SUJATHA
India
Sujatha has type 2 diabetes

06 The **Blueprint for Change** Programme
June 2014

developing partnerships to change diabetes in India

The scope of the diabetes epidemic in India demands a partnership approach where organisations with complementary skills work together to eliminate barriers to care. In India, we are striving to raise awareness of diabetes, improve access to quality diabetes care and enable people with diabetes to live healthy lives. We are doing this by bringing what we have learned in the private sector to the public healthcare system.

novo nordisk®

contents

Executive summary

India is a paradox. The fast-growing economy is changing standards of life. However, with economic growth comes a rise in non-communicable diseases like diabetes. By 2030, India will have one of the largest economies in the world. But little of that economic yield is invested in India's public healthcare system. Only 1.3% of gross domestic product is spent on public healthcare, which is no match for India's burden of non-communicable diseases – this is threatening the country's economic growth and quality of life.

In India, 65 million people have diabetes. By 2035, this number is expected to reach 109 million. Only half of the people with diabetes know they have it, fewer are treated, and even fewer reach treatment targets. Improving awareness of diabetes and access to care can narrow these gaps and, possibly, slow the increase in the incidence rate of diabetes complications.

Novo Nordisk believes that changing diabetes in India requires a strengthening of the public healthcare system. No single group can do this, but when governments, non-governmental organisations and private businesses work together with a common vision, we can improve diabetes prevention, awareness, diagnosis and treatment – reducing the human toll and saving society billions of dollars. In the process, we can stimulate market growth and create business opportunities.

The public–private partnership approach offers a foundation for sustainable and large-scale ventures. It is how we help to create shared value in India.

the challenge

In India, we know that 65 million people have diabetes. Less is known about how many of these people are receiving care or are achieving treatment targets. Government health expenditures are relatively low; coupled with low diabetes awareness, a shortage of diabetes-trained healthcare professionals and a lack of self-care knowledge, the diabetes burden is not under control and threatens to derail India's economic growth.

a fast-growing epidemic

The scope of India's diabetes epidemic is undeniable. In India, 65 million people live with diabetes – out of an adult population of 760 million.[1] If they were to make up their own country, it would correspond to France in terms of population and would be the 21st largest nation in the world. Another 22 million people in India have prediabetes[1] (Box 1).

The situation is expected to worsen in the coming years, with another 44 million people developing diabetes by 2035[1] (Figure 1). All of this, we know. But the lack of data could hide a worse scenario.

According to the rule of halves[2] (Figure 2), which is a way to map out the diabetes situation in a given country, only half of people with diabetes are diagnosed, and the best available data suggests that this is true in India as well. But given the absence of a multistate study in India, it is impossible to know precisely how many people who are diagnosed, receive care, achieve treatment targets or achieve desired outcomes. Actual rates of diagnosis may be closer to industry consensus, which holds that only one third of people with diabetes know they have it.

Drivers of the diabetes burden

The rise of diabetes can be traced to a number of factors, including improved economic standards, diet and lifestyle changes.

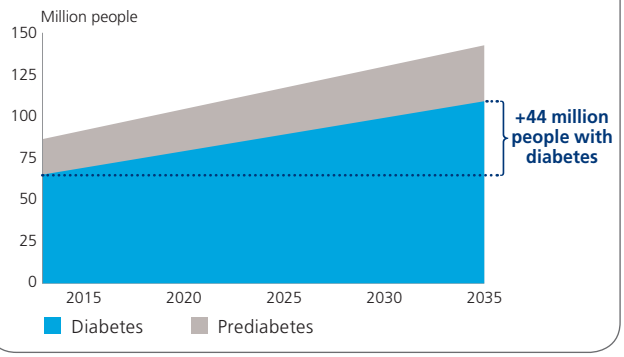
The Indian economy is growing rapidly, posting an average annual gross domestic product (GDP) growth of 10% since 2002.[3] By 2030, India is expected to have one of the world's largest economies.[4]

Economic growth leads to increased urbanisation, which is also the case for India.[5] Urbanisation is associated with sedentary lifestyles and a changing diet. In a typical Indian diet, more than 60% of caloric intake is from rice, wheat, corn and sugar, with only about one third of the recommended amount of fibre being consumed.[6, 7, 8] This, combined with a sedentary lifestyle, places Indians at a greater risk for diabetes.[9]

The situation poses many threats on personal and societal levels. Left unmanaged, diabetes may lead to health complications[10] and poor quality of life. With the expected growth in the burden of diabetes, society faces significant challenges as the epidemic will put increased pressure on the healthcare system.

Diabetes and prediabetes trends Figure 1

109 million people with diabetes by 2035



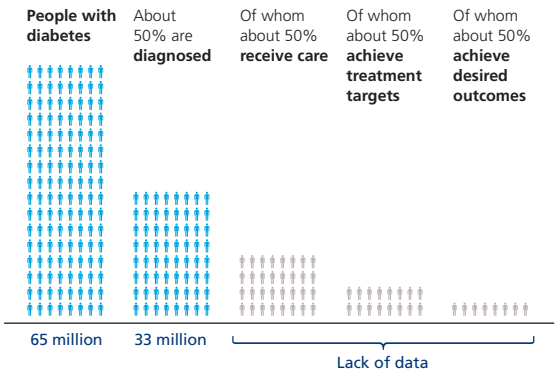
Box 1

Prediabetes

Before people develop type 2 diabetes, they almost always have prediabetes. This means that blood sugar levels are higher than normal but not high enough to warrant a diagnosis of diabetes.

Rule of halves Figure 2

50% of people with diabetes do not know they have it



the healthcare system

In low-income countries, the burden of communicable diseases typically outweighs that of non-communicable diseases like diabetes. Until recently, this has been true in India, where rapid socioeconomic[4] and demographic changes[11] have contributed to a shift in this balance. Today, non-communicable diseases account for just over half of all deaths,[12] creating a 'double burden' of communicable and non-communicable diseases that compete for attention and resources.

Historically, health has not been a general priority in India. Government health expenditures account for 1.3% of GDP – less than a fourth of the world average.[13] Lack of public healthcare funding forces increased reliance on the private healthcare system, where eight out of 10 doctors work and most patients seek treatment[14] (Figure 3).

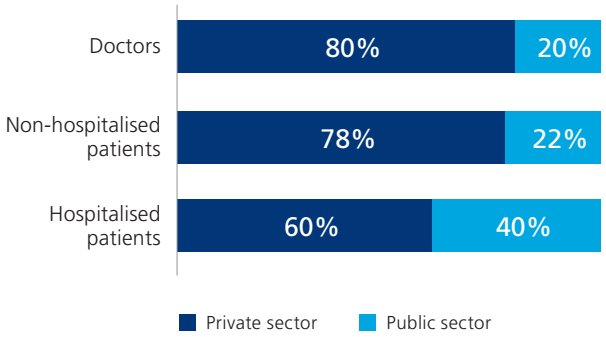
A dominant private system leads to one of the highest out-of-pocket expenditure levels in Asia.[15] In India, this is a direct cause of poverty for many families,[16] and it limits their access to high-quality care. By improving the quality and availability of public healthcare facilities, out-of-pocket expenditures could be reduced.[17]

> "There are so many programmes under the health department: maternal and child care, vaccinations, prevention of communicable and waterborne disease outbreaks [...] Because of their burden, there is not that much attention given to non-communicable diseases. The willingness is there, but there is no time."
>
> – Dr Neelam J. Patel, Chief District Health Officer, Ahmedabad District, Gujarat

A study shows that 80% of healthcare professionals believe that major improvements are needed in early diagnosis and treatment of diabetes.[18] In India, people with diabetes struggle with access to qualified healthcare professionals.

Division of doctors and patients in the healthcare system Figure 3

8 out of 10 doctors work in the private sector



The challenge is more pronounced in rural areas, where more than half of people with diabetes live and where public healthcare services are limited.[17]

Recently, the government has begun to improve the rural healthcare infrastructure through the National Rural Health Mission.[19] And India is beginning to address the increased prevalence of non-communicable diseases in other ways too. As an example, the federal government allotted 11 billion US dollars in 2012 for the prevention, control and management of non-communicable diseases such as diabetes.[14]

Still, as long as the public system faces the challenges of scarce resources, it is limited in what it alone can do to alleviate the growing diabetes burden.

Photo by Jesper Westley for the World Diabetes Foundation

People with diabetes waiting in line to see a doctor at an eye care camp, Tamil Nadu, 2003

barriers to diabetes care

We want to enable people with diabetes to live healthy lives and give them access to quality medicine. In doing so, we strive to create value for people living with diabetes, for society and for Novo Nordisk.

Our approach to creating value for people with diabetes is rooted in the Universal Declaration of Human Rights, which defines the right to health as essential for an adequate standard of living.[20] Four key elements shape the right to health: availability, accessibility, affordability and quality for patients.[21] In addition, the World Health Organization points to awareness as a critical element.[22] Together, these elements form a framework of five barriers to diabetes care.

Selected issues and barriers

In India, we have identified barriers that – if dealt with – yield the greatest value for both society and Novo Nordisk. These are highlighted in blue in Figure 4. Within each of these barriers, we have identified a key issue:

1. Low public awareness about diabetes and its symptoms
2. Lack of diabetes care skills among healthcare professionals
3. Lack of self-care knowledge among people with diabetes

These three key issues are the main focus of this Blueprint for Change case study as they represent the greatest potential value when addressed. However, our efforts in India go beyond addressing the issues and barriers identified in this case study. Directly, we address affordability by offering a diverse product portfolio and thereby serving all layers of society; indirectly, we do it by building capabilities within public healthcare. Addressing affordability alone does not lead to better healthcare. By addressing issues such as access to qualified healthcare professionals in public healthcare facilities, people will move from private healthcare to the more affordable public healthcare system.[17]

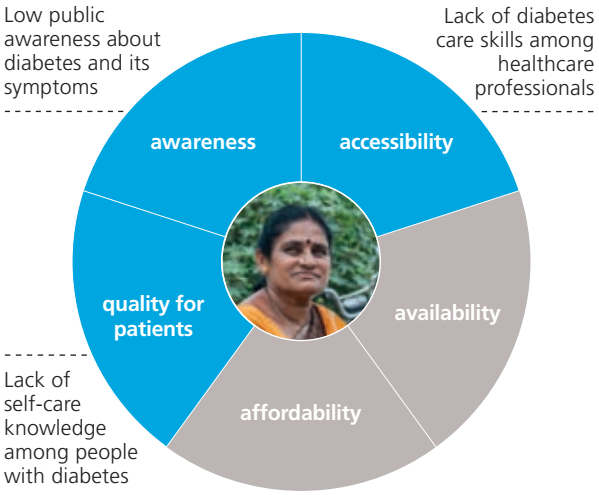
Breaking the rule of halves

We believe that by working with partners, we can help prevent onset diabetes, increase the diagnosis rate, improve access to treatment and help people with diabetes live free from complications. In this case study, we examine how Novo Nordisk collaborates with partners to break the barriers and address relevant issues. This is our commitment to breaking the rule of halves (Figure 5).

Issues and barriers to diabetes care — Figure 4

key barriers to diabetes care

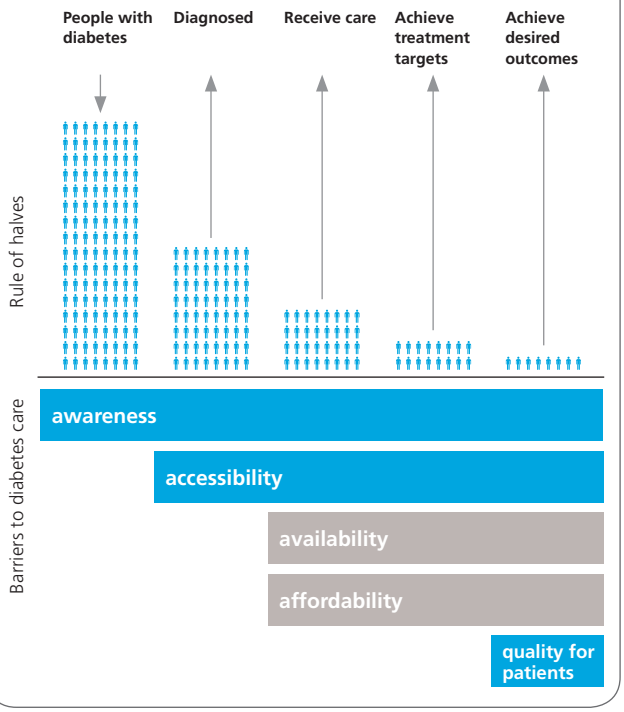
are lack of awareness, accessibility and quality for patients



Rule of halves and barriers to diabetes care — Figure 5

breaking the rule of halves

by addressing key barriers



our approach

Since we entered the Indian market in 1982, we have demonstrated our commitment to reducing barriers to care by building relationships and making investments to expand the private market. In recent years, we have started to leverage the knowledge and resources gained in the private market in the public sector.

our history

Novo Nordisk has 90 years of experience in bringing innovative diabetes products to the market. The company is controlled by the Novo Nordisk Foundation, whose objective is to provide a long-term sustainable basis for Novo Nordisk's activities and to support scientific, humanitarian and social purposes.

Today, Novo Nordisk is a global healthcare company with 38,400 employees that markets products in more than 180 countries.

Our history in India (Figure 6) reflects our belief that tackling diabetes requires a holistic approach. In 1982, we became one of the first healthcare companies to enter the Indian diabetes market. Since then, we have been committed to reducing barriers to diabetes care by building relationships and making investments to expand the private insulin market.

Initially, we provided innovative products to the Indian market via export, then later through a local production facility, Torrent Pharmaceuticals Ltd., with which we still collaborate. In 1994, we established our Indian affiliate and today we employ more than 1,500 employees. We are the leader in diabetes care in India, with an insulin volume market share of more than 60%.[23]

With the establishment of the Novo Nordisk Education Foundation in 1998, we made it a strategic imperative to improve diabetes care. Since then, the Foundation, a not-for-profit organisation, has been a major driver of our work with awareness creation and diabetes education.

We continuously work to strengthen the medical care infrastructure. One way is through clinical research activities, which are conducted to ensure that our products are tailored to the needs of Indian patients. Our focus on innovation was strengthened in 2010 with the establishment of a global research and development centre in Bangalore.

In 2008, we introduced the Changing Diabetes® platform. Changing Diabetes® is our commitment to defeating the diabetes pandemic by working with partners to raise awareness, improve access to care and address psychosocial aspects of diabetes.[24] Examples of such initiatives are the Changing Diabetes® Barometer (page 17) and the Changing Diabetes® in Children programme. In addition, we have set a long-term target to provide medical treatment to 40 million people with diabetes worldwide by 2020, doubling the number of people we serve.

Major events in our history in India Figure 6

a history of dedication
and collaboration since 1982

1982
- Export of insulin to the Indian market

1988
- First production of Novo Nordisk products in India

1994
- Novo Nordisk India Private Ltd. established

1998
- Novo Nordisk Education Foundation established as a non-profit organisation

2000
- First Steno 'train-the-trainer' programme for healthcare professionals
- Novo Aid, supporting children under 18 from poor families with free insulin

2001
- Original DAWN™ study to understand the psychosocial burden of diabetes

2002
- First World Diabetes Foundation project

2003
- Modern insulin introduced

2007
- First World Diabetes Day marked with diabetes walks, patient education camps, children's events, seminars and exhibitions
- Global shared service centre established

2008
- State government in Goa enters first Changing Diabetes® Barometer partnership with Novo Nordisk Education Foundation

2010
- Victoza®, a human GLP-1 analogue, introduced
- Research and development centre established; one of five global innovation centres at Novo Nordisk

2011
- Guinness World Record for number of blood sugar tests
- Changing Diabetes® in Children programme started, providing free insulin and care for children

2013
- Tresiba®, a new basal insulin, introduced
- Base of the Pyramid, a social business model to improve diabetes care

our value proposition

With a rapidly growing economy, India is experiencing an increasing number of people with diabetes and a need for better access to care. The issues we have identified pose threats to the people's ability to receive appropriate diabetes care, and therefore need to be addressed.

At Novo Nordisk, we believe that what is good for people with diabetes and what is good for society is also good for us. In addressing basic risk factors that could lead to the development of diabetes and addressing barriers to diabetes care, the objective is to create value for people with diabetes, for society, for partners and for Novo Nordisk (Figure 7). We call this creating shared value.

This philosophy is part of our Triple Bottom Line business principle, which means conducting our activities in a financially, environmentally and socially responsible way.

In India, increased diabetes awareness, fewer complications and improvements in the skills of healthcare professionals would result in societal gains.[25, 26] This includes reductions in healthcare costs and better quality of life for people with diabetes.

As we have seen, the public healthcare system is facing challenges in addressing barriers to good care. As a result, private companies are starting to play a larger role in improving patients' healthcare, which goes beyond merely offering products.

Guinness World Record for completed blood sugar tests, Bangalore, 2011

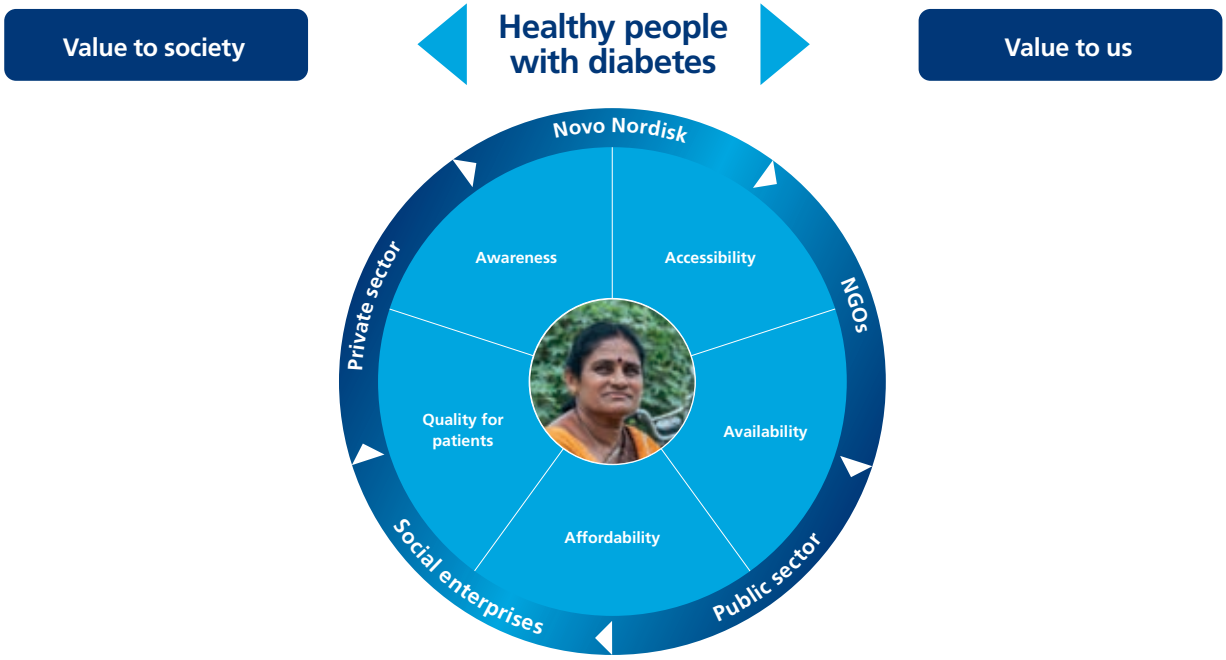
Since 2008, we have been leveraging knowledge gained in the private market in the public sector with the initiation of the Changing Diabetes® Barometer. We believe this holds tremendous potential for value creation for all stakeholders involved. Through public sector focus, more people with diabetes will be reached, benefiting society as people live more healthy and productive lives, while at the same time benefiting Novo Nordisk as more people gain access to treatment. This is the essence of shared value.

We believe that the best way to create shared value is to collaborate with state governments, non-governmental organisations (NGOs) and other partners on activities and programmes that reduce barriers to diabetes care.

Shared value creation Figure 7

focusing on the patient

results in value both for society and for Novo Nordisk



creating shared value

To improve diabetes care, we must address barriers of awareness, accessibility and quality for patients. Actively working with partners, we have spread a message of awareness to more than 16 million people, resulting in 332,000 people being diagnosed with diabetes since 2002. We have also built healthcare professionals' capabilities and promoted patient education. The sum of these efforts results in value both for society and for Novo Nordisk.

awareness

Even as the diabetes epidemic expands in India, the general population remains largely unaware of the disease, how to prevent it and its potential complications.

Because of this, misconceptions about diabetes are widespread. For example, one out of three people does not believe that lifestyle plays a role in diabetes[27] (Figure 8). And in some regions, only one out of five people knows that diabetes is preventable.[28]

The lack of understanding of diabetes and its symptoms not only precludes people from knowing if they are at risk, but could also contribute to a lack of general acceptance by society. According to the DAWN2™ study (Box 2), this is quite pronounced in India – three out of 10 people with diabetes feel discriminated against because of their condition[29] and half of healthcare professionals believe that there is a major need for improvement if people with diabetes are to be accepted as equal members of society.[18]

> "People are not aware of diabetes, so they will not proactively go and get checked."
>
> – Rajan Joshi. Rajan has type 2 diabetes
> Ahmedabad, Gujarat

For two decades, Novo Nordisk has regarded lack of awareness of and misconceptions about diabetes as a priority to be addressed. Think of it as a matter of public health: the longer it takes for people at risk to recognise diabetes symptoms and seek medical advice, the higher their risk of developing diabetes complications, including kidney failure, blindness and amputation,[30] which lead to costly treatments for the individual and for society.

Paths to value creation

Novo Nordisk addresses the issue in two ways. Among the general public, we work to raise public consciousness of diabetes. At a grass-roots level, we strive to improve awareness in local communities through community health workers.

Improving general public awareness

Through activities such as educational programmes, exhibitions and screening camps, we have worked to raise diabetes awareness among the general public. Both to enable timely diagnosis and to help people prevent onset diabetes. For example, on 14 November 2012, to mark World Diabetes Day, more than 2,600 people participated in a community-based event that set a Guinness World Record as the largest health awareness initiative.

Diabetes screening and awareness van, Puducherry, 2013

Misconceptions about diabetes Figure 8

1 out of 3 **people believes that lifestyle plays no role in diabetes**

1 out of 2 believes that diabetes can be cured by herbal treatment

1 out of 4 believes that soaking the feet in water reduces elevated blood sugar levels

1 out of 3 believes that lifestyle plays no role in diabetes

Box 2

DAWN2™ – a patient-centered study

With more than 15,000 people participating across 17 countries, DAWN2™ is the largest study ever conducted to understand the psychosocial issues and needs of people with diabetes. The purpose of the study is to inspire new and sustainable ways to enable them to live healthy lives. The study is conducted as a collaboration between the International Diabetes Federation, the International Alliance of Patients' Organizations, Novo Nordisk and others.

Partnerships are vital for creating scalable solutions to barriers to care, and improving public awareness is no exception. The Changing Diabetes® Barometer (page 17), initiated in collaboration with state governments, is an important example of such a partnership. Through the Changing Diabetes® Barometer, more than 5.5 million people have been reached, resulting in more than 11,000 new cases diagnosed.[23] One way we reach people is through eight diabetes screening and awareness vans, which provide diabetes screening, treatment facilitation and educational material.

Our public outreach accomplishments become even more significant when we consider the activities of the World Diabetes Foundation (WDF) (Box 3). Through our partnership with WDF, awareness-building messages have reached an additional 10 million people in India.[31] Through screenings, almost 313,000 people have been diagnosed.[23, 31]

Improving awareness in local communities

We view training of community health workers as a fundamental tool for building awareness and promoting prevention at community level. Skilled healthcare professionals are limited, which means that community health workers, such as Accredited Social Health Activists (ASHAs), are important.

ASHAs, who are an integral part of the National Rural Health Mission, receive basic training and can provide essential primary healthcare to people with diabetes. As trusted members of the community, health workers are effective at disseminating knowledge.[19] ASHAs also play a central role in our social business project (Box 4) by improving diabetes care for people at the base of the pyramid. Through WDF, more than 37,000 community health workers have been trained since 2002.[31]

> "The ASHAs can play a big role in increasing awareness of diabetes among the population."
>
> – Dr Rebha R. Krishori, Medical Officer, Jekot PHC, Dahod

Value to society

The Changing Diabetes® Barometer, our partnership with WDF and other initiatives, such as World Diabetes Day, have made a difference in India. Through these activities, 16 million people have been reached and 332,000 people have been diagnosed with diabetes since 2002. Another 124,000 people with prediabetes have been made aware that they are at high risk of developing diabetes later in life.[23, 31] For this group, a change in lifestyle may prevent diabetes onset.[32]

To support newly diagnosed people with diabetes, we provide care through the Changing Diabetes® Barometer. When diagnosed, people are directed to public facilities with expertise in treatment and care (page 17).

Intuitively, there is value to society in enabling people to improve their lifestyles, seek medical advice and follow through with appropriate care. The value of these activities can be demonstrated by using the recently published DiabCare study. Using the CORE diabetes model,[33] Novo Nordisk's activities have brought about diagnoses that have avoided 12,400 cases of heart complication and 3,400 cases of amputation and vision loss[34, 35, 36] (Figure 9).

Raising awareness about diabetes, World Diabetes Day, 2007

Box 3

World Diabetes Foundation (WDF)

In 2002, Novo Nordisk established WDF as an independent and not-for-profit foundation dedicated to supporting prevention and treatment of diabetes in developing countries. Through co-funded and sustainable projects with local partners, WDF focus on diabetes prevention, awareness, and access to care, capacity building and advocacy. In India, WDF has supported 59 projects to date and the total investment has reached 42.8 million US dollars of which the foundation has donated 18.5 million US dollars.

Value created through diagnosis Figure 9

12,400 cases of heart complication avoided

Diagnosis of 332,000 people with diabetes

- 3,400 cases of amputation and vision loss avoided
- 5,000 cases of kidney failure avoided
- 12,400 cases of heart complication avoided

Note: The numbers are based on an eight-year CORE diabetes model simulation that assumes that people who have recently been diagnosed with type 2 diabetes could simultaneously reach the level of risk factors recorded for the best-performing quarter of the patients with a one-year duration of diabetes in the 2011 DiabCare India data. There are no treatment costs in this simulation.

Box 4

Base of the pyramid

In 2013, we introduced a social business model to provide access to insulin and quality diabetes care to people with modest incomes in a scalable, sustainable and profitable way. As part of the project, Novo Nordisk Education Foundation has recently signed a memorandum of understanding with the state health society of Bihar to train 300 more ASHAs.

accessibility

As is true in many low-income countries, India has a shortage of qualified healthcare professionals. On a per-capita basis, the number of doctors and nurses is less than half of the global average[37] (Figure 10).

At the primary care level, one out of four healthcare professionals who treats diabetes has not received any postgraduate training in caring for people with the condition.[18]

Incentives for continuous medical education (CME) vary across India, which contributes to low levels of knowledge about diabetes among some groups of doctors.[38, 39] In addition to CME programmes, scientific seminars are needed to help healthcare professionals integrate new knowledge and transform old practices.[39]

It is not a matter of doctors being unwilling to learn; in fact, two out of three nurses and primary care level doctors indicate a desire for more training in diabetes care[18] (Figure 11). Lack of diabetes knowledge may lead to delayed diagnosis and reluctance to start the patient on insulin, even if this is the proper treatment. Inadequate treatment leads to risk of complications and hence increase in costs.

Paths to value creation

We have been training and educating healthcare professionals in the private sector since the early 1990s. In recent years, we have expanded our activities to strengthen capabilities in the public sector.

Building capabilities in the private sector

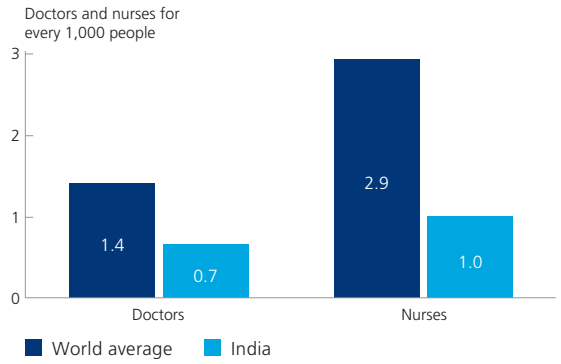
Scientific seminars are a key approach to training healthcare professionals in the private sector. Since 1994, Novo Nordisk has regularly gathered together healthcare professionals to discuss matters such as basic diabetes management, insulin therapy, diabetic foot treatment and responses to hyperglycaemia (high blood sugar), to mention just a few. More than 46,000 healthcare professionals have been reached through such seminars.[23]

Since 2000, the Novo Nordisk Education Foundation has also supported more than 1,300 doctors with education through diabetes CME programmes such as the University of Newcastle's TUNNDA[A] and by collaborating with Steno Diabetes Center on the Practical Diabetology Course.[23] As well as training and educating healthcare professionals, since 2011 we have operated the Changing Diabetes® in Children programme (Box 5) in collaboration with partners to give children with type 1 diabetes access to qualified healthcare professionals.

Woman with diabetes receiving care at a foot clinic, Chennai, 2004

Number of doctors and nurses Figure 10

less than 1 **doctor for every 1,000 people in India**



Desire for training Figure 11

2 out of 3 **doctors and nurses desire more training in diabetes care**

Changing Diabetes® in Children Box 5

Changing Diabetes® in Children (CDiC) is a programme that provides free insulin, blood glucometers, strips as well as patient education for children with type 1 diabetes. The programme is carried out in partnership with local and international organisations, such as the World Diabetes Foundation, Roche and the International Society for Pediatric and Adolescent Diabetes. CDiC supports more than 4,000 children in 21 clinics throughout India.

A: TUNNDA is a certificate and diploma course conducted by the Novo Nordisk Education Foundation in collaboration with the University of Newcastle Diabetes Academy, Australia.

Building capabilities in the public sector

In conjunction with seven state governments, the Novo Nordisk Education Foundation has launched the Changing Diabetes® Barometer (page 17). Through the Barometer, we collaborate with Steno Diabetes Center (Box 6) to train public-sector healthcare professionals. The Steno Diabetes Center has many years of international experience in providing training and education to healthcare professionals, and we are now using this expertise to build capabilities in the public healthcare system.

> "We have conducted training with Novo Nordisk for medical officers at primary and community healthcare centre level. But otherwise […] there is no regular non-communicable disease training or capacity building."
>
> – Dr Neelam J. Patel, Chief District Health Officer, Ahmedabad District, Gujarat

Part of the concept is to 'train-the-trainer'. The Novo Nordisk Foundation funds Steno Diabetes Center who trains some of the leading healthcare professionals in each state and these, in turn, train other healthcare professionals within their organisations. In this way, they perpetuate capability building after their initial training is complete. These activities meet a vital need in improving care for people with diabetes.

Value to society

Together with our partners, we have trained and educated more than 86,000 healthcare professionals in the public and private sectors since 1994. Most of these – 65,000 – are doctors.[23]

> "We follow routines and don't get that much updated knowledge. Through Changing Diabetes® Barometer, doctors are being trained and getting more confidence to treat patients."
>
> – Dr Dhanlaxmi B. Rathod, Chief District Health Officer, Dahod District, Gujarat

Having access to a qualified healthcare professional is good for people living with diabetes and for society. Among other things, access to quality care and improvements in care processes can reduce the risk of complications.

Assuming that each of the 65,000 trained doctors provides care and treatment for 82 people with diabetes[23], our training and educational activities in India have led to a gain of almost 600,000 life years as a result of improved access for people with diabetes to qualified healthcare professionals[23] (Figure 12).

Box 6

Steno Diabetes Center

Steno Diabetes Center is a world-leading institution for translating research into diabetes care and prevention. Owned by Novo Nordisk, Steno Diabetes Center is an independent not-for-profit organisation. Internationally, Steno Diabetes Center supports and delivers training of healthcare professionals in best practices in areas of diabetes management such as foot care, screening and complications.

Value created from training doctors Figure 12

600,000 life years gained

Training of 65,000 doctors

Improved access to qualified healthcare professionals for 5.3 million people with diabetes

600,000 life years gained

Note: The numbers are based on an eight-year CORE diabetes model simulation for India that assumes that access to a qualified healthcare professionals increases access to screening and prevention programmes for foot ulcers, eye disease and renal disease. Further, increased access to qualified healthcare professionals is assumed to increase the proportion of patients receiving concomitant medication for prevention of complications.

Ranjith and his doctor, Changing Diabetes® in Children, Bangalore, 2013

quality for patients

People with diabetes play a central role in achieving treatment targets. Diabetes can be complex to manage, and to a great extent diabetes management takes place outside the doctor's treatment room. Teaching self-care skills to people living with diabetes enables them to make lifestyle adjustments on a day-to-day basis and make better decisions about treatment.[40]

Lack of self-care knowledge can result in people with diabetes being uncomfortable with insulin use or poor treatment adherence,[41] which makes treatment targets elusive and frequently leads to complications[30] (Figure 13). This prevents these people from living healthy lives. The DAWN2™ study shows that one out of 10 people with diabetes believes that their quality of life is poor as a consequence of their diabetes.[29]

Lack of knowledge

In India, people with diabetes know little about their condition. For instance, only two out of five people diagnosed with diabetes are aware that the condition can cause complications[28] (Figure 14).

> "I don't ask questions to the doctor. Whenever I go there I just ask for the medicine. […] If I ask the doctor questions he will come up with things that are scary for me."
>
> – K. Mangalakshimi. K. Mangalakshim has type 2 diabetes. Puducherry

Only 23% of people with diabetes in India have received self-care education, although those who received it found it helpful.[29] Low levels of patient education may explain a lack of knowledge about the complications of diabetes.

Treatment targets not achieved

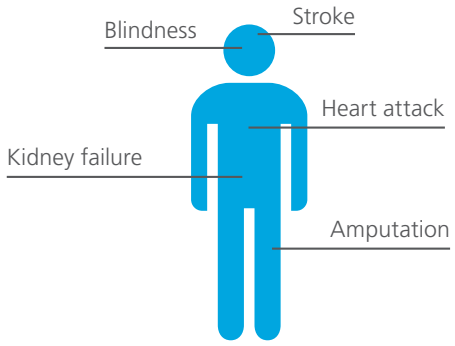
In India, 50–60% of people with diabetes who receive care do not achieve the recommended treatment target of an HbA1c level below 7%.[42] Insulin is appropriate for helping millions of people living with diabetes to reach this goal, but many people worldwide are reluctant to start on insulin either because they view it as a personal failure or out of concerns about injections.[41, 43]

Further, more than half of people with diabetes believe that their medication routines interfere with their ability to live normal lives.[29] This might relate to concerns about insulin therapy and inadequate self-care training.[43] These worries result in many people seeing a doctor for daily injections.[44] Relying on a doctor for injections interferes with daily routines and increases the risk of injections being skipped. This increases the risk of complications and drives up costs both for people with diabetes and for society.[45] Moreover, daily visits to a doctor, as opposed to routine self-care, puts pressure on an already overburdened healthcare system.

Potential complications Figure 13

heart complications

can be a result of poor treatment



Sujatha at the market. Sujatha has type 2 diabetes, Bangalore, 2013

Knowledge of diabetes-related complications among those diagnosed Figure 14

2 out of 5

people with diabetes are aware that the condition can cause complications


1 out of 4 is aware that diabetes can cause foot problems


1 out of 20 is aware that diabetes can cause a heart attack


2 out of 5 are aware that diabetes can cause complications

Paths to value creation

For two decades, we have worked with partners to teach people with diabetes how to treat and care for their diabetes. This empowers them to take control of their health.

Patient education with partners

One of the many things that WDF does is to support projects that increase people's understanding of their diabetes diagnosis. Many such projects focus on how to avoid or detect vision and foot complications. In total, WDF has trained and educated more than 214,000 people with diabetes in self-care management.[31]

Education through our local field force

We have also trained 579,000 patients on diabetes management through our local field force.[23] We conduct the training at healthcare clinics, with the focus on general diabetes management, including foot care, proper diet and use of medications.

As with education of healthcare professionals, there is a strong need for patient education – and not enough people to provide it. We are seeking to address this imbalance because we believe that good self-care is imperative for positive patient outcomes.

Value to society

Between WDF and our field force, our efforts have resulted in education and training for almost 800,000 people with diabetes.[23]

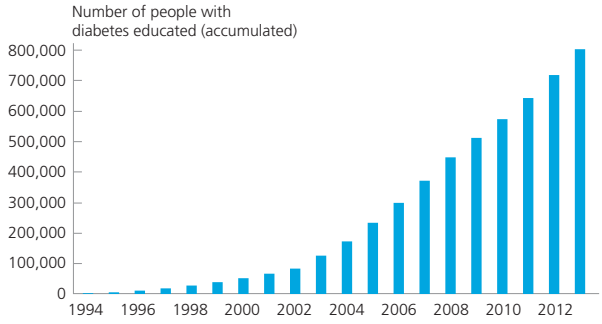
Patient education is positively associated with reductions in HbA1c levels[46] and potentially triggers a cascade of benefits, such as lower risk of complications,[10] as people learn how to manage their diabetes. It enables them to take steps to keep their diabetes under control. It also helps them to achieve treatment targets that can ultimately yield better quality of life. Healthy people with diabetes contribute to societal welfare through lower healthcare costs and higher economic productivity.

Photo by Jesper Westley for the World Diabetes Foundation

People with diabetes receiving foot care training, Karnataka, 2008

Patient education by Novo Nordisk and partners Figure 15

800,000 people with diabetes educated



overall value for society

Through public–private partnerships, Novo Nordisk is dedicated to addressing risk factors related to diabetes and reducing barriers to diabetes care. Achieving this, we believe, will not only slow down diabetes prevalence and improve people's health and quality of life, but also reduce healthcare expenditures.

Value for people with diabetes

Our awareness messages have reached 16 million people (Figure 16), motivating many to improve their health through diet and exercise. We believe that, as a result of these efforts, fewer people will experience onset diabetes. These activities also teach people to recognise the warning signs of diabetes, prompting early diagnosis and treatment.

Through exhibitions and educational events, we have empowered hundreds of thousands of people already diagnosed with diabetes. Patient education improves their understanding of their condition. Knowledge gives them tools to take control and manage their condition properly, minimising the risk of developing disabling and costly complications.

Value for the healthcare system and healthcare professionals

With India's public healthcare system being challenged to provide optimal care, we have extended our private-sector training programmes to the public sector. Through our partnerships with Steno Diabetes Center and WDF, we are contributing to meeting the critical need for diabetes education among healthcare professionals. Steno Diabetes Center's 'train-the-trainer' approach has a ripple effect that builds capacity across the healthcare system.

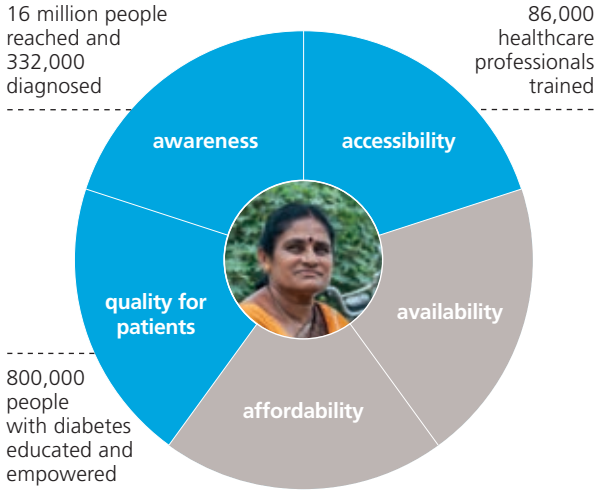
Together, these activities have resulted in the training of 86,000 healthcare professionals, which has improved access to quality care for people with diabetes.

Value for the local community

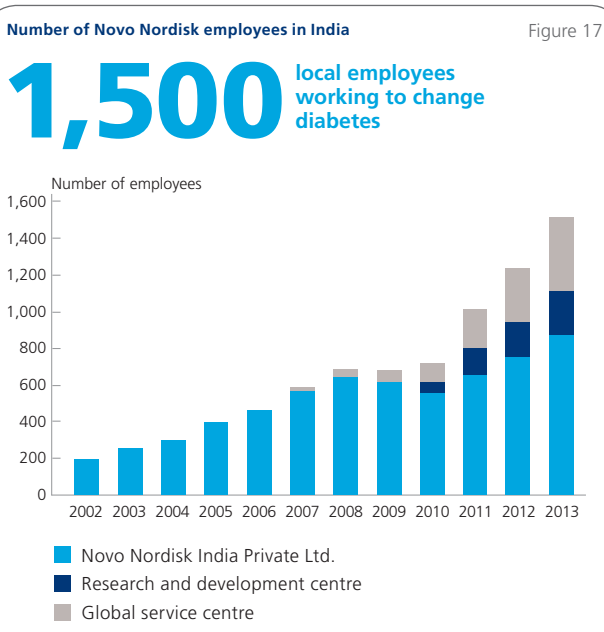
We established our presence in the 1980s at a time when few treatment options were available for people with diabetes. Since then, we have been committed to building this market while fulfilling an unmet need through the provision of life-saving medications and by working with local partners.

Our dedication to the local community has also resulted in direct job creation. Over the past decade, the number of employees in our Indian operations has grown steadily. Today, we employ more than 1,500 people locally, divided between Novo Nordisk India Private Ltd., our research and development centre and our global service centre (Figure 17). In addition, for 25 years we have licensed out the production of our products in India to Torrent Pharmaceuticals Ltd., thus supporting local business and the community in which it operates.

Value to society of addressing barriers to diabetes care Figure 16



Number of Novo Nordisk employees in India Figure 17



> "[…] the government is going to supply, together with the Novo Nordisk Education Foundation, glucometers to the healthcare professionals, so at least they can check sugar levels, because they don't have many lab facilities."
>
> – Dr Kartikeya Parmar, Assistant Professor of Medicine, B.J. Medical College and Civil Hospital, Ahmedabad

overall value for Novo Nordisk

Our work to build the market in India has generated significant value for Novo Nordisk. This value is qualitative, quantitative and, most importantly, sustainable.

Building reputation

Knowing that we cannot address the diabetes pandemic alone, we strive to build relationships with stakeholders. Our work with healthcare professionals and our mission to change diabetes have earned their trust and respect. In surveys of healthcare professionals, their positive perceptions of Novo Nordisk place us among the world's leading diabetes care companies.[47]

A company's reputation is an important element in its commercial success. When asked, people with diabetes say that Novo Nordisk has a competitive advantage given our dedication to improving diabetes treatment and our long history of innovative and quality products[48] (Figure 18).

Employee satisfaction

Employee support for our corporate mission, vision and values influences our ability to succeed in the market. In our annual satisfaction survey, employees are asked to rate the importance and perception of how the company lives up to elements in the Novo Nordisk Way, which is our value-based management system. Results from India show strong support from employees for our patient focus, our Triple Bottom Line business principle and our ability to maintain good relations with key stakeholders[23] (Figure 19).

Serving more people with diabetes

Much of our work with partners revolves around improving treatment and creating access to high-quality care for people with diabetes.

Based on the development of the diabetes epidemic in India, the number of people with diabetes who receive care has grown by 7% each year since 2003[23, 49] (Figure 20).

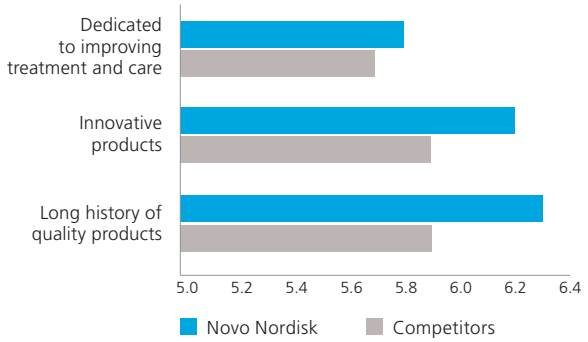
For millions of people, insulin is the proper treatment to live healthy lives. Together with partners, we have contributed to 14% more people getting access to quality insulin treatment each year. Admittedly, these people only represent a proportion of the total number of people with diabetes who could benefit from insulin. However, it illustrates how our efforts have started breaking down barriers to diabetes care by improving access to care.

Since we started serving the Indian market, we have reached more than 60% of people with diabetes using insulin.[23] We are dedicated to continue improving access to quality diabetes care, which supports our ambition of doubling the number of people treated by Novo Nordisk worldwide by 2020. And with an increasing number of people with diabetes, we expect to treat more people in the coming years.

Top three influences on Indian patients' overall satisfaction Figure 18

recognition

of our long history of quality products by people with diabetes

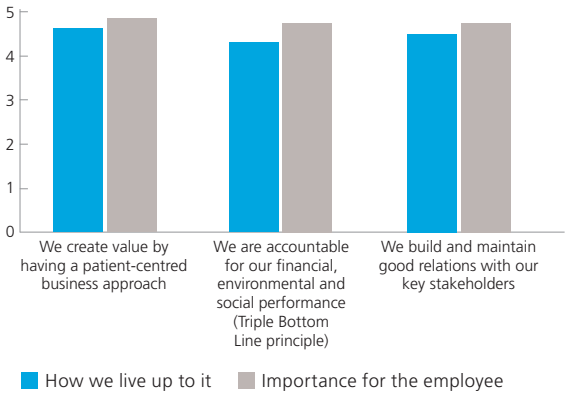


Note: Patients were asked to rate companies on a scale of 1-7 where 1 means 'Totally dissatisfied' and 7 means 'Totally satisfied'.

Employee perception of selected Novo Nordisk Way Essentials Figure 19

consistency

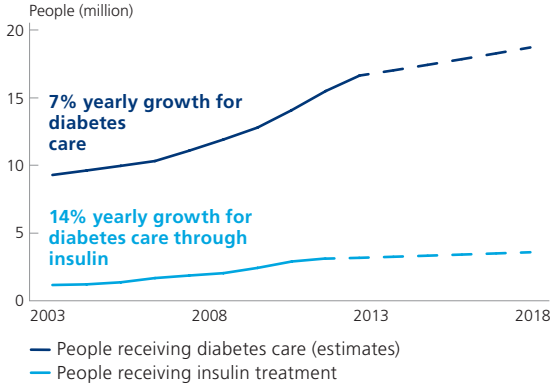
between perceived importance and actions



Note: Employees were asked to rate Novo Nordisk on a scale of 1–5 where 1 means 'Poor' and 5 means 'Outstanding'.

People with diabetes receiving diabetes care Figure 20

14% **average yearly growth in people with diabetes treated with insulin**



looking forward

We are committed to raising awareness, increasing diagnosis rates, facilitating access to qualified healthcare professionals through training and educating people with diabetes to care for themselves. This is our promise. Through our Changing Diabetes® Barometer, we have followed through on this pledge, emerging as a trusted partner in the effort to change diabetes. But much more still needs to be done.

a path to improving public healthcare

Half of all people with diabetes in India are unaware that they have it.[1] Our aspiration – that everyone with diabetes be diagnosed – is, admittedly, very ambitious. But consider the societal and human gains to be made in working towards this: Increasing the rate of early and timely control of diabetes in people recently diagnosed to 100% would save 2 billion US dollars between now and 2020 in costs related to diabetes complications. If everyone with diabetes were diagnosed, 335,000 heart complications could be avoided[34] (Figure 21).

Such impressive outcomes can be achieved only when partners with different competencies converge around a unified vision of breaking down barriers to care.

> **"Patient compliance and healthcare professional training to improve compliance are the main areas for cooperation between the state and the private sector."**
>
> – Dr Dhanlaxmi B. Rathod, Chief District Health Officer, Dahod District, Gujarat

Effects of increased diagnosis rate Figure 21

335,000 cases of heart complication avoided

Increasing the diagnosis rate from 50% to 100%

$ 2 billion US dollars saved in costs related to complications

335,000 cases of heart complication avoided

Note: The values are based on an eight-year CORE diabetes model simulation that assumes that people who have recently been diagnosed with type 2 diabetes (1.73 million people every year) could simultaneously reach the level of risk factors recorded for the best-performing quarter of the patients with a one-year duration of diabetes in the 2011 DiabCare India data. There are no treatment costs in this simulation.

Novo Nordisk's strength lies in developing innovative medicines and making them available to people who need them. We screen people, provide medications and supply healthcare professionals with critical know-how. The government connects a crucial network of people, resources and institutions. With the increasing focus on tackling non-communicable diseases, the government possesses valuable local knowledge and market understanding.

Beyond these needs, however, lie peripheral issues that are contributing to the diabetes pandemic – malnutrition, urban development and transportation, to mention just a few. Efforts to address these issues are best conducted by organisations with relevant expertise. As long as these needs remain unfulfilled, they offer a business opportunity to partners who share our passion to change diabetes.

The value of partnerships

In many Indian states, the public healthcare system has too few resources and too many healthcare professionals who lack the fundamental skills necessary for good diabetes care. Public–private partnerships have begun to change this scenario. We have learned that successful partnerships compel private organisations, healthcare professionals, state governments and others to bring their resources, experience and knowledge to the table, agree on aims, establish roles, work together and create value for all.

Novo Nordisk wants to engage with state governments to break down the barriers to care for people with diabetes through the Changing Diabetes® Barometer.

If we are going to significantly improve the diagnosis rate, strengthening the public healthcare system through partnerships is the way to reach as many people as possible. The task is huge. But the potential reward can be even greater.

Changing Diabetes® Barometer

Our public–private partnership approach

Our approach to sustainable and mutually beneficial public–private partnerships is the Changing Diabetes® Barometer. Here, the Novo Nordisk Education Foundation, state governments, Steno Diabetes Center and other partners convene around enabling people with diabetes to live healthy lives.

The partnership builds on clearly defined responsibilities (Figure 22). The Novo Nordisk Education Foundation is primarily responsible for awareness and diagnosis. The state governments ensure access to established healthcare infrastructure, monitor diabetes data and guide implementation. And Steno Diabetes Center is responsible for building capabilities by training healthcare professionals.

We began these efforts in Goa in 2008, since when six other states and union territories have become diabetes care role models (Figure 23). In these states, the Barometer has contributed to improving conditions for quality diabetes care in public primary care in terms of awareness creation, improved diagnosis rates, training of doctors and counselling of people with diabetes.

Creating centres of excellence

The Barometer has, however, shown that there is still a significant need to strengthen the public management of non-communicable diseases, especially diabetes.

We want to address this by expanding the scope from primary care clinics to more specialised Community Diabetes Centres located within public hospitals. These centres are knowledge hubs that specialise in diabetes and offer expert treatment and counselling. Thus far, 46 centres have been established.

Ambitions for the future

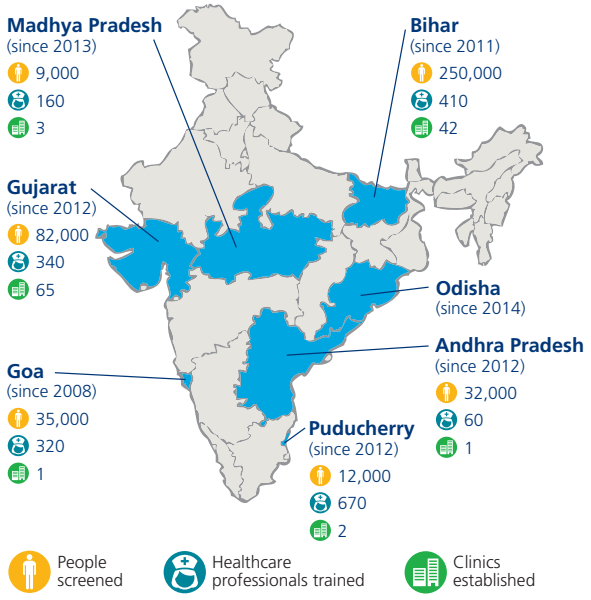
Going forward, the Barometer will strive to create strong links between primary care and the specialised treatment centres while maintaining our efforts in creating awareness, monitoring the diabetes situation and building healthcare professionals' capabilities.

Today, our seven established public–private partnerships with state governments potentially cover a population of more than 360 million people. The partnership setup has proven successful, and we therefore want to scale up and initiate new partnerships with state governments. By 2015, we want to more than double the current number of Community Diabetes Centres.

It is about helping people with diabetes to live healthy lives. It makes good business sense. And it is the right thing to do.

States with Changing Diabetes® Barometer — Figure 23

7 states have already committed to the Barometer



Changing Diabetes® Barometer — Figure 22

a sustainable partnership requires alignment of goals and individual responsibilities

Partners	Responsibilities (examples)	Ambition
State governments	**Monitoring & facilitation** ▪ Infrastructure ▪ Diabetes data ▪ Strategic direction	Universal healthcare leading to healthy people with diabetes
Steno Diabetes Center & other partners	**Capability building** ▪ Training of healthcare professionals	
Novo Nordisk Education Foundation	**Awareness & diagnosis** ▪ Screening camps ▪ Public events ▪ Community Diabetes Centres	

methodology

This case study integrates a knowledge-based approach with actions to engage with stakeholders on how to strengthen diabetes management in India. We use empirical data to make the business case for the Triple Bottom Line principle and its contribution to a sustainable future. We do this by identifying drivers of shared value creation[50] and measuring realised benefits for society and for the company.

When identifying drivers of shared value, we consider activities that maximise benefits and minimise risks for all parties involved in both the short and in the long run.

We use the comprehensive barriers model (Figure 4) to guide our understanding of what the most acute needs are and which issues, if addressed, could create most value for people with diabetes and for all other stakeholders. The value for society includes broadening awareness, improving the accessibility, availability and affordability of diabetes care and increasing quality for patients. Measurable benefits for the company include improved market share, reputation and employee satisfaction.

Research approach

Our goal is to identify actions with most impact and best practices within diabetes management in India. Observations and conclusions build on our understanding of the shared value concept and the Triple Bottom Line business principle.

Data collection and analysis

Data collection and analysis were conducted simultaneously, allowing our understanding, interpretation and conclusions to develop side by side. We have applied both qualitative and quantitative sources in order to get a holistic understanding of the activities in India.

- **Interviews:** To gain an in-depth understanding, we conducted interviews with internal and external stakeholder groups: management in Novo Nordisk India Private Ltd.; government[A]; healthcare professionals[B] and people with diabetes from three different states and union territories representing urban and rural areas as well as the private and public sector.

- **Desk research:** Part of the data collection was carried out as desk research involving both quantitative data and academic papers. We did this to discover patterns and identify issues and barriers. To support interviews and scientific findings, we used internal data – some of which is confidential. The use of the confidential information led us to anonymise and index some figures in the publication to avoid disclosing sensitive information.

External review

External reviewers of this Blueprint for Change case study:

- Professor Jette Steen Knudsen, University of Copenhagen, Copenhagen, Denmark
- Senior Consultant Sebastien Mazzuri, FSG, Geneva, Switzerland

glossary

Communicable diseases: Infectious diseases such as diarrhoea, influenza, malaria, tuberculosis and HIV.

Diabetes: A chronic condition that arises when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin produced. There are two basic forms of diabetes: type 1 and type 2. In type 1 diabetes, the pancreas no longer makes insulin and consequently blood glucose cannot enter the cells to be used for energy. In type 2 diabetes, either the pancreas does not make enough insulin or the body is unable to use insulin correctly.

HbA1c: Glycated haemoglobin, the average plasma glucose concentration over prolonged periods of time. Lowering HbA1c to around or below 7% is associated with reduced risk of microvascular and macrovascular complications of diabetes.

Healthy people with diabetes and **desired outcomes:** People with diabetes who live without complications and feel accepted and supported.

Insulin: A hormone that helps the body use glucose for energy. The beta cells of the pancreas make insulin. If the body is unable to make enough insulin, it can be administered by injection or using an insulin pump.

Non-communicable diseases: Non-infectious diseases such as diabetes, autoimmune diseases, heart diseases, stroke, some cancers, asthma and osteoporosis.

Out-of-pocket expenditures: Outlays of cash that the patient has to pay directly to the healthcare provider or for the medicine. In some countries, these costs may later be reimbursed, which for the majority is not the case in India.

Primary care level: Primary care refers to the work of healthcare professionals who usually act as a first point of consultation for patients within the healthcare system. Such a professional would usually be a general practitioner or family physician.

Public–private partnership: A business venture funded or operated jointly by government and private entities.

Rule of halves: A general model to describe the diabetes situation. Specific conditions vary from country to country.

Treatment intensification: Treatment guidelines for type 2 diabetes call for different approaches at different stages of the disease. The first step is to establish proper diet and exercise. This might be supplemented with tablets, often referred to as oral antidiabetic drugs (OADs). If treatment targets are no longer met, insulin therapy might be introduced.

A: Director of the Department of Health and Family Welfare Services, Puducherry; Chief District Health Officer, Gujarat.
B: Head of the Department of Medicine and Diabetology, Government General Hospital, Puducherry; Medical Officers, Gujarat, Puducherry; Diabetologists and Endocrinologists, Gujarat and Puducherry; Assistant Professor in medicine, Ahmedabad.

references

1. International Diabetes Federation. *IDF Diabetes Atlas*. 6th edn. Brussels, Belgium: International Diabetes Federation, 2013.
2. Hart JT. Rule of halves: implications of increasing diagnosis and reducing dropout for future workload and prescribing costs in primary care. *British Journal of General Practice, March* 1992; 42(356):116–119.
3. International Monetary Fund, World Economic Outlook Database, October 2013. Gross domestic product based on purchasing-power-parity (PPP) valuation of country GDP, current international dollar. www.imf.org/external/pubs/ft/weo/2013/02/weodata/index.aspx (cited December 2013).
4. PwC Economics. World in 2050. The BRICs and beyond: prospects, challenges and opportunities. *PwC Macroeconomics* 2013.
5. Government of India – Ministry of Urban Development. India's urban transition. The 2011 Census Results. New Delhi: National Institute of Urban Affairs (NIUA). 2011.
6. McKeown NM, Yoshida M, Shea MK, Jacques PF, Lichtenstein AH, Rogers G, Booth SL & Saltzman E. Whole-Grain Intake and Cereal Fiber Are Associated with Lower Abdominal Adiposity in Older Adults. *The Journal of Nutrition* 2009.
7. Nutrition Data. Nutrition fact: Rice, white, long-grain, regular, raw, unenriched. www.nutritiondata.self.com/facts/cereal-grains-and-pasta/5812/2.
8. FAOSTAT. Food supply: Crops Primary Equivalent. Food and Argriculture Organisation of the United Nations. www.faostat.fao.org/site/609/ default.aspx#ancor.
9. Gupta R, Misra A, Vikram NK, Kondal D, Gupta SS, Agrawal A & Pandey RM. Younger age of escalation of cardiovascular risk factors in Asian Indian subjects. *BMC Cardiovascular Disorders* 2009; 9(28).
10. Stratton IM, Adler AI, Neil HAW, Matthews DR, Manley SE, Cull CA, Hadden D, Turner RC & Holman RR. Association of glycaemia with macrovascular and microvascular complications of type 2 diabetes (UKPDS 35): prospective observational study. *BMJ* August 2000; 321:405-12.
11. McKinsey Global Institute. India's urban awakening: Building inclusive cities, sustaining economic growth. *McKinsey Global Institute* 2011.
12. World Health Organization. Noncommunicable diseases country profiles. *World Health Organization* 2011.
13. World Health Organization. WHO Global Health Expenditure Atlas. Department of Health Systems Financing. *World Health Organization* 2012.
14. Government of India – Planning Commission. Report of the Working Group on Disease Burden for 12th Five Year Plan. 2011.
15. Rao GM & Choudhury M. Health Care Financing Reform in India's Decentralized Health Care System (chapter in book). Clements B, Coady D & Gupta S. The Economics of Public Health Care Reform in Advanced and Emerging Economies. *International Monetary Fund* 2012:283–306.
16. Balarajan Y, Selvaraj S & Subramanian SV. Health care and equity in India. *Lancet* 2011; 377(9764):505–15.
17. IMS Institute for Healthcare Informatics. Understanding Healthcare Access in India. *IMS Health Incorporated* 2013.
18. Holt RIG, Nicolucci A, Burns KK, Escalante M, Forbes A, Hermanns N, Kalra S, Massi-Benedetti M, Mayorov A, Menéndez-Torre E, Munro N, Skovlund SE, Tarkun I, Wens J & Peyrot M. Research: Educational and Psychological Issues Diabetes Attitudes, Wishes and Needs second study (DAWN2™): Cross-national comparisons on barriers and resources for optimal care – healthcare professional perspective. *Diabetic Medicine* 2013; 30:789–798.
19. Government of India – Planning Commission. Report of the Working Group on National Rural Health Mission (NRHM) for the 12th Five Year Plan (2012–2017). 2011.
20. The United Nations. The Universal Declaration of Human Rights. Article 25 (1). The United Nations, 2013.
21. World Health Organization. Office of the High Commissioner for Human Rights. The Right to Health. Joint fact sheet. World Health Organization, 2007.
22. World Health Organization. Global action plan for the prevention and control of noncommunicable diseases 2013-20. World Health Organization, 2012.
23. Novo Nordisk. Internal data on file. 2013.
24. Novo Nordisk. Changing Diabetes®. 2013. www.novonordisk.com/about_us/changing-diabetes (cited: October 2013).
25. Ramachandran A, Ramachandran S, Snehalatha C, Augustine C, Murugesan N, Viswanathan V, Kapur A & Williams R. Increasing expenditure on health care incurred by diabetic subjects in a developing country. A study from India. *Diabetic Care* 2007; 30(2):252–256.
26. Kapur A. Economic analysis of diabetes care. *Indian Journal of Medical Research* March 2007; 125(3):473–482.
27. Patil R, Nasrin N, Datta SS, Boratne AV & Lokeshmaran. Popular misconceptions regarding the diabetes management: Where should we focus our attention? *Journal of Clinical and Diagnostic Research* February 2013; 7(2):287–291.
28. Mohan D, Raj D, Shanthirani CS, Datta M, Unwin NC, Kapur A & Mohan V. Awareness and Knowledge of Diabetes in Chennai – The Chennai Urban Rural Epidemiology Study [CURES – 9]. *Journal of the Association of Physicians of India April* 2005; 53:283–287.
29. Nicolucci A, Burns KK, Holt RIG, Comaschi M, Hermanns N, Ishii H, Kokoszka A, Pouwer F, Skovlund SE, Stuckey H, Tarkun I, Vallis M, Wens J & Peyrot M. Research: Educational and Psychological Issues Diabetes Attitudes, Wishes and Needs second study (DAWN2™): Cross-national benchmarking of diabetes-related psychosocial outcomes for people with diabetes. *Diabetic Medicine* 2013; 30(7):767–777.
30. International Diabetes Federation. Complications of diabetes. International Diabetes Federation. 2013. www.idf.org/complications-diabetes (cited November 2013).
31. World Diabetes Foundation. Projects. 2013. www.worlddiabetesfoundation.org/projects.
32. Gillies CL, Abrams KR, Lambert PC, Cooper NJ, Sutton AJ, Hsu RT & Khunti K. Pharmacological and lifestyle interventions to prevent or delay type 2 diabetes in people with impaired glucose tolerance: systematic review and meta-analysis. *BMJ* 2007; 334(7588):1–9.
33. Palmer AJ, Roze S, Valentine WJ, Minshall ME, Foos V, Lurati FM, Lammert M & Spinas GA. The CORE Diabetes Model: projecting long-term clinical outcomes, costs and cost-effectiveness of interventions in diabetes mellitus (Types 1 and 2) to support clinical and reimbursement decision-making. *Current Medical Research & Opinion* 2004; 20 Suppl 1:5–26.
34. Mohan V, Jain P, Strandberg-Larsen M, Aagaard-Jensen RF & Shah SN. Clinical and economic impact of early and timely control of type 2 diabetes mellitus in India. *13th International Diabetes Epidemiology Group Symposium*, Melbourne, November 30 to December 2, 2013.
35. Shashank RJ, Jain P, Strandberg-Larsen M, Aagaard-Jensen RF & Seshiah V. Clinical and economic impact of access to qualified healthcare professionals for people with type 2 diabetes mellitus in India. *13th International Diabetes Epidemiology Group Symposium*, Melbourne, November 30 to December 2, 2013.
36. Wangnoo SK, Jain P, Strandberg-Larsen M, Aagaard-Jensen RF & Unnikrishnan AG. Clinical and economic impact of achieving 'realistic' type 2 diabetes mellitus targets in India. *13th International Diabetes Epidemiology Group Symposium*, Melbourne, November 30 to December 2, 2013.
37. World Health Organization. World Health Statistics 2013. Part III: Global Health Indicators. *World Health Organization* 2013.
38. Sarkar OBD & Kumar S. Continuing medical education in India. W*orld Health Organization: Bulletin of the World Health Organization* 2004; 82(2).
39. Hasan H, Zodpey S & Saraf A. Diabetes care in India: Assessing the need for Evidence-Based education. *South-East Asian Journal of Medical Education* 2011; 5(2):15–18.
40. Jarvis J, Skinner TC, Carey ME & Davies MJ. How can structured self-management patient education improve outcomes in people with type 2 diabetes? *Diabetes, Obesity and Metabolism* 2010; 12(1):12–19.
41. Davies MJ, Gagliardino JJ, Gray LJ, Khunti K, Mohan V & Hughes R. Real-world factors affecting adherence to insulin therapy in patients with Type 1 or Type 2 diabetes mellitus: a systematic review. *Diabetic Medicine* 2013; 30(5):512–524.
42. Venkataraman K, Kannan AT & Mohan V. Challenges in diabetes management with particular reference to India. *International Journal of Diabetes in Developing Countries* 2009; 29(3):103–109.
43. Meneghini L. Why and How to Use Insulin Therapy Earlier in the Management of Type 2 Diabetes. *Southern Medical Association* 2007; 100(2):167–174.
44. Bjork S, Kapur A, King H, Nair J & Ramachandran A. Global policy: aspects of diabetes in India. *Health Policy* 2003; 66(1):61–72.
45. World Health Organization. Factsheet: the cost of diabetes. *World Health Organization*, 2013. www.who.int/mediacentre/factsheets/fs236/en (cited November 2013).
46. Duke SA, Colagiuri S & Colagiuri R. Individual patient education for people with type 2 diabetes mellitus. *Cochrane Database of Systematic Review* 2009; (1): 1–32.
47. Physician insights. Diabetes Insights 2012, wave 4, India results. Novo Nordisk, internal data on file, December 2012.
48. Diabetes Customer Satisfaction, Wave 6, India Results. Novo Nordisk, internal data on file, June 2009.
49. International Diabetes Federation. *IDF Diabetes Atlas*. 1st–5th edn. Brussels, Belgium: International Diabetes Federation, 2000, 2003, 2007, 2010 and 2011.
50. Porter M & Kramer MR. Creating Shared Value. How to reinvent capitalism – and unleash a wave of innovation and growth. *Harvard Business Review* 2011.

Blueprint for Change Programme

The Blueprint for Change programme aspires to set new standards for measuring and optimising the impact of our sustainability-driven activities by enhancing our understanding of how we as a business create value. We do this by analysing the Triple Bottom Line principle applied in practice. Through a series of case studies, we provide insight into current and emerging sustainable business approaches, as well as best practices for creating shared value. The intent is not to present a final answer, but to present a work in progress that invites stakeholders to share their own views and together co-innovate sustainable solutions to complex societal issues.

Get in touch

Bjørn von Würden
Programme Manager
Corporate Sustainability
bjwe@novonordisk.com

Melvin Oscar D'souza
General Manager
Novo Nordisk India Pvt. Ltd.
mod@novonordisk.com

the **Blueprint for Change** Programme

About Novo Nordisk

Headquartered in Denmark, Novo Nordisk is a global healthcare company with more than 90 years of innovation and leadership in diabetes care. The company also has leading positions within haemophilia care, growth hormone therapy and hormone replacement therapy. We believe that a healthy economy, environment and society are fundamental to long-term value creation. This is why we manage our business in accordance with the Triple Bottom Line business principle and consider the financial, environmental and social impact of our business decisions. The strategic commitment to corporate sustainability has brought the company onto centre stage as a leading player in today's business environment, recognised for its integrated reporting, stakeholder engagement and consistently high sustainability performance.

For more information, visit novonordisk.com/sustainability

novo nordisk®