# Diabetes: a pandemic, a development issue or both?

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**"…it is timely to ponder the extent of the diabetes problem, its implications for development and how these, and the human suffering it imposes, might most successfully be mitigated."**

Every 5 seconds someone somewhere in the world is diagnosed with diabetes, and every 10 seconds someone dies of it [101]. As a result of technical and clinical advances, and public health successes such as the lowering of national smoking rates, there has been a dramatic decline in mortality from cardiovascular disease in several developed countries over the past three to four decades. Regrettably, there is no parallel effect for diabetes, which continues to increase inexorably.

## Diabetes as a disease pandemic

The International Diabetes Federation (IDF) assiduously collects and collates diabetes incidence and prevalence data from primary studies around the world, and publishes this triennially in a global epidemiological profile of diabetes, known as the Diabetes Atlas. Figures from the current Diabetes Atlas paint an even gloomier picture than previous estimates – of a world awash with diabetes and no reversal of this trend in sight. Hence, it is timely to ponder the extent of the diabetes problem, its implications for development and how these, and the human suffering it imposes, might most successfully be mitigated.

Released in 2000, the initial edition of the Diabetes Atlas estimated the global prevalence of diabetes at 4.6%, representing 151 million people, and projected an increase to 333 million people by 2025 [1]. On the basis of the most recent evidence, the current Diabetes Atlas has revised these figures upwards, estimating a global prevalence of 6.6% (285 million people) in 2010, and predicting that, by 2030, the number of people with diabetes will have risen to 438 million or 7.8% of the world's population. In 2010, it is estimated that up to 4 million deaths in the 20–79-year-old age group may be attributable to diabetes, accounting for 6.8% of global all-cause mortality in this age group. Individual national prevalence rates reported by the IDF range from just over 1% to almost 31%, with the major proportion of the diabetes burden borne by low- and middle-income countries, and disproportionately affecting lower socioeconomic groups [102]. In addition, there is the mental health burden, which is documented in studies demonstrating significantly higher rates of depression and anxiety in people with diabetes compared with their nondiabetic counterparts [2,3].

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In the face of these figures, few would deny that the long-predicted diabetes pandemic no longer needs to be forecast – it is already here. And, as if this was not enough, we are now learning that people with diabetes are more likely to get serious infectious diseases such as HIV/AIDS, TB and malaria, and are less likely to recover from them [4,5].

## Diabetes as a development issue: what do the numbers mean?

By some strange quirk, while our ever more sophisticated epidemiological capabilities enable us to compare, contrast and present increasingly accurate and reliable profiles of disease burden and distribution, we seem to have become somehow

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less sensitive to the issues behind the data. So, although we might well admire the innate rhythm and cadence of the numbers themselves, we must remind ourselves that these statistical symphonies represent real people living in real families and real communities, which make up real societies and economies in which a loss or gain of real money can make the difference between eating or not, having a job or not, political and social stability versus instability, or having adequate national infrastructure for essential services such as health, education and transport – or not. In this context, it is worth dwelling on what lies behind the global diabetes statistics.

### *For individuals & families*

Those of us who live in countries that offer their citizens universal healthcare coverage find it difficult to imagine having to make a choice between feeding our family or buying life saving diabetes medications, sending a child into the streets to beg for money for grandma's dialysis rather than to school, or having to decide who lives and who dies when two family members need essential healthcare interventions. However, this is the everyday experience of millions of people around the world. For many families in countries that offer little or no social protection, a diagnosis of diabetes can mean a sentence to intergenerational hardship and poverty when a breadwinner dies early or is unable to work as a result of debilitating complications. The association between noncommunicable diseases (NCDs) and poverty, notably in developing countries, is increasingly acknowledged [6,102], and there are gender impacts such as female illiteracy resulting from girls being designated to stay home to look after disabled family members while their parents go to work and their siblings to school [7].

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Even in developed countries, copayments and the cost of self-care equipment and supplies may mean that other needs cannot be met, and this can be particularly problematic for people on low or fixed incomes. Furthermore, having diabetes or a dependent child with diabetes has been shown to impede career progression and incur significant loss of employment income [8].

### *For health systems*

Diabetes is expected to account for 11.6% of total global healthcare expenditure in 2010 [102]. The proposition that healthcare costs for diabetes are insupportable is not new. Hospital admissions and medications account for much of these costs. Health systems everywhere are struggling to meet the challenge, and the IDF predicts that the global cost of treating and preventing diabetes will reach US$490 billion by 2030 [102].

### *For national economies*

Of possibly even greater concern to national economies is the impact of diabetes and related NCDs on lost productivity and subsequent economic growth and stability.

Globally, the 40–59-year-old age group, perhaps the peak years of productivity, currently has the greatest number of people (132 million) with diabetes, more than 75% of whom live in low- and middle-income countries. By 2030, it is forecast that there will be 188 million people with diabetes in the 40–59-year-old age band, with more than 80% of these people residing in newly developed or developing countries [102].

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Numerous studies from the developed world attest the impact of diabetes on increased absenteeism [9,10], and a recent report that put the total cost of diabetes in the US at US$174 billion attributed US$58 billion or 30% of that sum to lost productivity [11]. This corroborates estimates of the mega billions of dollars of income foregone through lost productivity resulting from NCDs, for example in China and India [103]. Without laboring the point, if this is such a problem in large and growing economies, what havoc must it wreak for the already struggling, aid-dependent, developing nations of Africa, or tiny Pacific Island countries where NCDs account for three out of four deaths [12].

## What needs to be done about it?

### *Accountable care & prevention services*

The prevention and care of diabetes needs to be made more accountable.

There is excellent evidence from the international literature about both Type 1 and 2 diabetes that demonstrates that diabetes complications can be prevented or significantly delayed, and details which clinical processes and practices reliably lead to the best outcomes [13,14]. A perusal of the IDF website will reveal guides and guidelines based on this evidence and covering most diabetes-related conditions and health service contexts. There are systematically derived frameworks from at least three countries to guide the design, focus, delivery and evaluation of self-care education for people with diabetes [15–17]. Results of rigorously conducted randomized controlled trials from several developed and developing countries provide clear and unequivocal testimony that progression to diabetes can be reduced by up 58% in people at identifiable risk through simple lifestyle interventions resulting in modest weight loss [18–22].

Why, then, is the prevalence of eminently preventable diabetes-related amputations still unacceptably high in many countries, and why are so many people still developing diabetes? Clearly resources are an issue, but the return on even scarce resources can be maximized by judicious prioritization and allocation, and basic diabetes care and education does not require expensive, high-tech solutions at its front end. Indeed, it is generally believed to be possible to reduce diabetes-related amputations by 30–50% through simple, low-cost measures such as training healthcare workers to identify high-risk feet and educate their owners in foot care and hygiene, and the need to seek professional help early when a foot problem occurs.

Given the weight of the evidence in favor of preventing diabetes and its complications, it is time for professional societies and consumer organizations alike to call for greater accountability from their members and their governments to reduce the ghastly toll of diabetes. There are precedents for this, such as the UK Health Department's incentives and disincentives for primary care physicians to achieve certain process and outcome indicators, and the Italian government's encryption into legislative policy of requirements for the provision of certain services for diabetes.

### *Adopt an ecological approach to prevention*

The vast majority of diabetes – approximately 90% worldwide – is attributable to Type 2 diabetes but, according to the WHO (2005), 80% of cases of Type 2 diabetes can be prevented [103]. In addition to conventional approaches and in the face of the overwhelming magnitude of the problem, innovative long-term solutions are sorely needed. Diabetes and CVD and their antecedent risks of overweight, obesity and sedentariness were not generated within the health system. They, and the commonalities they share with those aspects of human activity that cause environmental damage, are rooted in the way we live, work and manage our societies; our love affair with cars, our obsession with energy-consuming automation and energy-dense foods, and the way these are produced, stored and transported.

To date, our efforts to prevent diabetes have centred on the high-risk approach and attempting to translate the randomized controlled trial prevention evidence into everyday settings. However, even the best strategies for identifying and working with at-risk people are undermined when individuals are faced with sedentary and stressful workplaces, surrounded by unhealthy food choices and inactive transport, and housed in dwellings and community settings that seem almost purpose-designed to repress rather than encourage physical activity and positive social interaction. These same factors that are damaging our health are also damaging our planet, and recent UK research tells us that countries with more obese populations generate tons more $CO_2$ emissions than those with less weighty populations [23].

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It makes sense to address both NCD prevention and climate change as an integrated package. Although not specific to NCDs, in a recent *Lancet* series on health and climate change, Haines *et al.* articulate potential health benefits associated with reducing greenhouse gasses, and there is a growing groundswell of conviction and commitment to earlier and more comprehensive interventions for NCDs [24]. These aim to keep healthy people risk free, reduce risks in those who already have them, and push back the onset of disease through better urban design, healthier work practices and healthy eating options. One manifestation of this movement is the Sydney Resolution [104], which focuses explicitly on heart disease, diabetes, chronic lung disease and cancer, and calls for healthy places, healthy and affordable food, healthy business, healthy public policy and healthy societies. More recently, the IDF, the World Heart Federation and the International Union for Cancer Control have joined forces to mount a similar case [105]. It is well worth noting that, while the ecological model ostensibly represents a very upstream approach to primary prevention, it stands to reap substantial return on investment in less obvious ways. For example, a healthier food and physical environment will enhance the ability of people who already have diabetes to adhere to recommended eating and exercise behaviors, and there are multiple additional physical, mental, social and environmental benefits associated with good urban design over and above those related to diabetes and NCDs.

### *Intersectoral & multisectoral approach*

The twin global crises of NCDs and climate change represent a dismal failure of global and national governance, and of markets. The citizenry and its various social instruments is no less culpable for not protesting along the way, the hedonistic path of short-term gain our political and business chiefs have led us on or, at least, failed to control. The crises can only be calmed through a cohesive and concerted effort of all levels and sectors of government and civil society that, either wittingly or unwittingly, had a role in bringing them about.

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Writing in 1997 about the contemporary and foreseeable socio–political milieu, Jonathan Sacks pointed out that "victory will go to those who learn the art of co-operation" [25]. The benefits of adopting an ecological approach are potentially almost unlimited, but to achieve it we must first overcome our regressive tendency to think and act in silos and, instead, learn the art of true collaboration. This means working productively across government sectors, weighing up and taking full account of the harms and benefits to health of all public and fiscal policy. The 'health in all policies' approach currently championed by Ilona Kickbusch [106] holds great appeal, as does finding ways in which industry and public health can work ethically and productively to mitigate our obesogenic and diabetogenic environments [26].

### *Strong, situation-sensitive, integrated advocacy*

As illustrated in the statement issued by the Commonwealth Heads of Government recent meeting in Tobago, governments all over the world are increasingly recognizing the devastating impact of NCDs on poverty and economic stability and are increasingly prepared to act on this [6]. Likewise, many of their more visionary and progressive counterparts in business are making significant positive changes, but many still remain to be convinced. As clinicians, researchers and public health practitioners, we have for too long failed to translate our language, and our confidence

intervals, into 'sound bites' that can be easily communicated to and understood by those whose expertise and knowledge base is not within our field. Specifically, we have neglected to adapt it to the language of politicians and business leaders, framing our advocacy argument only in ways that appeal to us rather than in ways that might move and motivate them.

> "There is little doubt that diabetes is both a pandemic and a development issue, and as such should be included in the Millenium Development Goals."

We should never lose our concern for human suffering, but we need to become more adept at turning our research evidence into a convincing business case. If we want to mount a robust, joined-up, flexible advocacy platform that frames diabetes in whatever way will most effectively appeal best to those we wish to influence, we must learn what motivates them, what their aspirations and imperatives are and present our argument in a way that speaks to their needs – be these political advantage, votes, a productive workforce, a competitive edge, increased profits or decreased costs, or just appearing to be savvy. We should not necessarily expect others have the same passion for the alleviation of suffering that we may have, or even care why they act to mitigate NCDs – provided, of course, their actions are legal and ethical.

### *Include diabetes & NCDs in the Millenium Development Goals*

There is little doubt that diabetes is both a pandemic and a development issue and as such should be included in the Millenium Development Goals (MDGs). A complex disease exacerbated by a complex socio–political and economic environment, it carries a two-tailed sting. First, there is a social gradient to its development. Second, its costs and complications cause untold socioeconomic hardship along the whole spectrum from minor disadvantage to full-blown poverty. The full magnitude of its consequences for stable and steady economic growth is only just beginning to be understood, and fears that it is undermining the MDGs are not unfounded. Regardless of this, and although there is overt recognition of the threat the major infectious diseases pose for achievement of the MDGs, there is no similar recognition of NCDs despite their far greater burden of death and disability.

The purpose of the MDGs is to enhance and optimize development by protecting and promoting human health and potential, and to enhance and optimize human health (and dignity and quality of life) by securing stable and peaceful economic development. The MDGs represent a synergistic approach aimed at ending poverty in growing national economies to ensure access to education, employment and healthcare which, in turn, is expected to drive economic growth.

Given the excessive and disproportionate burden diabetes imposes on developing economies, its omission from the MDGs seems a gross oversight. Hopefully, if we get our advocacy argument right, this will soon be rectified.

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