

PRESS RELEASE

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NUS Medicine and Lien Foundation establish early childhood centre with \$30 million gift

The Centre for Holistic Initiatives for Learning and Development (CHILD) was born out of a desire to give all children in Singapore a head start in life and to help them develop optimally as they grow up

Singapore, 28 July 2021 – The Centre for Holistic Initiatives for Learning and Development (CHILD), established with a generous gift of S\$30 million from the Lien Foundation will provide a multi-disciplinary approach to translating critical research to intervention, to improve the health and developmental outcomes of children in Singapore and beyond.

The first of its kind in Asia, CHILD will build on an unmatched reservoir of clinical data on mothers and children in Singapore, provided by a much-cited research study - the GUSTO¹ (Growing Up in Singapore Towards healthy Outcomes) cohort. The GUSTO study is a major collaborative research effort involving the National University Health System, KK Women's and Children's Hospital, and A*STAR's Singapore Institute for Clinical Sciences as well as international researchers in New Zealand, the United Kingdom, and other countries.

CHILD is an inclusive, multi-collaborative effort, whose founding partners include the Yong Loo Lin School of Medicine, National University of Singapore (NUS Medicine), Lien Foundation, Centre for Evidence and Implementation (CEI), and A*STAR's Singapore Institute for Clinical Sciences (SICS), and aims to work with multiple partners in the local early childhood and family services space.

Its key propositions include:

1. Multi-disciplinary approach bringing together professionals from a variety of disciplines, cutting across social, health and education boundaries and incorporating health, sociology, psychology, artificial intelligence, and data analytics.
2. Helping to build capability and capacity at all levels and spheres within the early childhood space, involving its network of partners and collaborators comprising

¹ GUSTO is a landmark study which has gathered valuable data in the past decade about how conditions in pregnancy and early childhood influenced maternal mental health and child neurodevelopment. More information on GUSTO is available at: <http://www.gusto.sg/>

scientists, researchers, community partners, policy makers, teachers, therapists, and other professionals.

3. Closing the gap between the evidence for what works to give children the best start to life and the effective implementation of this in policy-making and service delivery.
4. Innovative, novel screening tools – develop and implement research-validated ‘made-in Singapore’ early screening tools as part of early detection, and to accurately and reliably identify children at risk of developmental concerns and stratify them according to risks. An example of this is the Whole Child Assessment (WCA)² developed by GUSTO researchers to assess school readiness.
5. Developing targeted intervention programmes tailored according to the risk profile of children screened, instead of a common one-size-fits-all approach. Examples of this include the **EASEL (Enhancing and Screening Early Development to Better Children’s Lives) Trial** which screens preschool children and also provides appropriate interventions to improve early childhood educators’ everyday practices in the classroom and their delivery of these practices for children with different needs. Another example is the **Appetite Toolbox** which aims to cultivate healthy eating behaviours early in life, and provide children and caregivers with tools designed to enhance eating self-regulation skills during preschool.
6. Breadth of focus - Based on GUSTO, as well as the latest evidence and data in the childhood development space, the focus is from conception to the primary school years.

The work of CHILD supports the Research, Innovation and Enterprise (RIE) 2025 plans on ‘human health and potential’ which aims to realise the full potential of every child through improving prenatal and early childhood development, and learning outcomes in schools. It also ties in well with the mission of Singapore’s Child and Maternal Health and Well-being Task Force to help women prepare for motherhood, and help children attain good health and well-being from their early years.

“The work of CHILD will promote efforts to maximise the developmental potential of children, with a focus on their emotional, cognitive, and social well-being, from conception to primary school years. The centre’s emphasis is in line with Singapore’s national drive to boost the health and well-being of mothers and their children and ensure a good start to life for all children in Singapore,” said Professor Chong Yap Seng, Dean of the Yong Loo Lin School of Medicine, NUS and Executive Director, Singapore Institute for Clinical Sciences (SICS), A*STAR.

"In a time of rapid social and technological change, we believe the convergence of disciplines and collaborative talents will inspire and propel new ways of uplifting the early childhood ecosystem," said Mr Lee Poh Wah, CEO, Lien Foundation.

"We see CHILD as an investment in the future and represents a commitment to support the national ambition of maximising human potential and enhancing the health and wellbeing of the next generation. We look forward to co-creating solutions with forward-thinking partners to ultimately achieve better outcomes for our young," said Mr Lee.

In gathering and synthesising the latest evidence and data across disciplines from Singapore and in the region, which will be used to guide and inform social policies and programmes and to accelerate the process from research and evidence to policy and intervention, CHILD will aim to engage and bring together key stakeholders in the local early childhood and family services space comprising government institutions such as the Health Promotion

² The Whole Child Assessment (WCA) is a screening approach to identify children with learning difficulties before they enter primary school.

Board, social service agencies, pre-schools and other institutions, as well as international partners.

CHILD Evidence to Policy and Practice Webinar Series

In tandem with the launch of CHILD, the '**CHILD Evidence to Policy and Practice Webinar Series**', aimed at engaging policymakers, academics, clinicians, and practitioners in a collaborative dialogue to foster innovations in research, policy and practice related to early childhood development, will be held on 30 July 2021. Ms Rahayu Mahzam, Parliamentary Secretary, Ministry of Communications and Information and Ministry of Health, will be delivering the keynote address at the webinar. The programme with the full list of speakers is outlined in Annexe A.

CHILD Evidence Briefs

CHILD has produced two 'Evidence Insights' on maternal mental health and the impact of digital media use on children's brain development. The key findings and recommendations are outlined below.

a) Maternal mental health affects brain development in children

Research from GUSTO, which aims to understand how conditions in pregnancy and early childhood influence the health and development of women and children, has shown that nearly 40 per cent of mothers in Singapore displayed depressive symptoms during pregnancy. Even at mild to moderate levels, this distress experienced by the mothers may affect the cognitive and emotional development and function of the child, and may go on to have an adverse impact on their school readiness, academic performance and even mental health^{3, 4}. The impairment of these functions places the child at a lifelong disadvantage⁵.

Importantly, the S-PRESTO (Singapore Preconception Study of long-Term maternal and child Outcomes) study found that women's maternal mental health issues may begin before conception, and remain problematic during their pregnancies, and even after delivery.

"These are significant findings that underscore the need for proactive intervention to take place as early as pre-conception, during pregnancy, and early postnatal period. This will ensure the optimal development of executive functions⁶ in the early years of their children and reduce the risks of lifelong downstream disadvantages. Interventions need to focus on both the mother and infant, with parental needs being supported even before the child is born," explained Associate Professor Robyn Mildon, Co-Director of CHILD and Founding Executive Director of the Centre for Evidence and Implementation (CEI).

³ Glover V. Maternal depression, anxiety and stress during pregnancy and child outcome; what needs to be done. *Best Practice & Research Clinical Obstetrics & Gynaecology*. 2014; 28 (1): 25-35.

⁴ Law EC, Aishworiya R, Cai S, et al. Income disparity in school readiness and the mediating role of perinatal maternal mental health: a longitudinal birth cohort study. *Epidemiology and Psychiatric Sciences*. 2021; 30: e6.

⁵ Moffitt TE, Arseneault L, Belsky D, et al. A gradient of childhood self-control predicts health, wealth, and public safety. *Proceedings of the National Academy of Sciences of the United States of America*. 2011; 108 (7): 2693-2698.

⁶ "Executive functions" are absolutely central to acquiring knowledge and solving problems, and are therefore critically important in school, work, and other aspects of daily life. They include the ability to consciously control behaviour; flexible thinking that forms the basis for planning and problem solving; the ability to regulate attention and process information; the self-regulation of emotional states; goal setting, planning and organisation.

b) Adverse impact of passive screen time on children’s cognitive and socio-emotional development

The early childhood years also present a crucial period to shape a child’s cognitive development. In a study led by Assistant Professor Evelyn Law from the Department of Paediatrics at NUS Medicine and Principal Investigator, Translational Neuroscience Programme, Singapore Institute for Clinical Sciences, A*STAR, which drew findings from GUSTO, it was found that locally, almost all infants and toddlers under two years of age are exposed to approximately two hours of digital media a day via electronic screen-based devices. High levels of passive viewing screen time during these early years may have adverse consequences for cognitive development in later childhood, including poorer eating behaviour, poor sleep, attention difficulties, near-sightedness, as well as developmental delays.

“Findings from recent studies are presenting clear evidence that high amounts of passive viewing screen time in early childhood are associated with numerous developmental and behavioural issues, including language delays, social communication deficits, and attention deficit hyperactivity disorder (ADHD) traits. This is a worrying trend and a key public health concern that we can, and ought to address, especially in this digital age where increased digital media use in infants and toddlers is ubiquitous,” said Professor Lee Yung Seng, Co-Director of CHILD and Head of Paediatrics at NUS Medicine.

“Based on current evidence, CHILD would recommend no passive screen time for children below 18 months and not more than one hour per day of unsupervised, passive screen viewing for children between 18-36 months of age,” added Assistant Professor Evelyn Law.

“Children are the future of our society. For long-term benefit across generations and to ensure optimal outcomes for the children, we urgently need to start focusing on women’s maternal mental health and well-being before pregnancy through to after birth. By amalgamating and integrating the research efforts in early childhood development, from pre-conception to pregnancy to the child’s infancy and early growing up years, the Centre is uniquely poised to accelerate this paradigm shift in our understanding of brain development and function in young children,” said Professor Chong Yap Seng.

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About the National University of Singapore (NUS)

The National University of Singapore (NUS) is Singapore's flagship university, which offers a global approach to education, research and entrepreneurship, with a focus on Asian perspectives and expertise. We have 17 faculties across three campuses in Singapore, with more than 40,000 students from 100 countries enriching our vibrant and diverse campus community. We have also established our NUS Overseas Colleges programme in more than 15 cities around the world.

Our multidisciplinary and real-world approach to education, research and entrepreneurship enables us to work closely with industry, governments and academia to address crucial and complex issues relevant to Asia and the world. Researchers in our faculties, 30 university-level research institutes, research centres of excellence and corporate labs focus on themes that include energy; environmental and urban sustainability; treatment and prevention of diseases; active ageing; advanced materials; risk management and resilience of financial systems; Asian studies; and Smart Nation capabilities such as artificial intelligence, data science, operations research and cybersecurity.

For more information on NUS, please visit www.nus.edu.sg

About the NUS Yong Loo Lin School of Medicine (NUS Medicine)

The NUS Yong Loo Lin School of Medicine is Singapore's first and largest medical school. Our enduring mission centres on nurturing highly competent, values-driven and inspired healthcare professionals to transform the practice of medicine and improve health around the world.

Through a dynamic and future-oriented five-year curriculum that is inter-disciplinary and inter-professional in nature, our students undergo a holistic learning experience that exposes them to multiple facets of healthcare and prepares them to become visionary leaders and compassionate doctors and nurses of tomorrow. Since the School's founding in 1905, more than 12,000 graduates have passed through our doors.

In our pursuit of health for all, our strategic research programmes focus on innovative, cutting-edge biomedical research with collaborators around the world to deliver high impact solutions to benefit human lives.

The School is the oldest institution of higher learning in the National University of Singapore and a founding institutional member of the National University Health System. It is Asia's leading medical school and ranks among the best in the world (Times Higher Education World University Rankings 2019 by subject and the Quacquarelli Symonds (QS) World University Rankings by Subject 2019).

For more information about NUS Medicine, please visit <https://medicine.nus.edu.sg/>

About Lien Foundation

The Lien Foundation is a Singapore-based private philanthropic organisation that seeks to inspire social change and improve the lives of seniors, children with special needs and those who were born into low-income homes. Through its unique brand of 'radical philanthropy', the Foundation pioneers and propagates solutions that address the root causes of challenges in eldercare and early childhood development in Singapore. It also works to improve access to palliative care among diverse communities in south and southeast Asia. To find out more: <http://lienfoundation.org/>

About Centre for Evidence and Implementation (CEI)

The Centre for Evidence and Implementation (CEI) is a global, not-for-profit evidence intermediary. CEI established an office in Singapore in 2017 and our multidisciplinary team works across other offices in Melbourne, Sydney, and London. The work of CEI brings together expertise in evidence synthesis and translation, implementation science, and program design and evaluation with extensive experience in early childhood, parenting, child development and disability. CEI works closely with its partners, including academics, policymakers, governments, practitioners, program providers, organisational leaders, philanthropists and funders.

CEI is committed to building capacity in the community by working with its partners to design, test, implement and evaluate evidence-informed programs that are contextualised and responsive to changing needs. The focus of the work at CEI is to put evidence into practice and policy in order to drive more effective decision-making and deliver better outcomes for children and families.

About Singapore Institute for Clinical Sciences (SICS)

Founded in 2007, the Singapore Institute for Clinical Sciences (SICS) was the first institute within the Agency for Science, Technology and Research (A*STAR) to focus on clinical sciences and translational research.

To fulfil its vision of building gateways and an evidence base for positive health, SICS strongly promotes clinical research that supports the understanding of metabolism, neuroscience, and how they impact human development. By leveraging on innovative approaches, technologies and seminal nationwide birth cohort studies such as Growing Up in Singapore Towards healthy Outcomes (GUSTO) and Singapore PREconception Study of long-Term maternal and child Outcomes (S-PRESTO), its esteemed researchers have made significant strides in pertinent healthcare fields like metabolic diseases, brain health, pathways to normal growth and development, and nutritional sciences.

Additionally, through its close ties with academia, industry and government, SICS is able to stay on the pulse of research and policy priorities to produce work that impacts at both the national and international level.

About GUSTO

Set up in 2009, GUSTO (Growing Up in Singapore Towards healthy Outcomes) is a nationwide birth cohort study involving collaborators from KK Women's and Children's Hospital (KKH), National University Health System (NUHS), National University of Singapore (NUS), and Singapore Institute for Clinical Sciences (SICS). It is a longitudinal study of Singaporean mothers and their offspring. Since its inception, the study has recruited 1,247

Singaporean pregnant women as volunteers. These volunteers are studied extensively during their pregnancy, and their offspring are closely followed up as they grow up. GUSTO aims to understand how conditions during pregnancy and early childhood may affect the mothers' and children's health, growth and development, as well as metabolic, neurodevelopmental and other conditions – all of which are of major public health and economic importance in Asia and around the globe. The research spans across four themes, where the results from monitoring both mother and child help in developing public health policies; clinically-valuable, testable interventions; reduce the burden of childhood obesity and non-communicable diseases, e.g. diabetes; and improve neurodevelopmental outcomes in children. The study is supported by the National Research Foundation (NRF) under the Open Fund-Large Collaborative Grant (OF-LCG) administered by the Singapore Ministry of Health's National Medical Research Council (NMRC), and the Agency for Science, Technology and Research (A*STAR). In RIE2025, GUSTO is supported by funding from the NRF's Human Health and Potential (HHP) Domain, under the Human Potential Programme.

About S-PRESTO

Led by KK Women's and Children's Hospital (KKH), in partnership with the Singapore Institute for Clinical Sciences (SICS) of the Agency for Science, Technology and Research (A*STAR), the National University of Singapore (NUS) and the National University Health System (NUHS), the Singapore PREconception Study of long-Term maternal and child Outcomes (S-PRESTO) aims to investigate the effects of nutrition, lifestyle, mental health and other environmental factors before and during pregnancy on the eventual health and socio-emotional outcomes of the mother and baby.

Since 2015, S-PRESTO has recruited 1,000 women between the ages of 18 and 35 years who were planning to conceive prior to pregnancy and followed up through their pregnancy, until their child was two years of age. The study seeks to understand important mechanisms linking maternal and perinatal health and nutrition to child development while also using the data to assess fertility rates in Singaporean couples intending to conceive. The long-term goal is to develop effective approaches to prevent metabolic disease and neurodevelopment disorders – ultimately enhancing health outcomes for every birth.

ANNEXE A

Programme for CHILD Evidence to Policy and Practice Webinar Series 30 July 2021

Time	Programme
9.00am	Commencement of event
9:05am	Opening Address Professor Chong Yap Seng , <i>Dean, Yong Loo Lin School of Medicine, National University of Singapore and Executive Director, Singapore Institute for Clinical Sciences (SICS), A*STAR</i>
9:10am	Keynote Address Ms Rahayu Mahzam , <i>Parliamentary Secretary, Ministry of Communications and Information and Ministry of Health</i>
9:20am	Key Insight – Digital Media Use and Brain Development Assistant Professor Evelyn Law <i>Assistant Professor, Department of Paediatrics, Yong Loo Lin School of Medicine, National University of Singapore</i> <i>Principal Investigator, Translational Neuroscience Programme, Singapore Institute for Clinical Sciences (SICS), Agency for Science, Technology and Research (A*STAR)</i>
9:30 am	Panel Discussion Moderator: Associate Professor Robyn Mildon <i>Co-Director, Centre for Holistic Initiatives for Learning and Development Executive Director, Centre for Evidence and Implementation</i> Guest Speakers: Professor Philip A. Fisher <i>Philip H. Knight Chair & Professor of Psychology Director, Centre for Translational Neuroscience, University of Oregon</i> Ms Vivienne Ng <i>Chief Psychologist, Ministry for Social and Family Development, Office of the Chief Psychologist</i> Professor Donna Cross <i>Professor and Programme Head, Development and Education University of Western Australia and the Telethon Kids Institute</i>
1025am	Closing Remarks
1030am	End of Webinar