute hepatic viral infection may be at higher risk of acute serious liver injury. A systemic corticosteroid should be administered to all patients before and after Zolgensma infusion. Liver function should be assessed prior to infusion and monitored for at least 3 months after infusion. The risks and benefits of infusion with Zolgensma in patients with pre-existing hepatic impairment should be weighed carefully against the risks of not treating the patient. ***♦Immunogenicity:*** Patients should be tested for the presence of AAV9 antibodies prior to infusion with Zolgensma. An immune response to the adeno-associated viral vector serotype 9 (AAV9) capsid will occur after infusion of Zolgensma. ***♦Systemic immune response:*** Immune-mediated hepatotoxicity may require adjustment of the immunomodulatory regimen including longer duration, increased dose, or prolongation of the corticosteroid taper. ***♦Immunomodulatory regimen:*** Increased vigilance in the diagnosis and active management of infection is recommended. Zolgensma should be postponed in patients with concurrent infections until the infection has resolved or is controlled. Seasonal prophylaxis against respiratory syncytial virus (RSV) is recommended and should be up-to-date. ***♦Thrombocytopenia:*** Platelet counts should be obtained before Zolgensma infusion and monitored on a regular basis afterwards, weekly for the first month and every other week for the second and third months until platelet counts return to baseline. ***♦Thrombotic microangiopathy (TMA):*** If clinical signs, symptoms and/or laboratory findings occur, a specialist should be consulted immediately to manage TMA as clinically indicated. ♦Elevated troponin-I: Troponin-I levels should be obtained before Zolgensma infusion and monitored for at least 3 months following Zolgensma infusion or until levels return to within normal reference range for SMA patients. Consider consultation with a cardiac expert as needed. **Pregnancy, lactation, females and males of reproductive potential Pregnancy:** There are no available data regarding Zolgensma use in pregnant women. No animal fertility or reproduction studies have been conducted with Zolgensma. **Lactation:** There is no information available on the presence of Zolgensma in human milk, the effects on the breastfed infant or the effects on milk production. **Adverse drug reactions** *Very common (≥10%):* Aspartate aminotransferase increased, alanine aminotransferase increased, transaminases increased, gamma-glutamyltransferase increased, hepatic enzyme increased, liver function test increased and transaminases increased. *Common (≥1 to <10%):* Thrombocytopenia, vomiting, pyrexia, troponin increased. *Frequency not known:* Thrombotic microangiopathy, acute liver failure, acute liver injury. **Interactions:** No interaction studies have been performed. Live vaccines, such as MMR and varicella, should not be administered to patients on an immunosuppressive steroid dose. Where feasible, the patient's vaccination schedule should be adjusted to accommodate concomitant corticosteroid administration prior to and following Zolgensma infusion. **Legal classification: P1S1S3. Reference:** EU Nov 2022 **Revision date:** 01 Feb 2023

HK2310125855

For healthcare professionals only.

zolgensma® (onasemnogene abeparvovec)

NOVARTIS

Novartis Pharmaceuticals (HK) Ltd
7/F, Citi Tower, One Bay East, 83 Hoi Bun Road,
Kwun Tong, Kowloon, Hong Kong
Tel:(852) 2882 5222 Fax:(852) 2577 0274

Freedom to live a **complete childhood**

Make Cosentyx your 1st-line systemic treatment for **paediatric patients** with moderate to severe psoriasis

Complete Cosentyx Approach

Give your paediatric patients a chance to

Look Better

Move Better

Feel Better

✓ Fast, strong, and sustained* **skin clearance**[1,2]

✓ Fast and sustained* **relief from** the physical and psychosocial **burden of psoriasis**[1,2]

✓ Favorable **long-term safety** profile[2,3]*

*Long-term=through Week 52.[2,3]

Indication

Paediatric Plaque psoriasis: Cosentyx® is indicated for the treatment of moderate to severe plaque psoriasis in children and adolescents from the age of 6 years who are candidates for systemic therapy.[4]

75 mg syringe supporting the paediatric patients with body weight <50 kg is not marketed in Hong Kong.

Cosentyx® secukinumab

Cosentyx®

Important note: Important note: Before prescribing, consult full prescribing information. **Presentation:** Secukinumab,Solution for subcutaneous injection in pre-filled pen contain 150 mg or 300 mg of secukinumab. **Indications: Adult plaque psoriasis** Cosentyx is indicated for the treatment of moderate to severe plaque psoriasis in adults who are candidates for systemic therapy. **Paediatric plaque psoriasis** Cosentyx is indicated for the treatment of moderate to severe plaque psoriasis in children and adolescents from the age of 6 years who are candidates for systemic therapy. **Psoriatic arthritis** Cosentyx, alone or in combination with methotrexate (MTX), is indicated for the treatment of active psoriatic arthritis in adult patients when the response to previous disease-modifying anti-rheumatic drug (DMARD) therapy has been inadequate. **Axial spondyloarthritis (axSpA)** *Ankylosing spondylitis (AS, radiographic axial spondyloarthritis)* Cosentyx is indicated for the treatment of active ankylosing spondylitis in adults who have responded inadequately to conventional therapy. *Non-radiographic axial spondyloarthritis (nr-axSpA)* Cosentyx is indicated for the treatment of active non-radiographic axial spondyloarthritis with objective signs of inflammation as indicated by elevated C-reactive protein (CRP) and/or magnetic resonance imaging (MRI) evidence in adults who have responded inadequately to non-steroidal anti-inflammatory drugs (NSAIDs). **Dosage and administration: *Dosage*** **Adult plaque psoriasis:** The recommended dose is 300 mg by subcutaneous injection with initial dosing at weeks 0, 1, 2, 3 and 4, followed by monthly maintenance dosing. Based on clinical response, a maintenance dose of 300 mg every 2 weeks may provide additional benefit for patients with a body weight of 90 kg or higher. Each 300 mg dose is given as two subcutaneous injections of 150 mg or one subcutaneous injection of 300 mg. **Paediatric plaque psoriasis (adolescents and children from the age of 6 years)** The recommended dose is based on body weight and administered by subcutaneous injection with initial dosing at weeks 0, 1, 2, 3 and 4, followed by monthly maintenance dosing. Each 75 mg dose is given as one subcutaneous injection of 75 mg. Each 150 mg dose is given as one subcutaneous injection of 150 mg. Each 300 mg dose is given as one subcutaneous injection of 300 mg or as two subcutaneous injections of 150 mg. The solution for injection in pre-filled pen 150 mg/ml and 300mg/2ml are not indicated for administration to paediatric patients with a weight <50 kg. Cosentyx may be available in other strengths and/or presentations depending on the individual treatment needs. **Psoriatic arthritis:** For patients with concomitant moderate to severe plaque psoriasis, please refer to adult plaque psoriasis recommendation. For patients who are anti TNFα inadequate responders (IR), the recommended dose is 300 mg by subcutaneous injection with initial dosing at weeks 0, 1, 2, 3 and 4, followed by monthly maintenance dosing. Each 300 mg dose is given as two subcutaneous injections of 150 mg or one subcutaneous injection of 300 mg. For other patients, the recommended dose is 150 mg by subcutaneous injection with initial dosing at weeks 0, 1, 2, 3 and 4, followed by monthly maintenance dosing. Based on clinical response, the dose can be increased to 300 mg. **Axial spondyloarthritis (axSpA):** *Ankylosing spondylitis (AS, radiographic axial spondyloarthritis)* The recommended dose is 150 mg by subcutaneous injection with initial dosing at weeks 0, 1, 2, 3 and 4, followed by monthly maintenance dosing. Based on clinical response, the dose can be increased to 300 mg. Each 300 mg dose is given as two subcutaneous injections of 150 mg or one subcutaneous injection of 300 mg. *Non-radiographic axial spondyloarthritis (nr-axSpA)* The recommended dose is 150 mg by subcutaneous injection with initial dosing at weeks 0, 1, 2, 3 and 4, followed by monthly maintenance dosing. For all of the above indications, available data suggest that a clinical response is usually achieved within 16 weeks of treatment. Consideration should be given to discontinuing treatment in patients who have shown no response by 16 weeks of treatment. Some patients with an initial partial response may subsequently improve with continued treatment beyond 16 weeks. **♦ Elderly patients (aged 65 years and over):** No dose adjustment is required. **♦ Paediatric population (aged below 18 years):** The safety and efficacy of Cosentyx in children with plaque psoriasis below the age of 6 years have not been established. The safety and efficacy of Cosentyx in children below the age of 18 years in other indications have not yet been established. No data are available. **♦ Renal impairment / hepatic impairment:** Cosentyx has not been studied in these patient populations. No dose recommendations can be made. ***Administration*** Cosentyx is to be administered by subcutaneous injection. If possible, areas of the skin that show psoriasis should be avoided as injection sites. The solution in the pen must not be shaken. **Contraindications:** ♦ Cosentyx is contraindicated in patients who have/had hypersensitivity reactions to the active substance or to any of the excipients. ♦ Clinically important, active infection (e.g. active tuberculosis) **Warnings and precautions: ♦ Traceability:** In order to improve the traceability of biological medicinal products, the name and the batch number of the administered product should be clearly recorded. **♦ Infections:** Cosentyx has the potential to increase the risk of infections. Caution in patients with chronic infection or history of recurrent infection. Patients should be instructed to seek medical advice if signs or symptoms suggestive of an infection occur. If a patient develops a serious infection, the patient should be closely monitored and Cosentyx should not be administered until the infection resolves. Anti-tuberculosis therapy should be considered prior to initiation of Cosentyx in patients with latent tuberculosis. Cosentyx should not be given to patients with active tuberculosis. **♦ Inflammatory bowel disease (including Crohn's disease and ulcerative colitis):** If a patient develops signs and symptoms of inflammatory bowel disease or experiences an exacerbation of pre-existing inflammatory bowel disease, secukinumab should be discontinued and appropriate medical management should be initiated. **♦ Hypersensitivity reactions:** In clinical studies, rare cases of anaphylactic reactions have been observed in patients receiving Cosentyx. Administration of Cosentyx should be discontinued immediately and appropriate therapy initiated if an anaphylactic or other serious allergic reaction occurs. **♦ Latex-sensitive individuals (for 150 mg pre-filled syringe/pen only):** The removable cap of the Cosentyx 150 mg pre-filled syringe/pen contains a derivative of natural rubber latex. **♦ Vaccinations:** Cosentyx should not be given concurrently with live vaccines. Patients receiving Cosentyx may receive concurrent inactivated or non-live vaccinations. **♦ Concomitant immunosuppressive therapy:** In psoriasis studies, the safety and efficacy of Cosentyx in combination with immunosuppressants, including biologics, or phototherapy have not been evaluated. Secukinumab was administered concomitantly with methotrexate (MTX), sulfasalazine and/or corticosteroids in arthritis studies (including in patients with psoriatic arthritis and ankylosing spondylitis). Caution should be exercised when considering concomitant use of other immunosuppressants and secukinumab. **Women of childbearing potential:** Effective method of contraception during treatment and for at least 20 weeks after treatment should be used. **Pregnancy:** There are no adequate data from the use of secukinumab in pregnant women. As a precautionary measure, it is preferable to avoid the use of Cosentyx in pregnancy. **Breast-feeding:** It is not known whether secukinumab is excreted in human milk. Because of the potential for adverse reactions in nursing infants from secukinumab, a decision on whether to discontinue breast-feeding during treatment and up to 20 weeks after treatment or to discontinue therapy with Cosentyx must be made taking into account the benefit of breast-feeding to the child and the benefit of Cosentyx therapy to the woman. **Adverse drug reactions: Very common (≥10%):** Upper respiratory tract infections. **Common (≥1% to <10%):** Oral herpes, tinea pedis, headache, diarrhea, rhinorrhea, nausea, fatigue. **Uncommon (≥0.1% to <1%):** Oral candidiasis, neutropenia, otitis externa, lower respiratory tract infections, conjunctivitis, inflammatory bowel disease, urticaria, dyshidrotic eczema. **Rare (≥0.01% to <0.1%):** Anaphylactic reactions, exfoliative dermatitis, hypersensitivity vasculitis. **Not known (cannot be estimated from the available data):** Mucosal and cutaneous candidiasis (including oesophageal candidiasis) **Interactions:** Live vaccines should not be given concurrently with Cosentyx. In a study in subjects with plaque psoriasis, no interaction was observed between secukinumab and midazolam (CYP3A4 substrate). No interaction was seen when Cosentyx was administered concomitantly with methotrexate (MTX) and/or corticosteroids in arthritis studies (including in patients with psoriatic arthritis and axial spondyloarthritis). **Packs: For 150 mg pre-filled pen:** Solution in pre-filled pen; 1's or 2's. **For 300 mg pre-filled pen:** Solution in pre-filled pen; 1's. Not all pack sizes are marketed. **Legal classification:** P1S153 Last revision: Mar 2023 Ref: EU Jun 2022

HK2303071391

Reference

1. Magnolo N. et al. J Am Acad Dermatol. 2022;86:1122-30. 2. Bodemer C. et al. J Eur Acad Dermatol Venereol. 2021;35:938-947. 3.Magnolo N. et al. Pediatr Drugs. 2022;24:377-387. 4. Cosentyx (secukinumab) solution for injection in pre-filled pen Hong Kong prescribing information. 07 Dec 2022.

The materials for Cosentyx contained in virtual exhibition are approved for use only in Hong Kong. Prescribing information may vary depending on local approval in each country/location. Before prescribing any product, always refer to local materials such as the prescribing information and/orthe Summary of Product Characteristics (SPC). For Hong Kong Healthcare Professionals' reference and sole use only.

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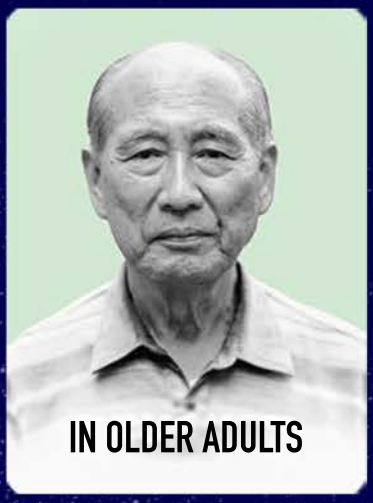
NOVARTIS

RSV CAN BE EASILY MISTAKEN FOR INFLUENZA

FOR SOME PEOPLE, RESPIRATORY SYNCYTIAL VIRUS CAN BE JUST AS SERIOUS AS INFLUENZA

IN INFANTS AND YOUNG CHILDREN

IN SOME ADULTS WITH CERTAIN RISK FACTORS



IN OLDER ADULTS

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PP-RES-HKG-0057 MAR 2024

Pfizer

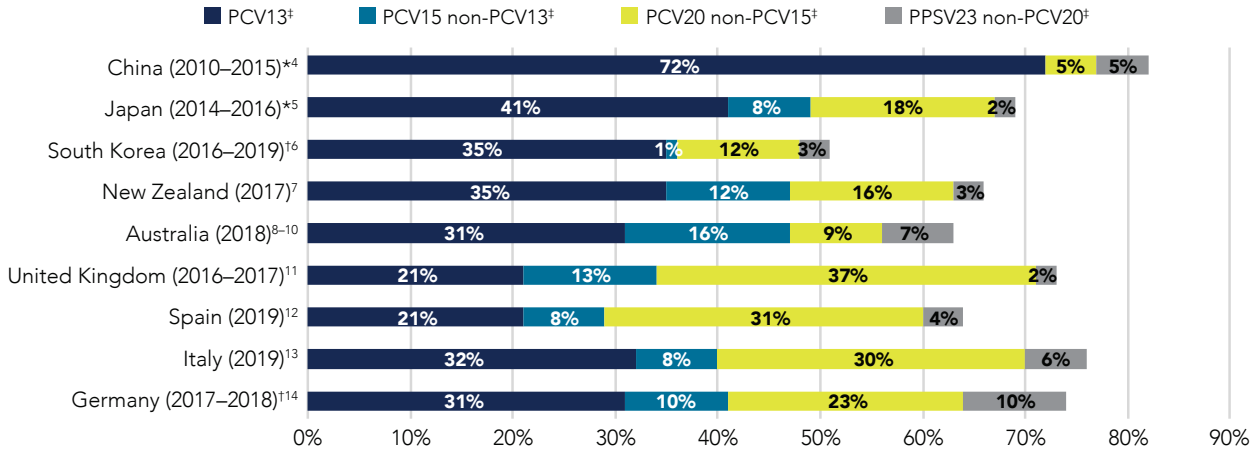
Prevenar 20®
Pneumococcal polysaccharide conjugate vaccine (20-valent, adsorbed)

BOOST PNEUMOCOCCAL PROTECTION

Broadest serotype coverage

NOW AVAILABLE[1-3#]

Serotypes causing IPD in older adults (aged ≥65 years) in different countries



Globally, more than 47% of IPD in older adults is caused by PCV20 serotypes[4–14]

CHOOSE Prevenar 20 to protect your older patients[1#]

‡PCV13 serotypes include 1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F and 23F. PCV15 non-PCV13 serotypes include 22F and 33F. PCV20 non-PCV15 serotypes include 8, 10A, 11A, 12F and 15B. PPSV23 non-PCV20 serotypes include 2, 9N, 17F and 20.[3,15]
#Broadest serotype coverage among existing pneumococcal conjugate vaccines. Prevenar 20 is approved for the active immunization for the prevention of pneumococcal disease caused by *Streptococcus pneumoniae* serotypes 1, 3, 4, 5, 6A, 6B, 7F, 8, 9V, 10A, 11A, 12F, 14, 15B, 18C, 19A, 19F, 22F, 23F, and 33F in adults 18 years of age and older.
*Among all adults.
†Adults aged ≥60 years.

IPD, invasive pneumococcal disease; **PCV13**, 13-valent pneumococcal conjugate vaccine; **PCV15**, 15-valent pneumococcal conjugate vaccine; **PCV20**, 20-valent pneumococcal conjugate vaccine; **PPV23**, 23-valent pneumococcal polysaccharide vaccine.

References: 1. Prevenar 20 (Pneumococcal polysaccharide conjugate, 20-valent adsorbed) Prescribing Information. Pfizer Corporation Hong Kong Limited: Version December 2022. Available at: https://www.pfi.sr/wRb. Accessed 15 May 2023. **2.** Prevenar 13 (Pneumococcal polysaccharide conjugate vaccine, 13-valent adsorbed) Prescribing information. Pfizer Corporation Hong Kong Limited: Version January 2021. Available at: https://www.pfi.sr/JzA. Accessed 8 Jan 2024. **3.** Centers for Disease Control and Prevention. Available at: https://www.cdc.gov/vaccines/vpd/pneumo/hcp/about-vaccine.html. Accessed 16 January 2024. **4.** Li MC, et al. *Hum Vaccin Immunother* 2021;17:146-156. **5.** Ubukata K, et al. *Emerg Infect Dis* 2018;24:2010-2020. **6.** Korea Institute of Science and Technology. Investigation of serotype change and antimicrobial resistance mechanism of Streptotoccus pneumoniae. Available at: https://scienceon.kisti.re.kr/srch/selectPORSrchReport.do?cn=TRKO202000001715. Accessed 27 July 2023. **7.** Institute of Environmental Science and Research Ltd (ESR). Invasive pneumococcal disease in New Zealand, 2017–2019. Porirua: ESR; 2021. **8.** Pennington K. *Commun Dis Intell* 2019;43. doi: 10.33321/cdi.2019.43.50. **9.** Pennington K. *Commun Dis Intell* 2019;43. doi: 10.33321/cdi.2019.43.51. **10.** Pennington K. *Commun Dis Intell* 2019;43. doi: 10.33321/cdi.2019.43.57. **11.** Ladhani SN, et al. *Lancet Infect Dis* 2018;18:441-451. **12.** de Miguel S, et al. *Clin Infect Dis* 2021:73:e3778-e3787. **13.** Dipartimento Malattie Infettive, Istituto Superiore di Sanità. Sorveglianzadelle malattie batteriche invasive in Italia. Available at: https://www.iss.it/documents/20126/0/Rapporto+consolidato+MIB+2019.pdf/1faeb457-9859-f800-b9aa-bf8aea405093?t=1612517562338. Accessed 27 July 2023. **14.** van der Linden M, et al. *PLOS One* 2019;14:e0220453. **15.** US Food & Drug Administration. Available at: https://www.fda.gov/vaccines-blood-biologics/vaccines/pneumovax- 23-pneumococcal-vaccine-polyvalent. Accessed 12 January 2024.

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PP-PNR-HKG-0262 JAN 2024

PREVENAR 20 Hong Kong Prescribing Information

The QR code/URL links to the latest Prescribing Information approved by the Department of Health in Hong Kong and may not be effective and the same as presented in the actual product package.

For Healthcare Professionals Only.

https://www.pfi.sr/wRb

Roche

Evrysdi® risdiplam

MOVING AHEAD WITH EVRYSDI® (risdiplam)

Proven results delivered orally

Evrysdi® (risdiplam)˅ works daily for a consistent impact on SMN protein levels throughout the body[1]

4+ years of long-term safety and efficacy[2]

15,000+ patients treated worldwide*

The **only oral**, non-invasive, **at-home** treatment for SMA[3]

Evrysdi® provides children and adults:

- **Consistent drug exposure throughout the entire CNS and body[1]**
- **Proven bulbar efficacy: preserves swallowing and feeding ability[4]**
- **90% of patients remain on Evrysdi® long term across different studied patient populations[2,4,5]**
- **The only SMA therapy with non-invasive at-home dosing[3]**

What is Evrysdi® (risdiplam)?

Evrysdi® is indicated for the treatment of 5q spinal muscular atrophy (SMA) in patients 2 months of age and older, with a clinical diagnosis of SMA Type 1, Type 2 or Type 3 or with one to four SMN2 copies.

Important Safety Information

Special warnings and precautions for use: Potential embryo-foetal toxicity: Embryo-foetal toxicity has been observed in animal studies. Patients of reproductive potential should be informed of the risks and must use highly effective contraception during treatment and until at least 1 month after the last dose in female patients and 4 months after the last dose in male patients. The pregnancy status of female patients of reproductive potential should be verified prior to initiating Evrysdi® therapy. Potential effects on male fertility: Based on observations from animal studies, male patients should not donate sperm while on treatment and for 4 months after the last dose of Evrysdi®. Prior to initiating treatment, fertility preservation strategies should be discussed with male patients of reproductive potential.

For Evrysdi® abbreviated product information, please scan the QR code. Full product information will be provided upon request

▼ This medicinal product is subject to additional monitoring. This will allow quick identification of new safety information. Healthcare professionals are asked to report any suspected adverse reactions. Please consult your local product information for details on how to report adverse reactions.

* Based on commercial patients, pre-approval patient access programs, and clinical trial participants as of February 2024. Source: Data on file. The Roche Group, 2024.

References: 1. Messina S et al. J Clin Med. 2020;9(7):2222. 2. Oskoui M et al, MDA Clinical & Scientific Conference; Dallas, Texas, USA March 19-22, 2023. 3. Evrysdi® Summary of Product Characteristics. The Roche Group, 2023. 4. Servais L et al European Paediatric Neurology Society Congress 2022 Glasgow, UK. 5. Chiriboga C et al, Annual Congress of the World Muscle Society. Halifax, Canada. October 11-15, 2022.

M-HK-00001577 Valid until 19/03/2026 or until change is required in accordance with the regulatory requirements, whichever comes first.

Roche | Evrysdi® risdiplam

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RINVOQ®
upadacitinib

HELP YOUR PATIENTS DISRUPT

MODERATE TO SEVERE ATOPIC DERMATITIS

RAPID ITCH RELIEF*,1

RINVOQ® 30 mg achieved significant itch reduction (vs placebo) as early as DAY ONE after treatment initiation[1]

SUPERIORITY OF RINVOQ® 30 MG VS DUPILUMAB[3]

- EASI-75 at week 16: 72.4%‡ (RINVOQ® 30 mg) vs 62.6% (DUPILUMAB 300 mg)[3]
- EASI-90 at week 16: 61.6§ (RINVOQ® 30 mg) vs 40.3% (DUPILUMAB 300 mg)[3]
- Mean improvement in Worst Pruritus NRS at week 16: 67.8%‖ (RINVOQ® 30 mg) vs 49.6% (DUPILUMAB 300 mg)[3]

PROVEN SKIN IMPROVEMENT[2]

- EASI-90 at week 16: 62%† (RINVOQ® 30 mg) vs 7% (placebo)[2]
- EASI-75 at week 16: 76%† (RINVOQ® 30 mg) vs 15% (placebo)[2]

EXPERIENCE IN MULTIPLE INDICATIONS[4,5]

- Well-studied safety profile with long-term exposure (>15,000 patient-years)[4]
- RINVOQ® 15 mg is approved in moderate to severe AD for adolescents from 12 years of age[5]
- Similar safety profile in adolescents and adults using RINVOQ® 15 mg for AD[5]

*Itch (a≥ 4-point improvement in Worst Pruritus NRS from baseline assessed in patients with Worst Pruritus NRS ≥ 4 at baseline) at Day 1 for RINVOQ® 30 mg was a key ranked secondary endpoint
†Integrated data at week 16. p≤0.001 vs placebo ITT (NRI-C) (placebo-controlled population)
‡Data at week 16. p=0.007 vs dupilumab multiplicity-controlled analysis
§ Data at week 16. p<0.001 vs dupilumab multiplicity-controlled ITT (NRI-C)
‖ Data at week 16. p<0.001 vs dupilumab ITT (MMRM)
¶ Patient-years of combined exposure to RINVOQ® 15 mg or 30 mg. Data are for RINVOQ® 15 mg in RA, PsA, AS and AD, and RINVOQ® 30 mg in AD only.[5]

For RINVOQ® Abbreviated Prescribing Informatiom, please scan the QR code

Full prescribing information is available upon request.
All adverse event should be reported drugsafety.pv@abbvie.com
For Healthcare Professionals Only

MEASURE UP 1 & 2 Study Design: Integrated summary of efficacy of two Phase 3, randomized, placebo-controlled studies of 847 (MEASURE UP 1) and 836 (MEASURE UP 2) adult and adolescent (12 years of age) patients with moderate to severe AD. Patients were randomized 1:1 to RINVOQ® 15 mg (n=281 and 276) or 30 mg (n=285 and 282) QD monotherapy, or placebo (n=281 and 278). At Week 16, patients entered a blinded extension with no placebo control and patients were aware they were on treatment but blinded to dose. Co-primary endpoints were EASI-75 & VIGA-AD 0/1 at Week 16, ITT INRI-C) EASI-90 at Week 16 was a ranked secondary endpoint multiplicity-controlled analysis ITT (NRI-C.)[1,2]

HEADS UP Study Design: a Phase 3b, randomized, active controlled, double-dummy trial of 692 adult patients with moderate to severe AD. Patients were randomized 1:1 to RINVOQ® 30 mg QD + placebo SC Q2W for dupilumab (n=331) or dupilumab 300 mg SC Q2W + placebo QD for RINVOQ® (n=342). Patients randomized to the dupilumab 300 mg SC Q2W group received the starting dose of 600 mg at the baseline visit. Primary endpoint was EASI-75 at Week 16. EASI-90 at Week 16 and percent improvement in Worst Pruritus NRS at Weeks 1, 4 and 16 were ranked secondary endpoints.[3]

AD, atopic dermatitis; **EASI-75,** at least a 75% improvement in Eczema Area and Severity Index (EASI) score from baseline; **EASI-90,** at least a 90% improvement; **ITT,** intention-to-treat; **MMRM,** mixed model repeated measures; **NRI-C,** non-responder imputation incorporating multiple imputation to handle missing data due to COVID-19; **NRS,** numerical rating scale; **OLE,** open label extension; **QD,** once daily; **Q2W,** once every 2 weeks; **SC,** subcutaneous. **VIGA-AD,** validated investigator global assessment scale for atopic dermatitis.

References: 1. Guttman-Yassky E, Teixeira HD, Simpson EL, et al. Once-daily upadacitinib versus placebo in adolescents and adults with moderate-to-severe atopic dermatitis (Measure Up 1 and Measure Up 2): results from two replicate double-blind, randomized controlled phase 3 trials. Lancet 2021:397(10290)2151-2168. doi:10.1016/S0140-6736(21)00588-2. **2.** Simpson E, Papp K, Blauvelt A, et al. Efficacy and Safety of Upadacitinib in Patients With Atopic Dermatitis: Results Through Week 52 From Replicate, Phase 3, Randomized, Double-Blind, Placebo-Controlled Studies: Measure Up 1 and Measure Up 2. Poster at the 2021 Dermatology Education Foundation (DEF) Essential Resource Meeting (DERM2021), August 5-8, 2021, Las Vegas NV, USA. **3.** Blauvelt A, Teixeira HD, Simpson EL, et al. Efficacy and Safety of Upadacitinib vs Dupilumab in Adults With Moderate-to-Severe Atopic Dermatitis: A Randomized Clinical Trial. JAMA Dermatology, 2021,157(9):1047-1055. doi:10.1001/JAMADERMATOL 2021.3023. **4.** Burmester GR. et al. "Safety profile of upadacitinib over 15 000 patient-years across rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis and atopic dermatitis" RMD Open 2023;9(1):e002735. **5.** RINVOQ Hong Kong prescribing information. Sept 2023.

HK-RNQ-240012 20MAR2024 4IC_3040A

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IgM-enriched immunoglobulin preparation for the adjunctive treatment of severe bacterial infections.

HA non-formulary code: Norm39

Therapeutic indications [1]

Adjuvant therapy of severe bacterial infections additional to antibiotics therapy

Immunoglobulin substitution in immunocompromized patients and patients suffering from severe secondary antibody deficiency syndrome

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Reference:
1 Pentaglobin® product insert

BEXSERO
Meningococcal Group B Vaccine
(rDNA, component, adsorbed)

The **ONLY** Meningococcal B Vaccine indicated for paediatric patients at 2 months and onwards[1, 2].

16 Years Old
Study abroad
1st & 2nd dose

2 Years old
1st & 2nd dose

1 Year old
BEXSERO booster#

After 2 Months
2nd dose*

2 Months Onwards
1st dose

*After receiving the 1st dose. #After receiving the 1st & 2nd doses.

References: 1. BEXSERO Hong Kong Prescribing Information GDS12. **2.** Pfizer Ltd. Trumenba. Annex I: Summary of product characteristics. EMA; November 2021.

Safety Information:
Hypersensitivity to any components of BEXSERO is a contraindication to administration. Administration of BEXSERO should be postponed in subjects suffering from an acute severe febrile illness. Minor infection, such as cold, should not result in the deferral of vaccination. BEXSERO should not be given to individuals with thrombocytopenia or any coagulation disorder that would contraindicate intramuscular injection, unless the potential benefit clearly outweighs the risk of administration.
Appropriate medical treatment and supervision should always be readily available in case of an anaphylactic event following administration of BEXSERO.
Anxiety-related reactions, including vasovagal reactions (syncope), hyper-ventilation or stress-related reactions may occur in association with vaccination as a psychogenic response to the needle injection. It is important that procedures are in place to avoid injury from fainting.
The safety and efficacy of BEXSERO in individuals above 50 years of age has not been established. There are limited data in patients with chronic medical conditions. In immunocompromised individuals, vaccination may not result in a protective antibody response. Insufficient clinical data on exposed pregnancies are available and there are no data on fertility in humans.
BEXSERO is not expected to provide protection against all circulating meningococcal group B strains.
The most common adverse reactions observed in clinical trials of infants and children were tenderness and erythema at the injection site, fever, and irritability. Fever occurred more frequently when BEXSERO was co-administered with other routine infant vaccines than when it was given alone.
Higher rates of antipyretic use were also reported for infants vaccinated with BEXSERO and routine vaccines. When BEXSERO was given alone, the frequency of fever was similar to that associated with routine infant vaccines administered during clinical trials. When fever occurred, it generally followed a predictable pattern, with the majority resolving by the day after vaccination.
Prophylactic use of paracetamol reduces the incidence and severity of fever without affecting the immunogenicity of either BEXSERO or routine vaccines. Antipyretic medication should be initiated according to local guidelines in infants and children (less than 2 years of age).
Due to an increased risk of fever, tenderness at the injection site, change in eating habits and irritability when BEXSERO was co-administered with routine vaccines, separate vaccinations can be considered when possible.
In adolescents and adults, the most common local and systemic adverse reactions observed were pain at the injection site, malaise and headache.
Less commonly, some serious events can occur after BEXSERO: seizures (including febrile seizures) and allergic reactions.

Please read the full prescribing information prior to administration. Full prescribing information is available on request from GlaxoSmithKline Ltd, 23/F, Tower 6, The Gateway, 9 Canton Road, Tsimshatsui, Kowloon, Hong Kong.

For adverse event reporting, please call GlaxoSmithKline Limited at (852) 3189 8989 (Hong Kong) or (853) 2871 5569 (Macau), or send an email to us at HKAdverseEvent@gsk.com.

PM-HK-BEX-BNNR-230001(06/2025) Date of preparation: 01/06/2023

GSK

APPROVED for
adolescents aged 12-17.[1]

Saxenda®
liraglutide injection

Weight management for
THE NEXT GENERATION

Patient portrayals.

Now, you can help with Saxenda®, approved prescription medication for weight management in adolescents with obesity as an adjunct to a healthy nutrition and increased physical activity[1]

80% of adolescents with obesity will continue to have obesity in adulthood if left untreated.[2]

Clinically relevant improvements in weight-related endpoints[3]

Real-world experience in **1.5 million adult patients** globally since launch[4]

Safety profile consistent with adult clinical trials. Robust clinical trial data that includes 5358 patients[1]

Abbreviated prescribing information (Please consult the full prescribing information before prescribing) **Saxenda® (liraglutide injection)** **Presentation:** Prefilled, disposable pen containing 18 mg of liraglutide in 3 mL of solution. **Indications:** Adults: Saxenda® is indicated as an adjunct to a reduced-calorie diet and increased physical activity for weight management in adult patients with an initial Body Mass Index (BMI) of ≥30 kg/m2 (obesity), or ≥27 kg/m2 to <30 kg/m2 (overweight) in the presence of at least one weight-related comorbidity such as dysglycaemia (prediabetes or type 2 diabetes mellitus), hypertension, dyslipidaemia or obstructive sleep apnoea. Treatment with Saxenda® should be discontinued after 12 weeks on the 3.0 mg/day dose if patients have not lost at least 5% of their initial body weight. Adolescents (≥12 years): Saxenda® can be used as an adjunct to a healthy nutrition and increased physical activity for weight management in adolescent patients from the age of 12 years and above with: obesity (BMI corresponding to ≥30 kg/m2 for adults by IOTF BMI cut-off points) and body weight above 60 kg. Treatment with Saxenda® should be discontinued and re-evaluated if patients have not lost at least 4% of their BMI or BMI z score after 12 weeks on the 3.0 mg/day or maximum tolerated dose. **Dosage:** Adults: The starting dose is 0.6 mg once daily. The dose should be increased to 3.0 mg daily in increments of 0.6 mg with at least one week interval to improve gastro-intestinal tolerability. If escalation to the next dose step is not tolerated for two consecutive weeks, consider discontinuing treatment. Adolescents (≥12 years): For adolescents from the age of 12 to below 18 years old a similar dose escalation schedule as for adults should be applied. The dose should be increased until 3.0 mg (maintenance dose) or maximum tolerated dose has been reached. Adults and Adolescents: Daily doses higher than 3.0 mg are not recommended. Method of administration: Saxenda® is for subcutaneous use only. It must not be administered intravenously or intramuscularly. Saxenda® is administered once daily at any time, independent of meals, preferably around the same time of the day. It should be injected in the abdomen, thigh or upper arm. Saxenda® should not be used in combination with another GLP-1 receptor agonist. When initiating Saxenda® in patients with type 2 diabetes mellitus, consider to reduce the dose of concomitantly administered insulin or insulin secretagogues (such as sulfonylureas) to reduce the risk of hypoglycaemia. Blood glucose self-monitoring is necessary to adjust the dose of insulin or insulin-secretagogues. The safety and efficacy of Saxenda® in children below 12 years of age has not been established. **Contraindications:** Hypersensitivity to liraglutide or to any of the excipients. **Special warnings and precautions:** There is no clinical experience in patients with congestive heart failure New York Heart Association (NYHA) class IV, and Saxenda® is therefore not recommended for use in these patients. Use of Saxenda® is not recommended in patients with inflammatory bowel disease and diabetic gastroparesis. Saxenda® is not recommended in patients: aged 75 years or more, treated with other products for weight management, with obesity secondary to endocrinological or eating disorders or to treatment with medicinal products that may cause weight gain, with severe renal impairment, with severe hepatic impairment. Saxenda® must be used with caution in patients with mild or moderate hepatic impairment. Acute pancreatitis has been observed with the use of GLP-1 receptor agonists. Patients should be informed of the characteristic symptoms of acute pancreatitis. If pancreatitis is suspected, Saxenda® should be discontinued; if acute pancreatitis is confirmed, Saxenda® should not be restarted. In clinical trials for weight management, a higher rate of cholelithiasis and cholecystitis was observed in patients treated with Saxenda® than in patients on placebo. Patients should be informed of the characteristic symptoms of cholelithiasis and cholecystitis. In clinical trials in type 2 diabetes, thyroid adverse events, such as goitre, have been reported in particular in patients with pre-existing thyroid disease. Saxenda® should therefore be used with caution in patients with thyroid disease. An increase in heart rate was observed with liraglutide in clinical trials. Heart rate should be monitored at regular intervals consistent with usual clinical practice. Patients should be informed of the symptoms of increased heart rate (palpitations or feelings of a racing heartbeat while at rest). For patients who experience a clinically relevant sustained increase in resting heart rate, treatment with Saxenda® should be discontinued. Patients treated with Saxenda® should be advised of the potential risk of dehydration in relation to gastrointestinal side effects and take precautions to avoid fluid depletion. Patients with type 2 diabetes mellitus receiving Saxenda® in combination with insulin and/or sulfonylurea may have an increased risk of hypoglycaemia. The risk of hypoglycaemia may be lowered by a reduction in the dose of insulin and/or sulfonylurea. Episodes of clinically significant hypoglycaemia have been reported in adolescents (≥12 years) treated with liraglutide. Patients should be informed about the characteristic symptoms of hypoglycaemia and the appropriate actions. In patients with diabetes mellitus, Saxenda® must not be used as a substitute for insulin. Diabetic ketoacidosis has been reported in insulin-dependent patients after rapid discontinuation or dose reduction of insulin. Dizziness can be experienced mainly during the first 3 months of treatment with Saxenda®. Driving or use of machines should be exercised with caution if dizziness occurs. **Pregnancy and lactation:** Saxenda® should not be used during pregnancy or breast-feeding. If a patient wishes to become pregnant, or pregnancy occurs, treatment with Saxenda® should be discontinued. **Undesirable effects:** Very common (≥1/10): headache, nausea, vomiting, diarrhoea, constipation. Common (≥1/100 to <1/10): hypoglycaemia, insomnia, dizziness, dysgeusia, dry mouth, dyspepsia, gastritis, gastro-oesophageal reflux disease, abdominal pain upper, flatulence, eructation, abdominal distension, cholelithiasis, injection site reactions, asthenia, fatigue, increased lipase, increased amylase. Uncommon (≥1/1,000 to <1/100): dehydration, tachycardia, pancreatitis, delayed gastric emptying, cholecystitis, urticaria, malaise. Rare (≥1/10,000 to <1/1,000): anaphylactic reaction, acute renal failure, renal impairment. **Overdose:** From clinical trials and marketed use overdoses have been reported up to 72 mg (24 times the recommended maintenance dose). Events reported included severe nausea, severe vomiting and severe hypoglycaemia. In the event of overdose, appropriate supportive treatment should be initiated according to the patient's clinical signs and symptoms. The patient should be observed for clinical signs of dehydration and blood glucose should be monitored. Date of review: Jun 2023

References: 1. Saxenda Hong Kong Prescribing information (8-9556-05-001-3) **2.** Lifshitz F. Obesity in children. J Clin Res Ped Endo. 2008;1(2):53-60. **3.** Kelly AS, Auerbach P, Barrientos- Perez M, et al. A randomized, controlled trial of liraglutide for adolescents with obesity. N Engl J Med. 2020;382:2117-2128. **4.** Data on file. Novo Nordisk Inc.; Plainsboro, NJ.

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Further Information is available from
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Saxenda® 秀身達®
Liraglutide injection

SAX-D-20230701

One Target, Dual Action, Five Indications

DUPIXENT targets IL-4Ra with dual action on both IL-4 & IL-13 to reduce Type 2 inflammation[1,2]

DUPIXENT - your versatile biologic that targets five conditions[3]

Atopic Dermatitis (AD)

- Moderate-to-severe AD in adults and adolescents ≥12 years old†
- Severe AD in children 6 months to 11 years old†

Asthma

- In adults and adolescents ≥12 years old as add-on maintenance treatment for severe asthma with Type 2 inflammation*
- In children 6 to 11 years old as add-on maintenance treatment for severe asthma with Type 2 inflammation^

Chronic rhinosinusitis with nasal polyposis (CRSwNP)

- As an add-on therapy with intranasal corticosteroids for the treatment of adults with severe CRSwNP#

Newly approved

Prurigo Nodularis (PN)

- Moderate-to-severe PN in adults who are candidates for systemic therapy

Newly approved

Eosinophilic Esophagitis (EoE)

- In adults and adolescents ≥12 years old weighing ≥40 kg‡

† Candidates for systemic therapy
* Characterised by raised blood eosinophils and/or raised FeNO, who are inadequately controlled with high dose ICS plus another medicinal product for maintenance treatment.
^ Characterised by raised blood eosinophils and/or raised FeNO, who are inadequately controlled with medium to high dose ICS plus another medicinal product for maintenance treatment.
# For whom therapy with systemic corticosteroids and/or surgery do not provide adequate disease control.
‡ Those who are inadequately controlled by, are intolerant to, or who are not candidates for conventional medicinal therapy.
Abbreviations: AD=atopic dermatitis; CRSwNP= chronic rhinosinusitis with nasal polyps; EoE= eosinophilic esophagitis; FeNO=fractional exhaled nitric oxide; ICS=inhaled corticosteroids; PN=prurigo nodularis.

References:
1. Guttman-Yassky E, et al. J Allergy Clin Immunol. 2019;143(1):155-172. 2. Gandhi NA, et al. Nat Rev Drug Discov. 2016;15(1):35-50 3.DUPIXENT® Hong Kong Prescribing Information

Presentation: Dupilumab solution for injection in a pre-filled syringe with needle shield. Indications: Atopic Dermatitis (AD): Moderate-to-severe AD in adults and adolescents ≥12 years who are candidates for systemic therapy; severe atopic dermatitis in children 6 months to 11 years old who are candidates for systemic therapy. Asthma: In adults and adolescents ≥12 years as add-on maintenance treatment for severe asthma with type 2 inflammation characterised by raised blood eosinophils and/or raised FeNO, who are inadequately controlled with high dose ICS plus another medicinal product for maintenance treatment. In children 6 to 11 years old as add-on maintenance treatment for severe asthma with type 2 inflammation characterised by raised blood eosinophils and/or raised FeNO, who are inadequately controlled with medium to high dose ICS plus another medicinal product for maintenance treatment. For 300 mg only – Chronic rhinosinusitis with nasal polyposis (CRSwNP): As an add-on therapy with intranasal corticosteroids for the treatment of adults with severe CRSwNP for whom therapy with systemic corticosteroids and/or surgery do not provide adequate disease control. Prurigo Nodularis (PN): Moderate-to-severe PN in adults who are candidates for systemic therapy. Eosinophilic esophagitis (EoE): In adults and adolescents ≥12 years, weighing ≥40 kg, who are inadequately controlled by, are intolerant to, or who are not candidates for conventional medicinal therapy. **Dosage & Administration:** Subcutaneous injection. AD adults: Initial dose of 600 mg (two 300 mg injections), followed by 300 mg Q2W. AD adolescents (12-17y/o): Body weight <60 kg- initial dose of 400 mg (two 200 mg injections), followed by 200 mg Q2W. Body weight ≥60 kg- same dosage as adults. AD children (6-11y/o): Body weight 15kg~<60 kg- initial dose of 300 mg on Day 1 follow by 300 mg on Day 15, then 300mg Q4W. Body weight ≥60 kg- same dosage as adults. * The dose may be increased to 200 mg Q2W in patients with body weight of 15 kg~< 60 kg based on physician's assessment. AD children (6 months-5y/o): Body weight 5kg~<15 kg- initial dose of 200 mg, then 200 mg Q4W. Body weight 15kg~<30 kg- initial dose of 300 mg, then 300 mg Q4W. Dupilumab can be used with or without topical corticosteroids. Topical calcineurin inhibitors may be used, but should be reserved for problem areas only, e.g. face, neck, intertriginous and genital areas. Consider discontinuing treatment in patients who have shown no response after 16 weeks. Asthma adults and adolescents: Initial dose of 400 mg, followed by 200 mg Q2W. For patients with severe asthma and on oral corticosteroids or with severe asthma and co-morbid moderate-to-severe AD or adults with co-morbid severe CRSwNP- initial dose of 600 mg, followed by 300 mg Q2W. Asthma children (6-11y/o): Body weight 15kg~<30 kg- 300 mg Q4W. Body weight 30kg~<60 kg- 200 mg Q2W; or 300 mg Q4W. Body weight ≥60 kg- 200 mg Q2W. For paediatric patients (6-11y/o) with asthma and co-morbid severe atopic dermatitis, as per approved indication, the recommended dose should follow AD children (6-11y/o). Patients receiving concomitant oral corticosteroids may reduce steroid dose gradually once clinical improvement with dupilumab has occurred. The need for continued dupilumab therapy should be considered at least annually as determined by a physician. CRSwNP: Initial dose of 300 mg, followed by 300 mg Q2W. Consider discontinuing treatment in patients who have shown no response after 24 weeks. PN: Initial dose of 600 mg (two 300 mg injections), followed by 300 mg Q2W. Dupilumab can be used with or without topical corticosteroids. Consider discontinuing treatment in patients who have shown no response after 24 weeks. EoE: 300 mg QW. Dupilumab 300 mg QW has not been studied in patients with EoE weighing <40 kg. Dosing beyond 52 weeks has not been studied. For Missed dose instructions, please refer to the full prescribing information. **Contraindications:** Hypersensitivity to dupilumab or any of the excipients. **Precautions:** Not be used to treat acute asthma symptoms, acute exacerbations, acute bronchospasm or status asthmaticus. Do not discontinue corticosteroids abruptly upon start of dupilumab. Reduction should be gradual and performed under supervision of a physician; it may be associated with systemic withdrawal symptoms and/or unmask conditions previously suppressed by systemic corticosteroid therapy. Biomarkers of type 2 inflammation may be suppressed by systemic corticosteroid use. If systemic hypersensitivity reaction occurs, discontinue dupilumab and initiate appropriate therapy. Be alert to vasculitic rash, worsening pulmonary symptoms, cardiac complications, and/or neuropathy presenting in patients with eosinophilia. Treat pre-existing helminth infections before initiating dupilumab. If patients become infected while receiving dupilumab and do not respond to anti-helminth treatment, discontinue dupilumab until infection resolves. Cases of enterobiasis were reported in children 6 to 11 years old in the paediatric asthma development program. Advise patients to promptly report new onset or worsening eye symptoms. Patients who develop conjunctivitis, dry eye and keratitis that does not resolve following standard treatment should undergo ophthalmological examination. Sudden changes in vision or significant eye pain that does not settle warrant urgent review. Patients with comorbid asthma should not adjust or stop asthma treatments without consultation with physicians. Carefully monitor patients after discontinuation of dupilumab. Avoid using live and live attenuated vaccines concurrently with dupilumab. Patients should be brought up to date with immunisations before starting dupilumab. **Drug Interactions:** Immune responses to TdaP vaccine and meningococcal polysaccharide vaccine were assessed. Patients receiving dupilumab may receive concurrent inactivated or non-live vaccinations. **Pregnancy and lactation:** Should be used during pregnancy only if potential benefit justifies potential risk to foetus. Unknown whether dupilumab is excreted in human milk or absorbed systemically after ingestion. Decision must be made whether to discontinue breast-feeding or dupilumab taking into account benefit of breast feeding for the child and benefit of therapy for the woman. **Undesirable effects:** Most common adverse reactions reported- injection site reactions, conjunctivitis, conjunctivitis allergic, arthralgia, oral herpes, eosinophilia and injection site bruising. Safety profile observed in adolescents and children 6 months to 11 years old consistent with that seen in adults. For other undesirable effects, please refer to the full prescribing information. **Preparation:** 2 x 300mg/2ml in pre-filled syringe with needle shield, 2 x 200mg/1.14ml in pre-filled syringe with needle shield. **Legal Classification:** Part 1, First & Third Schedules Poison **Full prescribing information is available upon request.**

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DUPIXENT® (dupilumab)

moderna®
this changes everything

The Science of mRNA

We are working to develop a new category of medicines that harness the power of mRNA.

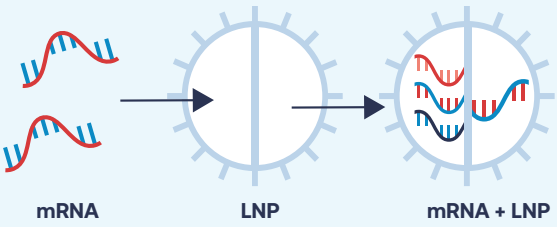
Since our founding in 2010, we have strived to build the industry's leading mRNA technology platform and the infrastructure to accelerate drug discovery and early development.

At Moderna, we are delivering on the promise of mRNA science to create a **new generation of transformative medicines** for patients.

Our mRNA platform

mRNA medicines constitute a **platform technology**.

mRNA is extremely fragile and requires a **safe**, **effective and stable delivery system** to protect it from degradation and reach target cells. A **lipid nanoparticle (LNP) delivery system** achieves this goal.[1]



Moderna's **unified approach** can be used to develop new mRNA vaccines with the same LNP and key mRNA design elements. Only the mRNA sequence that codes for the antigen is changed.

Potential advantages of our mRNA platform

With its **speed**, **scale** and **flexibility**, Moderna's mRNA platform is well-suited to tackle a broad spectrum of viruses and diseases that threaten global health.

Speed

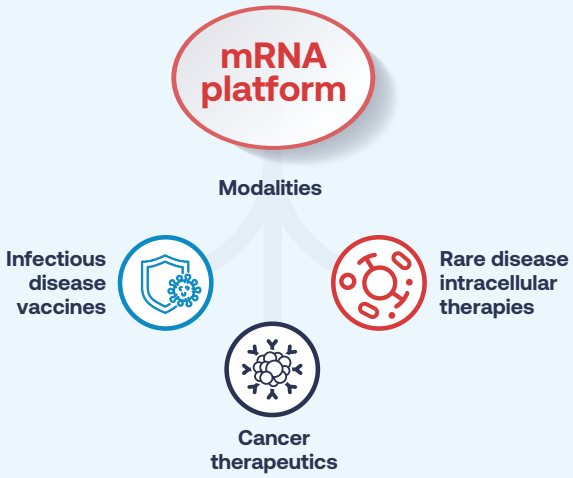
Allows for **accelerated research and development** timelines and rapid iteration cycles[2,3]

Scale

Enables **large quantities** of medicines to be rapidly produced[3]

Flexibility

Produced in the same factory via the **same cell-free manufacturing process**[4]



Moderna's multimodal mRNA-based therapies

Our medicines and vaccines are grouped into what we call modalities. Currently, Moderna has over **40 development programs** in its pipeline of vaccines and therapeutics.

While the programs within a modality may target diverse diseases, each modality shares **common mRNA design features**, **LNP structure** and **manufacturing process**.

For more information, visit www.modernatx.com/en-HK.

References: 1. Hou X, et al. *Nat Rev Mater* 2021;6:1078-94. **2.** Nelson J, et al. *Sci Adv* 2020;6:eaaz6893. **3.** Kis Z, et al. *J Adv Manuf Process* 2020;2:e10060. **4.** Jackson NAC, et al. *npj Vaccines* 2020;5:1-6.

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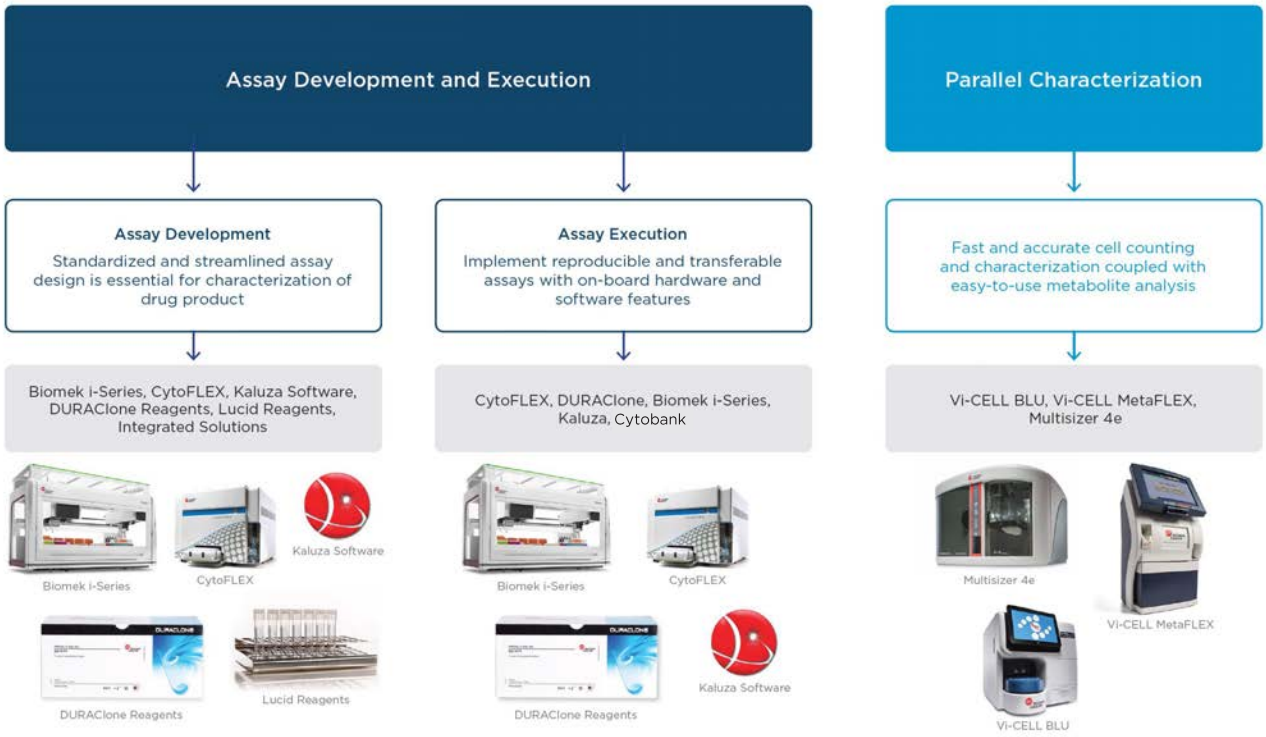
MED-HK-NP-2400002 (prepared in Mar 2024)

Cell Therapy Analytical Development Workflow



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Immune Globulin Intravenous (Human), 10% Liquid
IVIg therapy made simple

Advancing Ig therapy. The first and only proline-stabilised 10% liquid human IVIg[1]

85+ Countries[2] | 1,000,000+ Patient-years exposure[3]

- Convenient, ready-to-use 10% liquid IgG[4]
- ≥98% Ig purity—only trace amounts of IgA (≤25 mcg/mL)[4]
- If well-tolerated, the rate of administration may gradually be increased to 4.8 mL/kg bw/hour[4]
- Multiple indications: PID, SID, CIDP, ITP, GBS, MMN, and Kawasaki disease[4]

Before prescribing, please review the approved Hong Kong Package Insert, November 2021

Privigen Human normal immunoglobulin solution for infusion (10%)

Indication: Replacement therapy in adults, and children and adolescents (0-18 years) in: • Primary immunodeficiency syndromes (PID) with impaired antibody production; • Secondary immunodeficiencies (SID) in patients who suffer from severe or recurrent infections, ineffective antimicrobial treatment and either proven specific antibody failure (PSAF)* or serum IgG level of <4 g/l. Immunomodulation in adults, and children and adolescents (0-18 years) in: • Primary immune thrombocytopenia (ITP), in patients at high risk of bleeding or prior to surgery to correct the platelet count; •Guillain-Barré syndrome; • Kawasaki disease(in conjunction with acetylsalicylic acid); • Chronic inflammatory demyelinating polyneuropathy (CIDP). Only limited experience is available of use of intravenous immunoglobulins in children with CIDP; • Multifocal motor neuropathy (MMN). ** PSAF = failure to mount at least a 2-fold rise in IgG antibody titre to pneumococcal polysaccharide and polypeptide antigen vaccines.* **Dosage:** In replacement therapy the dose may need to be individualised for each patient depending on the clinical response. *Replacement therapy in primary immunodeficiency (PID) syndromes* The recommended starting dose is 0.4 to 0.8 g/kg body weight (bw) given once, followed by at least 0.2 g/kg bw every 3 to 4 weeks. *Secondary immunodeficiencies* The recommended dose is 0.2 – 0.4g/kg bw every three to four weeks. *Primary immune thrombocytopenia (ITP)* • 0.8 to 1g/kg bw given on day 1; this dose may be repeated once within 3 days, OR •0.4 g/kg bw given daily for 2 to 5 days. *Guillain-Barré syndrome* 0.4 g/kg bw/day over 5 days. Kawasaki disease 2.0 g/kg bw should be administered as a single dose. Patients should receive concomitant treatment with acetylsalicylic acid. *Chronic inflammatory demyelinating polyneuropathy (CIDP)* The recommended starting dose is 2 g/kg bw divided over 2 to 5 consecutive days followed by maintenance doses of 1 g/kg bw over 1 to 2 consecutive days every 3 weeks. *Multifocal Motor Neuropathy (MMN)* Starting dose: 2 g/kg given over 2-5 consecutive days. Maintenance dose: 1 g/kg every 2 to 4 weeks or 2 g/kg every 4 to 8 weeks. **Method of administration:** For intravenous use. Privigen should be infused intravenously at an initial infusion rate of 0.3 ml/kg bw/hr for approximately 30 min. If well tolerated, the rate of administration may gradually be increased to 4.8 ml/kg bw/hr. In PID patients who have tolerated the infusion rate of 4.8 ml/kg bw/hr well, the rate may be further gradually increased to a maximum of 7.2 ml/kg bw/hr. **Contraindications:** Hypersensitivity. Patients with selective IgA deficiency who developed antibodies to IgA. Patients with hyperprolinaemia type I or II. **Precautions:** Not indicated in patients with selective IgA deficiency where the IgA deficiency is the only abnormality of concern. Caution for hypersensitivity, haemolytic anaemia, aseptic meningitis syndrome, thromboembolism, acute renal failure, pulmonary adverse reactions, interference with serological testing, possibility of transmissible agents. In case of adverse reaction, IVIg products should be administered at the minimum rate of infusion and dose practicable. Privigen does not contain sucrose, maltose or glucose. Privigen contains less than 2.3 mg sodium per 100 ml. **Undesirable effects:** Headache, pain, pyrexia, influenza like illness, anaemia, haemolysis β, leukopenia, hypersensitivity, dizziness, hypertension, flushing, hypotension, dyspnoea, nausea, vomiting, diarrhoea, abdominal pain, hyperbilirubinaemia, skin disorder, myalgia, fatigue, asthenia, decreased haemoglobin, Coombs' (direct) test positive, increased alanine aminotransferase, increased aspartate aminotransferase, increased blood lactate dehydrogenase. **Date of last revision of PI:** Nov 2021

References

***1.** Morio T, et al. Immunological Medicine 2019;42:4, 162-168 **2.** Data on file. Available from CSL Behring as DOF-PRI-10019. **3.** Data on file. Available from CSL Behring as DOF-PRI-10020.**4.** Hong Kong Privigen Package Insert, Nov 2021*

Ig: immunoglobulin; IVIg: intravenous immunoglobulin; bw: body weight; PID: Primary immunodeficiency syndromes; SID: Secondary immunodeficiencies; CIDP: Chronic inflammatory demyelinating polyneuropathy; ITP: Primary immune thrombocytopenia; GBS: Guillain-Barré syndrome; MMN: Multifocal Motor Neuropathy

Biotherapies for Life™ **CSL Behring**

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HKG-PVG-11220008
Date of preparation: Nov 2022

Acknowledgements

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