

Diabetes care: some improvements, more challenges, some opportunities!

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Some 12 years ago, one of us contributed an editorial to the Journal.⁽¹⁾ In that editorial, several observations and some suggestions for improving diabetes care were made. Now, 12 years on, it is timely to take stock, reflect and reformulate. Have there been improvements in diabetes care? There are several. A few are highlighted here for discussion, together with some thoughts on further enhancements.

There have been significant changes in the funding of diabetes care locally. One such development is the approval of the use of outpatient Medisave for chronic diseases, such as diabetes mellitus, since 2006.⁽²⁾ The current annual quantum cap of S\$400 per account is not considered high, and it would not be able to cover the annual costs of outpatient care for patients with multiple comorbidities or complications as they require frequent tests and investigations, as well as the use of multiple pharmacological agents. However, for the average patient with diabetes mellitus, this sum may be of substantial help. The recent inclusion of disposable insulin analogue pens in the Medication Assistance Fund (MAF) list may also reduce the cost of these insulin delivery devices, making them more affordable for patients.⁽³⁾ In particular, elderly patients who have delayed the initiation of insulin because their failing eyesight or reduced dexterity makes it difficult for them to draw insulin from the cheaper vials may now be able to initiate insulin using the more convenient insulin analogue pens, which have been made more affordable through this initiative. For the less well-to-do patient, each of these initiatives provides some form of relief.

Over the years, some healthcare clusters have put in place various electronic information platforms to enhance diabetes care. One of these has come close to functioning as a diabetes registry and has even incorporated decision support elements.⁽⁴⁾ However, we still need to improve on current gaps (e.g. by including data fields on eye and foot complications, and linkage with other clinical outcomes) in these platforms. There is also a need to build linkages across the various platforms used by different institutions and clusters. After all, different facets of patient care are often delivered at different institutions, and it would thus be important for busy clinicians providing care to patients with diabetes mellitus to have key information from the different providers available at a glance during consultation

with the patient. After the linkages have been built, and if analytics could be deployed, there is also potential for population health management and the use of such information for more equitable allocation of healthcare resources.

The National Health Survey 2010 reported that 11.3% of adult Singaporeans have diabetes mellitus, of which 51.4% were diagnosed for the first time. Another 14.4% of adult Singaporeans have impaired glucose tolerance.⁽⁵⁾ The Health Promotion Board has in place an integrated health screening programme for citizens aged 40 years and above, and one of the chronic conditions screened for is diabetes mellitus.⁽⁶⁾ When the screening outcome indicates diabetes mellitus, the patient is referred to a primary care provider. Patients whose screening outcome is that of impaired glucose tolerance are referred to the prediabetes intervention programme run by the Health Promotion Board to support such individuals in lifestyle changes.⁽⁷⁾ These programmes are useful in the early detection of impaired glucose tolerance and previously undiagnosed type 2 diabetes mellitus. More thought, however, should be put into how these programmes could be further strengthened, as prediabetes represents a stage in the metabolic milieu of disease development during which lifestyle intervention may easily retard disease progression and the incidence of complication. Even if the initial expenditure of such programmes may appear relatively high and the benefits unapparent or indirect, the long-term cost-effectiveness of these programmes should be further studied. If it is found to be positive, greater consideration should then be given to the organisation of community-based lifestyle programmes to benefit those with prediabetes or diabetes mellitus.

In the 2001 editorial,⁽¹⁾ the beginnings of a diabetes nurse educator (DNE) course at a local polytechnic was mentioned. This is now an established course with several batches of graduates, many of whom currently serve as DNEs in polyclinics and hospital diabetes centres, providing much-needed self-management education to diabetic patients and serving as an essential link between busy doctors and the multitude of patients with growing complexities. Although not widely practised at the moment, group family medicine clinics that attend to a large number of diabetic patients could find it worthwhile to have similarly trained nurses to help with patient care. Doctors

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and nurses should form the nucleus of primary care healthcare teams that look after diabetic patients.

In addition, there is a growing number of specialist nurse clinicians and advanced practice nurses (APNs) who work in diabetes centres and polyclinics, providing patient care, and in some situations (limited), prescriptions for patients with diabetes mellitus. Perhaps more can be done to utilise this resource on a wider scale in polyclinics. Notably, the Primary Care Survey 2010 indicated that on survey days, polyclinics attended to 45% of chronic patients, but deployed only 14% of all resident general practitioners (GPs) in Singapore.⁽⁸⁾ As many younger doctors working in the polyclinics still undergo rotation every few months, it would make sense for appropriately trained and experienced nurses to look after patients with chronic diseases such as diabetes mellitus on a continuing basis, alongside doctors. Perhaps, at the moment, what stands in the way of having more nurse-led consultations is a funding mechanism that incentivises such care. Also, if such a scheme were to work, a corps of willing physician-mentors would be needed to help guide these nurses through the initial stages.

As mentioned in the earlier editorial,⁽¹⁾ structured care for diabetes mellitus and its comorbidities has become established within polyclinics. Although there is still room for improvement, processes such as the checking of glycosylated haemoglobin (HbA1c) and low-density lipoprotein (LDL) cholesterol levels, as well as eye screening, are consistently performed among patients with diabetes mellitus at polyclinics. However, the next important focus of attention would be on the appropriate therapeutic steps to be taken when these processes indicate that targets, such as HbA1c level, have not been met. Although algorithms are in place, the experienced clinician (be it a doctor or a nurse) who has been caring for the patient on an ongoing basis and who has a measure of understanding of the patient's circumstances may be in the best position to discuss with the patient and his/her family members about possible lifestyle and pharmacological changes, and the most appropriate option to take. In some circumstances, the most appropriate option for a particular patient might be to accept the suboptimal individual metric and focus on other achievable targets. Drawing lessons from the Action to Control Cardiovascular Risk in Diabetes (ACCORD) study, this approach might mean the avoidance of potential harm such as severe hypoglycaemia.⁽⁹⁾ At the same time, the healthcare team may engage the patient in achieving other targets. We should also take heart from the conclusions of the Steno-2 study, which looked at intensified multifactorial management of patients with type 2 diabetes mellitus. The intensive treatment group in the Steno-2 study showed less than 50% target attainment for some of these clinical parameters, yet managed to achieve an impressive reduction in vascular complications and mortality on follow-up.⁽¹⁰⁾ We should therefore target all metabolic parameters, but focus on those that are easily attainable, and perhaps accept that it is best to reconsider targets that are not easily or safely

attainable. Again, the clinician providing continuing care would be in the best position to discuss this with the patient.

The Primary Care Survey 2010 reported that about 34% of diabetic patients were seen in private primary care clinics.⁽⁸⁾ Private family physicians who see their patients on a continuing basis often have a good doctor-patient rapport. Besides facilitating clinical decisions, this rapport could be exploited to motivate patients and their family to adhere to healthful lifestyle practices and self-management, as well as educate them on the aforementioned. In Singapore, the Ministry of Health has been advocating the formation of family medicine clinics,⁽¹¹⁾ where small groups of doctors practise together. Consequently, it may become worthwhile for such clinics to employ nurses who are trained in diabetes mellitus and invest in equipment necessary for comprehensive diabetes care. With this, the structure of care established in polyclinics may then add further value to the existing doctor-patient rapport found in private primary care. Of importance would be the creation of an equitable funding policy. It is equally important to give sufficient thought to the determination of the group of patients that should be cared for at polyclinics and family medicine clinics.

Over the years, increasing complexities in patients with diabetes mellitus have been observed. At least from the perspective of a doctor practising in a hospital's diabetes centre, there seems to be many more patients with nephropathy and multiple complications. Some of these patients need care provided in the hospital setting, with input from different specialists such as nephrologists, vascular surgeons, infectious disease specialists, endocrinologists, nurses, podiatrists, dietitians and medical social workers, among others. Coordinating and integrating the care of such patients is an ongoing challenge. However, such efforts are of great importance if we hope to retard renal disease progression and avoid amputations. As it is, many more dialysis centres are expected to be needed over the next few years in order to cater to the increasing number of patients progressing to end-stage disease.

One of the most important areas that must be addressed is the adoption of desirable lifestyle practices and responsibility for self-management appropriate for the level of health literacy and executive functioning among patients. Although it is well recognised that sustained behavioural change takes much more effort and time than patient education, the latter is nevertheless an important first step. A useful approach is structured, tiered education that is often organised as modules based on the patient's needs and delivered one-to-one or in small groups, involving family members where possible. In addition to that, an ongoing 'healing' relationship between the healthcare team and the patient and his/her family is required for continuing patient engagement in self-management. The healthcare team acts in the manner of a coach, exploring ongoing adjustments to lifestyle, diet and medications with the patient over time, and frequently, over a patient's life journey. The necessity for such education and long-term doctor-patient relationships has been

underestimated, but they are imperative if we want to achieve greater patient engagement and encourage responsibility in self-management. This area demands much more thought!

In summary, diabetes care has made considerable progress in Singapore over the last 12 years. However, with the many facets of diabetes care requiring further improvements, it appears that the care of diabetic patients is getting more challenging. Nevertheless, current changes in the healthcare landscape have also presented us with opportunities. In order to better meet challenges and seize these opportunities, there needs to be a coordinated effort to identify gaps, prioritise efforts, mobilise resources, monitor results and troubleshoot problem areas on an ongoing basis. At the same time, the efforts of lay organisations, government agencies, hospital diabetes centres, primary care clinics, doctors, nurses and other allied health professionals should also be harnessed, aligned and coordinated. In order to ameliorate the huge burden of diabetes mellitus on the individual, family and society, a massive and concerted effort is required!

REFERENCES

1. Sum CF. Improving diabetes care – can we do more? *Singapore Med J* 2001; 42:498-500.
2. Ministry of Health Singapore. Cost and Financing – Chronic Disease [online]. Available at: http://www.moh.gov.sg/content/moh_web/home/costs_and_financing/schemes_subsidies/medisave/Chronic_Diseases.html. Accessed May 3, 2013.
3. Ministry of Health Singapore. COS Speech by Minister for Health Gan Kim Yong – Better Health for All (Part 2 of 2), 12 March 2013 [online]. Available at: http://www.moh.gov.sg/content/moh_web/home/pressRoom/speeches_d/2013/MOH2013COSMinSpeechBetterHealthforAllPart2of2.html. Accessed May 3, 2013.
4. Toh MP, Leong HS, Lim BK. Development of a diabetes registry to improve quality of care in the National Healthcare Group in Singapore. *Ann Acad Med Singapore* 2009; 38:546-51.
5. Ministry of Health Singapore, Epidemiology and Disease Control Division. National Health Survey 2010.
6. Health Promotion Board, Singapore. Integrated Screening [online]. Available at: <http://www.hpb.gov.sg/HOPPortal/health-article/3672>. Accessed May 3, 2013.
7. Health Promotion Board, Singapore. Pre-diabetes Intervention Programme [online]. Available at: <http://www.hpb.gov.sg/HOPPortal/programmes-article/5844>. Accessed May 3, 2013.
8. Ministry of Health Singapore. Primary Care Survey 2010 – Profile of Primary Care Patients.
9. The ACCORD Study Group, Gerstein HC, Miller ME, Genuth S, et al. Long-term effects of intensive glucose lowering on cardiovascular outcomes. *N Engl J Med* 2011; 364:818-28.
10. Gaede P, Lund-Andersen H, Parving HH, Pedersen O. Effect of a multifactorial intervention on mortality in type 2 diabetes. *N Engl J Med* 2008; 358:580-91.
11. Ministry of Health Singapore. Transforming the primary care landscape: Engaging the GP community and our stakeholders in the journey, 8 Oct 2011 [online]. Available at: http://www.moh.gov.sg/content/moh_web/home/pressRoom/pressRoomItemRelease/2011/transforming_theprimarycarelandscapeengagingthegpcommunityandour.html. Accessed May 3, 2013.