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MEDIA RELEASE

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NEW TELE-DENTISTRY PROGRAMME SUPPORTS EARLY INTERVENTION FOR CHILDREN AT RISK OF CARIES

Targeting vulnerable families, the collaborative programme empowers parents with personalised insights and clear, prioritised guidance for their children's oral care

SINGAPORE — For many families, dental care decisions tend to be reactive, made only when a child experiences pain or visible dental problems, by which time treatment can be more complex. Addressing childhood dental risk early not only improves health outcomes but also supports better use of healthcare resources by ensuring children receive the right level of care at the right time.

Past studies on children's dental health in Singapore have highlighted the prevalence of early childhood caries and gaps in dental care access and follow-through among young children. One study[1] showed an increase in early childhood caries with age, with prevalence rising from 17.8 per cent among two-year-old children to 42.9 per cent by age three.

Another study[2] conducted between 2018 and 2019 by institutions under the National University Health System (NUHS), examined the differences in health habits and health-related quality of life of preschool children from lower-income families [3] compared with their peers. In relation to dental health, it found that fewer than half had ever visited a dentist, compared with 75.4 per cent of their peers from higher-income families. Of particular concern was the low follow-through on recommended care. Among children identified with active dental decay and advised to seek follow-up, only 13.3 per cent of those from lower-income families accessed specialist care within the three- to four-month follow-up period. Amongst those followed up till 12 months, 28.9 per cent followed through with regular dental care (including primary care dental clinics) at least once a year.

Enabling early, right-sited dental care through tele-dentistry

In January 2023, a multi-modal tele-dentistry programme which combined behavioural risk assessment with image-based assessment, was launched as part of the HEAlth and Development SUpport in Preschool Partnerships (HEADS-UPP) initiative (refer to

[1] Hu S, Sim YF, Toh JY, Saw SM, Godfrey KM, Chong YS, Yap F, Lee YS, Shek LP, Tan KH, Chong MF, Hsu CS. Infant dietary patterns and early childhood caries in a multi-ethnic Asian cohort. Sci Rep. 2019 Jan 29;9(1):852. doi: 10.1038/s41598-018-37183-5. PMID: 30696871; PMCID: PMC6351619.

[2] Chong SC, Aishworiya R, Seo WL, Chiong YK, Koh GC, Lin JB, Heng L, Habib Mohd T, Saw YE, Chan YH, Chua JS, Shorey S. Health practices, behaviours and quality of life of low-income preschoolers: A community-based cross-sectional comparison study in Singapore. Ann Acad Med Singap. 2024 Mar 27;53(3):142-151. doi: 10.47102/annals-acadmedsg.2023168. PMID: 38920242.

[3] Those with a household income below SGD3000 or per capita income below SGD750.

Annex A). HEADS-UPP is a community-based preventive health programme delivered in partnership with Care Corner Singapore and PAP Community Foundation (PCF) Sparkletots Preschool, providing health and developmental screenings, targeted health and parenting education, and support to children from lower-income families[4].

The tele-dentistry programme brings together the clinical, academic and public health expertise from the National University Hospital (NUH), the Faculty of Dentistry, National University of Singapore (NUS Dentistry), the National University Centre for Oral Health, Singapore (NUCOHS) and the Yong Loo Lin School of Medicine, National University of Singapore (NUS Medicine) to support early identification of caries risk and timely parental action. Through this cross-institutional collaboration, the programme aims to enable earlier intervention and, over the longer term, help narrow oral health disparities among preschool children from vulnerable families.

As of 20 January 2026, a total of 355 children aged 18 months to six years from 17 PCF Sparkletots preschools in western Singapore had benefitted from the programme. Nurses and case management officers from NUH visit preschools to capture intraoral images of the children's teeth, while parents complete a questionnaire adapted from the American Academy of Pediatric Dentistry's Caries Risk Assessment tool, covering factors such as oral hygiene, dietary habits, family history of caries, and frequency of dental visits.

A paediatric dentist from NUS Dentistry then remotely reviews the questionnaire responses and assesses the intraoral photographs for signs of dental plaque, gingival inflammation, and dental decay. These assessments culminate in a personalised dental report for each child, which includes annotated intraoral images highlighting areas of concern, alongside the child's caries risk level and recommended individualised and prioritised follow-up actions. The programme incorporates a tiered referral pathway based on individual risk assessment, ensuring right-siting of care, with high-risk children referred directly to NUCOHS for specialist management, while those of lower risk are referred to appropriate primary care. Members of the HEADS-UPP team will also engage parents to walk through the report, reinforcing key recommendations and providing coaching on preventive practices.

The same questionnaire is administered approximately six to nine months after the individualised report is shared with families, providing the programme team with insights into whether parents have acted on the recommended preventive measures, such as arranging dental visits or making changes to their child's oral health habits.

Preliminary findings show improved parental follow-through and reduced caries risk

Based on responses from the questionnaires administered at the start of the tele-dentistry programme, 93.3 per cent of children were identified as being at moderate to high risk of dental caries. A review of intraoral images from the 355 participating children further found that 27.3 per cent showed signs of dental caries, 30.7 per cent had inflamed gums, and 54.9 per cent demonstrated poor oral hygiene.

Among children identified with dental caries, the tele-dentistry programme was associated with improved follow-through on recommended care. While only 13.3 per

[4] Families who meet the criteria of household income below SGD4500 or per capita income below SGD1125.

cent of children from lower-income families received further specialist treatment within the three- to four-month follow-up period in the 2018/19 NUHS study despite being recommended to do so, 57.5 per cent of children in the HEADS-UPP tele-dentistry programme subsequently received such follow-up care four to six months later, suggesting stronger parental follow-through and earlier intervention. More parents also followed recommendations to seek regular dental care at primary care dental clinics (51.3 per cent), as compared with the 2018/19 NUHS study (28.9 per cent).

Feedback from parents participating in the tele-dentistry programme indicated that the personalised approach helped strengthen their child's toothbrushing routines, reduce practices associated with caries risk, and build greater confidence in managing their child's oral health. These perceptions were supported by preliminary findings from the follow-up questionnaire administered six to nine months after parents received the personalised dental report, which showed a reduction in caries risk, with the proportion of children classified as moderate to high risk decreasing from 93.3 per cent to 75.6 per cent.

"What we are seeing from this tele-dentistry programme is encouraging," said Associate Professor Catherine Hong, Vice Dean (Research, Innovation and Enterprise), NUS Dentistry and Senior Consultant, Division of Paediatric Dentistry, NUCOHS. "By bringing dental assessment and clinical advice closer to where children are, we are able to identify risks earlier and support lower-income families who might otherwise face barriers to timely care. This helps address gaps in early detection during a critical stage of a child's development."

Adjunct Associate Professor Chong Shang Chee, Head of Division and Senior Consultant, Division of Developmental and Behavioural Paediatrics, Department of Paediatrics, Khoo Teck Puat – National University Children's Medical Institute, NUH, and programme lead of HEADS-UPP, added: "Looking ahead, we see tele-dentistry as an important part of how HEADS-UPP encourages families to take proactive action through structured guidance, such as individualised reports that clearly prioritise next steps so parents are not overwhelmed."

"Going forward, we aim to enhance the dental screening process through the integration of artificial intelligence (AI). AI can help review the intraoral images, evaluate responses from the Caries Risk Assessment questionnaire and integrate these data to generate oral health reports. These reports contain customised oral health recommendations that allow parents to intervene early, reducing the risk of progression of dental caries and gum inflammation. These enhancements will streamline the dental screening process, enabling the programme to reach more children and expand to additional preschools, while reducing reliance on manual processes. "

Chinese Glossary

National University Health System (NUHS)	国立大学医学组织 (国大医学组织)
National University Hospital (NUH)	国立大学医院(国大医院)
Faculty of Dentistry, National University of Singapore (NUS Dentistry)	新加坡国立大学牙科学院 (国大牙科学院)

National University Centre for Oral Health, Singapore (NUCOHS)	新加坡国立大学口腔医学中心 (国大口腔医学中心)
Yong Loo Lin School of Medicine, National University of Singapore (NUS Medicine)	新加坡国立大学杨潞龄医学院 (国大杨潞龄医学院)
National University Centre for Women and Children	国大妇幼医疗中心
Care Corner Singapore	关怀机构
PAP Community Foundation (PCF) Sparkletots Preschool	人民行动党社区基金会 Sparkletots 学前教育
HEADS-UPP tele-dentistry programme	HEADS-UPP 远程牙科计划
Associate Professor Catherine Hong Vice Dean (Research, Innovation and Enterprise), Faculty of Dentistry, National University of Singapore Senior Consultant Division of Paediatric Dentistry National University Centre for Oral Health, Singapore	方素玲副教授 副院长（研究、创新与企业） 新加坡国立大学牙科学院 高级顾问医生 小儿口腔科 新加坡国立大学口腔医学中心
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About the National University Hospital (NUH)

The National University Hospital (NUH) is Singapore's leading university hospital. While the hospital at Kent Ridge first received its patients on 24 June 1985, our legacy started from 1905, the date of the founding of what is today the NUS Yong Loo Lin School of Medicine. NUH is the principal teaching hospital of the medical school.

Our unique identity as a university hospital is a key attraction for healthcare professionals who aspire to do more than practise tertiary medical care. We offer an environment where research and teaching are an integral part of medicine, and continue to shape medicine and transform care for the community we care for.

We are an academic medical centre with over 1,200 beds, serving more than one million patients a year with over 50 medical, surgical and dental specialties. NUH is the only public and not-for-profit hospital in Singapore to provide trusted care for adults, women and children under one roof, including the only paediatric kidney and liver transplant programme in the country.

The NUH is a key member of the National University Health System (NUHS), one of three public healthcare clusters in Singapore. For more information, visit www.nuh.com.sg

About the National University Centre for Oral Health, Singapore (NUCOHS)

The National University Centre for Oral Health, Singapore (NUCOHS) is a national specialty centre that provides a comprehensive spectrum of dental care to manage oral, dental, and jaw-related conditions in patients across the lifespan. NUCOHS is also well poised to provide oral healthcare to the geriatric population as well as patients with special needs including those with complex medical conditions.

NUCOHS draws on the expertise of its clinicians and experts in the fields of Endodontics, Oral Maxillofacial Surgery, Orthodontics, Periodontics, Paediatric Dentistry and Prosthodontics, Geriatric Dentistry and Dental Public Health from the National University Hospital's (NUH) University Dental Cluster (UDC) and the National University of Singapore (NUS) Faculty of Dentistry to operate within NUHS under an academic health centre governance model. Its vision is to transform oral health in Singapore, nurture the next generation of oral health professionals, and champion impactful multi-disciplinary research in oral health.

NUCOHS is one of the three national centres, along with the National University Cancer Institute, Singapore (NCIS) and the National University Heart Centre, Singapore (NUHCS), which form an integral part of the National University Health System (NUHS) in meeting the evolving specialised healthcare needs of the population in Singapore.

For more information, please visit: www.nucohs.com.sg

About the Yong Loo Lin School of Medicine, National University of Singapore (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 one of the leading medical schools in Asia and ranks among the best in

the world (Times Higher Education World University Rankings 2025 by subject and the Quacquarelli Symonds (QS) World University Rankings by subject 2025).

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

About the Faculty of Dentistry, National University of Singapore (NUS Dentistry)

The NUS Faculty of Dentistry began as the Department of Dentistry within the King Edward VII College of Medicine in 1929. It was the first dental school to be established in a British colony in the East. It achieved full Faculty status in 1966 and continues to be the only dental school in Singapore.

The Faculty is led by a Dean and a team of academic and administrative staff, in fulfilling its strive for excellence in the areas of oral health clinical care, research, and education. It works closely with departments in the NUS Yong Loo Lin School of Medicine and other teaching hospitals and institutions across Singapore in healthcare delivery and education. It also partners departments in other faculties of NUS, public institutions, and private enterprises in multi-disciplinary research activities.

For more information on the Faculty, please visit dentistry.nus.edu.sg.

ANNEX A

About the HEAlth and Development SUpport in Preschool Partnerships (HEADS-UPP) programme

The HEAlth and Development SUpport in Preschool Partnerships (HEADS-UPP) programme under the National University Hospital is delivered in partnership with Care Corner Singapore and PAP Community Foundation (PCF) Sparkletots Preschool. Bringing together healthcare professionals, social workers, preschool educators and researchers from the Centre for Holistic Initiatives for Learning and Development (CHILD) at the Yong Loo Lin School of Medicine, National University of Singapore, the programme provides coordinated health and developmental support for children from lower-income families.

HEADS-UPP is grounded in the belief that healthy habits and routines should begin early, with families supported right from the start. Lower-income children are known to be at higher risk of health and developmental issues, due to various social and environmental disadvantages. These issues may persist into adulthood without specific early intervention. Adopting a preventive and family-centred approach, the programme focuses on early identification of health and developmental needs, followed by timely referrals to appropriate support services for both children and their caregivers.

This approach is operationalised through a range of initiatives, including maternal mental health assessment and support, coaching parents in providing a home environment enabled for language and developmental stimulation, and a tiered screening framework followed up by direct child assessments, to identify children at health and developmental risks. Based on these assessments, targeted education, support, and service referrals were individualised for each family. Every child received a detailed, personalised health and development report, with follow-up recommendations where necessary. Families requiring further evaluation were given direct access to specialist centres, reducing the need for additional primary care referral processes. The programme also works closely with community and government partners on initiatives to further support the overall well-being of participating families. Preschool teachers also received follow-up recommendations of each child, so they would be able to help support the parents after they are enrolled in HEADS-UPP.

Technology-enablement is also a feature of HEADS-UPP. Tele-dentistry helped improve access to dental care. Carefully curated health education resources for caregivers and educators, based on common but important health issues was delivered through our NUHS health app and chatbot. Telehealth through video-consultations and support allowed direct access of parents, families and teachers to the health team, whilst digital note systems allowed health professionals to track service uptake and each child's health needs across the healthcare system including primary care sites.

Since its launch in 2022, HEADS-UPP has reached more than 400 children, and trained more than 160 professionals in interdisciplinary care, supporting more integrated and upstream interventions in early childhood health and development. HEADS-UPP was also the recipient of the Healthcare Humanity Awards (Team Award) in November 2025.