

A stylized world map in shades of blue, showing the continents. The map is centered on the Atlantic Ocean. The background of the entire page is a gradient of blue, transitioning from a darker blue at the top to a lighter teal at the bottom.

DIABETES IMPACT SURVEY **REPORT**

FOREWORD

Diabetes is fast becoming a global problem. Recent data suggest that worldwide more than 246 million people may have the disease (almost six per cent of the world's population) and if nothing is done to slow the epidemic this number may reach 380 million in less than 20 years.¹

There are many costs involved in the care and management of diabetes, both direct and indirect. Intangible costs such as pain, anxiety and general lower quality of life also have a great impact on the lives of patients and their families.² To assess the social and economic burden associated with type 2 diabetes worldwide, the 'Diabetes Impact Survey' was commissioned by Merck Sharp & Dohme. The survey was designed to assess the issues and barriers relating to access to diabetes management and how they impact the overall burden of diabetes. The survey was developed by a steering panel of medical, scientific and clinical diabetes professionals and polled more than 1,400 HCPs and people with type 2 diabetes across Europe (France, Germany and the United Kingdom), Canada, Mexico and India.³ Patients surveyed included those with type 2 diabetes for at least two years who had been receiving some form of treatment (i.e. oral anti-diabetics and/or insulin).

This report provides an overview of the findings of the survey alongside current information pertaining to the burden and impact of the global diabetes epidemic and recommendations, drawn from the survey results, of potential strategies to address diabetes care and the growing global problem presented by the disease. We hope you find this report to be insightful and informative.

DIABETES STEERING PANEL

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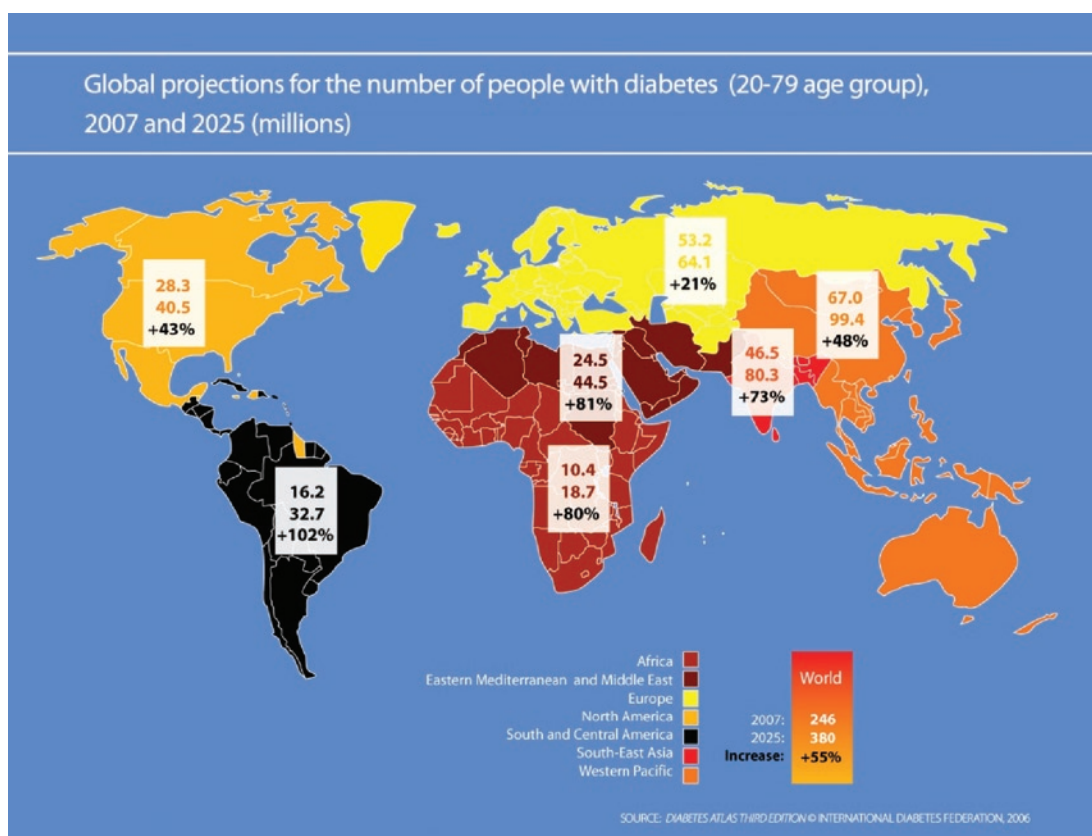
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INTRODUCTION

In sheer numbers, costs in human suffering and money spent on health care, diabetes is a disease of epic proportions. It is expected to have caused 3.8 million deaths worldwide in 2007, about six per cent of total global mortality, the same as HIV/AIDS; and the World Health Organization projects that diabetes deaths will increase by more than 50% in the next 10 years without urgent action. Most notably, diabetes deaths are projected to increase by over 80% in upper-middle income countries between 2006 and 2015.⁴ The overall risk of dying among people with diabetes is at least double the risk of their peers without diabetes.⁵ In fact the International Diabetes Federation (IDF) estimates that the equivalent of an additional 23 million years of life are lost to the disability and to reduced quality of life caused by the preventable complications of diabetes.⁶



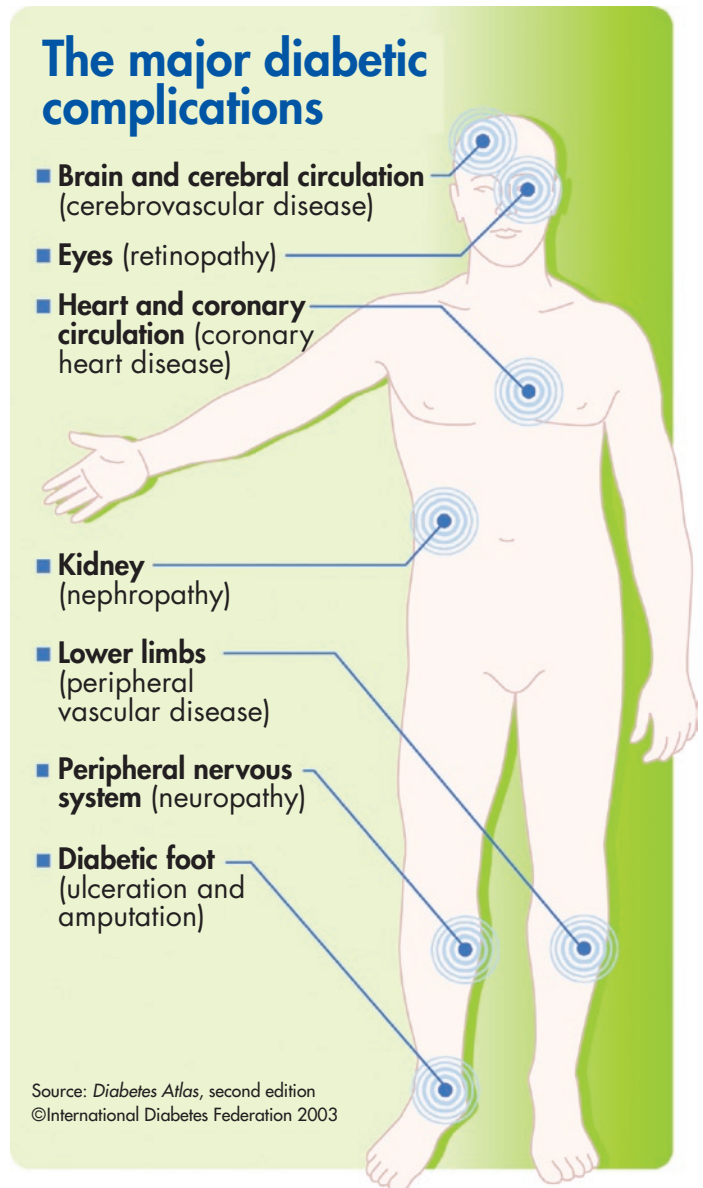
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COMPLICATIONS OF DIABETES

Currently 90% of diabetic patients have type 2 diabetes, which can largely be attributed to the trend for populations being overweight and physically inactive.⁷ In both type 1 and type 2 diabetes the increased blood glucose levels cause tissue damage, in particular to the blood vessels and nerves, often leading to serious complications.⁸ By the time of diagnosis of type 2 diabetes, 50% of patients already have some diabetic complication due to tissue damage.⁹ Complications associated with diabetes can include:

- Heart disease¹⁰
- Blindness and visual handicap¹¹
- Limb amputation¹²
- Kidney failure¹³
- Impotence and sensory loss¹⁴



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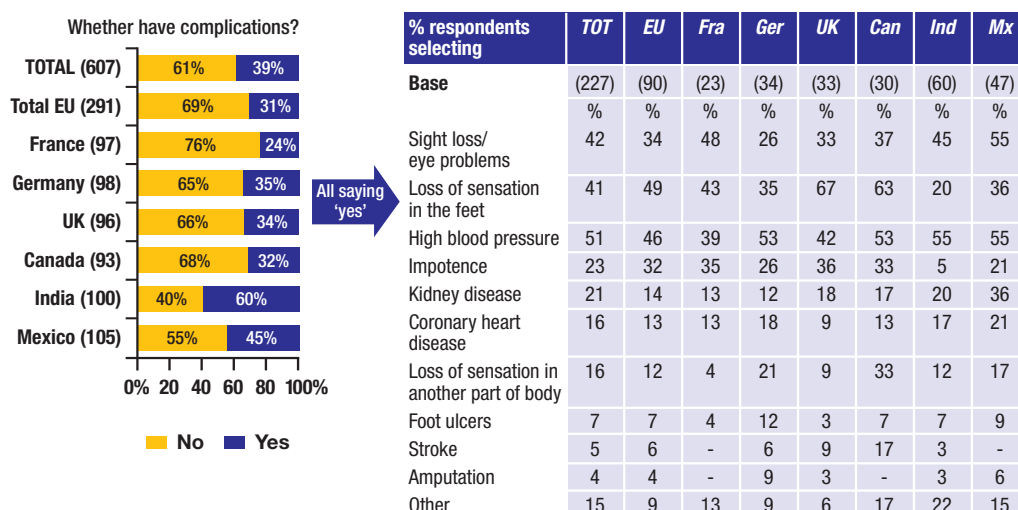
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COMPLICATIONS OF DIABETES

KEY RESULTS:

- Overall nearly 40% of patients* surveyed (i.e. treated patients who had diabetes for at least two years) reported that they currently had complications associated with diabetes
- The prevalence of complications varied by country, with patients surveyed in India reporting the highest prevalence (60%)
- The most commonly reported complications of those patients surveyed were eye problems, loss of sensation in the feet and high blood pressure¹⁵

Around 40% of patients have complications (higher in India), most commonly eye problems and/or loss of sensation in the feet (also high blood pressure, albeit less so in France and the UK).



*Patients surveyed included those with type 2 diabetes for at least two years who had been receiving some form of treatment (i.e. oral anti-diabetics and/or insulin).

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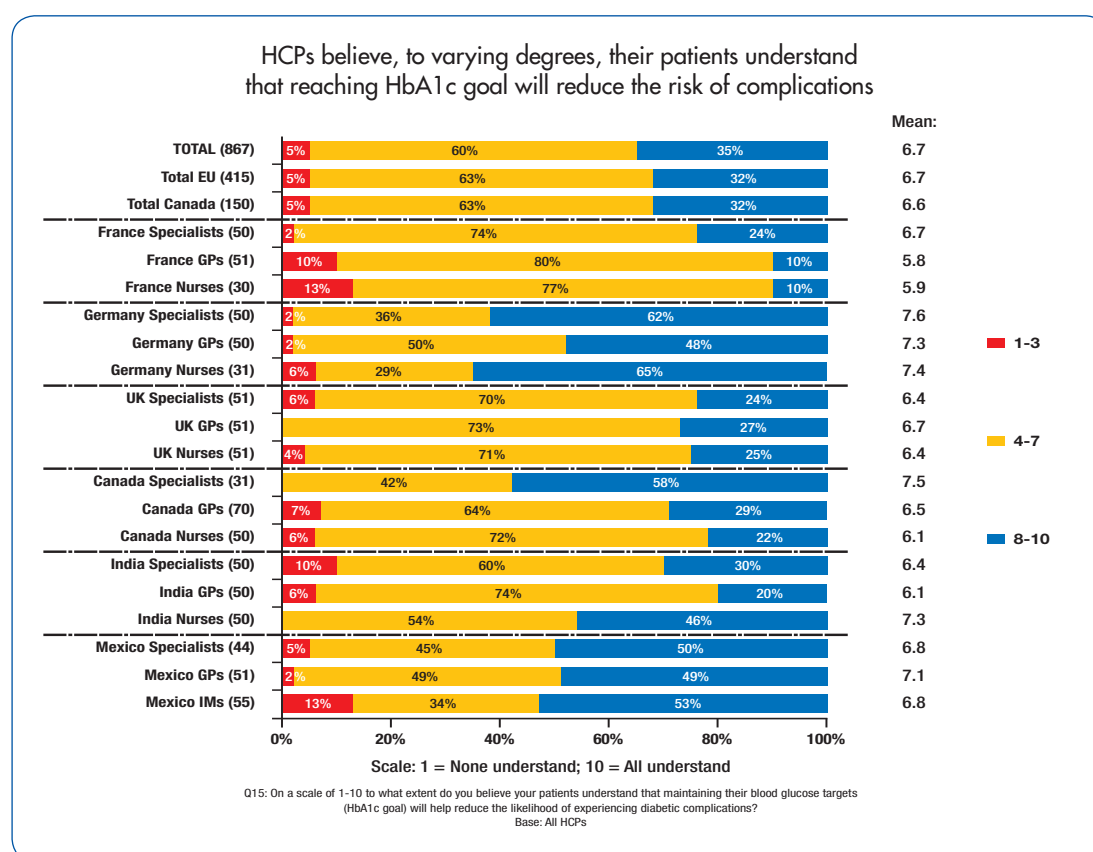
¹⁵ Merck data on file. Diabetes Impact Survey. Conducted by TNS: 28th June – 21st July. Slide 69

CHALLENGES IN DIABETES CARE MAY LEAD TO COMPLICATIONS

The mainstay of non-pharmacological diabetes treatment is diet and physical activity but often this is not enough and pharmacological agents are required. The main aim of treatment with pharmacological agents is to regulate levels of blood glucose (blood sugar), which helps to prevent the development of complications. However, research has shown that the majority of individuals with diabetes are not treated to currently recommended goals.¹⁶

KEY RESULTS:

- The HCPs surveyed estimated that less than half (43%) of their patients are at or below their target HbA1c¹⁷
- Indicating a need for greater patient education, almost half of patients surveyed (43%) were not aware of what their target numbers should be for HbA1c level¹⁸ and blood pressure¹⁹
- Encouragingly, just under four out of five patients surveyed (79%) were aware that maintaining HbA1c may reduce the likelihood of complications, except in India where half are unaware (50%)²⁰
- When HCPs were asked to what extent their patients understand that maintaining their blood glucose targets will help to reduce the likelihood of experiencing diabetic complications, the HCPs surveyed indicated a lower level of awareness among their patients.²¹



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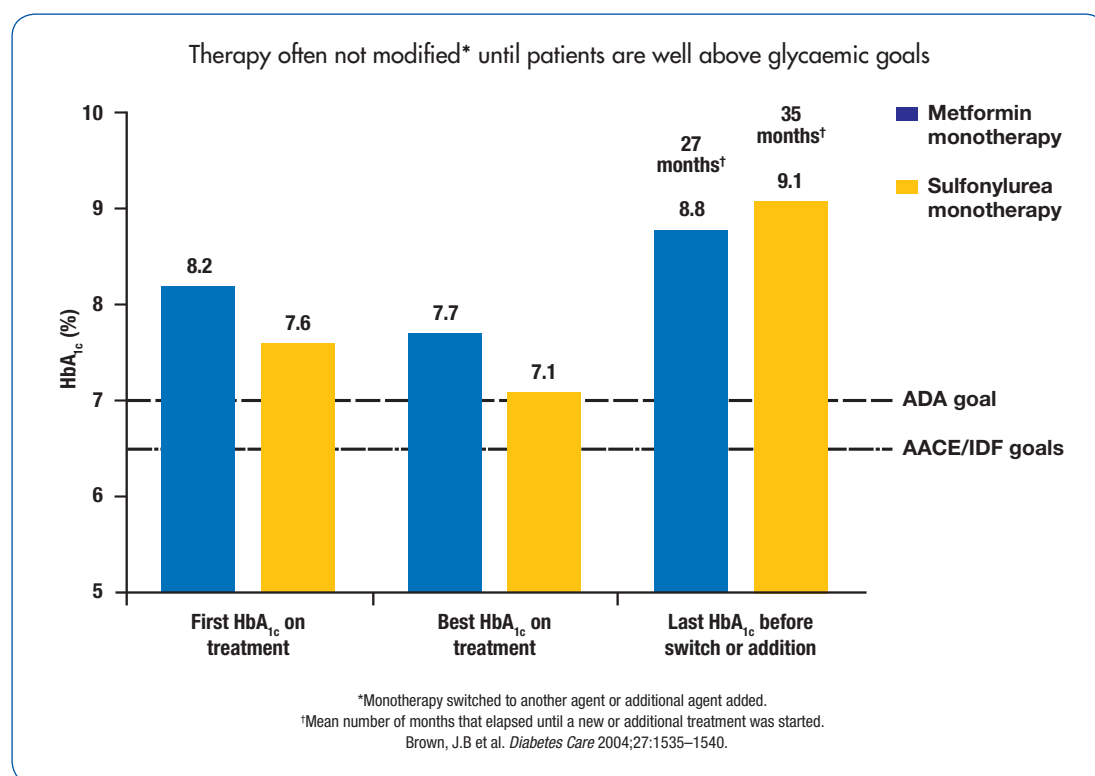
CHALLENGES IN DIABETES CARE MAY LEAD TO COMPLICATIONS

Due to the progressive nature of the disease, over time most type 2 diabetes patients require multiple drugs to achieve glycaemic control to help manage co-morbidities.²²

When asked about the treatment options used by their diabetes patients the healthcare professionals surveyed estimated that:

- Thirty-nine percent of their patients used diet and exercise plus two or more agents
- Thirty-one percent of their patients used diet and exercise plus insulin with or without oral agents²³

However, research has shown that therapy is often not modified until patients are well above glycaemic goals.²⁴



Encouragingly, the physicians surveyed believe that in recent years they have become more likely to prescribe additional therapies at an earlier stage.²⁵

"It is important for clinicians to re-evaluate treatment protocols to ensure our patients are receiving the most effective therapies as early as possible to help achieve blood sugar goals and prevent related complications before they develop."

Professor Anthony Barnett

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CHALLENGES IN DIABETES CARE MAY LEAD TO COMPLICATIONS

The social and economic impact of the diabetes epidemic is often exacerbated by late diagnosis, and additional complications resulting from inadequate treatment of the condition. The landmark United Kingdom Prospective Diabetes Study (UKPDS) demonstrated that by the time of diagnosis of type 2 diabetes, 50% of patients already have some indication of diabetes-related tissue damage.²⁶

In addition many therapies have some safety and tolerability limitations including weight gain, hypoglycaemia (very low blood glucose) and gastrointestinal (GI) side effects which hinder their ability to achieve glucose control.²⁷

- The HCPs surveyed indicated that when selecting a treatment for type 2 diabetes they want to avoid hypoglycaemia and weight gain as they are the most troublesome.²⁸ Eight-four percent and 69% of HCPs surveyed respectively placed these side effects in the top three side effects that they would want to avoid
- Of the patients surveyed, currently the majority (59%) taking drug treatment receive the standard therapy, metformin²⁹
- The majority of HCPs surveyed (84% overall, rising to 97% in Germany and Canada) cited restrictions on prescribing and in line with this 78% felt that fewer prescribing restrictions would aid more effective disease management³⁰
- The survey also demonstrated that nearly one third of patients (31%) believed that better access to more treatments would allow them to manage their diabetes more effectively³¹

Because diabetes is a self-managed disease, patients tend to be proactive about their care. For diabetes care to succeed, patients must be able to make informed decisions about how they will live with their illness.³² However, poor patient concordance/compliance is an issue in diabetes. Over a quarter of patients surveyed (28%) admitted to missing a medication dose at least once a week, and within this figure nearly one in 10 patients (9%) admitted to missing a dose two – four times a week.³³

- Thirty-seven percent of total HCPs surveyed, rising to 43% in the UK, believed that patients' regularly missing a dose of their medication is a major issue among their type 2 diabetes patients³⁴
- When patients surveyed were asked to cite the reasons they forgot, missed or did not take their medication, the most common were having too many to take, fear of side effects and not thinking they needed to take their treatment daily³⁵
- The top three reasons for HCPs surveyed believing that their patients do not comply with their treatment regimens were too many medications to take (74%), forgetting (62%) and fears about hypoglycaemia (51%)³⁶

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CHALLENGES IN DIABETES CARE MAY LEAD TO COMPLICATIONS

- Patients surveyed agreed that once daily dosing would be a successful aid to compliance, followed by an increased appreciation of the value of taking their medicine (i.e., expectation of reduced complications)³⁷

“For many patients the diabetes treatment regimen can be a vicious circle. On one hand, patients don’t always take their medication as prescribed because they are concerned about the associated side effects. However, ultimately this will just result in the requirement for more medications potentially at higher doses.”

Lori Berard

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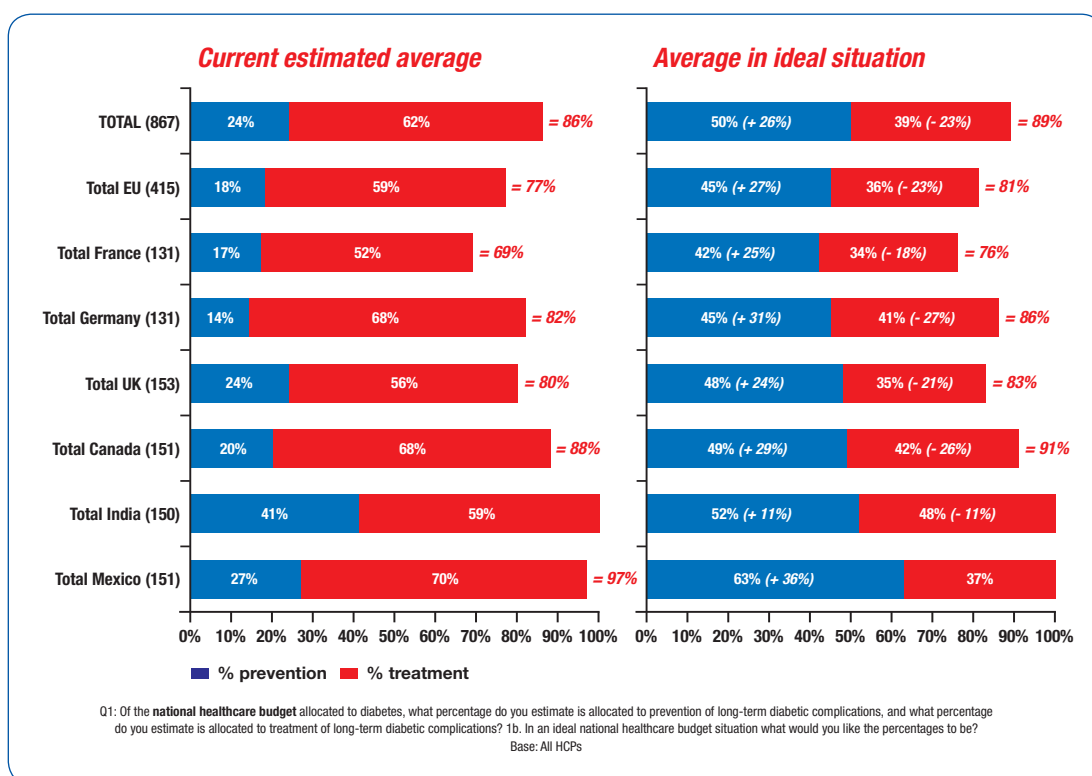
THE ECONOMIC BURDEN

Diabetes and its complications impose significant economic consequences on individuals, families, health systems and countries accounting for an estimated 2.5-15% of a nation's health budget.³⁸ The WHO predicts that between 2005 and 2015 diabetes, heart disease and stroke together will cause net losses in national income.³⁹

Private health insurers and employers will face the spiralling costs of treating the growing number of people with diabetes. Because diabetes is increasing faster in the world's developing economies than in its developed ones, it is the developing world that will bear the brunt of the future cost burden.⁴⁰ In 2007, the world is estimated to spend at least US\$232 billion to treat and prevent diabetes and its complications. By 2025, this lower-bound estimate will exceed US\$302.5 billion. In industrialised countries, about 25% of medical expenditures for diabetes go to treating elevated blood sugar; 25% goes to treating long-term complications, largely cardiovascular disease, and 50% is consumed by the additional general medical care that is associated with diabetes.⁴¹ A person with diabetes incurs medical costs that are two to five times higher than those of a person without diabetes.⁴²

Given all of these factors, it is evident diabetes has reached crisis proportions around the globe.

- The majority of healthcare professionals surveyed were in favour of allocating additional resources to prevention of long term complications of diabetes, rather than treating those complications after they occur.⁴³



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THE ECONOMIC BURDEN

It has been argued that preventing or delaying the onset of type 2 diabetes results in considerable cost reduction. In secondary prevention, it is thought that improving metabolic control (specifically by improving glycaemic control, and lowering blood pressure) will reduce healthcare usage as well as improve the quality of life for patients.⁴⁴

- Within the survey the majority (75%) of HCPs estimated the economic impact of diabetes in their country as being below five billion (\$USD).⁴⁵ However, in many countries the economic impact far exceeds that estimate:
 - \$15 billion in the UK⁴⁶
 - \$7.7 billion in both Germany and France^{47,48}
 - \$9 billion in Canada⁴⁹
 - \$15 billion in Mexico⁵⁰
 - \$14.8 billion in India⁵¹

“The global cost of diabetes has increased dramatically over the last decade with complications accounting for a substantial proportion of the economic burden. Therefore the focus from both an economic and clinical perspective should be on ways to reduce the progression of complications.”

Professor Ilhan Satman

Diabetes also places a significant burden on patients and their families and patients worldwide in terms of bearing many of the costs related to medical care; blood sugar regulating drugs and drugs required for the management of diabetic complications. This is particularly apparent in India and Mexico where at least one in five patients surveyed spend more than 10% of their monthly income on management of their diabetes.⁵² As well as the direct treatment costs incurred by patients, diabetes can also have an impact on patients' ability to work.

KEY RESULTS:

- Nearly one in five patients surveyed (ranging from 14% in Europe to 52% in Mexico) who were working reported their ability to work was negatively affected by their diabetes⁵³
- Approximately one in six of the patients surveyed who were not currently working had stopped due to their diabetes, with three in four of these stating they had been impacted financially as a result⁵⁴
- Up to one in ten patients surveyed reported having been admitted to hospital at least once in the last twelve months as a result of their diabetes or diabetes-related complications where the hospital stay was commonly between four and seven days⁵⁵

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STRATEGIES TO ADDRESS THE BURDEN: WHAT NEEDS TO BE DONE?

There is clearly a disparity in prevalence of diabetes and spending on treatment worldwide, but even in the highest spending countries this problem is not being managed sufficiently. More needs to be done to improve prevention and early diagnosis of diabetes in order to reduce the personal and economic burden of complications associated with this condition. Access to adequate care, medication and monitoring can delay or prevent diabetes complications to help reduce this burden.

Both the World Health Organization and the International Diabetes Federation support the implementation of strategies to prevent and control diabetes and resulting complications by providing guidelines for prevention and standards in diabetes care as well as building awareness on the growing prevalence and resulting impact of the condition. In addition to this the Diabetes Impact Survey has revealed some important strategies to help fight the burden of this debilitating disease.

Patient education and understanding

Patient education was generally cited by HCPs surveyed as the one strategy that would help patients manage their diabetes more effectively, thereby aiding prevention of complications (cited by 43%),⁵⁶ and 38% felt it would ease the economic burden of diabetes on the national healthcare system.⁵⁷ Ensuring patients understand the implications of high HbA1c and are aware of their target HbA1c is vital.

“The results reinforce our current thinking; from a social and economic perspective there is a role for all of us to act now to help slow the diabetes epidemic. Ensuring our patients receive the right level of education and care to help them effectively manage their disease is a key step in the process.”

Professor Anthony Barnett

Appropriate access to key HCPs

Nearly one in five (19%) of HCPs surveyed did not feel that their patients have access to multidisciplinary care⁵⁸ and more frequent contact and more time per patient were cited by HCPs (53% and 51% respectively) as key strategies to help patients achieve goal.⁵⁹ HCPs surveyed also believed that more frequent monitoring and contact with the relevant healthcare professional are also key to help patients reduce diabetic complications.⁶⁰

Fewer prescribing restrictions and greater access

Identifying ways to reduce the current restrictions placed on prescribing and broadening the access to appropriate medication will help allow appropriate use of diabetes medication which has been demonstrated to save costs⁶¹ and reduce the risk of hospitalisation.⁶²

Re-evaluate treatment protocols

There is a continued need to ensure all patients are receiving effective and appropriate therapies as early as possible.

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STRATEGIES TO ADDRESS THE BURDEN: WHAT NEEDS TO BE DONE?

Improve patient adherence to treatment

Patients surveyed (59%) feel that simpler dosing would be a successful aid to compliance⁶³ and this is supported by the physicians surveyed (64%) who agree that simpler dosing may help patients reach goal.⁶⁴

Reassess the economic strategy

Governments worldwide are making significant investments in the fight against the diabetes epidemic. Considering a reallocation of funds to place a greater focus on helping to prevent type 2 diabetes complications rather than treatment of complications once they have developed is a long-term strategy but one which may have a significant impact.

“The diabetes epidemic is not going to be solved easily but this survey research has reinforced the need for a multi-factorial approach to the problem. This starts with encouraging lifestyle changes early on in at-risk patients and continues through to encouraging compliance and providing effective education and information once patients have started medication.”

Professor Chan Siew Pheng

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