

The Diabetes Dilemma: How do we Deal with It?

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World Diabetes Day is celebrated on November 14th and it marks the birthday of Dr Frederick Banting. Together with Dr Charles Best, Dr Banting discovered insulin in 1922.¹ The discovery of insulin was probably the single greatest advance in diabetes care and has literally transformed the life of millions of patients with diabetes.

Since then, diabetes management has progressed on many fronts. Great strides have been made in understanding the pathogenesis of diabetes. A plethora of oral and injectable anti-diabetic drugs have been developed targeting the beta cell, liver, insulin resistance, carbohydrate digestion and the incretin axis. Studies have shown a direct correlation between the degree of diabetes control and the risk of developing chronic complications of renal, eye and nerve damage and to a lesser degree, cardiovascular disease. Technological advances have led to development of simple and accurate self-glucose monitoring devices, insulin pens and insulin pumps. Pancreatic and beta cell transplants have become a reality for small numbers of highly selected patients. Multidisciplinary patient care involving diabetes specialists, podiatrists, nutritionists and diabetes educators address the complex management issues of patients. Regular screening for complications and early intervention has reduced complication rates. Multifactorial intervention targeting blood pressure, cholesterol, weight, smoking and addition of renoprotective drugs is now standard of care. Professional and layperson diabetes societies, advocacy groups and national and international diabetes organisations all work towards promoting better care for diabetic patients.

Despite the stream of new diabetic medications, whose pronounceability rivals that of chemotherapy agents, diabetes, far from being cured, is threatening to overwhelm health systems around the world. The numbers are staggering. Three hundred and sixty-six million people in the world have diabetes, with 60% of sufferers in Asia. It is estimated that there is 1 death every 7 seconds from diabetes.² In Singapore the prevalence of diabetes has increased almost 6-fold over the past 35 years. In 2010, the National Health Survey found that diabetes affected 11.3% of our population,³ up from 1.9% in 1975, 4.7% in 1984 and 9% in 2004.

The economic burden is enormous. Worldwide, US\$35 billion was spent of diabetes drugs in 2010 and overall health care costs were estimated at \$465 billion. The burden is unfortunately is skewed towards poorer nations but wealthy nations are not spared either. The total economic cost of diabetes in the US in 2007 was estimated at \$174 billion. This was greater than the U.S. government budget deficit for the same year. Treatment for diabetes and other non communicable diseases (NCDs) can quickly drain household resources, driving families into poverty. The WHO World Health Report 2010⁴ states that each year, 100 million people are pushed into poverty because they had to pay directly for health services. The report indicates that out-of-pocket payments represent more than 50 per cent of total health expenditures in a large number of low- and middle-income countries. Paying for care associated with NCDs can cost low-income households up to a third of their incomes and can lead to distress borrowing and selling of assets.

The acuteness and urgency of the burden of NCDs such as heart disease, diabetes, cancer and lung disease has recently led to a Health Summit at the latest UN General Assembly in September 2011. This is the second UN Health Summit ever held, the first being the meeting in 2001 to combat HIV/AIDS. Four modifiable shared risk factors for these NCDs were identified as targets for intervention, namely: unhealthy diet, physical inactivity, alcohol use and smoking. World leaders pledged to take wide-ranging action to prevent millions of deaths from cancer, diabetes, and heart and lung disease by tackling these key causes. However, the declaration approved at the meeting, in typical UN fashion, left unanswered the question of coordinating an international response to what the leaders called 'a challenge of epidemic proportions'.

The solution to containing the inexorable rise in diabetes is by no means easy but it certainly does not reside in newer and ever more costly medications. Neither will it be cutting edge technological advances in beta cell transplant or perhaps stem cell therapy. While new drugs and technologies are of doubtless importance, the overwhelming majority of the world's diabetics neither need nor can afford them. Furthermore, medical advances only target treatment of

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the population already with the disease and do not address prevention of the disease.

To make any impact on the growing numbers of patients who develop diabetes, successful prevention strategies are urgently required. From a diabetes prevention standpoint, the ideal prevention strategy is a complete reversal of the dramatic lifestyle change that has accompanied modernisation and urbanisation. Reality naturally makes this a pipe dream. Nonetheless, The Diabetes Prevention Program⁵ proved that lifestyle modification (weight loss of just 5% to 7% of original body weight and moderate exercise of 30 minutes a day) could reduce the risk of diabetes by almost 60% over a 4 year period. This was twice as effective as metformin, which could only reduce the risk by about 30%. Numerous other studies showed similar results. Unfortunately, lifestyle modification can be tough even for the self-motivated and cannot be directly mandated by organisations or governments.

In Singapore, there are pressures of time constraint with many individuals working the whole day, reaching home late in the evening after a long commute thus leaving little time to exercise. Meals are seldom home cooked but are often bought from food courts and fast food outlets. While tasty and relatively inexpensive, these meals generally contain excessive amounts of carbohydrate and fat. Persuading people who already have diabetes to make lifestyle changes is already hard; all the more difficult persuading the population at risk but not yet having the disease. Measures beyond traditional public health campaigns are needed to make any significant impact in preventing diabetes. There is a need to promote widespread availability of healthy foods which are also inexpensive and tasty. This has been implemented in many schools but could be extended to food courts and fast food outlets. Tax incentives and rebates may be helpful in this respect. Gym, sports or pool facilities and even equipment could be subsidised, made free or tax deductible. Schools could allocate more periods to physical activities and encourage recreational as opposed to purely competitive sports as choices for CCAs (Co-Curricular Activities). Organisations and companies could be encouraged to give workers specific time off for exercise. Conversely sweetened caloric beverages and high fat foods could be selectively taxed.⁶ While some consider this form of taxation regressive, it is not unprecedented.

Recently in October 2011, Denmark became the first country in the world to implement a ‘fat’ tax, taxing all foods containing more than 2.3% of saturated fat. Hungary has already imposed tax on foods with unhealthy levels of sugar, salt and carbohydrates. Austria and Switzerland have banned trans-fats. Even New York, a place with virtually unbridled civil liberties, restricted trans-fats in the city’s eateries and imposed requirements for restaurant chains to post calorie information on their menus.

Whatever the case, diabetes will continue to be a major health concern worldwide. Hopefully the latest United Nations’ Summit will help spur international and national efforts to stem the rapid rise of new cases of diabetes and prevent it from overwhelming health systems, especially in vulnerable countries. In Singapore, given the abundant resources available and the ability of the government to exercise a significant degree of control over many aspects of our lives, health policy makers could and should do more to try to retard or reverse the trend of the increasing prevalence of diabetes. Changing the lifestyle of the general population is a slow and tedious task and results may take years to become apparent. Nonetheless, it is an important goal and achieving it will reap significant health and economic rewards in the long term.

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