



WORLD **DIABETES** FOUNDATION



THE WORLD DIABETES FOUNDATION

Founded in 2002, the World Diabetes Foundation (WDF) today is a leading international funding agency supporting diabetes prevention and care in the developing world.

Our vision is to alleviate human suffering related to diabetes and its complications among those least able to withstand the burden of disease.

The WDF aims to attract and fund innovative partnership projects at the global, regional and national levels. Projects combine one or more Interventions (the purpose of the activity) with one or more Focus Areas (the disease state the project addresses). The WDF has three Interventions and six Focus Areas:

INTERVENTIONS

ACCESS TO CARE



PREVENTION



ADVOCACY AND
STAKEHOLDER ENGAGEMENT



FOCUS AREAS

TYPE 2 DIABETES



DIABETES FOOT CARE



DIABETES EYE CARE



HYPERGLYCAEMIA IN PREGNANCY



TYPE 1 DIABETES



TUBERCULOSIS AND DIABETES



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LETTER FROM THE MANAGING DIRECTOR AND CHAIRMAN

DOING A LOT – WITH A LITTLE.

The diabetes epidemic in the developing world continues to grow, and as the burden increases, so does the need for coordinated action and funding – yet surprisingly few agencies are active in this area. This is why the work of the World Diabetes Foundation is so vital – we are entirely focused on the over 650 million people in the developing world living with diabetes or at great risk of developing it.

Since the WDF was established in 2002, we have achieved more than we had hoped for. We have funded 486 projects in 115 countries – supporting grassroots initiatives all the way up to national programmes, and partnering with stakeholders ranging from local champions to ministries of health – with the ambition of building and strengthening sustainable capacity in healthcare systems across the developing world. Our advocacy initiatives have raised awareness of diabetes, its complications and related NCDs, at the local and national level, promoting health-seeking behaviour in civil society, impacting health policy and inspiring donor agencies to get involved in the fight to alleviate human suffering related to diabetes.

We are lifted and encouraged by the implementation of the United Nation's Sustainable Development Goals (SDGs) at the beginning of 2016, whose specific targets for NCDs, infectious diseases, and maternal and child health bring new impetus and meaning for our work around the world. With our focus on diabetes, our efforts have encompassed actions to address these issues thereby promoting and supporting an integrated response to the health system challenges of the developing world as envisaged in the SDGs.

A learning organisation

We are committed to continuous learning, as we believe this is fundamental to the success of our work. This year we implemented new, clinical indicators of our projects in order to document their impact; welcomed external evaluations of our programmes in Tanzania, Mali, Georgia, Cameroon, Thailand and Palestine; and our Board made a field visit to Malawi to see various programmes in action. We passed on our learnings through advocacy initiatives and by educating project partners and national stakeholders.

In 2016 – as in previous years – we have taken time to reflect on our strategic direction (see page 6). Back in 2002 we began by mostly funding small-scale, local projects. These grassroots initiatives created local champions and raised awareness of diabetes. In some countries, government agencies began to take notice and became involved, leading to a bigger platform to influence national policies. Going forward we will continue to support projects including innovative small-scale programmes which can develop into national programmes aligned with the NCD action plans adopted by national ministries of health. This will ensure the sustainability of our projects once they have been completed and carry our efforts into the future.

Our heartfelt thanks

We are proud of all we have achieved in 2016, which has been another eventful year. We supported 57 new projects, finalised 34 projects and ended the year with 231 active projects – the largest our project portfolio has ever been. In addition, we have also organised several international advocacy meetings (see page 8). In this *Annual Review*, you will find more information about some of these significant achievements within each of our focus areas.

We could not have accomplished so much if it weren't for our passionate project partners around the world, and the 15 dedicated individuals who constitute the WDF Secretariat. It is incredible what so few people have achieved for so many – and for their continuing commitment and hard work we are truly thankful.

Together we can make a bigger impact than our size would suggest, to ease the burden of diabetes for the millions of people who need our help.



Dr Anders Dejgaard
Managing Director



Dr Anil Kapur
Chairman



*The WDF's Board of Directors
during a field visit to Malawi in 2016.*

THE WDF – HOW WE WORK

HOW CAN ONE SMALL FOUNDATION FIGHT AN EPIDEMIC?

This is the question that the founders of the World Diabetes Foundation asked back in 2002 – and that organisations, civil society, advocates and authorities still ask us today. Then, as now, the answer is clear and unambiguous:

The WDF creates partnerships to act as a catalyst for change.

Why partnerships? Because it is our partners on the ground who have the best understanding of local challenges and opportunities. The WDF acts as a funder and technical sparring partner, while our local partners formulate culturally-appropriate strategies to improve awareness and access to care that align with the NCD responses in their communities and countries.

Our partnerships often begin as collaborations with civil society organisations and advance from there. In countries where civil society is less developed, where governments are not yet open to enter into dialogue, or where technical capacity is low, the WDF sometimes partners with non-governmental organisations or multilateral agencies with local expertise and experience.

Early phase WDF projects often include primary prevention, awareness raising, basic capacity building, training of healthcare professionals, or establishment of mobile and/or permanent clinics and healthcare units. The main objective in this phase is to help primary healthcare clinics deliver improved, integrated diabetes care.

In the **next phase**, the projects move into broader geographical areas, technical and clinical capacities are deepened, more patients and clinics are involved, and additional Interventions and Focus Areas are added. Projects in this phase often involve multi-sectoral stakeholders and a range of different partner institutions.

Our **most advanced** projects have even wider outreach, cover more if not all Interventions and Focus Areas, align with national strategies and plans, and are typically formulated by and implemented with ministries of health. We call these National NCD Response programmes, and they are closely aligned with recent policy frameworks

such as the WHO Global Action Plan.

Not all problems can be solved on the ground, however. For this reason, the WDF has also become a **global advocate** for increased attention to diabetes and NCDs. Over the years, we have supported and organised a number of summits, expert symposia, and stakeholder and donor meetings, to plant the seeds for long-term global, regional and/or national change.

Our ultimate goal is to make a real and lasting difference for people with diabetes, with a special focus on the poorest people and communities worldwide.

New challenges, clear aim

Today, on our 15th anniversary, we are happy to see a growing recognition of the threat posed by NCDs. New global frameworks, notably the WHO's Global Action Plan for NCDs and the UN's Sustainable Development Goals, offer guidance and commit member states to take action.

Yet the landscape in which the WDF and our local partners operate is more complex than ever. The diabetes epidemic has only worsened – today an estimated 425 million people have diabetes and the number is expected to grow to 642 million by 2040. Three quarters of these people live in low- and middle-income countries.

But as the challenges have grown, so have our experiences and skills. In recent years we have increased our focus on impact measurement, strategic advocacy, collecting and sharing learnings, increasing our reach and impact, and communication. We and our partners look forward to implementing new innovative, multi-sectoral approaches benefitting millions more people and communities in the years ahead.

The world may be in flux, but the aim of the WDF remains the same as it was at our founding: **to alleviate human suffering related to diabetes and its complications among those least able to withstand the burden of the disease.**

OUR INTERVENTIONS AND FOCUS AREAS

INTERVENTIONS are the purpose of the project.

FOCUS AREAS are the disease state the project addresses.

WDF projects combine one or more Interventions with one or more Focus Areas.



ADVOCACY IN 2016



WITH PIONEERING GLOBAL AND REGIONAL EVENTS, MULTIPLE CALLS TO ACTION AND A NEW DOCUMENTARY FILM, **2016 WAS A SIGNIFICANT YEAR IN THE WDF'S BATTLE TO MOVE DIABETES, RELATED NCDs, AND THE TB CO-EPIDEMIC HIGHER ON THE PUBLIC HEALTH AGENDA.**

The WDF's breakfast meeting at Women Deliver Conference in Copenhagen, Denmark.

Advocacy is an integral part of the WDF's work and mission. With partners including the United Nations, the World Health Organization, the International Diabetes Federation, the International Federation of Gynecology and Obstetrics, and The International Union against Tuberculosis and Lung Disease, among others, the WDF organises, supports and participates in global, regional and national summits, expert meetings and symposia. The aim is to raise awareness of the growing diabetes epidemic and generate support for prioritising and tackling this public health crisis at all levels.

2016 was another busy year for WDF advocacy, with many events clustered in three key areas: hyperglycaemia in pregnancy, diabetes and related NCDs, and the diabetes and TB co-epidemic.

HYPERGLYCAEMIA IN PREGNANCY

Hyperglycaemia in pregnancy (HIP) includes all forms of too-high blood glucose in pregnant women – including previously diagnosed diabetes, type 2 diabetes diagnosed during pregnancy and gestational diabetes (GDM). According to the International Diabetes Federation, one in six births is by a woman with some form of hyperglycaemia. Left untreated, high levels of blood glucose can lead to very large babies, complications during pregnancy and delivery, and still birth. The mother and child are both at

increased risk of developing obesity, high blood pressure and type 2 diabetes later in life.

Women Deliver

To stop diabetes, the world must invest in maternal health. This was the WDF's clear message at the 4th Global Women Deliver Conference in Copenhagen in May, a global event financially supported by the WDF, attended by more than 5,000 delegates and followed by millions more.

The WDF held a breakfast meeting during the conference that was attended by 150 people including the WDF's patron, HRH Princess Benedikte of Denmark. It began with a film, in which an Indian woman described her experience with HIP. Susan Papp, the meeting's moderator and the Director of Policy and Advocacy at Women Deliver, noted that approximately 21 million women worldwide experience HIP yearly, many of them in developing countries. WDF partners and the WDF's Chairman Dr Anil Kapur and Managing Director Dr Anders Dejgaard, followed with presentations of the challenges that these women face, the latest science about HIP, and how partnerships are helping to break this destructive cycle.

The WDF also co-sponsored a collaborative meeting for organisations working with HIP to increase awareness and use of the International Federation of Gynecology



The signing of the Colombo Declaration.

and Obstetrics (FIGO) guidelines, a powerful tool for improving HIP care that was released in 2015. During a Speakers' Corner presentation at the conference, Dr Dejgaard explained the WDF's partnership approach and encouraged listeners with good ideas to apply for funding.

Colombo Declaration

In September maternal health was in focus again, when more than 350 people gathered to discuss HIP at the 1st Asia Pacific Congress on Diabetes, Hypertension & Metabolic Syndrome in Pregnancy in Colombo, Sri Lanka. The high-level meeting was organised by the South Asia Initiative for Diabetes in Pregnancy (SAIDIP) and Diabetes in Pregnancy Asia Pacific (DIPAP) and was supported by the Ministry of Health Sri Lanka, the WHO Sri Lanka Country Office and the WDF.

The meeting closed with the endorsement of the Colombo Declaration, which demands urgent action to address the link between maternal health and diabetes as a public health priority. "This Declaration will help accelerate the implementation of the FIGO GDM guidelines in South Asia, support policy actions, mobilise resources and increase government as well as public awareness," says Professor Moshe Hod, Chair of the Expert Group for the FIGO GDM Initiative. "Furthermore, a road map towards a global HIP initiative was outlined, which is urgently needed if we are to

lower maternal and foetal morbidity and mortality as well as interrupt the vicious cycle of NCDs for the mother as well as her offspring."

The WDF took other opportunities to raise awareness about HIP during 2016 – for example, by co-publishing *Hyperglycaemia and Pregnancy in the Americas*, the final report of the Pan American Conference on Diabetes and Pregnancy, held in Peru in 2015. The report includes a review of the diabetes burden in Latin America and the Caribbean, existing healthcare services, guidelines and support, and a Call to Action for Improved Outcomes.

NCDs AND DIABETES

The implementation of the United Nation's Sustainable Development Goals at the beginning of 2016, with their specific targets for non-communicable diseases (NCDs) and maternal and child health, brought new energy to global efforts to combat NCDs and diabetes. The WDF's advocacy in 2016 focused on helping various stakeholders planning to achieve the goals and – as always – called for more resources to support the ongoing effort.

Shared learnings in Africa

In March, the WDF funded a symposium in Tanzania titled



Panellists at the WDF-funded regional diabetes meeting in Tanzania.

Diabetes and NCDs in Eastern and Southern Africa: Cross-learning from national approaches. The meeting drew 80 representatives of ministries of health, the WHO, the African Union, the Global NCD Alliance, local/regional civil society groups and academic institutions from 17 different countries, who shared experiences from East, Central and Southern Africa.

“To get so many countries to sit down together and learn from each other was a great success,” says Dr Kaushik Ramaiya, Consultant Physician at Shree Hindu Mandal Hospital, WDF Board Member and Secretary of the East Africa Study Group, which organised the meeting together with the WDF. “This was an excellent forum for getting practical ‘hands on’ information, for learning from the successes and failures of various programmes and for networking in this region.”

Delegates endorsed the 2016 Dar Es Salaam Call to Action on Diabetes and Other NCDs. “I think this is a document with major implications – if followed up by each of the participating delegations – as it will facilitate the achievement of goals set forth by the WHO Global Action Plan for NCDs and help us overcome the remaining barriers to NCD care and prevention in Africa,” Dr Ramaiya says.

The WDF is planning a similar meeting for the French-speaking countries of West Africa.

Call for action in the Pacific

In June, the WDF was in Tonga for the first-ever Pacific NCD Summit, a collaboration between the Government of Tonga and the Pacific Community, supported by the Australian Government, the New Zealand Aid Programme, World Bank, the WDF, the World Health Organization, the Government of the United States and the United Nations Development Programme. Some 140 people attended, including the King of Tonga.

Presentations ranged from new WHO and World Bank reports on childhood obesity and the economic impact of NCDs to small country-level pilot projects on prevention and care. Delegates endorsed an outcomes document to be presented at the Pacific Ministers of Health meeting in Cook Islands in 2017, and agreed to circulate draft call to action documents to their governments for local approval and implementation.

High-level meeting in Mauritius

The WDF also continued its contributions to the WHO Global Coordination Mechanism on the Prevention and Control of NCDs (WHO GCM/NCD), a structure established in 2014 to promote, facilitate and enhance implementation of the WHO Global NCD Action Plan 2013-2020.

In October, WDF representatives travelled to Mauritius to participate in the GCM conference: Working together to



tackle non-communicable diseases. It explored the role of non-state actors in supporting member states' efforts to address NCDs.

"We support non-state actors in diverse countries and nurture and strengthen civil society organisations working on NCDs at the country level," explains WDF Senior Programme Manager Bent Lautrup-Nielsen, who attended the meeting together with WDF Board Member Dr Kaushik Ramaiya. "We are also, ourselves, a non-state actor trying to influence the global agenda. An important part of our work is advocacy, with the objective of facilitating local responses to NCDs."

TB AND DIABETES

Diabetes triples the risk of developing active tuberculosis (TB) and people with diabetes remain contagious with TB for longer, respond less well to TB treatment and have a higher likelihood of a recurrence of TB or of dying during TB treatment. Furthermore, TB worsens glycaemic control in people with diabetes and many people with TB have undiagnosed diabetes. The co-epidemic of TB and diabetes threatens TB control in developing countries and is negatively impacting the WHO's End TB Strategy.

Global co-epidemic

At The Union World Conference on Lung Health in

Liverpool, UK, in October, the WDF worked to highlight the serious implications of the TB-diabetes dual burden. Representatives of the WDF, including Chairman Dr Anil Kapur and Managing Director Dr Anders Dejgaard, shared learnings from the WDF's growing portfolio of TB and diabetes projects throughout the meeting.

"Unfortunately TB epidemiology is not going in the right direction. In 2015, compared with 2014, there were more absolute cases of TB, more cases of multiple drug resistant TB and more TB-related deaths," says Professor Anthony Harries, Senior Advisor and Director of the Department of Research for The Union. "Presentations at the World Conference heightened awareness that diabetes may be an important contributor to the worsening of the TB epidemiology."

The human impact

A film produced by The Union and funded by the WDF took a closer look at the human cost of the dual burden. Tuberculosis and Diabetes: Heading off the Perfect Storm is set in India, and uses interviews with patients, their families and caregivers to illustrate the personal and societal toll of fighting TB and diabetes.

The film was first shown at The Union World Conference and was released on The Union's website, www.theunion.org, on World Diabetes Day, 14 November 2016.



TYPE 2 DIABETES

The problem: diabetes is one of the most serious global health emergencies of the 21st century.

Each year, more and more people are affected by diabetes. In addition to the estimated 425 million people currently living with this disease, another 318 million have impaired glucose tolerance, placing them at risk of developing diabetes in the foreseeable future. The vast majority of people with diabetes – 75% – live in low- and middle-income countries.

Type 2 diabetes is the most common type of diabetes. Risk factors include poor nutrition, physical inactivity and excess body weight. Type 2 diabetes is characterised by the body's cells being less responsive to insulin. At first, the body is able to compensate by producing more insulin, but over time insulin levels may become insufficient. While the disease mainly affects adults, type 2 diabetes is becoming increasingly common in children and adolescents.

Treatment of type 2 diabetes targets physical inactivity, unhealthy diet, smoking, and elevated blood pressure and lipid levels. It is essential to lower blood glucose levels – this can be achieved via lifestyle changes, oral medications and insulin therapy. People with type 2 diabetes need access to education, glucose monitoring and quality care in order to regulate their blood glucose and avoid serious short- and long-term complications.

Why is type 2 diabetes so damaging?

Type 2 diabetes often develops over many years. As a result, many people with type 2 diabetes remain undiagnosed and unaware of their condition. However, during this time the body is already being damaged by excess blood glucose.

Type 2 diabetes is associated with a threefold increase in premature cardiovascular mortality and devastating microvascular complications affecting the eyes, kidneys and nerves. If not properly treated, these complications can lead to blindness, foot ulcers, amputations and kidney failure. People with type 2 diabetes are also at increased risk of cancer, hypertension, infections and psychosocial stress.

Type 2 diabetes and its complications are largely preventable, but remain responsible for millions of premature deaths and disabilities, especially in the developing world.



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**PROJECTS WITH AN ACCESS OR
TYPE 2 DIABETES COMPONENT**

THE WDF'S APPROACH: IMPROVING PREVENTION AND ACCESS TO CARE THROUGH LOCAL PARTNERSHIPS

Diabetes is an enormous challenge for healthcare systems to address. Yet proper diagnosis and treatment of type 2 diabetes is essential to improve the lives of individuals and reduce the extreme burden that diabetes imposes on families and societies.

To address this, the World Diabetes Foundation acts as a funder and technical sparring partner, while its local partners define culturally appropriate strategies to improve type 2 diabetes awareness and care in their communities. The WDF's ultimate goal is to make a real and lasting difference for people with type 2 diabetes, with a special focus on the poorest people and communities worldwide.

To facilitate prevention, the WDF funds projects teaching school children about healthy lifestyles, facilitates educational and screening camps, and supports other activities that raise awareness about type 2 diabetes and its risk factors.

To improve access to care, the WDF supports capacity building projects establishing clinics (including mobile clinics), training of healthcare professionals, strengthening infrastructure, establishing local treatment guidelines and strengthening primary healthcare services.

Furthermore, the WDF supports global, regional and national advocacy activities that raise awareness among policymakers and decision makers worldwide.

The WDF has allocated more than 60% of its funding to the prevention and care of type 2 diabetes to date.



10,312

clinics established
or strengthened



6.6 million

patients at clinics



8.8 million

people screened



334,318

healthcare professionals trained



48,021

awareness camps conducted

TYPE 2 DIABETES: IN PERU, A DIPLOMA FOR BETTER CARE



FROM THE MOUNTAINS TO THE JUNGLE TO THE COAST, **CLINICS IN EVERY REGION OF PERU ARE STRUGGLING TO CARE FOR CITIZENS WITH DIABETES.** A NEW, 8-MONTH DIPLOMA COURSE WILL HELP HEALTHCARE PROFESSIONALS **BUILD SKILLS AND STRENGTHEN CLINICS NATIONWIDE.**

Dr Percy Vargas Dávila, San Juan Health Center, Iquitos. Peru.

From his chair in the Loreto Regional Health office situation room, Dr Hermann Silva Delgado could clearly see the latest health data for his region. The multi-coloured charts tracking Dengue, Zika, malaria, leptospirosis and tuberculosis filled an entire wall.

Yet on this day in November 2016, the Regional Health Director's focus was on something else: diabetes – and a new WDF-funded project bringing much-needed expertise to the region's primary healthcare centres.

Knowledge sharing

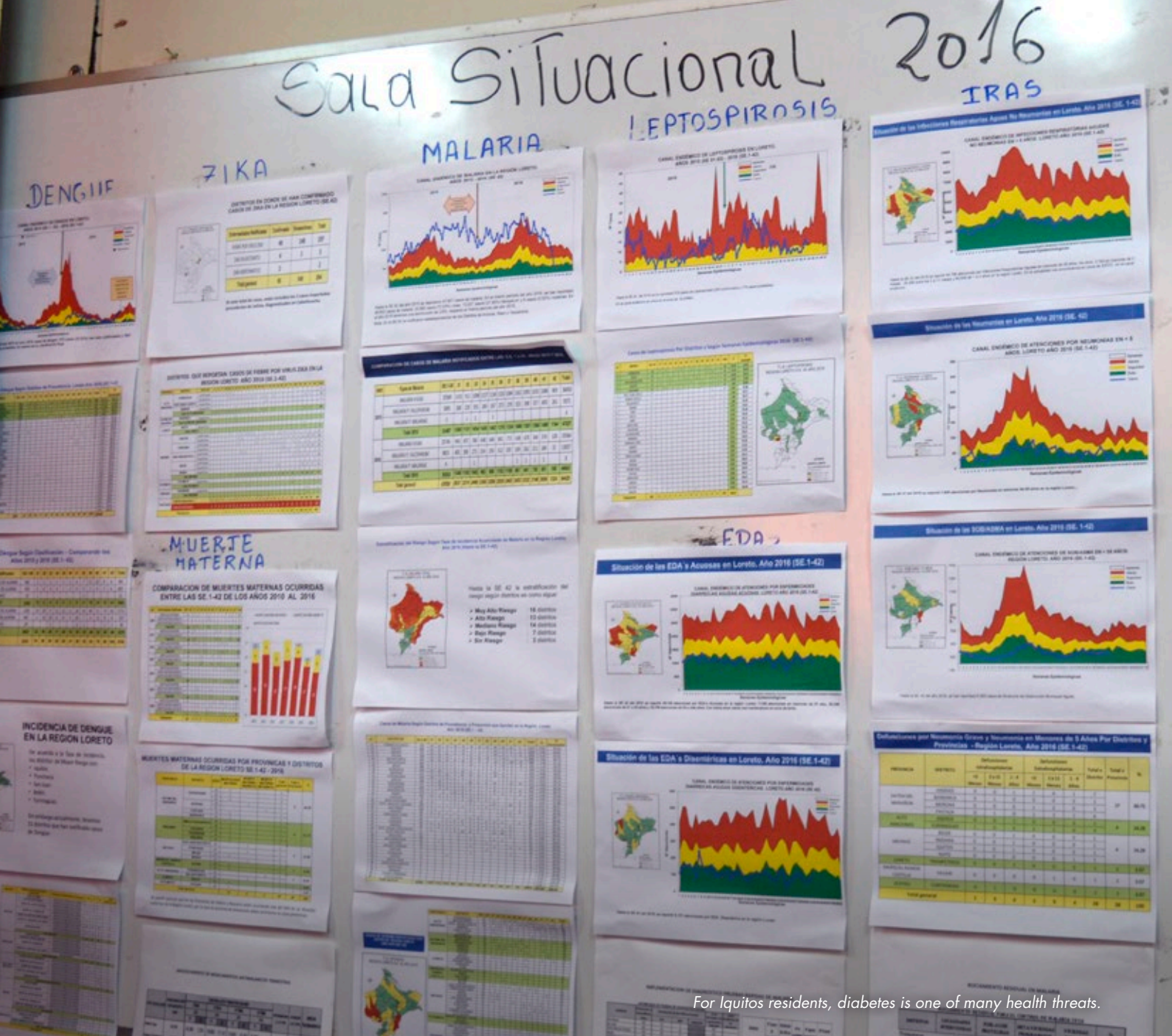
The Diabetes Network Action project (DIANA), WDF14-929, will launch a new, university-level diploma degree in diabetes care and prevention for primary level healthcare providers in Peru's urban areas.

"This project, to train healthcare providers in the management of diabetes, is extremely important," Dr Delgado said to his

two visitors who had to come to discuss the project: Dr Óscar Boggio from the Pan American Health Organisation (PAHO), and Jakob Sloth Yigen Madsen from the World Diabetes Foundation.

The next stage in the project plan was simple: two tutors from Iquitos would attend a week-long training course later that month and then return to Iquitos to lead an 8-month course for teams of primary care doctors, nurses and nutritionists from local clinics – 40 people in all. Once the training was completed, these teams would ensure that their clinics meet Peru's national guidelines for diabetes prevention, treatment and care.

The training is a big step forward for Loreto, a huge region encompassing Peru's Amazon basin. Iquitos, the largest city in Loreto, is one of the eight cities participating in the project rollout. Iquitos is also the largest city in the world not accessible by road. Many indigenous peoples such as the Amahuaca and the Uruarina live here, and diabetes rates



For Iquitos residents, diabetes is one of many health threats.

are high. Yet there are only 385 healthcare centres serving the population of 884,000 – and they are ill-equipped to diagnose or treat chronic diseases.

“Our experience is with anaemia, diarrhoea and contagious diseases – we are simply not geared for chronic disease. We don’t manage people with diabetes well because of how complex their situations are,” Dr Delgado explained to his visitors. “That’s why DIANA is important. We need to spread information about diabetes in this region, and the country as a whole.”

On track

DIANA is the WDF’s sixth project in Peru and its first on a national level. It came about after Peru began working on a new national Diabetes Guideline, and the Ministry of Health and PAHO began thinking about how to implement it. “A diploma course was one way to do this,” Dr Boggio says.

PAHO and Peru’s Ministry of Health engaged the University Peruana Cayetano Heredia to design, develop and certify the course. The university divided the course into 8 modules and 44 topics covering diabetes management, hypertension, cardiovascular risk factors and complications: “everything that the patient needs, and the healthcare system needs to do”, according to Dr Boggio. It will be taught through a combination of on-site training by head tutors and virtual training through an e-learning system. During the course, the teams of healthcare providers create individual plans for implementing the guidelines in their local clinics. Each plan will be slightly different, reflecting local circumstances and needs.

DIANA was approved in 2014 and activities began in 2015. The cities included were from the north, south, west and east, and included Peru’s three natural regions: mountains, jungle and coast. “The regions that are participating want more training slots,” Dr Delgado said with a smile at the November meeting. “And it’s not small numbers we’re



San Juan Health Center.

starting with – we’re training 830 people from across the country.’

Mr Madsen, who has worked with the WDF’s partners in Peru since 2014, says the country’s rapid progress from grassroots diabetes projects to a national NCD response is impressive.

“It’s interesting to see this project now, at its initial stage, and again in one year’s time. There is a strong need for this initiative, as NCDs are increasing in Peru. DIANA is expected to be an essential element in the rollout of the overall NCD strategy in Peru.”

Building good habits

Mr Madsen and Dr Boggio also visited the San Juan Health Center in Iquitos last November and met with Dr Percy Vargas Dávila, the centre’s manager. The clinic, which is

participating in DIANA, has four doctors serving 38,000 people – and the skills that DIANA will bring can’t arrive quickly enough, Dr Dávila told them:

“We cannot cover the demand for diabetes care. We have to prioritise emergencies and communicable diseases. Our doctors manage chronic diseases as best they can, but if we have complicated cases we refer them to hospital.” The clinic, despite its size, only had 100 registered diabetes patients at that time – and of these, perhaps 10 had come in for check-ups in the previous month, estimated Dr Dávila.

During their meeting, Dr Boggio assured him that the DIANA project will bring measurable improvements: in knowledge, record-keeping, compliance and quality of care.

“I hope after this training, all doctors will see and manage diabetes the same way,” Dr Dávila replied. “This has to do



Clinic visitors.



San Juan Health Center.



Maria Arirama Manihuari (left) and Clotilde Romaina Chuña.

with knowledge and good habits in record keeping and follow-up. I hope we can establish these habits."

Outside Dr Dávila's office, two women had taken a seat on a bench in the clinic's cool atrium. They were Maria Arirama Manihuari, 71, and Clotilde Romaina Chuña, 89. Both have diabetes, and are among the small group of San Juan patients who return regularly to the clinic for diabetes check-ups.

"I started feeling dizziness in my body, aching, and weakness. I just didn't feel at ease," Ms Manihuari said, recalling the time several years ago when she learned she had diabetes. "I wanted to drink a lot of water and after I'd peed, I saw a lot of ants attracted to the urine. Seeing this, I thought something was strange and came here."

A nurse recognised the symptoms and Ms Manihuari was tested and diagnosed with diabetes. But while she began

receiving treatment at a relatively early stage of the disease, her daughter was not so lucky.

"My daughter first went to the doctor after she felt really, really bad," Ms Manihuari said. Only then was she diagnosed with diabetes. She died two years ago, at age 47.

When told about DIANA, the women nodded thoughtfully.

"We have friends with this disease," Ms Manihuari said. "Everybody with diabetes needs an encouraging talk sometimes, and the nurse here is like our mother... I would like others to have good doctors and nurses, like we have."

"If they receive more training, I think that is good – I know many others with diabetes who need help," Ms Chuña agreed.



DIABETES FOOT CARE

The problem: every 20 seconds, an amputation due to diabetes is done somewhere in the world.

Of the many serious long-term complications that can affect people with diabetes, foot complications are among the most devastating. At least 25% of people with diabetes will develop a foot ulcer during their life. People with diabetes are also 25 times more likely to lose a leg than people without diabetes, and the economic and psychological impact of limb loss is immense. In many cases, especially in the developing world, people with amputations can no longer provide for themselves or their families, they become dependent on others and may suffer from social isolation.

According to the International Diabetes Federation, diabetic foot ulcers cause the majority of lower-limb amputations in developing countries. The increasing prevalence and generally poor control of type 2 diabetes in low- and middle-income countries mean that without effective strategies for combatting diabetes and its complications, the number of people suffering amputations worldwide is likely to continue to grow.

Why are feet affected?

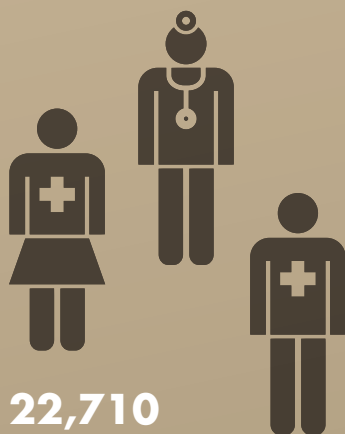
Diabetes can damage nerves (diabetic neuropathy) and blood vessels throughout the body when blood glucose levels and blood pressure are persistently too high. More than 60% of people with diabetes will suffer either symptomatic or asymptomatic neuropathy after living with diabetes for 20 years. Among the earliest and most commonly affected areas are the feet and lower extremities.

Diabetic neuropathy in the lower extremities leads to sensory loss and muscular dysfunction and deformities with a predisposition to the formation of foot ulcers. Furthermore, such patients are at risk of deteriorated blood circulation with decreased oxygen supply to the feet, which further impairs wound healing. As a result, ulcers can become infected. Blood glucose control is often worsened, further stimulating infection which can spread to the soft tissue and later the bones, leaving amputation as the only possible treatment. However, with preventive measures most ulcers can be avoided and if treated correctly should they appear, will heal without necessitating amputation.



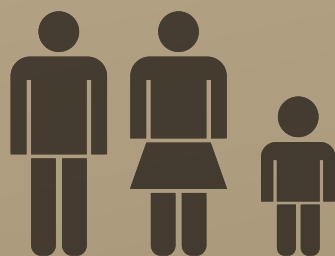
84

**PROJECTS WITH A
FOOT CARE COMPONENT**



22,710

healthcare professionals
trained in foot care



892,649

people screened for
diabetic foot



129,448

feet saved
from amputation

THE WDF'S APPROACH: MOST AMPUTATIONS CAN BE AVOIDED BY TAKING SIMPLE AND LOW-COST MEASURES

The majority of amputations in people with diabetes are preceded by a foot ulcer. The underlying cause of these ulcers is neuropathy and poor blood circulation. There are many direct causes of foot ulcers – such as lack of preventive foot care, ill-fitting or no shoes, contact with very hot surfaces or sharp objects and animal bites – which vary in different regions of the world. Yet regardless of the cause, the vast majority of foot ulcers can be prevented or healed using simple, low-cost measures, which will significantly lower the number of amputations.

Prevention and treatment of a diabetic ulcer requires a patient-centred multidisciplinary team consisting of surgeons (cleaning the ulcer), internists (glucose regulation), nurses (wound care), podiatrists (shoes and in-soles) and shoemakers (new shoes). The World Diabetes Foundation supports the Step-by-Step model for reducing diabetic foot problems in the developing world. Training and dedicated diabetic foot clinics are critical. Ulcers and amputations can be prevented with simple education for healthcare professionals and people with diabetes, emphasising prevention, self-management, and basic foot and wound care. Unfortunately, foot care is neglected in many healthcare settings. As a result, many people with diabetes do not have their feet checked regularly until it is too late.

The WDF has allocated about 8% of its funding to the prevention of diabetic foot to date. Using its experience and in collaboration with diabetic foot care experts, the WDF created the Step-by-Step model, which is a toolkit for preventing diabetic foot that is applicable throughout the developing world.

FOOT CARE – SAVING FEET, AND MONEY, IN GEORGIA

TWENTY-FIVE YEARS AFTER THE DISSOLUTION OF THE SOVIET UNION, THE GEORGIAN HEALTHCARE SYSTEM IS STILL FINDING ITS WAY. **WDF-FUNDED PROJECTS ARE HELPING WITH DATA, AWARENESS-RAISING, AND IMPROVING DIABETES FOOT CARE ACROSS THE COUNTRY.**

Grape vines snake up a building facade in Tblisi.

In Georgia, grapevines are everywhere: spreading across green valleys, rising from busy urban sidewalks, covering carports in the rural countryside. Wine and food are a huge source of pride and pleasure in this small country at the crossroads of Western Asia and Eastern Europe.

Simon Gabritchidze, Executive Director of the Welfare Foundation, is happy to explain his country's traditional supra (feast) to visitors. But he's less proud of a newer tradition – the under-prioritisation of primary healthcare. "The healthcare system in Georgia motivates people to go to the doctor at a late stage of their disease, when things have already become very serious," he explains.

For people with diabetes, this can be disastrous. About 300,000 Georgians have diabetes – nearly 7% of the population. "Prevention is not funded by the Government, so people first go to the hospital when they have advanced complications. Sometimes it's not possible to treat them at that point, and it's very expensive. It's a real problem," Mr Gabritchidze says.

He is determined to change this – and he isn't alone. Working together with other key partners such as the National Centre for Disease Control and the Nurses Association of Georgia, and with funding from the WDF, he is directly addressing the most widespread diabetes

complication in Georgia – diabetic foot ulcers – even as he advocates for better primary healthcare at the highest levels of his Government.

"Our aim is to make sure the Government understands that we are wasting resources because people only go to the doctor when they already have severe complications," he says. "What we are saying is not just our personal view – we are asking the Government to make their policy based on the evidence."

A nurse who cares

The WDF began working with the Welfare Foundation in 2012. At that time, a new Government had come to power promising more funds for healthcare – a response to post-Soviet changes that had left Georgian healthcare privatised, unregulated and inaccessible to many.

The project, Diabetes prevention and care improvement, WDF12-720, created 10 diabetes centres integrated into existing clinics or other health facilities across the country. The project was a success, training peer educators, creating educational materials, and surpassing its screening goals, eventually reaching more than 6,000 Georgians. Valuable data was collected along the way.



A nurse trained by a WDF project treats a patient in Batumi, Georgia.

“We found out foot problems were one of the major diabetes complications in Georgia. Yet there was no diabetes foot care in the country – the area was neglected, so there were bad complications and a high amputation rate. When feet were cared for it was not by a primary healthcare doctor but by a very expensive specialist.”

To address this, Mr Gabritchidze proposed Diabetic foot care improvement, WDF14-923. The project would create 11 new diabetic foot care units in existing clinics in six of Georgia’s nine regions. To staff them, it would train 11 nurses, who would thereafter work as nurse podiatrists – something brand new to Georgia. The project would also provide 180 doctors and surgeons with diabetes foot care training; train peer educators; generate educational materials – and continue the Welfare Foundation’s advocacy and awareness-raising efforts.

The first of the new foot care clinics began operating in January 2016. One was at Nazarishvili Medical Centre, the biggest outpatient clinic in Kutaisi. Endocrinologist Manana Kobulashvili says she is pleased her clinic was selected for the project and that her 2,000 diabetes patients are “very satisfied” thus far.

“Because of the clinic, we’re now able to screen all our diabetes patients for foot problems,” she explains. “Also,

our patients are more educated now and they’re seeking treatment earlier. We hope, because of better prevention and earlier treatment, to see fewer complications.”

This is Mr Gabritchidze’s hope as well. “We’re seeing more value attached to foot care, now that we have a nurse who cares on the floor. Now, endocrinologists at participating clinics don’t have to refer the patient directly to the surgeon when amputation is likely – they can refer to the nurse podiatrist instead.”

And what about the many other Georgians not served by the WDF foot care project? That’s where the project’s awareness raising and advocacy come in. Mr Gabritchidze notes that the project has managed to draw the attention of major stakeholders in Georgia and to unite the individuals and groups working on diabetes issues in the country, increasing their collective voice and influence.

The project and its partners will use this attention and unity, and the new data the project generates, to improve diabetes prevention and care for all Georgians, Mr Gabritchidze explains. “Georgia gained independence only 25 years ago, so we don’t have much practice in how to run a country. The Government is agreeing that primary healthcare should be the priority. We need to continue our work to ensure that the Government not just agrees but implements its promises.”



DIABETES EYE CARE

The problem: everyone with diabetes is at risk of losing vision.

Eye disease caused by diabetes (diabetic retinopathy) is the leading cause of acquired blindness globally. Diabetic retinopathy will affect over one third of all people with diabetes and, according to the International Diabetes Federation, more than 93 million people currently suffer some form of eye damage from diabetes.

Diabetic retinopathy can have a devastating effect on both individuals and societies. In many cases – particularly in the developing world – people with vision impairment or blindness resulting from diabetes can no longer provide for themselves or their families; they become dependent on others and may suffer from social isolation.

The increasing prevalence and generally poor control of type 2 diabetes in low- and middle-income countries mean that without effective strategies for combating diabetes and its complications, the number of people suffering vision impairment or blindness worldwide is likely to continue to grow.

Why are eyes affected?

Raised blood glucose levels and blood pressure damage small vessels in the body – this is called microvascular disease. Diabetic retinopathy results from the damage microvascular disease does to the small vessels of the retina in the eyes. In the early stages (non-proliferative diabetic retinopathy), there are few signs and symptoms. In later stages, blood flow and oxygen supply to the retina is restricted and, to compensate for this, retinal vessels start to multiply (proliferative retinopathy). These fragile new vessels can start bleeding, thereby causing blindness.

Diabetes may exacerbate other eye conditions such as cataracts, glaucoma, loss of focusing ability and double vision. The major risk factors for diabetic retinopathy are duration of diabetes, persistently high blood glucose levels and blood pressure.



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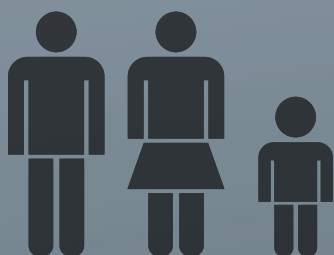
PROJECTS WITH AN EYE CARE COMPONENT

THE WDF'S APPROACH: IT IS ESSENTIAL THAT PEOPLE WITH DIABETES HAVE REGULAR EYE SCREENINGS

Effective management of blood glucose levels and blood pressure is essential to preventing or delaying the onset and progression of diabetic retinopathy. Diabetic retinopathy is often asymptomatic in its early stages. It is therefore essential that people with diabetes have regular eye examinations to detect early signs of eye disease and that appropriate action is taken.

If detected early, diabetic retinopathy can be treated and blindness prevented. The World Diabetes Foundation therefore advocates for and supports effective management of diabetes and its complications beginning in primary healthcare. This management should include regular screening for diabetic retinopathy. This requires that healthcare professionals are trained in ophthalmoscopy or retinal photography with a fundus camera. If retinal vessel proliferation is seen, the patient needs to be referred to an ophthalmologist for laser treatment. In addition to training, the WDF also supports procurement of the instruments needed to provide eye examinations and treatment.

The WDF has allocated about 12% of its funding to the prevention of diabetic eye disease to date. Furthermore, the WDF supports and promotes guidelines, such as Diabetes Eye Health from the International Diabetes Federation and The Fred Hollows Foundation, which aim to help societies prevent diabetic eye problems throughout the developing world.



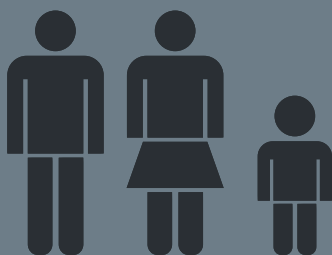
2 million

people screened for diabetic retinopathy



253,948

people detected with diabetic retinopathy



123,032

people treated for diabetic retinopathy

EYE CARE – TACKLING DIABETIC RETINOPATHY IN THE SOLOMON ISLANDS

A WDF PROJECT SAVES EYESIGHT IN THE SOLOMON ISLANDS – AND **UNCOVERS THE NEED FOR EARLIER AND BETTER DIABETES CARE** ACROSS THE ISLAND CHAIN.

“No one should go blind as a result of their diabetes,” Andrew Bell says. As Executive Director of The Fred Hollows Foundation New Zealand (FHFNZ) and Project Partner to the WDF, Mr Bell has witnessed the dire situation in the Solomon Islands, where diabetes is one of the leading causes of blindness among working-age adults.

In 2015 the WDF began funding WDF14-924: Tackling diabetic retinopathy – a 3-year FHFNZ project to improve diabetic retinopathy (DR) prevention and care and to strengthen awareness of diabetes eye complications in the Solomon Islands. Alarming, of the people with diabetes screened for this project to date, a staggering 28% have sight-threatening DR. “The complete lack of DR knowledge within the general population and among the existing healthcare workforce is a major challenge which we knew had to be urgently addressed,” explains Mr Bell.

The temptation of imported food

One of the Pacific’s poorest countries, the Solomon Islands – a chain of large volcanic islands, outlying islands and atolls to the south-east of Papua New Guinea – has a small population of approximately 595,000 people. While the capital, Honiara, has experienced rapid urbanisation, the majority of Solomon Islanders live in rural villages where electricity, telephones and transportation are often lacking and a subsistence economy – based on bartering the products of fishing, hunting and crops, or alternative forms of currency such as shells – mostly exists.

The availability and appeal of cheap, imported, processed foods has grown in recent years, replacing the traditional nutrient-rich diet of fish, coconut and potatoes. This fast-food epidemic has contributed to the high obesity rates in the Solomon Islands and a diabetes prevalence of 13.6%. Life expectancy here is just 69.2 years.

A tried and tested model

The WDF first partnered with FHFNZ in 2008 for a project in Fiji. The creation of a diabetes eye clinic in the Pacific Eye Institute in the Fijian capital Suva, along with an outreach screening programme to rural areas, proved a great success – and a model that could be readily applied to the Solomon Islands.

“Rolling out a programme which has been trialled in Fiji made sense,” says Mr Bell. “We saw great potential in the WDF supporting this diabetes eye care programme, based on the Hub and Spoke model used in Fiji – with the newly-constructed Regional Eye Centre in Honiara being the central hub and the outreach visits, tailored to local needs, forming the spokes.”

The Regional Eye Centre already had an advanced eye care workforce because several staff had received training at the Pacific Eye Institute in Fiji, but it lacked appropriate equipment, Mr Bell says. “WDF14-924 therefore began with strengthening of the Regional Eye Centre with high quality equipment to ensure the provision and integration of DR services.”



A mother and child outside the Kukum clinic in the Solomon Islands, where diabetes eye screening is now available.

Retaining knowledge and expertise

In the Solomon Islands, diabetes is typically diagnosed when complications appear. Mr Bell believes that this is partly caused by silos in the health service. "If we are to achieve earlier diagnosis and prevent complications – including DR – the diagnosis of diabetes must be integrated into other services to ensure early detection," he points out.

Adding to this problem is the lack of healthcare professionals trained in diabetes care and DR. This deficit has arisen because doctors and nurses previously had to go to Australia or New Zealand for training, and many didn't return. It is hoped that the Regional Eye Centre will soon be a second Pacific Eye Institute campus, as it is a training ground for a wide variety of healthcare professionals – not only from the Solomon Islands but from the entire Pacific region. "This year the Regional Eye Centre has become established as a centre of excellence," Mr Bell says with a smile.

This means that trainee ophthalmologists and nurses can complete a large portion of their training in their home country. "Having the healthcare workers undertaking training in-country means their skills and services are retained within this country," says Dr John Szetu, Program Medical Director at FHFNZ who was also responsible for the WDF-funded project in Fiji.

By June 2016, 29 healthcare professionals had received training in DR. Furthermore, two annual NCD workshops had taken place at the Regional Eye Centre with a focus on training, referral and strengthening of service provision.

DR – and diabetes – needs attention

A key aspect of the project is to raise awareness of DR through education programmes, workshops and public health messaging. Dr Szetu hopes that this will lead to an improvement in the health-seeking behaviour of people with diabetes: "We need to educate patients so that they present earlier to the eye service before it is too late, and keep preaching to clinicians that ocular complications are just as important and serious as the other health complications of diabetes. DR has not been prioritised and this needs to be rectified."

Of the 16 outreach initiatives planned for the project, 9 have already taken place with 1,624 people screened for DR. Of these, 50% were diagnosed with DR, of which 55% were diagnosed with sight-threatening DR and 44 patients from the provinces have been referred to the Regional Eye Centre for treatment.

Hanne Strandgaard, WDF Programme Coordinator, visited the Solomon Islands in 2016. "The efficient and professional implementation of this project is proving to be a great success," she says.

"This project model has enabled Solomon Islanders to have access to quality eye care, including DR care, for the first time. The shocking prevalence of DR detected during this project has highlighted an urgent need to address general diabetes care and prevention, which could perhaps be the focus of future projects in this region."



HYPERGLYCAEMIA IN PREGNANCY

The problem: high blood glucose during pregnancy has devastating effects on women, children and societies.

Hyperglycaemia in pregnancy (HIP) is the umbrella term for conditions including gestational diabetes mellitus, type 2 and type 1 diabetes in pregnancy. Every year, approximately 21 million women worldwide experience hyperglycaemia during their pregnancy.

Hyperglycaemia is among the most common medical conditions women encounter during pregnancy and a leading cause of maternal death and disability worldwide. High blood glucose levels during pregnancy can lead to problems for the foetus including malformations, weight gain, complicated delivery and a risk of low blood glucose immediately after birth. Later in life these children have a significantly increased risk of hypertension, obesity and diabetes. Pregnant women with HIP have an increased risk of raised blood pressure, preeclampsia, miscarriage, need for caesarean delivery and birth trauma including severe bleeding. These women also have an increased risk of HIP in future pregnancies and of developing type 2 diabetes and hypertension later in life that is eight times higher than women without HIP.

Due to these immediate and long-term consequences it is therefore important that all patients with HIP are diagnosed and treated. Pregnant women in low- and middle-income countries are not consistently screened for HIP, even though these regions account for 85% of global deliveries and 88% of gestational diabetes cases.

Why is pregnancy affected?

The change in hormonal status during pregnancy is a major contributor to changed glucose metabolism, as it causes decreased insulin sensitivity and increased blood glucose levels in some women during pregnancy.

If the increase in blood glucose is high, the pregnant woman is diagnosed with type 1 or type 2 diabetes. If the glucose increase is less but still above normal levels, she is diagnosed with gestational diabetes mellitus (GDM). If the woman has been diagnosed with type 1 or type 2 diabetes before becoming pregnant she is still considered to have HIP while pregnant. Women with type 1 and type 2 diabetes will continue to have diabetes after delivery, but women with GDM will often have a normal glucose metabolism after delivery.

The increased levels of glucose and insulin in the mother also causes metabolic disturbances in the child, and raise the mother and child's risk of immediate and future health problems.



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PROJECTS WITH A
HIP COMPONENT

**THE WDF'S APPROACH: ALL PREGNANT
WOMEN SHOULD BE TESTED FOR
ELEVATED BLOOD GLUCOSE**

Elevated glucose levels during pregnancy can be treated with lifestyle modifications, glucose lowering tablets and/or insulin, and if successful the associated risks for the mother and child are eliminated. Studies have shown that HIP screening and treatment, including lifestyle interventions for type 2 prevention after delivery, is highly cost effective, even in low-income countries.

In 2015, the International Federation of Gynecology and Obstetrics (FIGO) released new guidelines for diagnosis, management and care of gestational diabetes. The World Diabetes Foundation advocates for wide adoption of these guidelines, with screening and care delivered to the best of each country's capabilities.

The WDF also supports the universal screening of pregnant women for elevated blood glucose levels; training in care for these patients including lifestyle management counselling; the scale-up of wellbeing and prevention campaigns; testing of all women with gestational diabetes at 6–12 weeks post-partum for signs of impaired glucose tolerance or overt type 2 diabetes; and use of the post-partum period for increased medical attention to both mother and child.

The WDF has allocated about 8% of its funding to projects improving prevention, screening and treatment of hyperglycaemia in pregnancy to date.



4,453

clinics established
or strengthened



825,871

women screened
for HIP

HIP – LIFTING MATERNAL DIABETES CARE TO THE NATIONAL LEVEL



IN SRI LANKA, YEARS OF EFFORTS TO **IMPROVE THE PREVENTION AND TREATMENT OF HYPERGLYCAEMIA IN PREGNANCY** HAVE CULMINATED IN A NATIONAL NCD RESPONSE.

A speaker at the Pragmatic approach to Gestational diabetes/HIP workshop.

In a crowded hotel conference room in Colombo, Sri Lanka, in September 2016, a diabetes nurse educator steps up to the microphone. Speaking in a combination of Sinhala and English, she asks: is a breastfed baby affected by maternal insulin levels? Behind her, others wait with more questions about how to keep pregnant women and their babies safe.

This setting was *Pragmatic approach to Gestational diabetes/Hyperglycaemia in Pregnancy*, a two-day training event for Ministry of Health employees, health workers, midwives and nurses. More than 300 people attended the training, which took place prior to the 1st Asia Pacific Congress on Diabetes, Hypertension & Metabolic Syndrome in Pregnancy (see page 9).

The high turnout reflected the growing interest in the problem of hyperglycaemia in pregnancy (HIP) in Sri Lanka, says Chandrika Wijeyaratne, a professor of reproductive medicine at the University of Colombo and WDF Project Partner in Sri Lanka. It's a remarkable change from 7 years ago, when HIP was a low priority in the Sri Lankan health system.

NIROGI shows the way

The change began in 2008, with the National Initiative to Reinforce and Organize General diabetes care In Sri Lanka (NIROGI) project – nirogi means 'healthy' in Hindi. This was started by a volunteer group of doctors who formed the Diabetes Prevention Task Force of the Sri Lankan Medical Association (SLMA). Their ambitious goal: to improve the quality and delivery of preventive and care services for diabetes in Sri Lanka. Professor Wijeyaratne, a member of

the group, approached the World Diabetes Foundation with a proposal.

The resulting project, General diabetes care, WDF09-411, was approved the following following year with NIROGI/SLMA/Diabetes Prevention Task Force as the project partner. By its completion 3 years later, it had strengthened six primary level clinics in the metropolitan Colombo area, trained more than 600 healthcare professionals, reached in excess of 80,000 people through awareness camps, and screened more than 25,000 people for diabetes.

As often happens, however, the first project uncovered new areas that needed attention. One was diabetes foot care. Another was HIP. "Although clinicians – both obstetricians and physicians – were aware of poor pregnancy outcomes from HIP, the enormity of the problem in South Asia was not appreciated," Professor Wijeyaratne explains.

A second project run by NIROGI/SLMA/Diabetes Prevention Task Force, National initiative to reinforce and organize general diabetes care in Sri Lanka, WDF12-683, addressed this, adding HIP – and also foot care – services and training to the infrastructure created in the first project.

The project's achievements within HIP included the training of more than 8,000 healthcare professionals, development of national screening and management guidelines, establishment of a national centre of excellence, and screening of more than 14,000 women using a new, validated screening methodology. The results showed a gestational diabetes prevalence of



Workshop participants practice their injection technique.

between 22–24% in urban areas and 14% in rural areas.

“Before this project, there was no widely accepted screening methodology for pregnant women in Sri Lanka, so the validation of the 2-hour postprandial blood glucose method was important,” says Hanne Strandgaard, WDF Programme Manager. “And the prevalence found was high. This shows that the need is real and the project is addressing a significant public health issue.”

NIROGI worked in close collaboration with other organisations, including The South Asia Initiative on Diabetes in Pregnancy (SAIDIP), an informal network of healthcare professionals in the South Asia Region, and the International Federation of Gynecology and Obstetrics (FIGO), a global organisation uniting professional societies of obstetricians and gynaecologists. As a result, the attention given to HIP in Sri Lanka grew and grew.

High-level and holistic

This combined effort worked. In 2015, the WDF was again approached, this time by Sri Lanka’s Ministry of Health, SLMA and the Sri Lanka College of Endocrinologists, about creating a diabetes prevention programme and NCD action plan for the entire island nation.

Sri Lanka Diabetes and CVD initiative, WDF15-1291, was launched in September 2016, during a formal ceremony in Colombo. The project will build diabetes capacity at the primary care level in all 25 districts of Sri Lanka. It will be managed by a steering committee under the chairmanship of the Ministry of Health.

The project’s key elements are:

- Refinement of existing training materials and health information systems, and development of protocols and guidelines.
- Organisation of workshops to strengthen collaboration between maternal and child health services, primary health centres and government health facilities.
- Capacity building of health facilities and healthy lifestyle clinics to improve delivery of diabetes, HIP and diabetic foot care services.
- Roll out of screening, care and referral for diabetes, including HIP and diabetic foot.
- Implementation of awareness and prevention activities through health promotion at the grassroots level.

“This is the first WDF-supported national level programme to be implemented in South Asia,” notes Ms Strandgaard. “It represents a culmination of WDF investments in Sri Lanka and of the partnerships established with key stakeholders, including the Ministry of Health.”

For Professor Wijeyaratne, seeing HIP prioritised at the highest levels of her Government is the realisation of many years of hard work.

“My sincere hope is that this sustainable multidisciplinary commitment and holistic approach will improve the lives of women across Sri Lanka,” she says. “Our goal is the prevention and control of GDM and metabolic disease in Sri Lankan women and their families – and now we’re several steps closer to achieving it.”



TYPE 1 DIABETES

The problem: in some countries, life expectancy for a child with type 1 diabetes is less than 1 year after diagnosis.

An estimated 542,000 children under the age of 15 are living with type 1 diabetes around the world, and 86,000 new cases are expected each year. About half of these children live in resource-poor settings, often without access to diabetes treatment. These children have high mortality rates, and in some countries life expectancy is less than 1 year after diagnosis.

Type 1 diabetes is relatively rare, accounting for only about 5% of diabetes cases worldwide. However, type 1 diabetes is still the most common form of diabetes in children. It is a chronic autoimmune disease characterised by the destruction of the insulin-producing cells in the pancreas, leading to absolute deficiency of insulin and hyperglycaemia. While the reason for this occurring remains unclear, evidence suggests a complex interaction between genetic susceptibility and several environmental factors.

Type 1 diabetes can affect people of any age but onset usually occurs in children or young adults. People with type 1 diabetes need to adjust insulin therapy to calorie intake every day in order to control the levels of blood glucose. Without insulin therapy, a person with type 1 diabetes will eventually die.

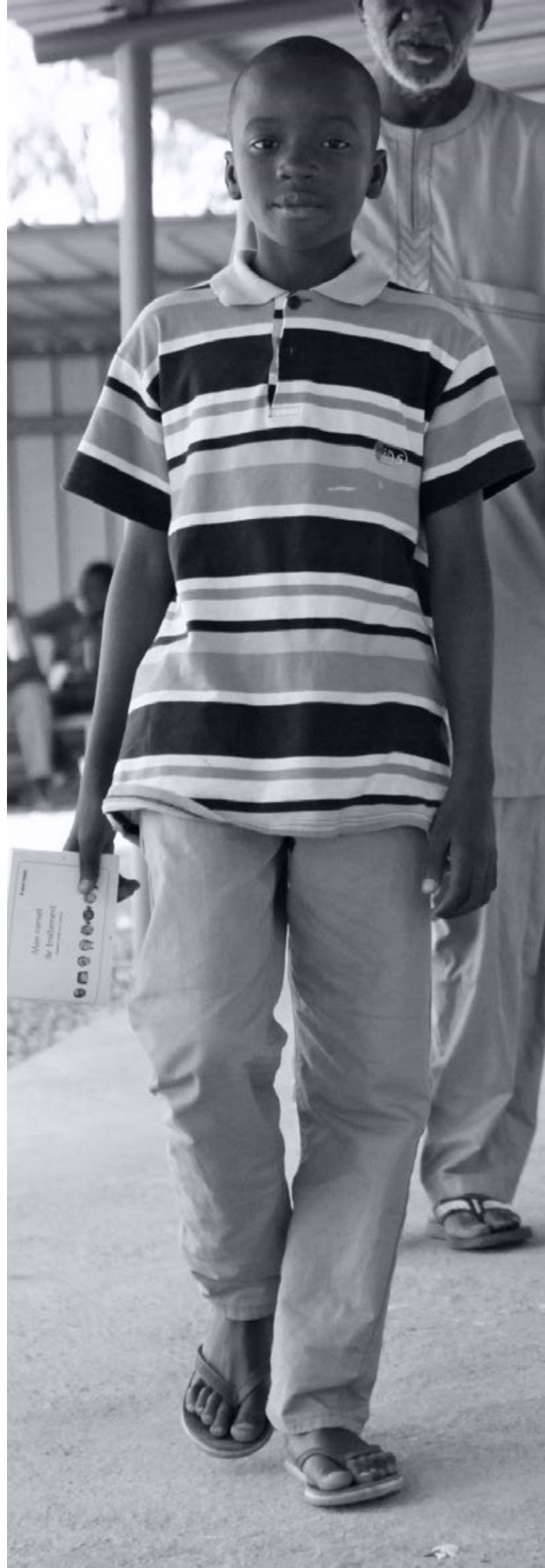
People with type 1 diabetes need access to education and quality care in order to regulate their blood glucose and prevent short- and long-term complications.

Why is type 1 diabetes so damaging?

Type 1 diabetes usually develops abruptly, causing dangerously high blood glucose levels and life threatening ketoacidosis (acid in the blood). In parts of the world where type 1 diabetes is less common or health systems are ill-equipped to diagnose it, the symptoms may be mistaken for more common illnesses such as gastroenteritis, cholera and appendicitis. Such misdiagnoses are fatal.

Treatment of people with type 1 diabetes requires careful instruction in exercise, diet and insulin therapy with a focus on achieving blood glucose targets while avoiding excessively low or high blood glucose levels. Ketoacidosis should also be prevented.

Yet successful insulin dosing requires training and education. If blood glucose is not well controlled there is a much higher risk that the patient will be affected by short- and long-term complications such as cardiovascular disease and microvascular disease affecting the kidney, eyes and nerves. This can lead to blindness, foot ulcers, amputations and kidney failure.



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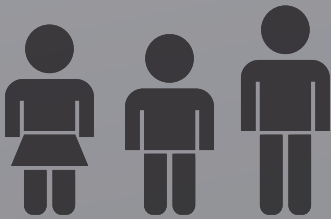
PROJECTS WITH A TYPE 1
DIABETES COMPONENT

THE WDF'S APPROACH: PREMATURE DEATHS FROM TYPE 1 DIABETES CAN BE AVOIDED WITH ACCESS TO PROPER CARE

Most premature deaths caused by type 1 diabetes could be avoided with access to proper diagnosis and care, including access to insulin therapy. The World Diabetes Foundation does not fund supply of medications, as its focus is on sustainable capacity building within the type 1 diabetes area. WDF-funding typically supports camps with training of people with type 1 diabetes and healthcare professionals, family counselling and related activities.

Training is essential in capacity building and, to ensure optimal outcome, it is important to train not only the person with type 1 diabetes and healthcare professionals but also parents, siblings and school teachers. Establishment of peer groups is another important tool to improve the lives of people with type 1 diabetes. The WDF and its partners lobby local governments to find long-term solutions for improving care and ensuring access to glucose monitoring and essential medicines.

The WDF has allocated about 3% of its funding to the education and care of people with type 1 diabetes to date.



17,665

children with type 1 diabetes
received care

TYPE 1 DIABETES – CREATING A SAFETY NET FOR CHILDREN IN CHINA

世界糖尿病基金会—中国儿童糖尿病管理项目中心
WDF-Project Center for Diabetes Management in Children in China

中国卫生部支持合作项目
Collaborative Project Supported
by Ministry of Health of China

WORLD DIABETES FOUNDATION

A WDF-FUNDED PROJECT HAS ESTABLISHED A NETWORK OF PAEDIATRIC DIABETES CENTRES ACROSS CHINA, PROVIDING ACCESS TO CARE TO THOUSANDS OF CHILDREN.

It's 2012, and the situation for children with type 1 diabetes in China is challenging. Only a handful of paediatric diabetes centres exist for the approximately 30,000 children living with this potentially life-threatening condition, and the diabetes knowledge of doctors varies greatly across this vast country. To support their families, some parents leave their child in their hometown and work in the city, making visits to far-away clinics difficult. Insulin and glucose testing strips are not included in the national medical insurance scheme. And the stigma of diabetes means that many parents refuse to believe their child's diagnosis.

Fast forward to 2016, and the situation has improved significantly, says Professor Luo Xiaoping, Chairman of the Chinese Society of Pediatric Endocrinology & Metabolism, Head of the Department of Pediatrics at Tongji Hospital and WDF Project Partner. China now has a network of paediatric diabetes centres, more than 1,000 healthcare professionals trained in type 1 diabetes management in children and nearly 2,000 families receiving support. It's the result of a pioneering WDF-funded project, he says.

Strengthening the healthcare system

Lack of healthcare resources, education and awareness has prevented children with type 1 diabetes in China from receiving timely diagnosis and quality care. To address this, Professor Luo proposed Management program for children with diabetes (WDF11-617), in 2012.

When the project began, there were fewer than 10 diabetes

centres for children in China and children's hospitals lacked a focus on diabetes. The goal was to establish 26 paediatric diabetes centres in 20 cities. However, due to the positive response from health centres, by the end of the project in 2015, 33 clinics had been established in 25 cities.

The project also had an ambitious plan to train 780 doctors, nurses, paramedics and educators in diabetes management. Again, the project exceeded expectations and by 2015, 820 healthcare professionals had been trained. In addition, 224 trainers were taught techniques for cascading diabetes education to additional staff.

"We were pleased with the response we received from hospitals, health centres and healthcare professionals, who were eager to participate in our project. They saw this as a good opportunity to improve their education and confidence, so that they could provide better treatment for children with type 1 diabetes," says Professor Luo.

Academic pressures affect follow-up

The most significant challenge for the project was getting children to attend follow-up appointments, explains Professor Luo: "In addition to the distance to the clinic and cost of medications, a common problem was that children study at school 6 days per week and academic pressures made several teenagers reduce the frequency of their visits to the clinic."

"If we want diabetes management to be sustainable, we



A mother and child at a paediatric diabetes centre in Beijing, one of 33 established by a WDF-funded project.

must adopt more ways to improve this rate of follow-up," he says. "We offered telephone consultations, increased the frequency of clinic appointments on weekends and holidays, and provided free blood glucose level detection in diabetes camps."

The impact was evident: "During the project, a total of 1,681 children with diabetes received quality care. At the beginning the average HbA1c level was 10.97%. After insulin treatment and following up for 1–3 years, the average HbA1c level dropped to 9.68%, 8.33%, and 7.56%, respectively," Professor Luo reports. This is comparable to some of the best centres for type 1 diabetes treatment in the world.

Educating and involving caregivers

Family involvement is a key assurance of long-term diabetes self-management for a child. However, many parents did not want their child to be known to have diabetes, to avoid discrimination from the local community. "Unfortunately, children with type 1 diabetes in China continue to die as a result of ignorance and lack of education. To address this, we educated 3,362 family members using specially developed materials and the social media platform WeChat, and held 90 diabetes camps for children with diabetes and their caregivers," says Professor Luo.

"After improving awareness and understanding, caregivers were not so worried about the views of others and accepted their child's diagnosis."

As there is no national data for paediatric diabetes, a survey was conducted at the project clinics. More than 90% of the children surveyed received insulin injections, but poor diet management and blood glucose monitoring was evident, especially in young children. "Monitoring devices are not covered by medical insurance, which means many children are not testing their blood sugar levels," explains Professor Luo. "Coupled with this is the severe lack of dietitians – especially for paediatric diabetes. It is therefore important that we encourage parents to pay more attention to what their child eats."

National registry

A registration system was created in the project clinics to support the management of paediatric diabetes, and Professor Luo is hopeful that this system will be rolled out to other centres across China, as the Ministry of Health attempts to register all children with type 1 diabetes across the country. Mads Loftager Mundt, WDF Programme Coordinator, says: "Due to the size of China, no uniform registration system is used by all hospitals, so the implementation of a joint registry for the entire project's paediatric diabetes centres is an excellent achievement!"

"The project has created structures for paediatric diabetes care across China and provided knowledge that will be useful for policy makers and for the general improvement of paediatric diabetes care in China," he adds.



TB AND DIABETES

The problem: diabetes triples the risk of developing tuberculosis.

Tuberculosis (TB) is the world's deadliest infectious disease, killing 1.5 million people annually. Diabetes is a non-communicable disease responsible for 5 million deaths annually. Experts warn that the two epidemics are converging, especially in the developing world, with dangerous consequences for individuals and societies alike.

The association between TB and diabetes and their synergistic role in causing human suffering has been recognised for centuries. Recent evidence has shown:

- People with diabetes are 2–3 times more likely to develop TB compared to people without diabetes
- TB may trigger the onset of diabetes and worsen glycaemic control in existing diabetes
- People with TB and diabetes have a higher risk of death during TB treatment and relapse after treatment than those without diabetes
- People with both diseases have a high risk of becoming multidrug resistant towards TB medicine
- People with TB and diabetes are more likely to be sputum positive for TB and take longer to become sputum negative

Why are TB and diabetes interrelated?

One in three people worldwide live with a latent TB infection and most are unaware they have this. Diabetes weakens the immune system, increasing the risk of infection and the likelihood that a latent TB infection will become active. It has been shown that people with diabetes with poor glycaemic control have a higher risk of converting a latent TB infection to an overt TB infection than a person with diabetes with good glycaemic control.

It is also known that infections increase the production of stress hormones, leading to increased insulin resistance, blood glucose levels and the risk of developing diabetes.



24

**PROJECTS WITH A TB AND
DIABETES COMPONENT**



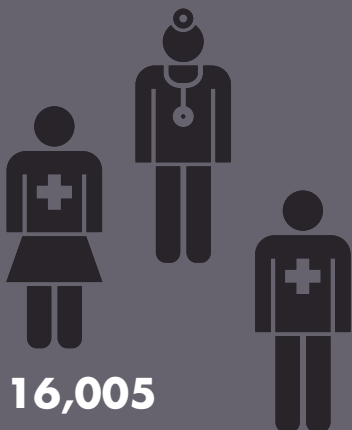
529

clinics established
or strengthened



54,763

people with TB
screened for diabetes



16,005

healthcare professionals
trained in TB and diabetes



1,893

people with both TB
and diabetes treated

THE WDF'S APPROACH: BIDIRECTIONAL SCREENING FOR TB AND DIABETES IS CRITICAL

Because of the association between TB and diabetes, it is critical that people with TB are screened for diabetes. In areas with a high prevalence of TB, people with diabetes should be screened for TB.

The World Diabetes Foundation supports the implementation of the Collaborative Framework for Care and Control of Tuberculosis and Diabetes produced jointly by the World Health Organization (WHO) and The International Union against Tuberculosis and Lung Diseases (The Union). The Framework offers guidance to establishing programmes aimed at detecting and managing diabetes in TB patients and vice versa.

Among its key recommendations is support for training and capacity development to enable prevention, early diagnosis and treatment for both TB and diabetes at the primary healthcare level. The WDF also supports efforts to increase public awareness about these conditions and their interaction, their individual and common risk factors, and how to prevent them.

The WDF has allocated about 3% of its funding to TB and diabetes projects to date.

TB – IMPROVING DIABETES AND HYPERTENSION DETECTION IN TB PATIENTS

IN SUB-SAHARAN AFRICA, TB PROGRAMMES RARELY INCLUDE NCD SCREENING – BUT A PROJECT IN ANGOLA IS PROVING IT CAN BE DONE WITH GREAT SUCCESS.

With an estimated tuberculosis (TB) prevalence of more than 370/100,000, Angola has one of the highest rates of TB, TB/HIV and multiple drug resistant-TB in the world, according to the World Health Organization. The country has responded by investing in TB programmes and establishing specialised clinics. But the double burden of TB and diabetes is hindering the success of these actions.

An estimated 4% of Angolans have diabetes. But this figure could be more than 50% higher due to the rapid urbanisation of the capital, Luanda, home to about 7 million people. Diabetes triples the risk of developing TB and people with diabetes remain contagious with TB for longer, respond less well to TB treatment and are more likely to have a relapse or die during TB treatment. Yet diabetes care is largely absent from most primary and even secondary level clinics in Angola and the Ministry of Health has not yet implemented a national NCD strategy or action plan.

Utilising existing health systems

In 2014, the WDF began funding WDF14-873: Improving diabetes and hypertension diagnosis in TB patients – a 3-year project in Angola which aimed to integrate type 2 diabetes and blood pressure screening activities into the existing TB health programme.

“We decided to use existing TB health centres in Luanda as they were already operative, organised and accessed by a high number of patients every day,” explains Dr Andrea Atzori, Head of International Relations at Doctors with Africa (CUAMM), an Italian NGO active in Sub-Saharan Africa, and WDF project partner in Angola. “In this way, we hoped to

optimise costs, strengthen existing centres and introduce a sustainable screening system for diabetes and other NCDs.”

CUAMM has collaborated with the Angolan Ministry of Health for many years and is one of their main partners implementing the country’s TB programme, making CUAMM a well-positioned partner for the WDF’s first project in Angola.

Laying the foundations

Using the WHO/Union Collaborative Framework for Care and Control of Tuberculosis and Diabetes as a guide, WDF14-873 began by establishing a steering group with the health authorities, including the Ministry of Health National TB Control Programme, and developing new clinical guidelines, training and awareness materials.

Next, it built capacity at six TB clinics in Luanda by training 35 healthcare professionals and providing basic screening equipment for diabetes and hypertension. No official data were available on diabetes, so the project developed registries to collect data about diabetes incidence and diabetes and TB co-morbidity, reports Dr Atzori: “Diabetes is so far under the radar in Angola that no one knew the size of this co-epidemic. This information is therefore useful to educate healthcare professionals as well as to advocate for a national health programme, public interventions and awareness activities about diabetes and NCDs.”

Screening – and referral challenges

As of November 2016, more than 7,000 TB patients have been screened for diabetes and hypertension, of which



Patients at a TB clinic in Luanda, where diabetes and hypertension screening are now available.

326 (4.5%) were diagnosed with diabetes and 1,186 (16.5%) with hypertension.

Screening activities for diabetes and hypertension have been well received, with doctors reporting that integration is manageable and not too time-consuming. This is important, says Dr Atzori, as the clinics are often over-crowded with TB patients waiting hours for their consultation. "Once a patient has registered at the clinic, they have to wait for their TB test. We use this time to sensitise them to the risks of diabetes. The actual test for diabetes is very quick as it is incorporated with other tests. So patients are happy to participate as they realise this is an opportunity to improve their health."

However, the targeted populations are generally from low income areas and adding a diabetes diagnosis to the existing burden of TB is not always appreciated. "Telling a TB patient that they also have diabetes makes their life more complicated. The big issue is that there are very limited diabetes services here and the cost of diabetes treatment is a great challenge," Dr Atzori explains. All too often when a person with TB who has been diagnosed with diabetes returns to the TB clinic, they have not been to a diabetes clinic or received any diabetes care. "We therefore needed to find a more personalised way to help these patients."

Associação dos Diabeticos de Angola (ASDA), the Angolan national diabetes association, is responsible for supporting people diagnosed with diabetes and hypertension at the TB clinics. The WDF project is strengthening ASDA's capacity so that it can effectively fulfil this role. The project is also working with health centres and hospitals to help

patients get appropriate diabetes care.

"We are also educating patients so they understand the implication of diet, exercise, smoking and alcohol on their diabetes. The patients appreciate that there is concrete action they can take to help themselves," explains Dr Atzori.

Changing policy

At the end of the 3-year project, a workshop will be held to present the results and to advocate for the integration of diabetes and hypertension screening into existing TB care, in particular at primary care level. "We have raised the level of passion, knowledge and priority for diabetes in Angola and activated discussions which I hope will lead to change in the near future," says Dr Atzori.

Bent Lautrup-Nielsen, Senior Programme Manager at the WDF, says: "This project is at the forefront of global advocacy within health and development to promote the absorption of some NCDs into existing care structures, such as those for TB."

Dr Atzori believes this project has already shown that integration across health programmes – such as TB, HIV and vaccination – can successfully tackle NCDs in Sub-Saharan Africa: "We want to create synergy between systems rather than a parallel system for chronic disease management and have demonstrated that it is possible," he says. "This experience can be replicated in many African countries as it represents a cost effective way to introduce diabetes screening and is easily accessible to those already using local health clinics."

MALAWI: USING THE MEDIA TO STOP AN EPIDEMIC



IN ONE OF THE WORLD'S POOREST COUNTRIES, A SAVVY MEDIA CAMPAIGN LIFTS DIABETES TO THE TOP OF THE HEALTH AGENDA.

Role playing during a diabetes awareness raising event.

A woman in an embroidered white blouse looks into the camera and lists some of the problems she and other people with diabetes face when seeking care.

"The delays we experience before we are attended to at the clinic are risky, since we leave our homes without eating or drinking anything," says Mary Francisco, a patient at the Mwanza District Hospital Diabetes Clinic in southern Malawi. She notes that diabetes patients must fast before their blood sugar is measured. "Sometimes we collapse while waiting for the clinic to start."

Also, the venue for the clinic keeps changing, she says. And consultations take place in an open room, where everyone can hear.

"Sometimes we fail to be completely honest with the doctor because of this lack of privacy," she confesses.

This is a standout moment in *Diabetes on the Doorsteps*, a 10-minute TV documentary broadcast on Times TV in August 2016. The issues Ms Francisco describes are clear, burdensome and eminently fixable. The idea is to spur viewers to roll up their sleeves and get to work, says Dingaan Mithi, Programme Manager for Journalists Association Against AIDS (JournAIDS), which produced the documentary.

"We thought real-life stories would be a powerful way of informing our Government, civil society organisations, policy and decision makers of the need to urgently address health challenges faced by people with diabetes," he says.

This documentary is the latest addition to a 6-year effort to increase awareness about the devastating impact that

diabetes is having in Malawi. It's an effort that is getting results – and generating lessons that can be applied to many other countries, as well.

Not just a disease of the rich

As their name implies, JournAIDS was created to raise awareness about HIV and AIDS. But in 2009, a survey showed that diabetes was growing fast in Malawi and this caught the organisation's attention.

"As a media NGO, we thought it would be a good idea to review our strategic plan to include non-communicable diseases," explains Christopher Bauti, Executive Director of JournAIDS. "People here thought diabetes was a disease for rich people – not relevant to us. We needed to correct that misconception."

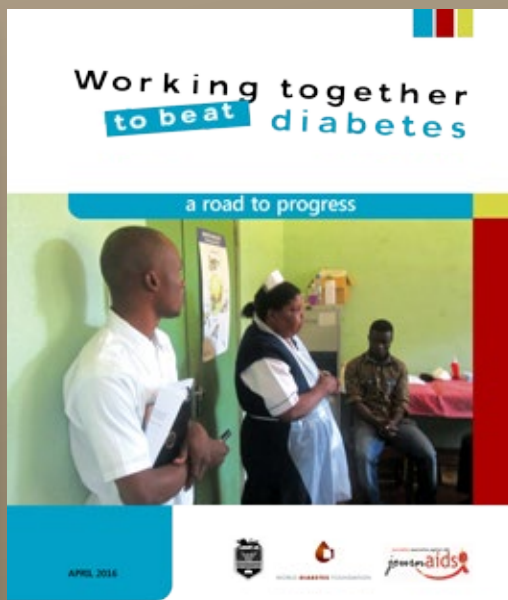
One goal was to increase general awareness about the disease, to help residents help themselves.

"Increased awareness makes people have better health-seeking behaviours," Mr Mithi says. "This reduces diabetes complications, which have a severe impact and often perpetuate poverty."

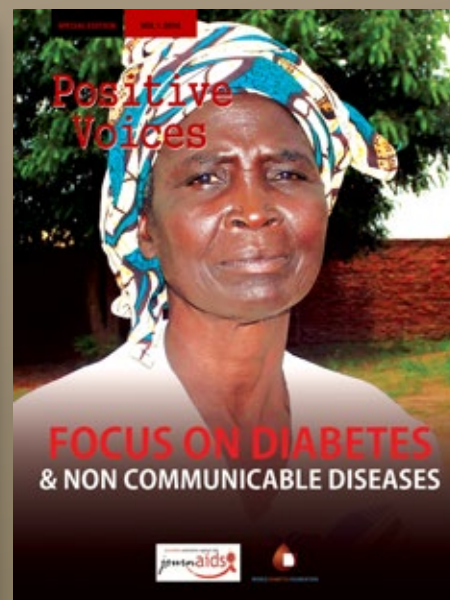
Yet patients cannot improve their health alone. Knowing this, JournAIDS created a plan targeting key groups in Malawian society, including the general public, media, NGOs and policy makers. They consulted with the Diabetes Association of Malawi, the College of Medicine and other stakeholders to ensure coordination of diabetes advocacy and to leverage their experience and ideas.



The documentary film *Diabetes on the Doorsteps* explores the experiences of people with diabetes and caregivers in Malawi.



Working Together to Beat Diabetes highlights best practices and other new models for improving diabetes care.



Positive Voices uses interviews and real-life stories to highlight the challenges faced by people with diabetes.

Then, they approached the World Diabetes Foundation for funding. The result was Support to primary diabetes prevention, WDF10-563. The project's goals included training local journalists, launching community mobilisation campaigns, creating a series of radio programmes and listener clubs, and lobbying the Ministry of Health.

The project exceeded its goals. In fact, the focus on diabetes in Malawi increased so much between 2010 and 2013 that a persistent problem – stock outs of diabetes medications – became big news. This contributed to the Government's decision, in 2013, to allocate an extra £16 million for drug procurement.

"It was a key lesson that exerting pressure on a government by using the media could improve health service delivery," Mr Mithi says.

The project taught other lessons as well. The project team saw that not just journalists, but also their editors, needed to learn about the diabetes and NCD threat. They saw a need for more patient voices and use of social media. There also was a bigger economic story they wanted to tell.

"We realised that diabetes and other NCDs needed a more clearly understood connection to key economic development issues," Mr Mithi says. "Showing how poverty links with diabetes was a powerful way to influence policy and decision makers, and one we hadn't fully explored."

Diabetes at the top of the agenda

This desire to do more led to a new project: Popularising advocacy to primary diabetes prevention, WDF14-858.

The new project builds on its predecessor, with expanded media training to focus on editors, and an increased number of written resources and field visit opportunities for journalists. A TV documentary has been produced, along with two magazines and five new radio programmes.

The project also has elements that are completely new. A national diabetes conference for policy makers from the health and education sector was organised and the project is lobbying parliament for more NCD financing, working to integrate NCDs into the national school nutrition programme, and educating religious leaders about the problem of NCDs.

Mr Mithi says the biggest achievement so far is the launch of an NCD column in Malawi's *Sunday Times*.

"We have generated over 50 articles since we started in February 2015," he says. The column explores a variety of topics related to diabetes and other NCDs, and is the only one of its kind in Malawi's print media.

The column, combined with the project's many other activities, is keeping diabetes in focus – and pressuring authorities to address the problem effectively.

"As of now, the Government and parliamentarians are aware of the need to tackle NCDs with urgency. Six years down the line we have changed the media coverage on NCDs in Malawi and put diabetes on top of the health agenda," says Mr Mithi.

GLOBAL DIABETES WALK 2016



THE **GLOBAL DIABETES WALK** IS THE WDF'S CONTRIBUTION TO **WORLD DIABETES DAY** – A WORLDWIDE EVENT DEDICATED TO **RAISING DIABETES AWARENESS AND EDUCATION** WHICH TAKES PLACE EVERY **14 NOVEMBER**.

Peru.

The 12th annual WDF Global Diabetes Walk campaign was a great success, thanks to Walk organisers worldwide and their creative, energetic, awareness-raising events of all shapes and sizes.

The Global Diabetes Walk 2016 surpassed expectations, broke records and expanded to new countries. In total, 180 organisers registered 1,842 Walks in 80 countries – and a record 430,056 people participated.

Not only were steps taken, but the message behind this activity was clear: take steps to prevent diabetes.

WALKS THAT MARKED 2016

Walks in Africa

An impressive 235 Walks were held with more than 59,572 participants in 20 countries. The biggest Walks took place in Nigeria, with 18,000 participants in 135 Walks organised by Nwaeze Diabetic Foundation Multipurpose Cooperative Society – a first time Walk organiser.

Walks in Europe

A total of 61 Walks were held with 33,099 participants in 19 countries. The biggest Walks took place in Armenia, with 12 Walks and 24,000 participants, organised by the Armenian Red Cross Society. This was the largest number of participants mobilised by a single organiser in Europe, to date.



Peru.



Kenya.



India.

Walks in Middle East and North Africa

Altogether, 154 Walks were held with 60,500 participants in 11 countries. The biggest Walk, with 15,000 participants, took place in the United Arab Emirates, organised by Landmark Groups – which also helped organise Walks in Oman, Qatar and Bahrain.

Walks in North America and Caribbean

Building on last year's success, 23 Walks were held with 5,275 participants in 7 countries. The biggest Walks took place in St Lucia, where St. Lucia Diabetes and Hypertension Association organised three Walks with 1,800 participants.

Walks in South and Central America

Altogether, 64 Walks were held with 28,090 participants in 11 countries. The biggest Walks were in Honduras, where

Instituto Nacional de Diabetes organised 10 Walks with 3,000 participants.

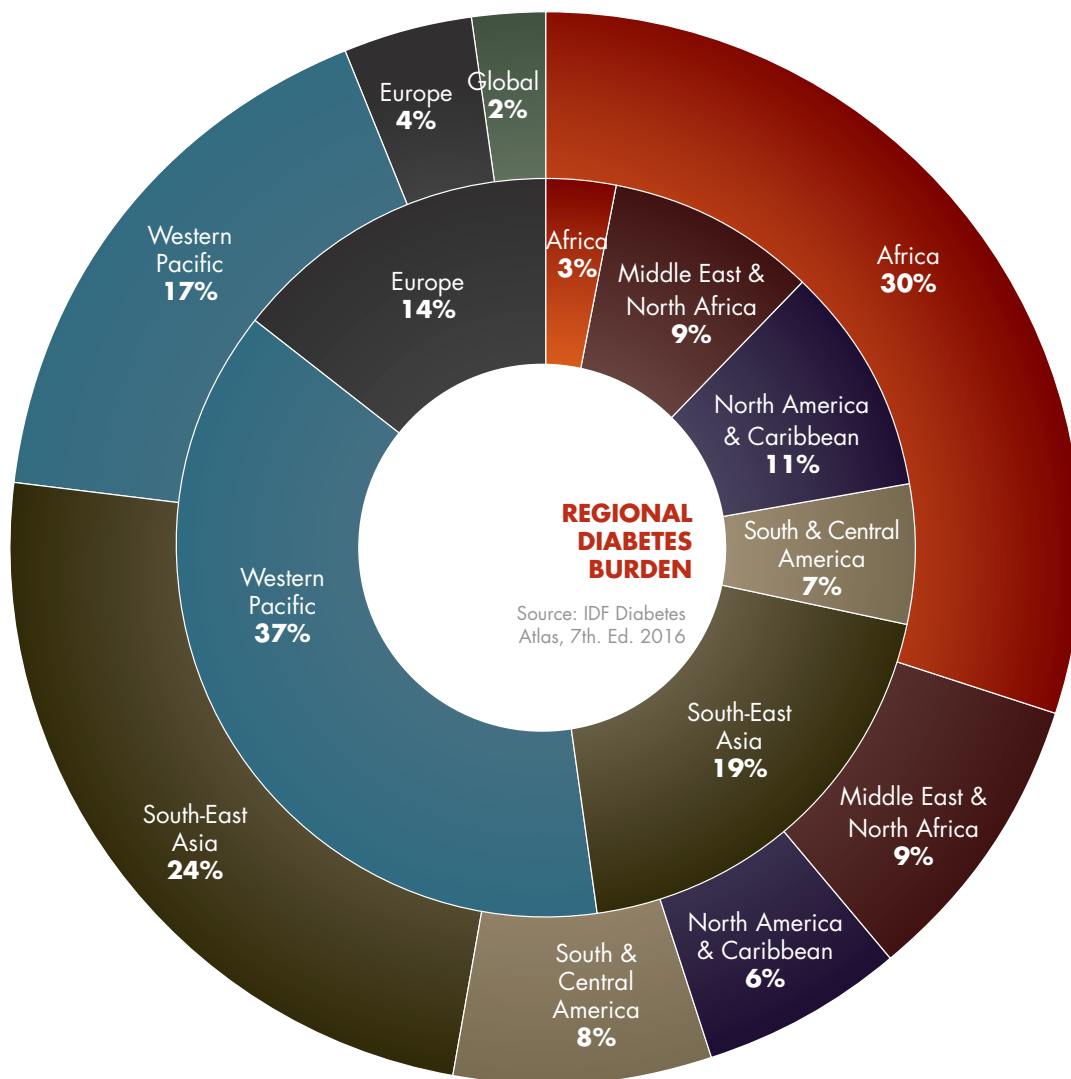
Walks in South East Asia

A staggering 1,237 Walks were held with 231,320 participants in 4 countries. The biggest Walks took place in India with an impressive 100,000 participants in 977 Walks organised by kNOw Diabetes. Furthermore a new organiser, Dr Rajesh Jain, gathered more than 75,000 participants in 75 Walks.

Walks in Western Pacific

In total, 68 Walks were held with 12,200 participants in 8 countries. The biggest Walk took place in Malaysia, where Yong Lai Mee organised a Walk with more than 2,000 participants.

DISTRIBUTION OF FUNDING TO REGIONS AND FOCUS AREAS (2002–2016)



REGIONAL DISTRIBUTION OF WDF FUNDING

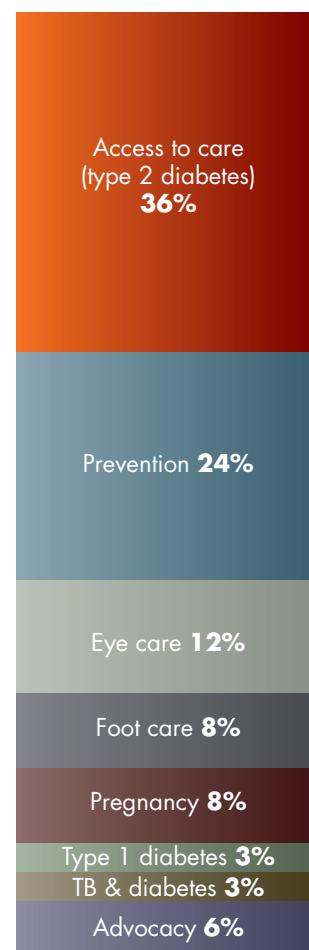
The World Diabetes Foundation is a leading funder in the area of prevention and treatment of diabetes and related complications in developing countries.

Our aim is to fund innovative projects that yield replicable and sustainable approaches. We also work to establish and develop local partnerships and strategic alliances at the global, regional and national levels. Our guiding principle is to allocate funding to areas where we believe it can make a lasting difference.

From 2002 to 2016, the WDF has funded 487 partnership projects in 115 countries, focusing on awareness, education and capacity building at the local, regional and global level. By the end of 2016, the total project portfolio had reached USD 365 million (including in cash and in-kind contributions at project level)*. USD 122 million of this amount was donated by the WDF.

The WDF spent an additional 7.4 million USD during this period on advocacy and strategic platforms.

The relatively high share of funding to Africa illustrates the WDF's poverty focus, which targets those countries least able to withstand the burden of the diabetes and its complications.



DISTRIBUTION OF FUNDING TO INTERVENTIONS AND FOCUS AREAS

*The USD value of the WDF portfolio is reassessed on a quarterly basis against realised grants.



ABOUT THE WORLD DIABETES FOUNDATION

The World Diabetes Foundation was established in 2002 through a commitment of DKK 650 million to be allocated during the period 2001-2010 by Novo Nordisk A/S. Three additional Novo Nordisk endowments have followed. This brings the endowments to a total maximum of USD 274 million (exchange rate 6.58) or DKK 1.8 billion in the period of 2001-2024. (The actual sum may vary, depending on the operating results of Novo Nordisk A/S in the coming years.)

The WDF is registered as an independent trust and governed by a Board of experts in the field of diabetes, access to health and development assistance. The World Diabetes Foundation raises funds from other sources to support specific projects ensuring a multiplier effect; for every USD spent, the WDF is able to raise approximately USD 2 in cash or as in-kind donations from other sources.

For more information, please visit: www.worlddiabetesfoundation.org

Diabetes screening event, Kenya.

ONGOING WDF PROJECTS BY REGION

GLOBAL

3

ONGOING PROJECTS

MIDDLE EAST AND
NORTH AFRICA REGION

17

ONGOING PROJECTS
IN 11 COUNTRIES

SOUTH AND
CENTRAL AMERICA /
NORTH AMERICA AND
THE CARIBBEAN REGIONS

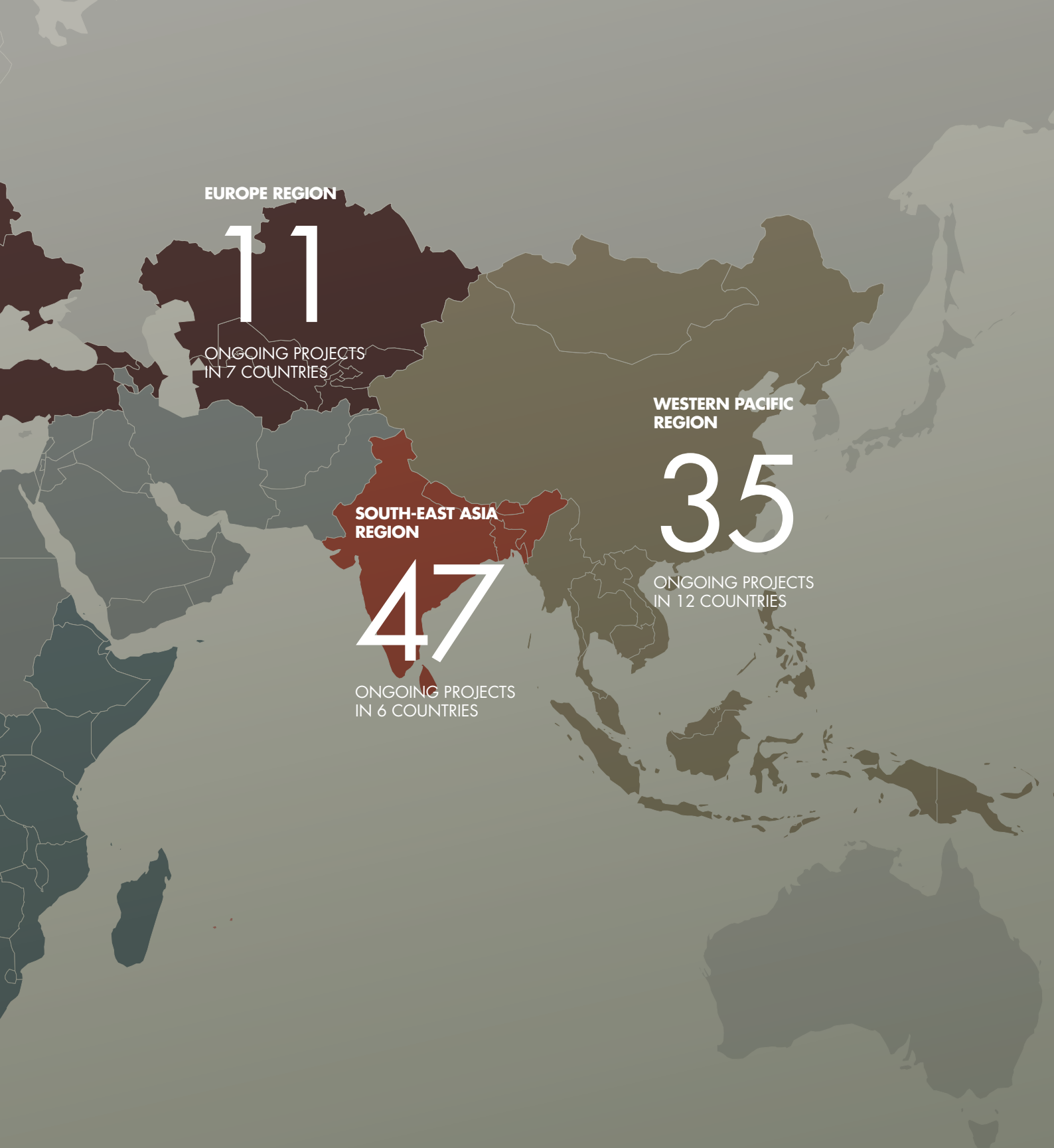
47

ONGOING PROJECTS
IN 16 COUNTRIES

AFRICA REGION

71

ONGOING PROJECTS
IN 28 COUNTRIES



The WDF is a demand-driven funder and technical partner for sustainable development, and a key partner to local champions and governments striving to meet the NCD targets set by the WHO and UN.

Total WDF projects ongoing in 2016: **231**

Total WDF projects completed to date: **256**

COUNTRIES WITH NEW WDF PARTNERSHIP PROJECTS IN 2016

- | | | | |
|-------------|-------------|------------------|------------|
| Afghanistan | China | Mauritius | Sri Lanka |
| Argentina | Colombia | Mexico | Sudan |
| Armenia | DR Congo | Mozambique | Uganda |
| Bangladesh | Guatemala | Nepal | Uzbekistan |
| Benin | Haiti | Nicaragua | Vietnam |
| Bolivia | India | Pakistan | Zambia |
| Brazil | Indonesia | Papua New Guinea | |
| Burundi | Ivory Coast | Peru | |
| Cambodia | Liberia | Philippines | |

CUMULATIVE PROJECT RESULTS (2002–2016)*

| | | AFRICA | EUROPE |
|------------------------------------|--|-------------|-----------|
| GENERAL | WDF DISTRIBUTION TO PARTNERSHIP PROJECTS (USD) | 36,362,256 | 5,512,126 |
| | CO-FUNDING TO PARTNERSHIP PROJECTS (USD) | 78,459,510 | 4,216,120 |
| | TOTAL VALUE OF PORTFOLIO (USD) | 114,821,766 | 9,728,246 |
| ADVOCACY | ADVOCACY & STRATEGIC PLATFORMS (USD) | – | – |
| PREVENTION | NO OF TEACHERS TRAINED | 3,795 | 709 |
| | NO OF CHILDREN AND PARENTS REACHED | 146,591 | 29,418 |
| ACCESS TO CARE | NO OF CLINICS ESTABLISHED/STRENGTHENED | 3,250 | 444 |
| | NO OF PATIENTS AT CLINICS | 636,611 | 84,997 |
| | NO OF DOCTORS TRAINED | 11,757 | 5,520 |
| | NO OF NURSES TRAINED | 20,768 | 4,131 |
| | NO OF OTHER HEALTHCARE PROVIDERS TRAINED | 19,827 | 960 |
| | NO OF AWARENESS CAMPS CONDUCTED | 7,973 | 2,759 |
| | NO OF PEOPLE SCREENED FOR DIABETES | 1,113,156 | 342,251 |
| EYE CARE | NO OF PEOPLE SCREENED FOR DIABETIC RETINOPATHY | 50,625 | 21,840 |
| | NO OF PEOPLE DETECTED WITH DIABETIC RETINOPATHY | 9,754 | 10,184 |
| | NO OF PEOPLE TREATED | 7,321 | 1,470 |
| FOOT CARE | NO OF HEALTHCARE PROFESSIONALS TRAINED IN FOOT CARE | 2,473 | 1,885 |
| | NO OF PATIENTS SCREENED FOR DIABETIC FOOT | 118,226 | 31,929 |
| | NO OF FEET SAVED | 11,914 | 3,905 |
| PREGNANCY | NO OF CLINICS STRENGTHENED WITH HIP | 579 | – |
| | NO OF WOMEN SCREENED FOR HIP | 129,880 | – |
| TYPE 1 DIABETES | NO OF CHILDREN WHO RECEIVED CARE | 6,956 | 2,274 |
| TUBERCULOSIS & DIABETES | NO OF HEALTHCARE PROFESSIONALS TRAINED IN TB & DM | 1,638 | – |
| | NO OF CLINICS STRENGTHENED | 110 | – |
| | NO OF PEOPLE WITH TUBERCULOSIS SCREENED FOR DIABETES | 17,391 | 1,099 |
| | NO OF PEOPLE WITH TUBERCULOSIS AND DIABETES TREATED | 270 | – |

| MIDDLE EAST & NORTH AFRICA | NORTH AMERICA & CARIBBEAN | SOUTH & CENTRAL AMERICA | SOUTH EAST ASIA | WESTERN PACIFIC | GLOBAL** | TOTAL |
|----------------------------|---------------------------|-------------------------|-----------------|-----------------|-----------|-------------|
| 11,711,103 | 6,974,083 | 10,024,223 | 28,860,564 | 20,399,580 | 2,539,806 | 122,383,741 |
| 24,578,293 | 12,460,144 | 19,591,036 | 40,855,203 | 57,189,439 | 5,481,633 | 242,831,378 |
| 36,289,396 | 19,434,227 | 29,615,259 | 69,715,767 | 77,589,019 | 8,021,439 | 365,215,119 |
| – | – | – | – | – | 7,396,178 | 7,396,178 |
| 749 | 794 | 1,845 | 23,871 | 4,082 | – | 35,845 |
| 30,585 | 23,840 | 48,455 | 1,525,241 | 87,967 | – | 1,892,097 |
| 917 | 239 | 1,177 | 1,813 | 2,452 | 20 | 10,312 |
| 199,733 | 61,544 | 369,938 | 3,641,646 | 1,600,748 | 3,200 | 6,598,417 |
| 7,801 | 1,422 | 2,847 | 23,516 | 54,505 | 11 | 107,379 |
| 2,706 | 1,434 | 4,520 | 33,734 | 14,284 | – | 81,577 |
| 3,220 | 1,439 | 9,015 | 90,800 | 20,101 | – | 145,362 |
| 4,238 | 660 | 2,450 | 20,191 | 9,750 | – | 48,021 |
| 95,710 | 46,175 | 74,934 | 5,902,472 | 1,196,242 | – | 8,770,940 |
| 40,241 | 6,152 | 6,202 | 1,020,550 | 924,409 | – | 2,070,019 |
| 11,544 | 1,849 | 130 | 103,281 | 117,206 | – | 253,948 |
| 7,781 | 790 | 85 | 85,309 | 20,276 | – | 123,032 |
| 3,982 | 98 | 76 | 8,519 | 5,677 | – | 22,710 |
| 159,057 | 5,720 | 10,257 | 477,857 | 89,603 | – | 892,649 |
| 74,141 | – | 804 | 31,302 | 7,382 | – | 129,448 |
| 194 | 21 | 69 | 2,150 | 1,440 | – | 4,453 |
| 87,337 | 20,757 | 39,993 | 168,222 | 379,682 | – | 825,871 |
| 4,143 | 1,159 | – | 721 | 2,412 | – | 17,665 |
| 49 | – | – | 3,576 | 10,656 | 86 | 16,005 |
| – | – | – | 234 | 165 | 20 | 529 |
| 4,330 | – | – | 2,196 | 29,747 | – | 54,763 |
| 56 | – | – | – | 1,556 | 11 | 1,893 |

**Includes WDF advocacy and strategic platforms.

ABSTRACT OF THE AUDITED FINANCIAL STATEMENTS FOR 2016

PROFIT AND LOSS 1ST JANUARY – 31ST DECEMBER

| | 2016 | 2015 |
|--|---------------|---------------|
| | DKK '000 | DKK '000 |
| Donations from Novo Nordisk A/S and others | 85,881 | 85,718 |
| Administration expenses | -5,633 | -6,232 |
| Project expenses | -11,017 | -11,224 |
| Profit before financial income and expenses | 69,231 | 68,262 |
| Financial income | 871 | 408 |
| Financial expenses | -95 | -145 |
| Profit for the year | 70,007 | 68,525 |
| Proposed distribution | | |
| Distributions from the World Diabetes Foundation | 78,448 | 60,263 |
| At disposal for future distributions | -8,441 | 8,262 |
| | 70,007 | 68,525 |

Gross distributions

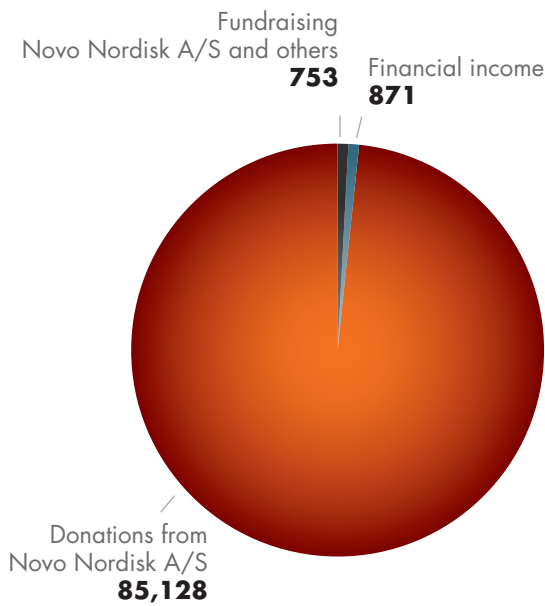
The World Diabetes Foundation has distributed DKK 88,050k in 2016, exclusive of reversal of unutilised grants from prior years.

The World Diabetes Foundation has met the main criterion of only supporting projects within the WDF's statutes. The other main criterion of ensuring full distribution was also met.



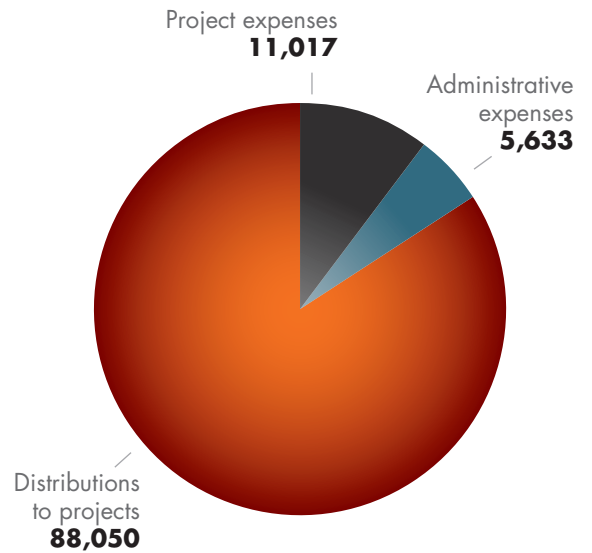
ABSTRACT OF MANAGEMENT'S REVIEW

INCOME, EXPENDITURE AND SEGMENTATION OF PROJECT DISTRIBUTIONS 2016



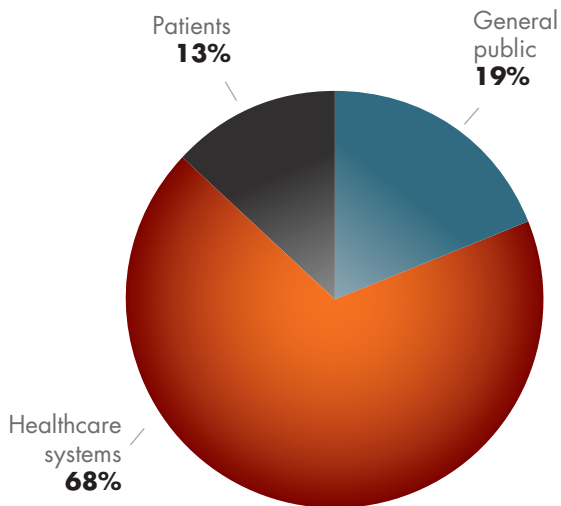
INCOME 2016

DKK '000

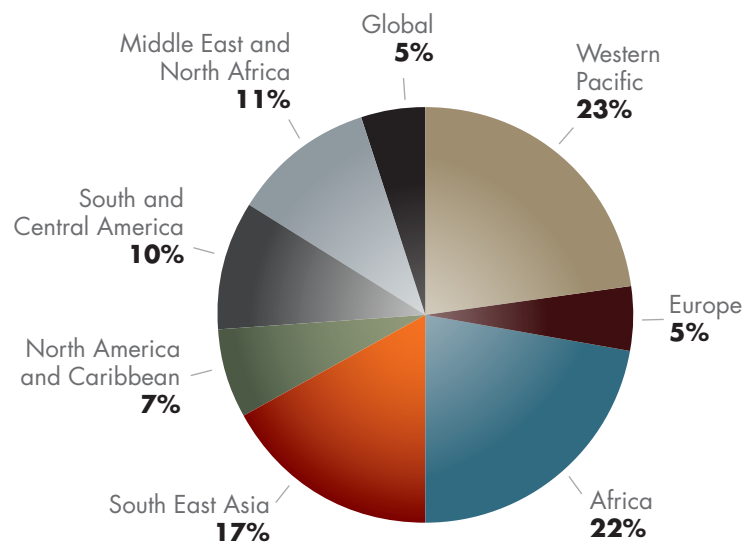


EXPENDITURE 2016

DKK '000



TARGET SEGMENTATION 2016



GEOGRAPHICAL SEGMENTATION 2016



Diabetes screening event, Kenya.

BALANCE SHEET

ASSETS

| | 2016 | 2015 |
|-----------------------------|----------------|----------------|
| | DKK '000 | DKK '000 |
| Blocked account | 260 | 260 |
| Tied-up assets | 260 | 260 |
| Receivable Novo Nordisk A/S | 5,838 | 26,652 |
| Interest receivable | 186 | 79 |
| Total receivable | 6,024 | 26,731 |
| Holding of bonds | 24,390 | 24,994 |
| Bank and currency deposits | 183,024 | 159,547 |
| Disposable assets | 213,438 | 211,272 |
| Total assets | 213,698 | 211,532 |

LIABILITIES AND EQUITY

| | 2016 | 2015 |
|-------------------------------------|----------------|----------------|
| | DKK '000 | DKK '000 |
| Tied-up capital | 260 | 260 |
| Disposable capital | 23,020 | 31,461 |
| Total equity | 23,280 | 31,721 |
| Trade payables | 342 | 322 |
| Accrued distributions | 187,723 | 176,909 |
| Other liabilities | 2,353 | 2,580 |
| Total short-term liabilities | 190,418 | 179,811 |
| Total equity and liabilities | 213,698 | 211,532 |

The above is an abstract of the Audited Financial Statements for 2016. Administrative expenses amounted to 6.49% of the total income for the year.

For full details of the audited financial statements, please refer to our website:
www.worlddiabetesfoundation.org

CODE OF CONDUCT

Our aim is to alleviate human suffering related to diabetes and its complications among those least able to withstand the burden of the disease

1. We will recognise people with diabetes and related diseases as dignified humans in all our activities and communications
2. We will display respect for the culture and values of the communities and countries within which we work
3. We will facilitate implementation of the UN Sustainable Development Goals by striving to reduce the vulnerability of people served through our grants – addressing basic health needs, promoting equity (in particular gender equity), and fostering sustainable solutions
4. We will give support regardless of race, gender or creed of the recipients in the developing world based upon assessment of needs and capabilities to meet these needs
5. We will promote local ownership of sustainable initiatives in co-operation with governments, private institutions and civil society
6. We will help build and strengthen local capacity to ensure that the recipients, including girls and women, are empowered, as key players in the development process
7. We will seek to support and create synergy between both top-down and bottom-up approaches that apply participation and partnership as both a means and a goal
8. We will be accountable to both those we seek to assist and those from whom we accept resources
9. We will adopt and require our partners to adopt a zero tolerance policy to corruption and bribery
10. We will be open and transparent, and report on the impact of our work, and the factors limiting or enhancing that impact



Kipchumba Luka, an orthopaedic technologist, at the Embu Clinic in Kenya.



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PHOTOS

Jesper Westley, Gwendolyn Carleton,
Hanne Strandgaard and by courtesy of
the WDF project partners

Front cover: Diabetes awareness and screening
event in Kenya, by Jesper Westley

Back cover photo: Kenya Defeat Diabetes
Association employee, by Jesper Westley



The World Diabetes Foundation is dedicated to supporting the prevention and treatment of diabetes in the developing world

The World Diabetes Foundation creates partnerships and acts as a catalyst to help others do more

The World Diabetes Foundation strives to educate and advocate globally in an effort to create awareness, care and relief to those impacted by the disease



WORLD **DIABETES** FOUNDATION