# Doing More with What We Already Know—Prevention and Improved Coverage of Healthcare for Diabetes

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## Abstract

Diabetes now affects 285 million people, representing 6.6% of the world's adult population. It disproportionately affects the developing world, with four of five people with diabetes living in low- and middle-income countries (LMCs). Diabetes is expected to cost the world at least $376 billion (11.6% of total healthcare expenditure) in 2010, according to the *IDF Diabetes Atlas*. This means that LMCs will also bear the economic brunt of the disease, which affects far more people of working age than previously believed. In many of these countries, essentials for good basic care for diabetes are scarce. The International Diabetes Federation (IDF) believes that where care for diabetes is scarce or limited, improving the coverage of prevention measures and basic care for diabetes will improve outcomes and quality of life. Good basic care can be highly cost-effective or even cost-saving. Even if costs are higher, the number of people affected by diabetes is now so large that it is no longer acceptable to ignore it.

## Keywords

Diabetes, public health, low- and middle-income countries, therapies, care, health expenditure

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The International Diabetes Federation (IDF) launched the fourth edition of the *IDF Diabetes Atlas* at its 20th World Diabetes Congress in Montreal, Canada in October 2009.[1] Based on conservative modeling assumptions, this edition estimates that the global prevalence of diabetes in 2010 has risen to 285 million people, representing 6.6% of the world's adult population. Far from being a condition of higher-income countries, 70% of those with diabetes live in low- and middle-income countries. In most low- and middle-income countries the majority of people with diabetes are 40–59 years of age—the age at which they should be economically productive.

Mortality attributable to diabetes in 2010 is estimated at 4 million (6.8%) deaths in the 20–79-year-old age group. This is larger than the number of people who die from AIDS or malaria each year.

Global healthcare expenditure on diabetes is expected to account for at least $376 billion (11.6% of total healthcare expenditure) in 2010. Approximately 80% of the countries covered in the *IDF Diabetes Atlas* report on the economic costs of diabetes are predicted to spend between 5 and 13% of their total healthcare dollars on diabetes. It is clear that diabetes is a global problem that has become a major health challenge for the 21st century.

In many high-income countries diabetes care can include breakthrough improvements in care such as the latest therapies, education, and technologies. A tremendous amount of money is spent on what are often incremental improvements in care. In poorer countries the picture is very different. In many low- and middle-income countries, essentials for good basic care for diabetes are scarce. Many people with diabetes are undiagnosed, and many of those who do know that they have diabetes do not attend a clinic regularly. Clinic-based studies and audits, from Africa for example,[2] tend to show that the quality of care in those who do attend a clinic is poor. However, poor access to care is not limited to developing countries. In some higher-income countries, health policies can exclude large numbers of disadvantaged people with diabetes, leading to poorer outcomes.

Where care for diabetes is scarce or limited, improving the coverage of prevention measures and basic care for diabetes will improve outcomes and quality of life. Good basic care can be highly cost-effective or even cost-saving. Even if costs are higher, the number of people affected by diabetes is now so large that it is no longer acceptable to ignore it.

IDF is working to raise the profile of diabetes with international organizations to ensure that at the very least good basic care is available to all people with diabetes. At the recent IDF 20th World Diabetes Congress, Professor Jean Claude Mbanya took over as President and will lead a dynamic campaign to ensure that care

for people with diabetes is improved around the world. This is in addition to IDF's five-year focus on Diabetes Education and Prevention through its World Diabetes Day campaign. Marked each year on November 14, the year-long campaign focuses on educating the public and individuals of diabetes warning signs and risk factors, as well as diabetes management and control. The campaign asserts that diabetes awareness is necessary in preventing type 2 diabetes, improving care for all people with diabetes, and effecting change.

## Prevention

Most of the increase in the number of people with diabetes is due to an increase in the number of people with type 2 diabetes. Evidence from trials in China,[3] Finland,[4] the US,[5] and India[6] have clearly demonstrated that type 2 diabetes can be prevented by improving diet (leading to weight loss) and increasing physical activity, or by pharmacological methods. Long-term follow-up of these trials is now starting to show encouraging results. The follow-up of the Finnish Diabetes Prevention Study (DPS)[7] showed a 43% reduction in the relative risk of diabetes; even after discontinuation of the intervention a reduction was maintained, with a relative risk reduction of 36% in the post-intervention period. Similarly, the Da Qing study in China, a six-year intervention, has recently shown that after 20 years of follow-up the risk of diabetes was lower in the intervention group.[8]

While there is good evidence from trials that diabetes can be prevented, there is far less evidence regarding the implementation of interventions in real life. Two studies, one in Finland[9] and one in the US,[10] have shown encouraging results. However, they were based on small samples, many subjects were self-selected, and the follow-up times were short. The IDF Bringing Research in Diabetes to Global Environments and Systems (BRIDGES) program is currently funding a translational research project in India that is implementing a randomized trial of culturally specific, community-based lifestyle intervention for the prevention of type 2 diabetes. Further work is required to translate the findings of these trials into the real world.

Economic evaluations of approaches to identifying and providing preventive measures to people at high risk of diabetes generally suggest that these are cost-effective. However, most evaluations contain many uncertainties and there is a need for further work to examine the cost-effectiveness of interventions in everyday practice. There is an even greater challenge in assessing the cost-effectiveness of population-wide measures.

## Treatment

When diabetes cannot be prevented, it can be treated. Diabetes care does not need to be expensive to be highly effective. In work carried out for the World Bank and World Health Organization,[11] interventions for diabetes were classified into three levels based on an assessment of their feasibility and cost-effectiveness in developing country settings. Interventions in the first level were found to be highly cost-effective or even cost-saving, and included moderate blood glucose and blood pressure control and foot care. Recognizing that most people with diabetes live in developing countries, the IDF Global Guideline provides guidance appropriate to three different levels of resource availability.

Providing good diabetes care for a population requires co-ordination across three levels of organization:

- at the micro level, and at the centre of all care, are the people with diabetes, their families, and their immediate carers;
- at the meso level is the community and healthcare organizations within which care is delivered; and
- at the macro level are the supporting policy and financing frameworks.

The World Health Organization's Innovative Care for Chronic Conditions (ICCC) Framework[12] (an evolution of the Chronic Care Model[13]) provides guidance on the relationships between, and the contents of, these three levels. This framework can be used to help repair the fragmentation of health services across the range of needs that people with diabetes have, and to provide links to broader population interventions, such as those for the prevention of diabetes. This approach has helped guide improvements in the delivery of diabetes care in a number of countries, including the US and the UK. In contrast to the refinements being made in higher-income countries, many low- and middle-income countries do not yet care for diabetes at the primary care level. This results in a poor distribution of healthcare relative to the distribution of people with diabetes.

Delivering care down to the primary level also requires human and material resources, and ideally should be considered within the levels of the ICCC framework. Data published in the *IDF Diabetes Atlas* show that insulin is not available or affordable in many low- and middle-income countries. However, simply improving the availability of insulin alone is not sufficient to improve care for those who require insulin. Insulin is useless without syringes. In five countries examined, syringes were not available from public health services, and even when insulin was available a combination of national policies and high charges in private pharmacies meant that value-added tax (VAT) was levied on syringes.

In addition to insulin and syringes, a small number of other essential medicines and technologies for non-communicable diseases, most of which are out of patent and cost pennies to produce, have the potential to save many lives in low- and middle-income countries. These include a generic statin, a generic angiotensin-converting enzyme (ACE) inhibitor, and a generic thiazide antihypertensive. Currently, these drugs are not readily available at the primary care level in many low- and middle-income countries.

## Change Is Possible

So, can we provide good coverage of basic healthcare for diabetes? Yes we can. Based on what we already know about prevention, effective interventions, and models of chronic care, it should be possible to make substantial gains and close the gap between optimal and current care, particularly for those who are currently the most disadvantaged. Coverage of good healthcare for diabetes is limited in many countries, but is attainable.

IDF is also working with other organizations such as the World Health Organization, the World Economic Forum, the World Heart Federation,

and the International Union Against Cancer to tackle the growing non-communicable disease (NCD) epidemic that is responsible for 60% of the global health burden.

IDF is acutely aware that change cannot be achieved in one disease area or by one group; only collectively can we work to improve global health, not only for people with diabetes and other NCDs but for everyone. This will require co-operation between the public, scientists, healthcare professionals, governments, and non-governmental organizations (NGOs). We are all in this together. ■

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