



MMC celebrating 6 years of experience and expansion

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More than 530 million people are now affected by the global diabetes epidemic.¹ Diabetes is particularly an issue in developing countries. By 2030, the *International Diabetes Federation (IDF) 2021 Atlas* predicts that the number of patients with diabetes will rise to 643 million, with three in four adults with diabetes living in low- and middle-income countries.¹ Of this large number of persons with diabetes in low- and middle-income countries, more than 60% are in Asia and approximately one-third in China. The latest epidemiological study in China shows that nearly 11% of the population is diagnosed with diabetes,² leaving a large proportion undiagnosed yet, showing that China has experienced one of the most remarkable increases anywhere in the world.

If combined with diabetes, chronic diseases, such as chronic kidney disease, cardiovascular disease, stroke, infection, and some kinds of cancers, are associated with higher mortality.² Diabetes-related medical expenses in China have surged from 2.2 billion renminbi (RMB) to 200 billion RMB between 1993 and 2007 and by 2030 are expected to exceed 360 billion RMB. The challenge of diabetes management to China is considered to be one of the most important examples in the world, which has brought an enormous burden to the medical system.²

CONTROL OF PRIMARY RISK FACTORS

In China, hypertension is common and its prevalence is rising. Among adults aged 35 to 75 years, the low control rate is so ubiquitous in all subgroups that a broad-based global strategy is in great need, such as more prevention efforts, better screening, and cost-effective treatment. Awareness, treatment, and control of hypertension and

dyslipidemia in China are much lower than in the United States.³

People in China have a high prevalence of cardiovascular risk factors due to growth of the ageing population, lack of diabetes educators, and lack of structured health care delivery. Social isolation, social disparity, and unequal access to care, along with high prevalence of overweight and obesity and low socio-economic status lead to a lack of awareness of diabetes.⁴

In order to improve the management of chronic disease in China, effective prevention of risk factors is essential. Based on the major predictive factors age, sex, waist circumference, body mass index, systolic blood pressure, and family history of diabetes, researchers developed a Chinese diabetes risk score to help identify high-risk individuals.⁵ In view of the large number of high-risk groups in China, comprehensive behavioral intervention to increase physical activity and improve diet is key to diabetes prevention efforts. Diabetes nurses, nutritionists, pharmacists, and doctors should be available and be more involved in patient care, both face to face and through digital medicine.^{4,6}

There are gaps between recommended guidelines and the real-world health care for diabetes due to wide variations in economy, cultural development, and medical service standards in different regions in China. In seeking methods to address all these challenges, the National Metabolic Management Center (MMC) was founded in 2016 as a pilot and standard system that can be replicated throughout the country.⁷

MMC aims to launch a new community management model of metabolic diseases based on an Internet health information platform. In addition, MMC helps to improve patients' compliance and effectiveness of



treatment, so as to benefit patients, doctors, and medical staff. The proprietary electronic medical database in MMC supports dynamic big data analysis on epidemiology, prevention, diagnosis, and treatment of diabetes. In addition, the nationwide standardized care system also provides a collaborative platform for prospective interventional studies on treatment and prevention of diabetes.⁸⁻¹⁰ Already, a large body of data and evidence originating from hospital-based care in MMC clinics has helped to achieve long-term optimal health outcomes,^{4,7} thus enabling a replicable standard care model across the country, laying the foundation for future medical policy formulation and improvement. The goal of MMC is to reduce the incidence rate of diabetes by 1% and the rate of diabetes-related complications by 10% in China.

Artificial intelligence technology-based medical tools were developed to promote screening, diagnosis, and treatment of diabetes in MMC clinics. In addition, the MMC is devoted to establishing highly efficient diagnosis and treatment, as well as comprehensive disease management, both in and outside of the hospital setting.

By the end of 2018, it was estimated that there would be over 300 MMC clinics and that their number would continue to increase. Now a reasonable assumption is that by the end of 2022, the dream of “one center, one stop, and one standard model” implemented in more than 1000 clinics of MMC in China will have been realized.⁷ Aiming to establish a standardized diagnosis, treatment, and long-term follow-up platform for metabolic diseases, hospitals and clinics share the same structure in terms of facilities, layout, and databases, as well as the same daily operations. With the MMC clinics, patients can enjoy one-stop care to get a series of comprehensive services from registration to detection to technological innovation.

Within 6 years, the MMC has dramatically changed the prevention and treatment mode all over China. There is still room for improvement and increase in level of care in the clinics. This outstanding breakthrough in medicine should be implemented throughout China in the coming years.

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