

PRESS RELEASE

NEW DIABETES FOOT CARE PROGRAMME DRIVES POSITIVE PATIENT OUTCOMES, REDUCES RISK OF LOWER EXTREMITY AMPUTATION

For Immediate Release

Singapore, 1 October 2021 – Diabetes mellitus (DM) is a major public health concern, with one in three Singaporeans at risk of developing the disease in his/her lifetime. Poorly controlled diabetes can lead to serious complications, including diabetic foot ulcers (DFUs) and lower extremity amputations (LEAs)¹. Singapore has one of the highest diabetes-related LEA rates in the world, with an average of four amputation procedures conducted a day².

To enhance care for patients with DFUs and help prevent DFU-related amputations, the National Healthcare Group (NHG) started the **Diabetic Foot in Primary and Tertiary (DEFINITE) Care** programme in June 2020. DEFINITE Care is a first-of-its-kind initiative that integrates and coordinates multidisciplinary care for such patients across primary and tertiary settings in NHG, including the National Healthcare Group Polyclinics (NHGP), Tan Tock Seng Hospital (TTSH), Khoo Teck Puat Hospital (KTPH), and the upcoming Woodlands Health (WH). The multidisciplinary care team comprises doctors, nurses and Allied Health Professionals from Vascular Surgery, Endocrinology, Orthopaedics Surgery, Primary Care, Podiatry, and Nursing. This holistic and integrated approach enables **early detection, diagnosis, and treatment for patients**.

With DEFINITE Care, patients with diabetes undergo regular foot screening and surveillance, education on foot care, and receive early and preventive treatment for mild to moderate conditions such as calluses or blisters under NHGP's DM Foot **S**creening & Surveillance, **T**reatment & **E**scalation Protocol (STEP) programme. Patients with more severe foot wounds or ulcers are fast-tracked and referred to the Lower Extremity Amputation Prevention Programme (LEAPP) at TTSH and KTPH for specialist care. As patients with less serious conditions can be managed in a primary care setting, the LEAPP specialist clinics focus on patients who require more complex care.

As of June 2021, more than 2,700 patients have benefitted from the DEFINITE Care programme. Preliminary data showed a 40 per cent reduction in major LEA rates and 80 per cent reduction in minor LEA rates, as well as significant improvement in diabetes and hyperlipidaemia control among patients. Through the establishment of a DEFINITE Care Registry comprising clinical outcomes, diabetic foot health states, quality-of-life (QoL), patient-

¹ Lower extremity amputation (LEA) refers to the surgical removal of the toe, foot or leg. Major LEA refers to amputation of the leg, below or above the knee, while minor LEA refers to amputation of the foot and toes.

² Ministry of Health Committee of Supply Debate 2016: <https://www.moh.gov.sg/news-highlights/details/speech-by-minister-for-health-mr-gan-kim-yong-at-the-moh-committee-of-supply-debate-2016>

reported outcome measures (PROMs), and direct healthcare costs, the cost-effectiveness, cost-utility, and long-term sustainability of the programme can be analysed.

A new role, Diabetic Foot Coordinator (DFC), was created to support this joined-up care. DFCs are trained to monitor, assess and review patients' needs throughout their DM care journey with NHG. They work closely with the multidisciplinary care team to liaise with and follow up on patients during their transition between primary and specialist care, as well as post-discharge from hospitals. DFCs also advocate health ownership by ensuring that patients adhere to self-monitoring and surveillance of foot health, which in turn, leads to improved outcomes. As of June 2020, four DFCs have been deployed across NHG.

NHG is also partnering the Nanyang Technological University of Singapore (NTU)'s Lee Kong Chian School of Medicine (LKCMedicine); Skin Research Institute of Singapore (SRIS) – a tripartite partnership between the Agency for Science, Technology and Research (A*STAR), NHG, and NTU; as well as software company, eKare, to study the efficacy of a wound surveillance mobile application (app) for patients with DFUs and/or their caregivers to use. The app enables tracking and monitoring of wounds, and early detection of deterioration by leveraging Artificial Intelligence (AI) and deep learning via wound image analysis, to prevent diabetes-related amputations.

“We have seen encouraging care outcomes for patients in the DEFINITE Care Programme, which demonstrates the importance of integrated, coordinated care across primary and tertiary settings. This new initiative has enabled us to help patients own their health, better manage diabetes and its complications, and in turn, improve care outcomes of our population. We look forward to working with our partners to develop and optimise the wound surveillance app for patients and their caregivers to effectively manage their DFUs,” says **Associate Professor Daniel Chew, Chairman, NHG DM Steering Committee; Senior Consultant, Department of Endocrinology, TTSH.**

“This is a timely collaboration to assess the efficacy of a patient-owned wound app for diabetic foot ulcers. We believe that the shift towards home surveillance will enable closer monitoring and better management of chronic wounds,” notes **Ms Annie Joseph, Director, Business Development & Strategic Partnership, SRIS and A*STAR Skin Research Labs.**

“Through this research, we aim to help patients with chronic wounds become more confident in adopting technology to self-manage their conditions. LKCMedicine's expertise in digital health assessment augments our collaboration with the NHG DEFINITE Care Team – we analyse patients' feedback on the mobile app, and provide insights on how they, their caregivers and healthcare professionals manage wounds more effectively through this virtual platform. This will lead to better customisation of the app for patients and their caregivers as the team explores rolling it out in the DEFINITE Care programme,” says **Professor Josip Car, Director, Centre for Population Health Sciences, LKCMedicine.**

“We are delighted to partner NHG in the wound surveillance programme. We look forward to demonstrating improved patient outcomes by leveraging eKare's remote monitoring and telemedicine capabilities for patients with chronic wounds at home,” says **Mr Patrick Cheng, Chief Executive Officer, eKare.**

A/Prof Daniel Chew and his team will be sharing the outcomes of the DEFINITE Care programme at the 19th Singapore Health and Biomedical Congress (SHBC) organised by NHG. This year's SHBC, themed "Brave New World of Healthcare", will be held virtually, with sessions and topics such as 'Reinventing the Continuum of Healthcare, 'Incentivising Health / Preventive Care', 'What We Learn from COVID-19?', 'Stratifying Health Care' and 'Innovation in Clinical Care' streamed as a weekly lunch-time series over four months from 7 October. This affords a wider audience – the whole of healthcare in Singapore and international participants – convenient access to the SHBC content. (See *Fact Sheet on SHBC 2021*)

Delving deeper into diabetes care, the 'Metabolic Health and Diabetic Management' track will highlight the **Augmented Glucose Monitoring Programme**. Piloted by Yishun Health in September 2019, the programme is a community-based diabetes care initiative that promotes self-management of the condition and lifestyle changes among residents living in Northern Singapore, through the use of a toolkit. The toolkit contains blood glucose monitors, blood pressure monitors and weighing scales, customised food diaries and educational materials. Together with their care team, patients monitor and report their condition on a bi-weekly basis, with clinical reviews conducted every three months. Preliminary data showed improvement in the patients' diabetes control, with more marked improvement seen in those with higher readings. About 40 per cent of patients with higher HbA1c levels at baseline experienced an improvement in their control. Patients also improved their Time-in-Range (TIR) (the percentage of time in which glucose readings are in the optimal range of 3.9 to 10.0 mmol/l) from 50.2 per cent to 52.7 per cent, as well as reduced extreme hyperglycaemia and hypoglycaemia by 1.7 per cent and 0.7 per cent, respectively.

ENHANCING PALLIATIVE CARE THROUGH COLLABORATION AND EDUCATION

Another innovation in clinical care to be featured at SHBC 2021 is KTPH's Palliative Medicine and General Surgery teams' novel palliative surgery collaboration. This pilot programme ensures patients are well-supported at the End-of-Life through holistic care by relieving symptoms and improving the quality of life for patients with advanced or incurable cancers.

KTPH also partnered eight nursing Homes to enhance specialised geriatric and palliative care for residents at the end-of-life. The KTPH GeriCare team works with the nursing home care teams to provide clinical care and support, as well as specialised training for the nurses looking after them. This is conducted through physical visits and teleconsultations, so that residents can receive appropriate care in place, minimising hospital admissions. In February 2021, the GeriCare team introduced the use of animation, titled *PowerFacts*, to augment ongoing training efforts. Data collected indicated that *PowerFacts* is an effective online educational tool to teach foundational palliative care knowledge to healthcare workers in nursing homes.

BOOK LAUNCHED TO HELP HEALTHCARE PROFESSIONALS IMPROVE COMMUNICATION WITH PATIENTS AND FAMILIES

To help healthcare professionals better communicate with patients, NHG will be launching a new book titled *The Bedside Communication Handbook* at the SHBC 2021. Written by experienced specialists and clinicians from various fields, the book covers important principles and offers practical tips aimed at guiding readers in refining their communication skills, establishing rapport, and demonstrating empathy in their day-to-day conversations with patients and their families. Healthcare professionals at all levels will find the bite-size chapters easy to read and to grasp the core principles of medical communication.

For information about SHBC 2021, visit www.shbc.com.sg.

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About the National Healthcare Group

The National Healthcare Group (NHG) is a leader in public healthcare in Singapore, recognised at home and abroad for the quality of its medical expertise and facilities. Care is provided through an integrated network of six primary care polyclinics, acute care and tertiary hospitals, national specialty centres and business divisions. Together they bring a rich legacy of medical expertise to our philosophy of integrated patient-centred care.

NHG's vision is '*Adding Years of Healthy Life*'. This vision goes beyond merely healing the sick to the more difficult and infinitely more rewarding task of preventing illness and preserving health and quality of life. With some 20,000 staff, NHG aims to provide care that is patient-centric, accessible, seamless, comprehensive, appropriate and cost-effective.

As the Regional Health System (RHS) for Central Singapore, it is vital for NHG to partner and collaborate with stakeholders, community advisors, and social care agencies. Together with our patients, their families and caregivers, we aim to deliver integrated healthcare services and programmes that help in *Adding Years of Healthy Life* to all concerned.

More information is available at www.nhg.com.sg.

GLOSSARY

新加坡卫生与生物医学大会	Singapore Health & Biomedical Congress (SHBC)
刘镇光助理教授 新加坡 2021 年卫生与生物医学大会主席 专科顾问, 国立成瘾治疗服务, 心理卫生学院	Assistant Professor Lambert Low SHBC 2021 Organising Chairman; Consultant, National Addictions Management Service, Institute of Mental Health
周奕光副教授 国立健保集团糖尿病症指导委员会主席 高级顾问医生, 内分泌科, 陈笃生医院	Associate Professor Daniel Chew Chairperson, NHG DM Steering Committee; Senior Consultant, Department of Endocrinology, Tan Tock Seng Hospital
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罗智文医生 顾问医生, 外科部, 兀兰医疗园	Dr Joseph Lo Lead, DEFINITE Care; Consultant, Department of Surgery, Woodlands Health
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程鹏先生 首席执行官, eKare Inc.	Mr Patrick Cheng Chief Executive Officer, eKare Inc.
卢洁敏医生 顾问医生, 临床研究组, 邱德拔医院	Dr Serena Low Consultant, Clinical Research Unit, Khoo Teck Puat Hospital
蔡滋恩医生 顾问医生, 老年科部门, 邱德拔医院	Dr Chua Zi'En Ruth Consultant, Department of Geriatric Medicine, Khoo Teck Puat Hospital
许荣焕副教授 高级顾问医生, 慈怀护理科, 陈笃生医院	Associate Professor Mervyn Koh Senior Consultant, Department of Palliative Medicine, Tan Tock Seng Hospital



FACT SHEET

SINGAPORE HEALTH & BIOMEDICAL CONGRESS 2021

Brave New World of Healthcare

The 19th Singapore Health and Biomedical Congress (SHBC) 2021, organised by the National Healthcare Group (NHG), will focus on the “Brave New World of Healthcare”, and the paradigm shift in healthcare delivery over the past year – leveraging technology and exploring innovative approaches through telemedicine, remote monitoring and other technology-enabled services. As Singapore prepares for the new normal, SHBC 2021 will also explore and discuss how to develop a sustainable, future-ready healthcare system amid the changing landscape. The conference will kick off on 7 October 2021.

Minister for Social and Family Development and Second Minister for Health Mr Masagos Zulkifli will be the Guest-of-Honour for the SHBC 2021 Opening Ceremony and he will deliver the Opening Address on 7 October.

SHBC 2021 NEW FORMAT AND HIGHLIGHTS

This year’s Congress will be special. Besides the Opening Ceremony and several select sessions taking place on 7 October, the rest of the track, plenary and panel discussions will be streamed virtually as a weekly lunch-time series over four months. Renowned local and overseas experts will share their in-depth expertise and knowledge on five key areas, with a total of 13 tracks: ***Brave New World of Healthcare; What We Learnt from COVID-19?; Education; Stratifying Health Care; and Innovation in Clinical Care.***

On the morning of 7 October, the keynote address on “**Community, Family and Health**” will be delivered by **Mr Masagos Zulkifli**. This will be followed by a panel discussion on “**Reinventing the Continuum of Healthcare**” with **Associate Professor Kenneth Mak, Singapore’s Director of Medical Services; Professor Philip Choo, Group CEO, NHG; and Associate Professor Jeremy Lin, Director, LIGHT, Saw Swee Hock School of Public Health, National University of Singapore (NUS)**. The session will be moderated by Ms Salma Khalik, Senior Health Correspondent, *The Straits Times*.

A second panel discussion for the afternoon will focus on “**New Models of Partnership in a Post-COVID World**”. It will feature **Dr Soumya Swaminathan Yadav, Chief Scientist, World Health Organization (WHO); Dr Richard Hatchett, Chief Executive Officer, Coalition for Epidemic Preparedness Innovations (CEPI); Professor Leo Yee Sin, Executive Director, National Centre for Infectious Diseases (NCID); and Professor Peter Piot, Professor of Global Health, London School of Hygiene & Tropical Medicine; Distinguished Visiting Professor in Medicine, NUS**. The session will be moderated by

Associate Professor David Lye, Director, Infectious Diseases Research and Training Office (IDRTO), NCID.

Notable Plenary Sessions will include:

- **What Does the COVID-19 Pandemic Tell Us About Health Systems and Preparedness**
Professor Tan Chorh Chuan, Chief Health Scientist, Ministry of Health (MOH); Executive Director, MOH Office for Healthcare Transformation (MOHT) will share insights on the new SARS vs Influenza paradigm of pandemic control, the development of key global priorities of universal health coverage and epidemic preparedness, and the building of basic research capabilities and their rapid translation into real world applications.
- **Precision Medicine in 2021: Opportunities and Challenges**
Professor Joseph Sung, Dean, Lee Kong Chian School of Medicine (LKCMedicine); Senior Vice President (Health and Life Sciences), Nanyang Technological University (NTU) will discuss how technology and development of biomedical sciences have made personalised medical care possible, the critical need for proof of improved clinical outcome and cost-effectiveness, and defining ethical, social and legal issues of data-driven approaches, artificial intelligence and machine learning.
- **Harnessing Digital Medicine to Optimise N-of-1 Healthcare**
Professor Dean Ho, Provost's Chair Professor; Director, The N.1 Institute for Health (N.1) and The Institute for Digital Medicine (WisDM); Head, Department of Biomedical Engineering, Department of Pharmacology, NUS will highlight the emergence of digital medicine, how technology is changing the development and administration of therapies to evolve alongside patients, and the integration of digital medicine-based optimisation into clinical workflows.

NHG RESEARCH & INNOVATION AWARDS 2021

The annual NHG Research & Innovation Awards recognise individuals and teams who have made outstanding contributions towards improving health outcomes or delivery, as well as promoting the spirit for continuous research and innovation in NHG. A new category, "NHG-LKCMedicine Clinician/Clinical Scientist Award" was added this year. The Awards will be presented to four individuals and five teams across five categories.

SHBC SCIENTIFIC COMPETITION 2021

The annual Scientific Competition showcases the achievements of medical and healthcare professionals and scientists to improve patient care. A new category, "COVID-19: Our Response to a New Challenge" was added this year. 633 submissions were received from Institutions across healthcare clusters and community partners. 58 award winners across 18 categories will be showcased online.

For information about SHBC 2021, visit www.shbc.com.sg.

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