EDITORIAL
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Continuous Glucose Monitoring

Dr Chiang Shu Hui Grace

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Diabetes mellitus (DM) is one of the leading, non-communicable causes of premature morbidity and mortality.[1] DM poses a significant global disease burden and is a growing health problem. In Singapore, DM is a major concern and poses a mounting challenge, accounting for 10 percent of disease burden in Singapore.[2] The prevalence of DM for individuals aged 16-69 years old in Singapore increased from 8.3 percent to 8.6 percent from 2010 to 2017[3]; the International Diabetes Federation estimates that the prevalence would have increased to 13.7 percent by 2030.[4]

Singapore's population is ageing, and by 2030, 1 in 4 citizens will be aged 65 and above, making it a "super aged" country. With a rapidly ageing population, low mortality rates, and rising proportions of people living with DM, the number of individuals at risk for developing DM complications is expected to increase, imposing a heavy burden on the country's health system and socio-economic development. Uncontrolled DM increases the risk of microvascular and macrovascular complications, which include retinopathy, neuropathy, nephropathy, ischaemic heart disease, stroke, peripheral artery disease, and lower extremity amputations.[5] The cost burden from DM is expected to rise from $940 million in 2014 to $1.8 billion in 2050, taking into consideration medical expenses and productivity loss.[6] As a consequence, in 2016, the Singapore government declared a "War on Diabetes" (WoD). The WoD led to a nationwide, multipronged approach to preventing and managing DM. This comprised of upstream prevention, early screening and intervention, and improved disease control.[7]

One approach to minimising the progression of DM and its potential complications is strict glucose control and management. Glucose monitoring can help in managing symptoms, evaluating response to DM therapy, achieving glycaemic targets, and preventing or delaying the progression of both Type 1 DM and Type 2 DM complications. Hba1c has been a traditional method for assessing glycaemic control; however, it is unable to reflect intra- and inter-day glycaemic excursions that may lead to hypoglycaemia or postprandial hyperglycaemia. Continuous glucose monitoring (CGM), whether from real-time use or intermittently viewed, is one the of newer methods for assessing glucose levels that can address the limitations of Hba1c and self-monitoring of glucose, and can play an important role in assessing treatment efficacy and safety in DM patients.[8-10]

CGM systems can chart glucose levels, share results, and/or receive alerts in real-time during occasions of hypo- or hyperglycaemia, allowing patients and their healthcare providers to assess patterns in glucose fluctuations. This aids them in making informed decisions about nutrition, physical activity, and DM medications to better manage DM.

This issue of the *Singapore Family Physician* highlights the usefulness of CGM to patients and healthcare providers.

In Unit 1, Dr Suresh Chandram gives a comprehensive overview on the role of CGM in managing T2DM.

In Unit 2, Dr Ester Yeoh provides physicians with an approach to interpreting and reviewing data from the Ambulatory Glucose Profile report generated from CGM use. She also highlights solutions to overcome the challenges from initiating CGM.

In Unit 3, A/Prof Gary Kilov AM offers physicians guidance on integrating CGM into clinical workflows in the primary care setting.

In this issue, A/Prof Goh Lee Gan has selected ten current readings on topics related to CGM in various patient populations and settings.

REFERENCES

1. Beaglehole R, Bonita R, Horton R, et al. Priority actions for the non-communicable disease crisis. Lancet. 2011 Apr 23;377(9775):1438-47. doi: 10.1016/S0140-6736(11)60393-0. Epub 2011 Apr 5. PMID: 21474174.
2. Epidemiology & Disease Control Division, Ministry of Health SI for HM and E. The Burden of Disease in Singapore, 1990–2017: An overview of the Global Burden of Disease Study 2017 results. IHME; 2019.
3. Ministry of Health Singapore. Disease Burden. [cited 10 May 2024]. https://www.moh.gov.sg/resources-statistics/singapore-health-facts/disease-burden.
4. International Diabetes Federation. Singapore diabetes report 2000–2045. 2021 [cited 10 May 2024]. https://www.diabetesatlas.org/data/en/country/179/sg.html.
5. Fowler MJ. Microvascular and macrovascular complications of diabetes. Clinical diabetes. 2008 Apr 1;26(2):77-82.
6. Png ME, Yoong J, Phan TP, Wee HL. Current and future economic burden of diabetes among working-age adults in Asia: conservative estimates for Singapore from 2010-2050. BMC Public Health. 2016 Feb 16;16:153. doi: 10.1186/s12889-016-2827-1. Erratum in: BMC Public Health. 2016;16(1):589. PMID: 26880337; PMCID: PMC4754926.
7. Ministry of Health Singapore. Speech By Minister For Health, Mr Gan Kim Yong, At The Moh Committee Of Supply Debate 2016. [cited 10 May 2024]. 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
8. Bolinder J, Antuna R, Geelhoed-Duijvestijn P, Kröger J, Weitgasser R. Novel glucose-sensing technology and hypoglycaemia in type 1 diabetes: a multicentre, non-masked, randomised controlled trial. Lancet. 2016 Nov 5;388(10057):2254-63. doi: 10.1016/S0140-6736(16)31535-5. Epub 2016 Sep 12. PMID: 27634581.
9. Haak T, Hanaire H, Ajjan R, Hermanns N, Riveline JP, Rayman G. Flash Glucose-Sensing Technology as a Replacement for Blood Glucose Monitoring for the Management of Insulin-Treated Type 2 Diabetes: a Multicenter, Open-Label Randomized Controlled Trial. Diabetes Ther. 2017 Feb;8(1):55-73. doi: 10.1007/s13300-016-0223-6. Epub 2016 Dec 20. PMID: 28000140; PMCID: PMC5306122.
10. Beck RW, Riddlesworth T, Ruedy K, et al. Effect of Continuous Glucose Monitoring on Glycemic Control in Adults With Type 1 Diabetes Using Insulin Injections: The DIAMOND Randomized Clinical Trial. JAMA. 2017 Jan 24;317(4):371-378. doi: 10.1001/jama.2016.19975. PMID: 28118453.