

WORLD **DIABETES** FOUNDATION

ANNUAL REVIEW 2005

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The diabetic foot is one of the most serious disabling complications caused by diabetes. Figures shows that more than one million amputations are conducted every year. And up to 85% of these amputations are preventable. It is estimated that up to 70% of all lower limb amputations are related to diabetes. Most studies estimate the incidence of lower leg amputation at 5-25/ 1.000 inhabitants/ year; among people with diabetes the figure is 6-8/1.000

FOCUS ON AFRICA

The African countries carry an almost unbearable double disease burden. Infectious diseases such as HIV/AIDS, tuberculosis and malaria are ravaging the continent and are without doubt the biggest and fastest killers in that part of the world. However, what is even more disturbing is the fact that HIV/AIDS and diabetes are proving to have connections hitherto not widely known.

Slow killers in the shape of chronic diseases such as diabetes are also developing epidemic proportions, already accounting for more than 23% of all deaths on the continent.

It is estimated that 13.6 million people suffer from diabetes in Africa. This number is expected to almost double in the next 25 years, to approximately 27 million people (IDF). But even if these numbers seem alarming they fade in comparison with the figures for AIDS and malaria. It is not surprising then that local governments in Africa focus their resources on the biggest killers. This leaves only scant resources to fight the chronic diseases that are rapidly gaining ground.

It is estimated that African countries use less than ten percent of their public health budgets on the prevention and treatment of non-communicable diseases. According to Dr. Kaushik Ramaiya, who is responsible for several WDF projects in Tanzania, the amount is insufficient. "Health policy decision makers in third world countries are so preoccupied with infectious diseases such as HIV/AIDS, tuberculosis and malaria that they tend to forget non-communicable diseases.

They are probably not aware that these are life-long conditions which cause huge economic burdens on individuals, families and society," he says.

This is precisely what WDF is committed to change. It is crucial that patients and doctors, as well as local health care authorities and national governments are given sufficient information for them to take action and make the right decisions in due time to prevent chronic lifestyle diseases such as diabetes from spreading further.

They must realise that diabetes is not merely high levels of blood sugar; patients can go blind from undiagnosed retinopathy, risk amputation of a foot or leg or suffer renal failure, develop heart disease or be paralysed by a stroke - all consequences of an untreated or poorly managed condition. People with diabetes can suffer from most of these complications for years before eventually dying.

The lethal connection

Studies show that metabolic complications, including diabetes mellitus, are seen more often among HIV-infected people. Additionally, those undergoing treatment with anti-retroviral drugs appear to have a five-fold increased risk of developing diabetes. This link is lethal and needs serious attention. Already, HIV patients on antiretroviral treatment live longer and will bear the devastating double disease burden. In addition, those with both HIV/AIDS and diabetes have an increased risk of acquiring tuberculosis - often the multiple drug-resistant varieties.

"People with HIV/AIDS who have been on anti-retroviral therapy tend to develop diabetes, hypertension, dyslipidaemia, obesity and metabolic syndrome much more frequently than those who are not on anti-retroviral therapy. Governments in developing countries who are already facing a challenge in managing HIV/AIDS, tuberculosis and malaria will be quite unable to manage emerging non-communicable diseases if they do not initiate primary prevention programs now involving all the different stakeholders," Dr. Ramaiya explains. "Therefore, to really relieve the double disease burden, governments in Africa need to develop more comprehensive and

appropriately balanced and focused prevention and management strategies encompassing both communicable and chronic non-communicable diseases. 'Totally neglecting one in favour of the other may have disastrous consequences,'" says Prof. Ib Bygbjerg an internationally recognised public health expert from the Panum Institute in Denmark and a member of the board of directors of WDF.

The critical situation in Africa was one of the reasons for the creation of the WDF. "We created the Foundation to lift our responsibility as a global leader in diabetes care by funding projects aimed at increasing awareness of the diabetes epidemic, by acting as a catalyst assisting local authorities and NGO's in the dissemination of best practices, by building capacity and by acting as an advocate for people with diabetes and those who care for them." says Lars Rebien Sørensen, President and CEO of Novo Nordisk,

Africa is the main focus of this Annual Report and in the following pages you will be introduced to some of the many important projects that WDF supports on the African continent. However, the commitment and engagement of the foundation is just as great and comprehensive in the rest of the developing world.

The growing proportion of children and young adults with diabetes represents a severe problem. Although diabetes can be well controlled, having to live with the disease for 50-60 years instead of 20 significantly increases the risk of diabetes-related complications occurring at a relatively young age. Complications such as nephropathy and retinopathy have been reported as early as five years after diagnosis among young people with type 2 diabetes

WDF AND THE COMING GENERATION

Lifestyle related diseases are spreading rapidly in the developing world. In societies in transition people are getting wealthier - but not necessarily healthier. If no corrective action is taken now, the next generation will grow up repeating the mistakes of its parents, developing diseases they could have possibly been avoided. The WDF has therefore decided on a new focus area - The Coming Generation.

Soon after its founding in the year 2002, the WDF decided to focus its attention on four areas within the field of diabetes by preferentially and sometimes proactively seeking and supporting projects in the area of "the diabetic foot," "eye care," "children with diabetes" and "women, pregnancy and diabetes."

Diabetes foot and eye care address the most neglected, and socio-economically the most devastating and challenging problems related to diabetes in the developing world. Similarly, the lack of attention to children with diabetes and to issues related to women with diabetes and gestational diabetes are included as WDF focus areas to proactively support these critical areas in countries with high prevalence and poor infrastructure. Based on an extensive evaluation of ongoing projects, the board of directors realised that the existing focus areas do not deal sufficiently with the urgent need to create programs for the primary prevention of diabetes. Therefore, a fifth focus area has been introduced: The Coming Generation.

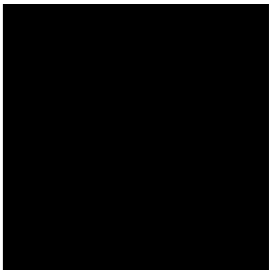
Primary prevention

There is increasing evidence to support the idea that people at risk of diabetes can prevent or delay its onset by making appropriate lifestyle changes. It is also well known that it is very difficult to change habits and lifestyles once acquired. Therefore if we are to succeed in our efforts to stem the rising burden of diabetes, obesity, hypertension, dyslipidemia and heart disease, we must ensure that the future generation learns to live

healthily. In focusing on The Coming Generations, the WDF will promote the cause of primary prevention by supporting and proactively seeking projects that target health promotion for the general population, and particularly for school children, by informing them of the risk of unhealthy lifestyles.

Consequently, the Foundation aims to include primary prevention in all of its projects addressing children, youngsters and adults who have not yet developed diabetes and inform them about risk factors and a healthy lifestyle.

The Foundation considers this fifth focus area to be of vital importance for the prevention of diabetes in developing countries. The developing world in general is undergoing significant socio-economic changes that strongly increase the risk of developing the condition. Factors such as obesity, tobacco consumption and physical inactivity are rapidly gaining ground. They are no longer the preserve of the western world and they need to be addressed now for the benefit of the new generation.



Pierre Lefèbvre



PROFESSOR PIERRE LEFÈBVRE
Chairman
World Diabetes Foundation

LONG TERM COMMITMENT

There are currently 194 million people with diabetes in the world. This figure is expected to increase to 333 million by 2025 corresponding to more than 19,000 new patients every day for the next 20 years. As much as the WDF and many other organisations working in the area wish to put an instant stop to this epidemic, the Foundation realises that this requires a broad long-term perspective and consistent collaborative work. For when it comes to diabetes there are no quick fixes and the situation will probably get worse before it gets better.

Diabetes is a slow chronic condition that often takes years to develop. Causes of the condition are many and varied but for the main part they can be traced back to an unhealthy lifestyle. And this is where the long-term commitment begins. There is no fast cure available, no healing pill to relieve the problem. Whole lifestyles, attitudes and risk behaviours must be changed to control the rising prevalence of diabetes and therefore many factors other than just the disease itself must be addressed.

Unhealthy nutrition, physical inactivity and obesity are the key risk factors for diabetes and these are

often deeply rooted in cultural values and social norms. It takes time and patience for individuals to bring about changes in such long-established behaviours and they very often cannot do it alone. It requires the right supportive and enabling environment where entire communities support and encourage healthy living and fundamental lifestyle changes therefore call for a significant shift in the cultural values and norms of society as a whole. It is a challenging task that is further complicated in countries where existing resources are scarce, infrastructure weak and education levels low as is the case in many parts of the developing world where the Foundation operates.

Such are the challenges we face each day in our work at the Foundation. It is therefore important that we understand, respect and use local knowledge to our advantage. By identifying local champions and building project-based professional relationships we ensure that we remain on track with our projects. To us, that is the only valid and efficient way to secure genuine sustainability and to achieve the desired results on a long term basis.

A catalyst for aid

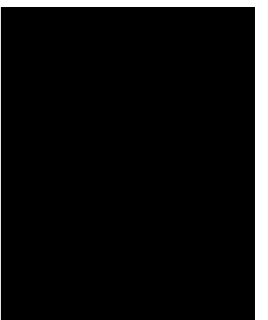
The need for initiatives to improve access to diabetes care was present years before the WDF was established. The IDF and other organizations struggled to bring attention to these needs but the efforts were scattered and funding was limited. Since 2002 the World Diabetes Foundation has acted as a catalyst, creating partnerships in the developing world by encouraging and helping many local champions do more for people with diabetes in their communities. We have raised awareness of the problem amongst the various stakeholders including national governments in the developing world as well as the general public

in the developed world through fund raising and other events; but more importantly the Foundation has created a sense of urgency, support and hope for millions of people with diabetes.

As of now, the WDF supports 57 projects in more than 65 countries in the developing world and as ever before the Foundation takes into account the overall context of diabetes; be it in Africa, Asia or South America. The work of the Foundation is estimated to have a direct impact on 24 million people and we will continue to improve and target our efforts even better in the years to come.



World Diabetes Foundation



Leif Fenger Jensen

LOSING HIS LEGS TO IGNORANCE

It's a hot day in one of the poorest neighbourhoods of Dar es Salaam, the capital of Tanzania in East Africa. Inside the home of Ally Mohamed Abdallah, the smell of burnt sand and charcoal dominates the one room where he eats and lives with his second wife. The narrow room is like a roasting oven, emanating heat. Since November 2005 fifty-year-old Ally has been forced to spend most hours of the day sitting on the mattress at the end facing the yard. In November both of his legs were amputated due to diabetes.

Ally's life with diabetes started ten years ago in 1995. Subsequent to his diagnosis, he received easily recognisable warning signs that, if acted upon, could have prevented his legs from being amputated. Sadly, like many other people with diabetes in Tanzania, he was not educated about his own disease.

In 1995, after having the typical symptoms of tiredness, thirst and frequent urination, Ally went to the local dispensary, when he could no longer bear the symptoms. At the dispensary they measured his blood sugar and gave him tablets as well as advising him on a diet. Ally has never been able to maintain the healthy diet and exercise regime that would benefit his condition. Today, like any other day, he eats "uwele," a thin porridge, accompanied by slices of bread. For lunch and dinner he takes more starch; "Ugali" porridge is consumed together with fish, meat or vegetables.

Education about diabetes has never been part of the treatment Ally was provided locally. In 1998 he even stopped taking the tablets, which evidently led to infection in one of his hands. He was treated at the local dispensary and advised to go back on tablets. When the hand healed Ally stopped taking the tablets. Lack of information led to a second admission in 2002, where another hand infection put Ally back on medication. Again he stopped when the hand healed. The third time he ran out of luck.

In October 2005, after a month enduring leg pains induced by an infected toe, he was finally admitted to Mohimbili Hospital, one of the largest hospitals in Dar es Salaam. The doctors hoped to save his right leg by amputating two toes, but the infection

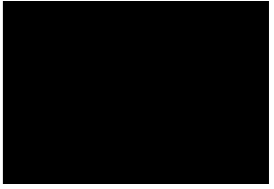
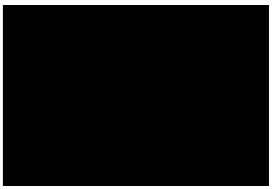
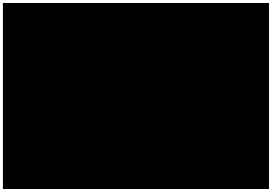
had already spread, and his leg was amputated below the knee. During his admission a burning sensation warned the doctors of complications in the left leg. Unfortunately, years of poorly controlled diabetes had left his body unable to fight back and his left leg was also amputated.

Today every day is a challenge. Until his amputation he lived by selling roasted meat on sticks, and bananas from a small store in front of his house. He is afraid that he will no longer be able to continue. His wife Ininga is the second of his two wives. Unlike his other wife she has taken it upon herself to take care of him. A lot of neighbours have come by to give moral support, while the family has been helping them by buying food and medicine.

It is hard to accept this story because Ally's fate is preventable. Both diagnosed patients and health care personnel need to be educated to look for the early signs of complications. Today 33% of patients admitted for diabetic foot ulcers undergo amputation, with a 54% mortality rate in patients who present themselves late.

The World Diabetes Foundation hopes to be able to influence these statistics, by supporting the "Step-by Step" project, running as a cooperation between India and Tanzania, in which foot complications are equally severe problems.

"Based on interaction with participants and faculty I estimate that on average the 95 teams that have participated and completed the two step training have each identified 125-150 high risk feet in about 350-400 people with diabetes that they may have



screened since the program began one year ago. All people with diabetes whose feet were examined received patient education. Thus about 35,000 to 40,000 people with diabetes are likely to have received preventive foot care education; among these about 12,500-15,000 people with high risk diabetes feet were identified and given extra attention and education. About 3,500-4,000 people with problems such as ulcers, callus and minor and major infections received appropriate care. Another major achievement is that in these big or small practices, in small towns in India where so much services have previously existed the beginnings of diabetes foot care clinics has been initiated. The enthusiasm of the participants to do even better in the future was amazing and many showed commitment

to roll out the education to others in the region using the excellent training material and patient education aids that have been developed under the program" says Dr Anil Kapur Vice Chairman of WDF enthusiastically, after attending the concluding advanced course in Mumbai in September 2005.

The "Step by Step" approach is based on the fact that diabetes related amputations are to a large extent preventable when simple measures are applied. Evidence shows that amputation rates can be reduced by 49-85% if strategies for preventing and treating diabetic foot lesions are implemented. By using relatively simple steps systematically, diabetic foot complications may be significantly reduced.

The project aim is to reduce amputations resulting from the diabetic foot in target areas by 50%, which means 600 legs saved in Tanzania

Thirty participants selected in 2004 were represented for the step by step project in 15 teams from 14 regions of Tanzania; each team consisted of one doctor and one nurse. Two teams represented two districts from one region of Dar es Salaam; three teams from three regions of Zanzibar; and one team from each of ten other regions

AIMS OF STEP BY STEP FOOT PROJECT

- To create more awareness of diabetic foot problems in India and Tanzania (possibly other developing countries)
- To provide sustainable training of healthcare professionals in the management of the diabetic foot
- To reduce the risk of lower limb complications in people with diabetes
- To facilitate the transfer of information from healthcare professionals who have undergone training to other healthcare professionals as one means of exporting expertise
- To empower people with diabetes to take better care of their feet, detect problems earlier, and seek timely help when problems arise

OTHER WDF PROJECTS IN AFRICA

Diabetes is widely considered a disease of the affluent, but a growing awareness of the disease is spreading among African governments not least because of a number of important projects supported by the WDF including:

- In Tanzania, more than 3500 people with diabetes have been diagnosed and treated as a result of 23 clinics established to improve the access to and quality of diabetes care
- In Sudan, the education of health personnel and the establishment of clinics is estimated to give 90,000 people access to good diabetes care.
- In Rwanda, 28 paramedics have been trained in diabetes diagnosis, treatment and prevention
- In the Seychelles, the aim is to improve access to diabetes care for 100,000 people through the establishment of 4 regional diabetes clinics
- In Kenya, the expected impact of training more than 20,000 people in the health care sector will be that 250,000 people with diabetes will receive diabetes education each year, and 5 million people without diabetes will be informed and educated about risk factors and healthy lifestyles in an effort to prevent them from developing diabetes
- In Ghana, 20 diabetes care centres will be established at the community level exposing some one million people to awareness and providing care for thousands of people with diabetes

DIABETES TRAINING IN RWANDA

Rwanda's only specialised diabetes clinic is to be found in Kigali. The rest of the country is in desperate need of qualified diabetes care. Therefore, in July 2005 the Rwandan and French diabetes associations, in cooperation with WDF and the Rwandan government, carried out a targeted diabetes training programme involving 28 local nurses representing the country's 12 regions. The programme was the first step in the process of developing a national plan to combat diabetes in Rwanda.

In the course of five intensive days during the summer of 2005, 28 nurses from all over Rwanda were trained in the diagnosis, treatment and prevention of diabetes. The objective was to increase the level of knowledge about diabetes in general, and for each of the trained nurses to be capable of communicating this knowledge to other health care professionals in their local regions, thus improving the overall prevention and treatment of diabetes across the country.

"This first training step has proven very successful. Before we started, diabetes treatment was practically non-existent at a national level because only very few professionals had the necessary knowledge. Now we have 1-2 nurses in each of the 12 regions who know how to treat and prevent the disease properly. The aim is that they share this new knowledge with their fellow nurses in order to leverage the training as much as possible," says Mr. André Hervouet from the French Diabetes Association FDA - the French counterpart in the project.

"The project enjoyed an exceptionally high level of involvement from the Rwandan government. The health authorities sponsored the initial steps of the project and part of the training took place at the Ministry of Health. Most importantly, though, diabetes has now become a government focus area together with AIDS, tuberculosis and malaria," Mr. Hervouet added.

In order to ensure the sustainability of the project, the Rwandan and French Diabetes Associations will keep track of the trained staff. The objective is to involve the staff in compiling records of

diabetes cases, how they were treated and how they evolved. This data will be centralised at a professional clinic managed by the Rwandan Diabetes Association and serve as basis for a valid assessment of the national diabetes situation in the country.

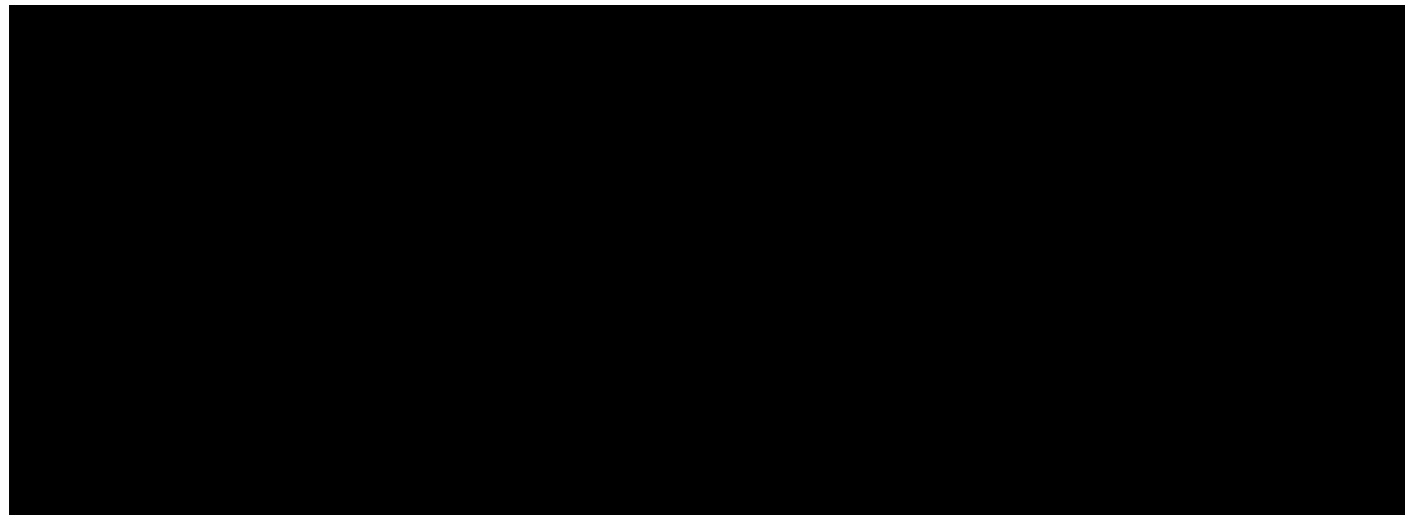
"At this point no one knows exactly how many people in the country suffer from diabetes, how many people are in need of treatment or how many people are in danger of developing the disease. Rwanda has gone through some terrible ordeals and the health care system has only recently been fully restored. However, the need for a national plan against diabetes is urgent and we need to address the issue now. This training facilitated by WDF was the first step on the way," Mr. Hervouet explains.

The Rwandan Diabetes Association estimates that in 2005 approximately 5 % of the Rwandan population has diabetes. This corresponds to about 400,000 patients across the country, with a strong concentration of cases in urban areas. The association has registered an alarmingly high number of deaths in relation to diabetes, due to the general lack of appropriate treatment.

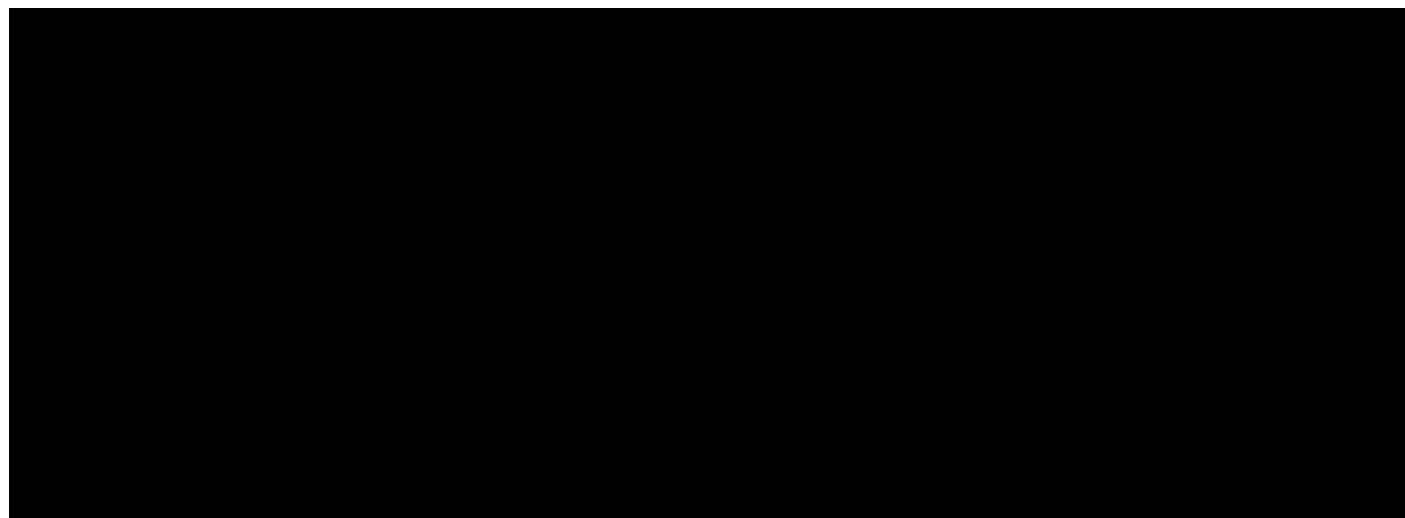
"If left untreated, diabetes eventually causes death. And keeping in mind that the estimate of the number of people with diabetes in Rwanda is set rather cautiously, this is a grim picture for thousands and thousands of people if they cannot receive proper treatment. Therefore, we are thankful for all the support we can get to continue this project in the future," Mr. Hervouet concludes.

During the 1994 genocide in Rwanda, a large portion of the country's health care system was destroyed. Hospitals, dispensaries, and health care centres were pillaged and the country suffered from a severe shortage of trained professionals

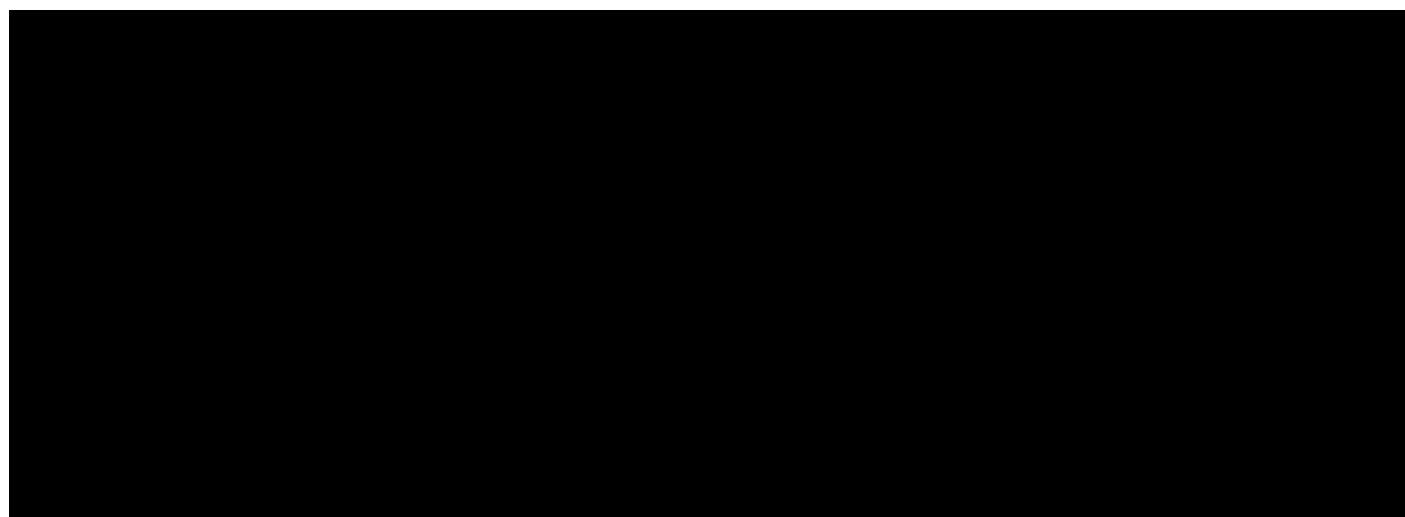
Rwanda has a population of 7.6 million. One million people were killed in the civil war and some 3 million driven into exile



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It is crucial that patients and doctors, as well as local health care authorities and national governments, are given sufficient information and education for them to take action in order to prevent chronic lifestyle diseases such as diabetes from spreading further



It is estimated that African countries use less than ten percent of their public health budgets on the prevention and treatment of non-communicable diseases.

EDUCATION – THE BEST MEANS OF PREVENTION

Until recently diabetes has not received sufficient attention in Kenya. However, as the prevalence rate has just increased to 11.6%, the Ministry of Health has committed itself to allocate funds to fight the development. Together with the WDF and the Diabetes Management & Information Centre (DMI), the Ministry of Health is developing a comprehensive national education programme.

In 2005 the rate of diabetes prevalence in Kenya reached 11.6 %. This clearly showed the Ministry of Health that the condition had become a major health problem in the country and that considerable efforts were required in order to put a stop to the negative development. Consequently, the national diabetes education programme that had already been initiated earlier in the year suddenly became of even greater importance.

“With a prevalence rate like that, we knew we had to move fast. Therefore, we quickly applied the already planned two-pronged approach that aims at improving diabetes care as well as enhancing diabetes prevention. This involves the education of health care professionals and of the population in general, informing them about the nature of the condition and its many risk factors,” Programmes Director Eva W. Muchemi explains.

The project aims to reach both the approximately 250,000 Kenyans who have already been diagnosed with diabetes and as many as 5 million Kenyans without diabetes. This will be done through various educational events that will take place in churches, schools, work places, and at sports events - places where people already spend their time. The events include free blood screenings for the early detection of diabetes, distribution of educational material, public information meetings, posters, radio shows, help lines, press conferences and exhibitions.

Health authorities ensure sustainability

Establishing sufficient professional diabetes clinics is one of the project's cornerstones. Throughout the four year period that the project is estimated to last, the partners intend to establish and/or re-equip

diabetes clinics in the country's 42 public district hospitals and 200 mini-clinics will be established in dispensaries and health centres in the rural areas. The Ministry of Health has committed itself to provide all equipment, facilities, medication, general practitioners and nurses for the clinics. DMI on the other hand is responsible for providing the diabetes educators and dieticians.

DMI seeks to improve the quality of diabetes care by applying the WDF-funded training curriculum from IDF Africa and the clinical practice guidelines in their training programme for the health care professionals. This combination ensures that the diabetes educators' expertise is up to date and at an acceptable level, when they treat patients.

“Education for health care personnel is a critical success factor for the project's sustainability. To ensure a spin-off effect, all the trained staff will be expected to train and educate other staff members who will then further communicate their new knowledge to their colleagues. If everything develops as planned, the number of professional trainers will triple over the next four years. In the same period we expect the number of trained lay people and people with diabetes to increase by five or six times,” Mrs. Muchemi explains.

“We are very happy to participate in this far-reaching project, as we can see that the impact on the overall diabetes development in Kenya will be great. At this point we have already managed to establish 27 out of 42 clinics, 131 out of 200 mini-clinics and we have reached 5,250,000 people. These remarkable results have been achieved, because all partners involved are genuinely committed to the project,” says Managing Director Leif Fenger Jensen of the WDF.

The project in Kenya is currently one of WDF's most comprehensive in Africa. Five hundred doctors, 11,000 paramedics, 3,040 nurses, 250 dieticians and 2,500 lay educators have received training in reducing the condition's risk factors. They are educated in diagnostics, primary and secondary prevention of diabetes and treatment of complications. Annually, this allows 250,000 Kenyans with diabetes to receive counselling on how to live with diabetes and reduce the risk of developing complications

THE DIABETES TRAVELLER

At Saturday around noon, Ulrik Nielsen - a programme coordinator at WDF - finds his seat in the JAK-40 airplane with room for 26 passengers and a Russian crew. His monitoring visit is close to the end and he is – finally – leaving the city of Garoua in the northern province of Cameroon.

On his visit Ulrik is accompanied by Professor Jean-Claude Mbanya, an endocrinologist and responsible for the "Cameroon Burden of Diabetes" (CAMBoD) project. He is also relieved by the thought of finally leaving Garoua. Not that it hasn't been a nice stay. Ulrik's visit for the World Diabetes Foundation has been very fruitful. But the travel to and from Garoua has been an African adventure. Arriving a day late because of a mysterious redirection of their flight, the team was scheduled to return Friday. Although every effort was made to board the plane with confirmed tickets, they were told that the plane was full. Returning to Garoua, a power cut left part

of the city without electricity, including the hotel. Half a day later they can laugh at the experience. Professor Mbanya comments "In a way it is nice, now you know what we are up against running the project in this area."

Ulrik Nielsen started in the Secretariat of the World Diabetes Foundation in August. The trip to Cameroon is Ulrik's first monitoring visit, but is not nearly his first encounter with Africa. For 2 years Ulrik lived in Burkina Faso working on development. Brought up in Kenya and Geneva, and with a political science degree, his expertise in and knowledge about the developing world is solid.

Ulrik deliberately broke out of the comfort zone by visiting this remote location of the CAMBoD project. "I told Professor Mbanya to show me some clinics where the project has succeeded and some less successful ones. I don't want to be seen as a 'policeman', with the power of cutting funds if I see things that aren't working out," Ulrik explains. "I know that things sometimes succeed, and sometimes it's more difficult. The World Diabetes Foundation creates partnerships in the developing world, this means that we agree to work together with a project team. Together we try to achieve results for people with diabetes."

In Garoua Ulrik saw clinics that were already handed over by the project and now run by local government. He met committed local authorities, meetings that made him feel confident that the work started by the CAMBoD project will live on and benefit the group of people with diabetes living in Garoua. "The local government is already planning to establish a diabetes clinic on its own. When these things happen we have had the intended impact; working as a catalyst, starting a development that will continue when we leave."

Personally, the most interesting conversations Ulrik had were with the members of the recently established Diabetes Association in Garoua who invited him to a meeting. In Garoua, before the project trained health care personnel in the diagnosis and treatment of diabetes, there was no access to diabetes treatment in the Northern Province. "They have established a community where they support each other. In a group of thirty men and women, a Muslim man told me of his problems with erection, which he suspected was due to diabetes. This honesty will bring them far as a group."

A remark towards the end of the meeting came from the president of the association. He told Ulrik that if it wasn't for the project, half of the members would not be alive today; they would have died because of lack of treatment.

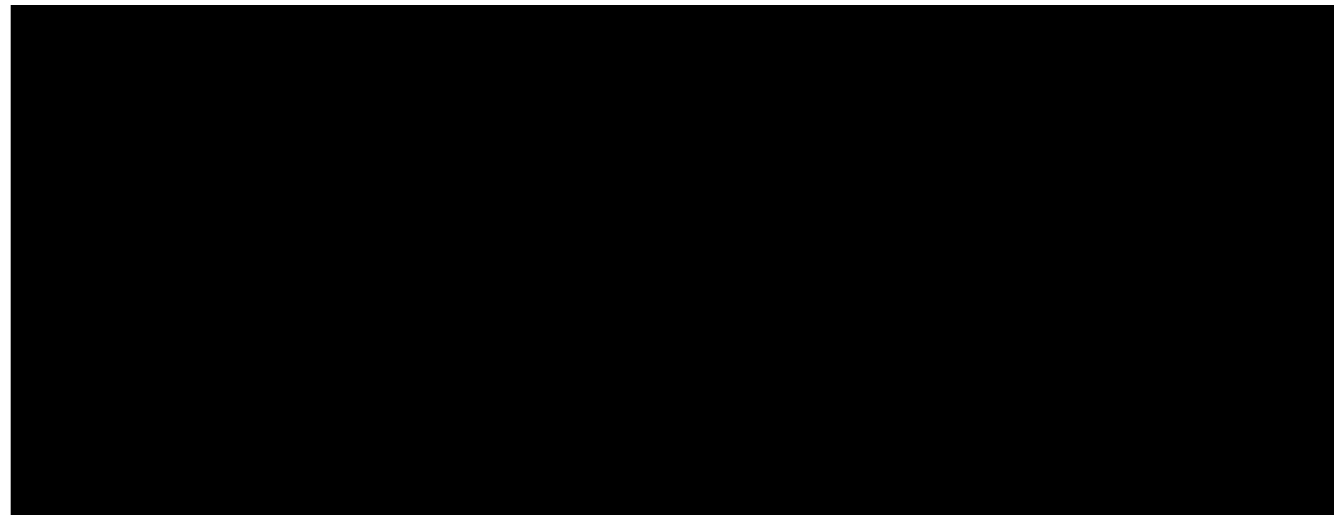
"Several people asked me if diabetes was

contagious, it made me think of the many areas of Cameroon, where people still need knowledge about diabetes", muses Ulrik Neilsen.

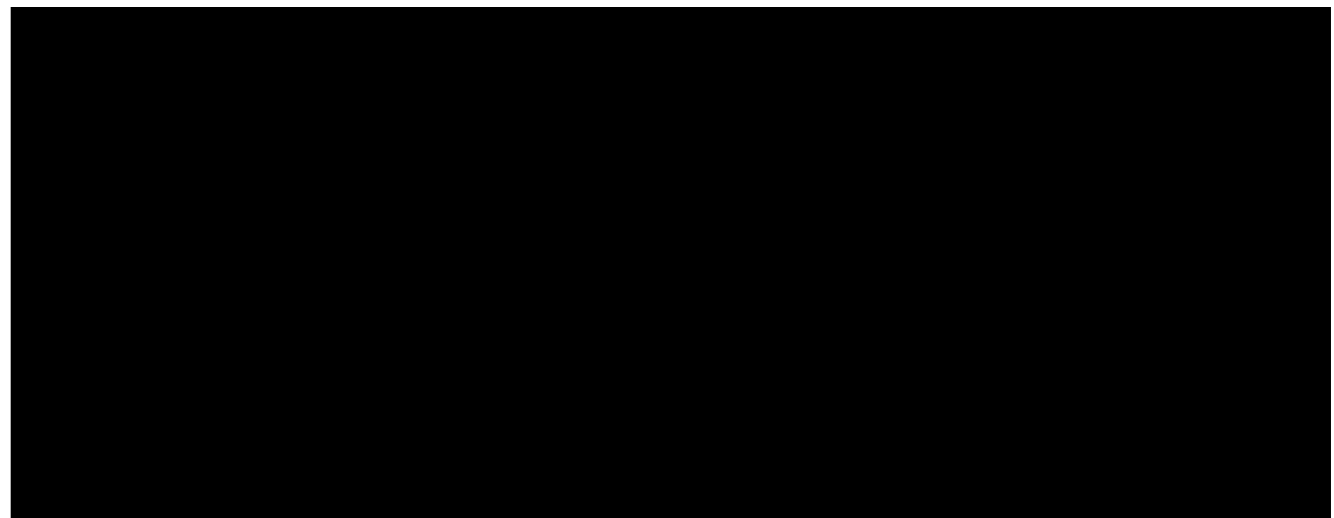
While phase one of the CAMBoD project covers four urban sites in Cameroon, phase two, running from 2006-2007, will include the six remaining areas of Cameroon and these clinics will perform outreach activities. In the next two years the team will include the traditional healers in Cameroon. While rural areas lack hospitals, every village has a traditional healer, and he is the first person people go to if they feel ill. He knows the family and is used as much as a counsellor as a doctor. In the project's effort to find and give proper treatment to all people with diabetes, the healers could be seen as an obstacle; believing more in plants and ancient rites than in western medicine. The CAMBoD project team sees them as an opportunity. After receiving diabetes training they will be able to identify people with diabetes and if necessary refer them to the nearest hospital. This is already happening in Garoua.

Ulrik met Dr. Fai Fominyen, president of the traditional healers in Cameroon, and found their talk inspiring. "Meeting him gave me the opportunity to try and understand how healers work and think, and now I see the powers they possess over people. It is important to understand the environment in which we work. I was happy that Dr. Fai was so eager to cooperate, together we can identify people with diabetes who otherwise may not reach a hospital in time."

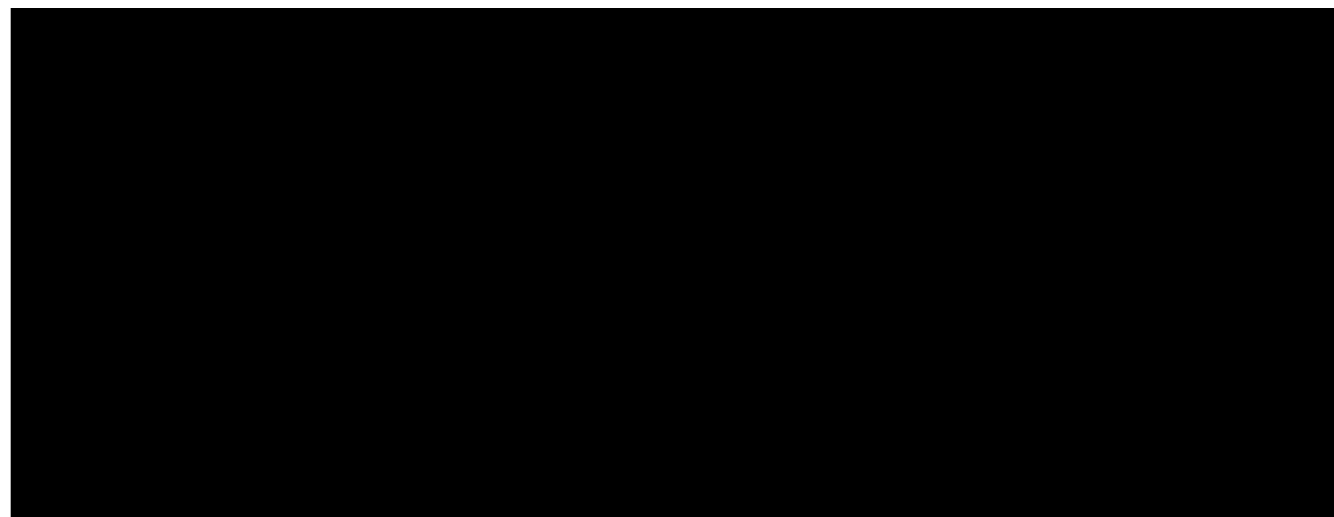
"I think my first monitoring visit went very well. What the project has achieved with the clinics is impressive," Ulrik concludes after a week in Cameroon. He is very satisfied to be able to work with development and diabetes; he himself has lived with type-1 diabetes for 19 years. Listening to patients in both Yaounde and Garoua made a deep impression on Ulrik, giving him a first hand insight in the living conditions of people with diabetes in West Africa. "I think they opened up to me because of the simple fact that I have diabetes," he concluded.



In the developing countries the young population is developing obesity and type 2 diabetes. This is due to changes in lifestyles resulting in increasing consumption of readily available and cheap, high fat, sugar processed food and not least falling levels of physical activity



People with diabetes are two to four times more likely to develop cardiovascular disease than people without diabetes



It is estimated that 13.6 million people suffer from diabetes in Africa. This number is expected to almost double in the next 25 years, to approximately 27 million people

ACTIVITIES 2005

GLOBAL

- 1 DIABETES ACTION NOW** WDF02-028
A joint WHO/IDF programme for raising awareness of diabetes globally through increased advocacy and action.
- 2 WDF/IDF FELLOWSHIPS** WDF02-042
Training of young healthcare professionals to disseminate knowledge and expertise in the area of diabetes.
- 3 DIABETES ATLAS 3RD EDITION** WDF04-084
An IDF initiative for raising awareness of the diabetes burden at national, regional and global levels.

AFRICA

- 4 SUB-SAHARAN AFRICA** WDF02-006
Diabetes education
An IDF Africa initiative for development of a standard diabetes education manual to improve the quality of diabetes care in Sub-Saharan Africa.
- 5 SUB-SAHARAN AFRICA** WDF02-007
Clinical practice guidelines
An IDF Africa programme for development of standardised clinical guidelines for diabetes care in the Sub-Saharan region.
- 6 CAMEROON** WDF02-016 and WDF05-017
Cameroon burden of diabetes I and II
Establishment of a national diabetes programme in Cameroon by creating a surveillance system, educating healthcare professionals and carrying out awareness activities
- 7 TANZANIA** WDF02-031
Diabetes clinics
Increased access to diabetes care by establishment of diabetes clinics within the public health system nationwide
- 8 TANZANIA** WDF05-102
Diabetes care
Strengthening the quality of diabetes care from primary to tertiary level and raising public awareness of diabetes in Mwanza Region in Northern Tanzania
- 9 TANZANIA/INDIA** WDF03-056
Diabetes foot care – Step by Step
Raising awareness of diabetic foot problems by training healthcare professionals and diabetes patients in prevention and management of foot complications
- 10 TANZANIA** WDF03-058
Diabetes and hypertension
Studying diabetes and hypertension in urban Dar es Salaam, improving care and raising community awareness of risk factors and symptoms.
- 11 SUDAN** WDF03-061
Diabetes care
Establishment of a network of diabetes care facilities and training of healthcare professionals.

- 12 AFRICA** WDF04-065
Postgraduate diabetes training EASD, ADA and IDF offer advanced training courses on clinical management of diabetes directed at healthcare professionals in Africa.
- 13 MOZAMBIQUE** WDF04-066
Improving diabetes care
Seeks to strengthen the Mozambican diabetes association and to assist the Ministry of Health in the development of a national diabetes programme.
- 14 MALI** WDF04-074
Nutrition and diabetes
Enabling people with diabetes in Bamako to manage diabetes through nutrition in a context of limited access to medication.
- 15 MALI** WDF05-114
Training of health personnel
Increasing knowledge of diabetes among health personnel by developing and conducting a training programme.
- 16 KENYA** WDF04-085
Diabetes education programme
Improving prevention, management and control of diabetes by training healthcare providers, educating people with diabetes, and raising public awareness of diabetes
- 17 SEYCHELLES** WDF04-090
Access to care
Improving the quality of and access to diabetes care by training of healthcare professionals and establishing four regional diabetes clinics
- 18 GHANA** WDF05-104
Diabetes centers
Raising awareness of diabetes and improving diabetes care by establishing 20 diabetes care centers in the Volta region of Ghana
- 19 UGANDA** WDF05-124
Carrying out a baseline survey with the aim to assess the prevalence of diabetes risk factors, the knowledge of diabetes in the population and the capacity of the health system to cope with diabetes
- 20 DEMOCRATIC REPUBLIC OF CONGO** WDF05-128
Diabetes care
Ensuring continued insulin availability for emergency use and supporting programs to improve diabetes care in a network of diabetes clinics in Kinshasa

MIDDLE EAST

- 21 WEST BANK** WDF02-010
Diabetes prevention and nutrition
DanChurchAid and Augusta Victoria Hospital have joined forces to improve diabetes prevention and care in Jerusalem and the West Bank.



ASIA

- 22 INDIA** WDF02039
Diabetes eye care
Mass screening camps for diabetes and retinopathy, and provision of relevant eye care aiming at reducing blindness due to diabetes in Tamil Nadu.
- 23 INDIA** WDF04-079
Diabetes eye care II
Screening camps for diabetes and retinopathy, and provision of relevant eye care aiming at reducing blindness due to diabetes in Tamil Nadu and Pondicherry.
- 24 INDIA** WDF03-052
National diabetes programme
Building capacity for implementation of the national diabetes programme and improving diabetes care through training programmes for healthcare professionals.
- 25 INDIA** WDF03-055
Urban diabetes prevention and control
Lifestyle modification campaign, training of healthcare providers and establishment of clinics and self-help groups in Raipur city.
- 26 INDIA** WDF03-057
Rural and semi-urban diabetes prevention and control
Diabetes prevention and control programme in rural and semi-urban parts of India where access to good quality healthcare is limited.
- 27 INDIA** WDF04-067
Gestational diabetes
Awareness among women's groups on gestational diabetes, and capacity building in the healthcare system to manage the problem.
- 28 INDIA** WDF04-078
Diabetes awareness camps
Raising public awareness of diabetes through a combination of activities, including 1,250 diabetes screening camps.
- 29 INDIA** WDF04-091
Tele-screening for diabetic retinopathy
Mobile units attending rural areas with the aim of conducting screening camps for diabetes and diabetic retinopathy.

- 30 INDIA** WDF05-110
Diabetic retinopathy treatment
Improved treatment for diabetic retinopathy by creation of a mobile unit, provision of equipment and training of healthcare personnel.
- 31 INDIA** WDF05-115
Preventing diabetes in rural areas
Increasing public awareness of diabetes and taking diabetes prevention and health care to rural areas.
- 32 INDIA** WDF05-120
Diabetes prevention
Effort to prevent diabetes among children and adolescents by educating in healthy lifestyle and dietary practices.
- 33 CHINA** WDF02-036
National diabetes programme
Developing capacity for implementing the national diabetes programme by training 50,000 doctors and producing a treatment guideline.

- 34 CHINA** WDF05-108
Diabetes prevention programme
Raising public awareness and improving diabetes care by implementing a diabetes prevention programme targeting the population of Qingdao.
- 35 VIETNAM** WDF02-013
National diabetes project
A cooperation between the Ministry of Health and WHO to improve the quality of diabetes care and prevention through a community approach.
- 36 NEPAL** WDF03-059
Diabetes education & prevention
Creating public awareness, educating people with diabetes and training of healthcare providers in diabetes prevention, detection and management
- 37 BHUTAN** WDF03-060
Diabetes healthcare services
Ministry of Health in collaboration with DANIDA working to establish diabetes clinics, train healthcare personnel and create public awareness of diabetes

ASIA

- 38 PACIFIC ISLANDS** WDF04-068
Reducing diabetes complications
Development and implementation of a suitable model for increasing the capacity of diabetes care in Samoa and Vanuatu
- 39 AFGHANISTAN** WDF04-08
National diabetes programme
Upgrading of diabetes departments in four main hospitals in Kabul through the development of clinical guidelines and training of personnel
- 40 UZBEKISTAN** WDF04-095
Regional diabetes information centers
Establishment of 14 diabetes information centers in order to provide information and resources for people with diabetes and healthcare providers nationwide
- 41 SRI LANKA** WDF04-089
Preventing diabetes and NCDs
Implementation of a nationwide lifestyle modification campaign and improvement of diabetes care for the poor
- 42 CAMBODIA** WDF05-119
Diabetes care
Raising awareness of diabetes among lay population and improving the quality of and access to treatment for people with diabetes
- 43 BANGLADESH** WDF05-131
Nutrition and diabetes
Translation of existing knowledge on nutrition and diabetes into culturally sensitive educational tools and strategies aimed at promoting better nutrition among the population
- 44 INDONESIA** WDF05-136
Diabetes education and prevention
Activities to raise public awareness of diabetes and training of healthcare providers in order to improve quality of diabetes care

LATIN AMERICA

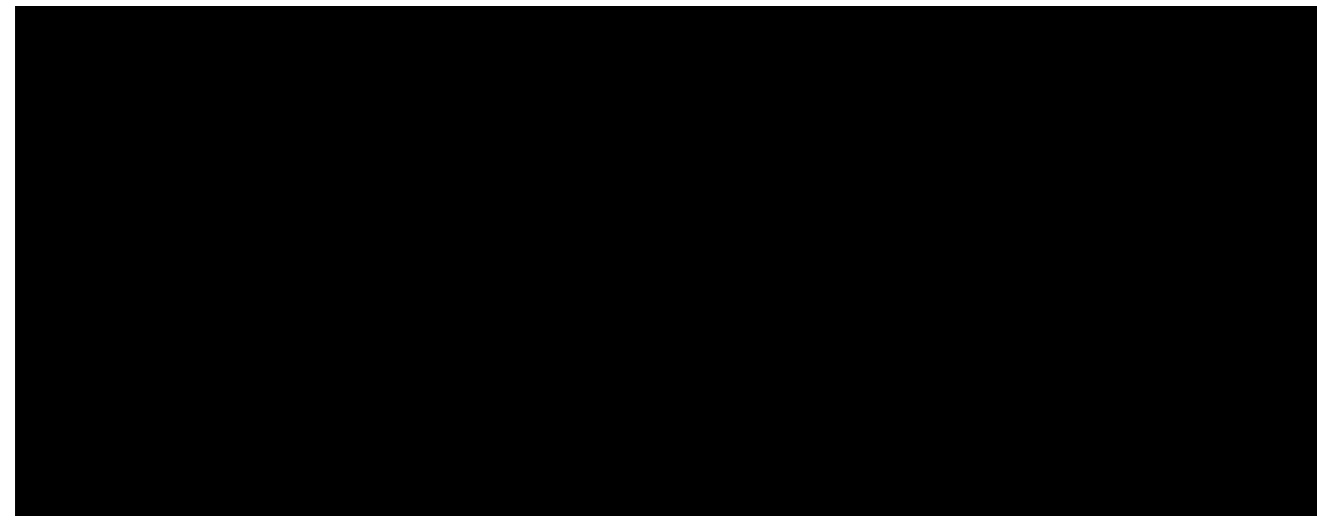
- 45 THE CARIBBEAN** WDF03-045
Nutrition protocol
Completion of a 'Caribbean Protocol for Nutritional Management of Diabetes, Obesity and Hypertension' and training of healthcare providers in its use
- 46 THE CARIBBEAN** WDF05-126
Diabetes education programme
Conducting a training course for healthcare professionals to provide them with skills to train other healthcare providers in diabetes education and to integrate diabetes education in their current practice
- 47 SURINAM** WDF04-076
Training of diabetes nurses
Reducing diabetes related complications by training diabetes nurses in effective management and control of diabetes
- 48 BOLIVIA** WDF05-105
Basic diabetes educators
Improving diabetes health services by training basic diabetes educators throughout the country

- 49 BRAZIL** WDF05-132
Diabetes treatment and resource mobilization
Improving diabetes care delivery by training health professionals in diabetes treatment and mobilization of available resources
- 50 SOUTH AMERICA** WDF05-135
BOLIVIA, PERU, ECUADOR, COLUMBIA AND VENEZUELA
Diabetes foot care
Prevention and early diagnosis of diabetic foot problems by training healthcare personnel and developing a clinical protocol for management and prevention

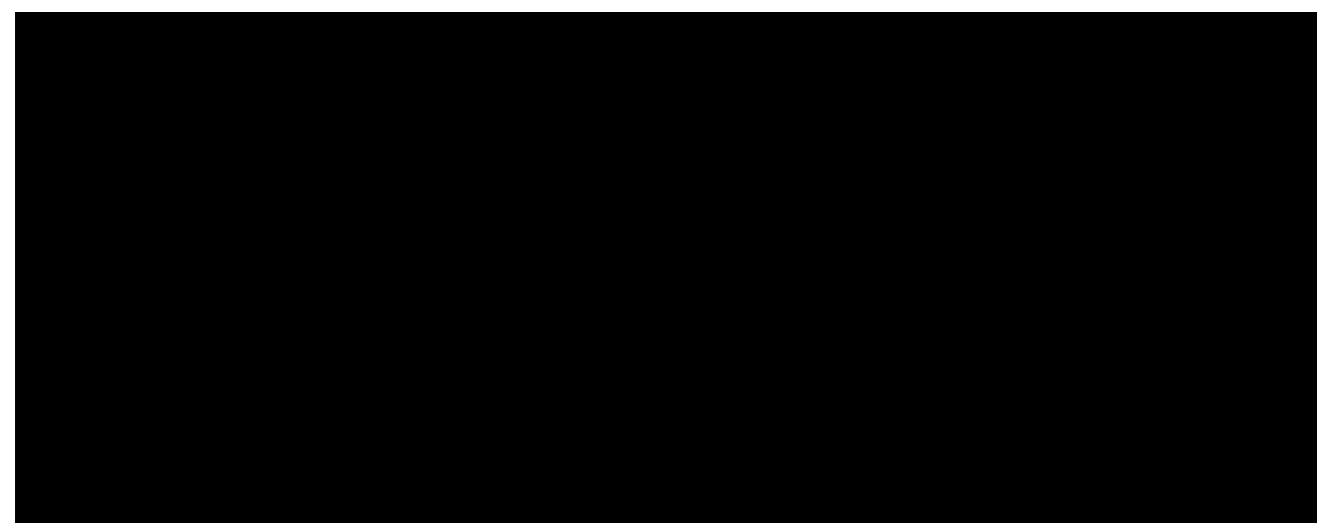
FUNDRAISING ACTIVITIES

- A EL SALVADOR** – diabetes hospital
- B TANZANIA** – diabetes clinics
- C INDIA** – foot care clinics
- D BANGLADESH** – insulin for children with type 1 diabetes
- E VIETNAM** – diabetes care
- F MONGOLIA** – diabetes clinic
- G PHILIPPINES** – diabetes clinic
- H AFGHANISTAN** – Diabetes centres

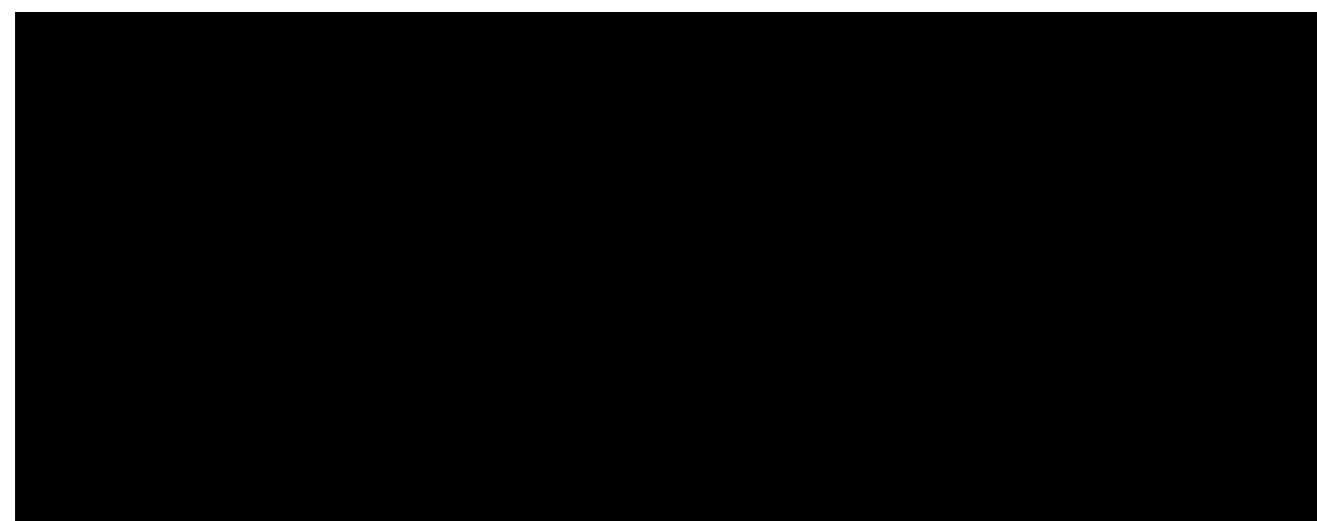
For full details on the projects funded by the World Diabetes Foundation, please visit www.worlddiabetesfoundation.org



Obesity is a major risk factor for type 2 diabetes. Reducing obesity through healthy nutrition and exercise helps to prevent diabetes



In Africa an overweight woman is seen as a social success, with good health and a husband who takes good care of her. Loss of weight on the other hand is considered to be a sign of disease or financial difficulty



The current explosion of diabetes in the developing world is closely linked to other serious non-communicable conditions such as obesity, high blood pressure, and high cholesterol

The Obesity Centre was established by funds raised by Novo Nordisk France and donated to WDF to help set up an obesity clinic in Cameroon. Yaounde Central Hospital is providing the staff and location, and health care personnel is educated by funds from the Cameroon Burden of Diabetes (CAMBoD) Project.

CAMEROON BURDENED BY OBESITY

“Bonjour Kevin.” Dr. Eugene Sobngwi shakes the hand of 15-year-old Kevin, as he shows up for his nine o'clock appointment at the Obesity Centre at Yaoundé Central Hospital. Kevin is, as you would imagine any other high school teenager; a quiet boy dressed in jeans and a red and blue striped football shirt. But then again he is different. He weighs around 90 kilos - last year it was 100 - and with a blood pressure above normal for his age (150/94 mm of Hg). Kevin also suffers from type-2 diabetes, a condition that until a few years ago was most common among older people.

“We are now seeing a growing epidemic of childhood obesity,” Eugene explains. “Kevin is a typical example of what is going on in our environment. This has consequences; we now see life style related metabolic diseases and diabetes in young people.”

Unlike the typical image of malnourished children one is used to seeing from programmes on Africa, the reality is that in many developing countries, and countries in economic transition such as Cameroon, people as young as Kevin are developing obesity and type 2 diabetes. This is

due to a change in lifestyle resulting in increasing consumption of readily available and cheap, high fat, high sugar, calorie dense, processed food and not least falling levels of physical activity due to mechanisation and the widespread availability of motorised transport.

Kevin's life with diabetes started in January 2004 when he was admitted with hyperglycaemia (high blood sugar). His body could no longer process the glucose he needed for his muscles and brain because of the lack of insulin he had slowly developed. That January day, he was close to going into coma.

“I imagined that when the doctors would have fixed this hyperglycaemia, I would be cured. I was surprised when, days later, I was told that I had diabetes,” Kevin says; “my mother was shocked - she already knew about diabetes.”

At the obesity clinic Kevin was put on insulin and given a meal plan to regain the control his body had lost. Today he is on tablets, and most importantly he is taking care of his life, eating healthier and doing exercise. Eugene has great expectations. He relies on Kevin to spread the message of diabetes risk factors to his family and friends. He, like the rest of the staff at the obesity clinic, know that prevention through awareness is the most effective way of avoiding people even getting as far as developing type-2 diabetes, and eventually risk suffering from many dreadful complications.

In the reception room a dozen patients are waiting to see a doctor, have a health check and get general advice, just like Kevin.

A female educator takes the opportunity to inform about diabetes. “To be struck by illness that is caused by obesity is bad. That is why we have opened this centre to prevent and treat obesity, so that you can avoid diseases like diabetes and hypertension. Let me tell you about diabetes. Diabetes can lead to blindness, diabetes can ruin your heart, diabetes can ruin your kidneys and

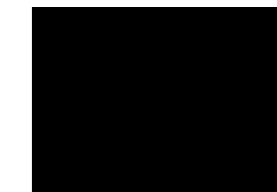
diabetes can lead to amputation of the feet, so diabetes can lead to many bad things. It is a very serious disease.”

The disease is spreading throughout Cameroon, reaching the highest numbers in the biggest cities. A field study supported under the CAMBoD project supported by WDF and performed by Professor Jean Claude Mbanya and his team in four urban areas of Cameroon, shows that 5.7% of the adult population living in urban areas has diabetes, and that up to 25 % are obese, the number is slightly less in communities in small towns, at around 20%.

“If nothing is done to cut down the risk factors, like obesity, it means that more and more people will develop diabetes in Cameroon, and it will become a national catastrophe,” Prof. Mbanya says. “If you have a healthcare system in Cameroon, which is not well developed in terms of free access to help for everyone and free medication, it means that people will not be able to secure treatment early enough. It means that they will develop complications, and they will have kidney, eye, heart and foot complications, and these are the things that are extremely expensive,” explains Prof Mbanya to highlight the need to run preventive, early diagnosis and treatment programmes.

In Dr. Eugene's consultation, Kevin is proof of the results already achieved. After Kevin's diabetes was discovered his whole family was invited to the clinic, where the doctors realised that Kevin's two brothers and one sister all suffered from obesity. They were checked for diabetes and, like Kevin, given advice on healthy food and exercise. Today they have all lost weight and no one has developed diabetes.

Kevin will continue his part of the deal when he leaves the clinic to go to school. “In my class at least four are obese, and all of my classmates are at risk if you look at what they eat and what they do. I tell them that they have to take care of their life. It's their responsibility.”



Kevin is 15 years old and developing obesity and type 2 diabetes

The World Diabetes Foundation is working as a facilitator and a funding agency helping the fundraiser to channel the funds towards a needed activity in a country in the developing world.

DIABETES CONTROL THROUGH HEALTHY EATING

Educating Malians about diabetes and its link to nutrition is the most efficient and inexpensive way to manage the condition in Mali. Today, diabetes constitutes the country's second greatest cause of hospitalisation and represents 95% of the national internal medicine usage. With funding from WDF, the Santé Diabète Mali (SDM) NGO has initiated the preliminary work to develop a comprehensive nutrition and diabetes programme covering the whole country.

More than 100,000 Malians suffer from diabetes. Doctors estimate that only 30% of these patients can afford the required medical treatment and this leads to a disproportionately high prevalence of complications such as high blood pressure and serious retinopathy. Therefore, together with the WDF and three hospitals in the city of Bamako, the SDM has decided to sensitise the Malian population about diabetes and explain the link between food habits and diabetes, starting in the two major communes of Bamako.

The overall aim of the work is to develop and implement a national diabetes nutrition programme. In the longer term, thousands of people with diabetes as well as those at risk of developing diabetes will benefit from this project as healthy eating will enable them to prevent and control diabetes, minimise complications, and reduce medical costs.

"We knew that we had to take local food habits and socio-economic issues into account in order to succeed. Therefore, our first task was to carry out a thorough nutritional evaluation study. The study, consisting of anthropological, socio-economic investigation as well as dietary recall has provided us with the required in-depth knowledge" explains Mr. Stéphane Besançon, director of programmes of the Santé Diabète Mali NGO.

"The study has given us a clear understanding of the dishes prepared and consumed in Bamako and the food habits of people with diabetes. This knowledge allows us to set up diets which take into account both the best foods and the socio-economic profile of every patient. This is essential

in order to convince Malians to follow and stick to a specific healthy diet," Mr. Besançon adds.

Cultural barriers for prevention

Typically, Malians consume three meals; breakfast, lunch and dinner. The traditional way of eating is with the hand in a common dish. This raises many difficulties for those with diabetes in the follow-up to the diet, as it prevents control of the quantity of food ingested. Further, the common dish rarely corresponds to what is advised for people with diabetes. On the other hand withdrawing from the common dish creates social problems for these people, as he/she is gradually isolated from the group. In addition to this, financial independence is required, as he/she needs to be able to pay for the condiments of the special diet.

Also, the public attitude to obesity is a great challenge to the project. An overweight woman is seen as a social success, with good health and a husband who takes good care of her. Loss of weight on the other hand is considered to be a sign of disease or financial difficulty. This makes it almost impossible for doctors to prescribe a diet as the necessary treatment. Consequently, the education of doctors and nurses is another essential task for the project's success. Nutritional training for health care professionals will be initiated in 2006.

"The WDF-funded nutrition study is the basis of this five-phase project. We have made a good start to the project and already achieved good results. We expect the whole project to be completed in 2007," Mr. Besançon concludes.

Educating Malians about diabetes and its link to nutrition is the most efficient and inexpensive way to manage the condition in Mali

On average a diabetes patient in Bamako spends US\$ 21.24 on diabetes care. This corresponds to more than half of an average family's monthly income

FIGHTING DIABETES IN MOZAMBIQUE

When the International Insulin Foundation (IIF), with the support of the WDF, conducted a Rapid Assessment Protocol for Insulin Access (RAPIA) in Mozambique in 2003, the lack of insulin availability was not the only problem identified. Therefore, the RAPIA recommendations and findings have now been embedded into a national plan for the management of non-communicable diseases widely supported by the local Ministry of Health.

One key RAPIA finding in Mozambique was the lack of an overall policy framework to guide and direct the improvement of diabetes care in Mozambique. The Mozambican diabetes association AMODIA, which was formed in 1995, had single-handedly been focusing on the management of diabetes and its reach was limited to the province of Maputo.

“The RAPIA led to AMODIA and the Ministry of Health joining forces. Together we prioritised the recommendations made by IIF and it became evident that we faced a greater problem than we were geared to meet. But with the formation of a non-communicable disease group in the Mozambican Ministry of Health a number of initiatives have been taken to improve diabetes care – one being the development of a national diabetes programme,” says Dr. Carla Silva Matos, Head of the non-communicable disease (NCD) group at the Mozambican Ministry of Health.

“Another initiative has been the strengthening of the diabetes association. Following the example of the diabetes association in neighbouring Tanzania, AMODIA has been revitalised and will expand its services to cover all provinces of Mozambique and thereby act as an advocate and counsellor for Mozambicans with diabetes,” Dr. Carla Silva Matos continues. The RAPIA conducted in Mozambique will serve as reference for future RAPIAs to be conducted in other African countries.

Access to knowledge

The nationwide diabetes association in Tanzania plays a central role in strengthening state-run diabetes health services. Chairman of the IDF

African Region, Dr. Kaushik Ramaiya has agreed to share the lessons learned with AMODIA.

“Close involvement of the national diabetes association is essential for a successful diabetes programme. It will encourage local ownership and ensure sustainability in the process of improving diabetes care. That is why we, at the Tanzanian diabetes association have offered to transfer the knowledge and skills we have gained from establishing a nationwide diabetes association in Tanzania to our colleagues in Mozambique,” says Dr. Kaushik Ramaiya.

Following the Tanzanian example, AMODIA will take the lead in developing training materials both for health workers and patients, and work with the National Health Service in improving diagnostic and management facilities for people with diabetes. In doing so, AMODIA will be using the clinical practice guidelines developed by IDF Africa along with a diabetes education manual funded by WDF specifically for the African continent. AMODIA will also facilitate the training and education of health care personnel in Mozambique.

“We are still seeing some initial difficulties mostly around staffing, but the important thing is that the programme is running and that non-communicable diseases have become part of the national health policy for Mozambique. At government level priority is given to the impending burden of diabetes and other non-communicable diseases and people have started not only to express their concern in this area but to act against it. In this perspective the WDF funded regional education manual is a very important tool,” Dr. Silva Matos concludes.

IIF estimates that the WDF funded, Regional IDF education manual will be made available to all African countries and institutions shortly and will be useful when conducting their own local training programmes. The manual ensures that staff is up to date and improves skills in providing patients with information about the disease and in training them for self-management and care.

IIF estimates that 900 Mozambicans have been diagnosed with Type 1 diabetes to date. However, the actual number is probably much higher. Estimated life expectancy for Type 1 diabetes patients in rural Mozambique is under 3 years and combined with the fact that trained health care personnel is scarce in the country it is likely that many patients, and especially children, die from the disease before they are diagnosed. In this perspective the WDF funded Regional IDF Africa education manual is a very important tool,” Dr. Silva Matos concludes.

Since the project was initiated in 2003, the aim has been to reduce blindness resulting from diabetes.

Seventy-five "Diabetic screening and diabetic retinopathy screening" camps have been held. The mobile unit has conducted 20 outreach camps.

KEEPING AN EYE ON RETINOPATHY

My grandchildren think I am spectacular because I am able to do so much exercise." 54 year old Mr. Arumugam is in fact more energetic than most of us. At four o'clock in the morning he gets out of bed to take a morning walk close to the nearby mountain. After an hour of brisk walking he returns for his breakfast and a wash, with plenty of time to take the 7 o'clock bus to work. "I walk to keep healthy, and I eat healthily too. I need to, because of my diabetes."

"This Sunday morning he walked more than usual; he had to go to the nearby temple. The building used for worship opens its doors one Sunday each month to volunteers from the Aravind Eye Hospital in Madurai for them to conduct a free diabetes

screening. "I go every month, to have my blood glucose tested. If I hadn't followed the advice given to me by the doctors since I was diagnosed with diabetes, I think my life would have been in danger."

Today the Aravind team has brought its mobile screening unit, which enables them to take pictures of the retina, and via satellite connection send the pictures to a specialist at the Madurai hospital for assessment.

A screening for visible results

One of the doctors assessing is Dr. Kim, who is Head of the Vitreoretinal Department at the Madurai Aravind Eye Hospital; "I can sit in my office and hear and see a patient from a remote area or village 300 km away. And I can see the same thing as the technician is seeing and then give my diagnosis." A consultant at the screening site returns with the results, and the patient is advised on the spot. "If the patient requires specialist care the technician urges the patient to see the doctor at the hospital," Dr. Kim explains. "This element is extremely helpful in screening our patients. Of all the patients we have screened, 63% were diagnosed for the first time to have some form of retinopathy."

The mobile screening unit

Mr. Arumugam has taken a seat in the eye screening bus, in front of the ophthalmologic camera. Within a few minutes the technician has taken enough pictures of his retinas, and sends them via satellite to Aravind Eye Hospital. Three other people are waiting to go through the same procedure, so Mr. Arumugam leaves the bus to wait outside for the results.

The mobile screening unit is the latest initiative used in the effort to screen the diabetes population for eye complications in rural areas in Tamil Nadu. In 2003 the project aimed to hold 36 screening camps in three years, but this goal has been far exceeded. By 2005 the project has already held 75 camps screening for cataracts and diabetic retinopathy.

Dr. Kim proudly explains: "Most of the doctors and nurses work for the project on a voluntary basis for the benefit of their local community. In the southern part of Tamil Nadu nobody else provides this type of healthcare within the field of diabetes, which is

why this project is unique in its form, capacity and involvement from the local community."

Since the inauguration of the mobile unit in May 2005 the team has conducted 20 outreach camps. These screening camps are supported by WDF. "At the moment we plan to have two camps a month, where we only focus on diabetic retinopathy."

After waiting 20 minutes Mr. Arumugam is invited to take a seat at the counsellor's desk. She has a print-out of the doctor's assessment, and explains to him that there is no need for special treatment although the pictures have revealed that he has MNPDR, Mild Non-Proliferative Diabetic Retinopathy. With a slip in his hand telling him to come for a check up in four months at the eye Hospital in Madurai, Mr. Arumugam leaves the screening site. He tells us: "I was advised to control my blood sugar level even better. She told me that it was better for me if I could prevent retinopathy than having to require laser treatment later; this is good advice and I will try to follow it."

Applying education for patients

Patients who are diagnosed as having a problem are invited to the Aravind eye clinic to undergo treatment and further follow-up only if necessary. Health staff at the camps are also responsible for education. They give talks to increase knowledge and create awareness and focus attention on the prevention of diabetes and its complications.

"In some of the camps we have screened hundreds of patients and 89 percent of the patients have been diagnosed with retinopathy. Surprisingly nine percent of them were found to have diabetes for the first time." Dr. Kim explains; "For patients with diabetic retinopathy we offer laser treatment at first. However, in worst cases we have to perform sight-saving surgery. Treatment is provided free of charge to all patients who come to us from these camps."

Mr. Arumugam is 54 years old and diagnosed with diabetes

Diabetes screening has been included in Aravind's regular eye camps. In all, 228 such camps have been held, bringing the total population screened for diabetes to 63,837 of which 14,428 have been identified as having diabetes. A total of 1,598 cases of diabetic retinopathy have been found and 1,018 people have undergone laser photocoagulation treatment at the tertiary centre of the Aravind Eye Hospital.

A similar project has been funded in Aravind Eye Hospital Pondicherry covering Pondicherry and two other districts of Tamil Nadu. The success of the project has inspired several projects, three other similar eye care projects from other institutions in Karnataka and Andhra Pradesh have also recently been funded.

SUSTAINABILITY THROUGH CULTURAL ADAPTATION

The WDF supports diabetes projects throughout the developing world. While the manifestation of the disease remains the same whether in Asia or in Africa, the approach to the projects is somewhat different. Local socio-cultural traditions must decide how each project is executed. Relying on local engagement, this approach results in culturally adapted, innovative solutions that secure sustainability and great results.

WDF Code of Conduct nr. 4

We shall endeavour to respect the culture, social structures and values of the communities and countries in which we work.

In some developing countries traditional healers are preferred to doctors who practice modern medicine. In many countries obesity, which is a risk for type 2 diabetes, is seen as a sign of wealth, health, power and fertility. And in most parts of the developing world, insufficient infrastructure often makes visits to hospitals a complex and costly journey for individuals seeking care.

Such cultural and socio-economic conditions present great challenges when it comes to organizing and funding diabetes prevention and care programs. "The WDF mostly supports and funds projects that are locally embedded and carried out with the support and commitment of

local project partners, governments and NGOs. We think this is a very crucial criteria when we assess projects for funding. Without this commitment the WDF would not be able to succeed with its numerous diabetes care activities around the world" says Ida Nicolaisen, an acclaimed expert on development aid and member of the board of directors of WDF.

The need for cultural adaptation

The WDF does not wish to alter the well-established health care systems in the developing world but tries to support and make them more functional. The foundation believes that cultural adaptation and local partnerships

based on existing social structures is the key to sustainability and success.

"In Cameroon for example, the CAMBoD project we fund, entered into an unorthodox but fruitful partnership with traditional healers who received training in identifying diabetes symptoms. Enjoying great respect and trust in the local communities, they now work as local champions to endorse the national diabetes care programme, referring patients with diabetes to modern hospitals in the cities where professional treatment is available," explains Jamal R. Butt, Communication Manager at the WDF.

In the Indian village of Inam Agaram (and many other such villages) where illiteracy is widespread, the WDF-funded project has taken a unique approach in reaching the target group. Self-Help Groups have been established consisting of volunteers from the local community who reach the local population through live street plays and mobile public announcements through loudspeaker or megaphone-fitted auto rickshaws.

The street plays attract both adults and youngsters and describe the symptoms of diabetes, its risk factors, where to go for treatment and advice. "These methods of communication may be unorthodox for the developed world but are a great way of getting the message across and raising awareness within a largely illiterate or poorly educated rural population," says Jamal R. Butt who recently witnessed a street play during his trip to Southern India.

In India, yet another WDF-funded project has taken a unique approach in order to overcome major local problems of accessibility to care. The Aravind Eye Hospital has introduced a satellite-connected, high-tech mobile screening unit for diabetic retinopathy screening allowing help to come to the patients instead of the other way around. "So when patients cannot travel to the clinic this WDF project takes the mobile clinic to the patients enabling people from several village clusters to

be screened for retinopathy," says Jamal Butt. At least three other projects in India are replicating this approach.

"We need to use the concept of mobile units and telemedicine more often to break the barrier of access to care. The revolution in the field of telecommunication should make this happen. Often we think of these technologies as very elitist but when one witnesses how they can be used to provide basic health care services one starts believing in them. In India things are starting to change where telemedicine is being increasingly used, and so however incongruous it may appear, there is place for traditional healers, street plays, rickshaw mounted megaphones as well as satellite connected mobile vans to reach information and care to the millions of disadvantaged people," elaborates WDF Vice Chairman Dr Anil Kapur.

Awareness through the media

Local partnerships are essential to the work of the WDF in raising awareness about diabetes. In Cameroon for example the Minister of Health called a national press conference in 2005 to support the WDF-funded CAMBoD project.

"Through national TV and radio we reached an estimated audience of 10 million people who we could inform about the disease, risk factors, how to prevent it and where to seek help if experiencing diabetes symptoms. Had the local government not been so committed to the project, we would never have been able to obtain such nationwide media coverage and reach so many people at the same time," says Jamal Butt.

"I believe that increased awareness through timely information is crucial in the battle against diabetes and that is why I called the press conference. Based on available data, there is reason to believe that the number of diabetes patients on the African continent is growing rapidly. Hence, we need to react now in order to prevent an epidemic and therefore the Ministry of Health in Cameroon warmly supports the WDF activities," says Cameroon Minister of Health Urbain Olinguena Awano.

The street plays attract both adults and youngsters and describe the symptoms of diabetes, its risk factors, where to go for treatment and advice

Public announcements through drums and loudspeakers are used to create awareness about diabetes in the Indian village of Inam Agaram

The WDF funded project in Cameroon has entered into an unorthodox but fruitful partnership with traditional healers who received training in identifying diabetes symptoms.

SCREENING FOR GESTATIONAL DIABETES – SAVING CHILDREN IN INDIA

One morning in late September, a local maternity clinic on the outskirts of Chennai is more crowded than usual. Inside, mothers lie with their newborn babies, breastfeeding or just resting after a recent delivery. Tiny knitted caps and thin blankets protect the babies from the draft of the whirring fans on the ceiling.

As of July 2005, 3,414 pregnant women have been screened of whom 472 with gestational diabetes are now undergoing treatment

For the crowd waiting outside, there is no respite from the sultry heat of this extended Indian summer morning in Chennai. Hundreds of pregnant women have gathered to join a diabetes screening camp performed by Dr. V. Seshiah's Diabetes Care and Research Institute. They sit or stand, waiting for their turn to have their blood sugar level measured.

Some women are here for the first time, encouraged by posters or public announcements to take a free blood test. Others already have GDM and are here to have a monthly check up, to see if the prescribed diet of healthy food and exercise, which is sufficient treatment in 95% of cases, is effective enough to prevent their high blood sugar levels from harming the babies growing in their wombs.

The waiting time is spent well; instructors from the local government hospital tell the waiting crowd the facts about diabetes. It is a fact that up to 15 % of pregnant women screened under the WDF supported project "Gestational Diabetes in India" have been diagnosed with Gestational Diabetes Mellitus (GDM). It's also a fact that gestational diabetes can lead to early abortions or stillbirths, malformations, large babies with the risk of injuries during delivery, and in the longer perspective a higher risk of developing diabetes both for the mother and the child when he/she grows to adulthood.

In a queue of women dressed in saris that only barely disguise that all of them are only a few months away from giving birth, Flory is waiting. She is carrying her second child, but is waiting for her first blood test. She is a visitor to Chennai. Eight months pregnant she has travelled from her village to spend the last part of her pregnancy in her mother's house, a custom still practiced in large parts of India. It is common to stay in the mother's house during and after birth, but Flory may have to change her plans. Her blood test shows a very elevated blood sugar level – she definitely has diabetes!

The devastating consequences

In the shadow the young Gopal family has found a place to rest. Their two month old boy is jumping on mummy's lap, while his father holds his tiny hands. The boy is out of the ordinary, not only to his parents, but also in a medical perspective. Several of his fingers and toes are joined together, his left foot has six toes of which three are joined, and he has a 'malformed nasal bridge'. Malformations that might have developed because his mother suffered from untreated gestational diabetes during her pregnancy.

Her doctor tested her blood sugar when she was five months pregnant. "It was high, but the doctor said it was normal to have high blood sugar. It was only when we came for a screening arranged by Dr. Seshiah's Institute that they

discovered my diabetes, at that time I was seven months pregnant."

After birth the parents were shocked when they saw the malformations. Further tests disclosed a hole in the heart. "The doctors have been very nice and told us that our child will become normal. In a few years our boy can go through operations that will fix the fingers and toes, and the heart will repair itself." Although comforted and no longer worried for the health of their boy, the family still suffers. "Our family has been very understanding, they know he will be well in the end, but our neighbours comment on our son and his deformities. I have stopped taking him out of the house. It isn't pleasant when people always ask about him."

Lucky Flory

The next morning Flory shows up at Dr. Seshiah's Diabetes Institute, where Dr. Madhuri guides her through this morning's tests. Two blood tests are needed, to get an accurate diagnosis; one fasting test and one two hours after drinking a glucose solution. Her weight and blood pressure is registered. The results only confirm yesterday's worries. Flory has diabetes and needs to take insulin right away. "I was a bit worried, when the doctor mentioned the syringes, I am used to doctors using needles, but I guess I need to learn to inject myself."

Whether Flory suffers from GDM or type-2 diabetes can only be proved when she has given birth. GDM disappears after delivery, while type-2 diabetes is chronic. "She was lucky," Dr. Madhuri says, "Although we discovered her late, we can still help her. She is now on insulin, and along with her obstetrician we will plan her delivery a bit early." Tired of the weight and discomfort of being pregnant and dizzy with untreated diabetes, Flory can't wait to take an auto rickshaw back to her mother's house. "Yesterday I was worried because of the results of my first test, but after talking to the doctor today I am comforted. I need to take my insulin and follow a meal plan, and I will be all right".

Preliminary results indicate prevalence of gestational diabetes as high as 15.4% in urban areas and 11.9% in rural areas

The prevalence survey also indicates that 95% of women with gestational diabetes may be controlled with a dietary plan and only 5% require insulin treatment

The Diabetes In Pregnancy - Awareness and Prevention (DIPAP) project India, is responsible for creating general public awareness about diabetes in general and gestational diabetes in particular. The other task of this project is to perform screening for GDM in health posts in Chennai (urban) and in Thiruvallur (rural) areas. Imparting knowledge on clinical aspects, treatment and prevention/control measures about GDM to government health staffs is also one of the aims of the project.

FIGHTING OBESITY AND DIABETES IN THE WEST BANK

Until now fighting diabetes in Palestine has relied solely on medical treatment. Therefore, in order to bring prevention into focus, the WDF has implemented a diabetes prevention and nutrition programme together with DanChurchAid and the Augusta Victoria Hospital in Jerusalem. The programme involves nutrition counselling for obese patients and their relatives and introduces diabetes prevention at selected schools.

Today more than 600 Palestinians with diabetes have received treatment at the Augusta Victoria Hospital. Six hundred patients with diabetes and their relatives have been trained in changing dietary habits, 600 obese patients have received nutrition counselling and more than 150 teachers and 1200 students have been trained in healthy behaviour that may prevent them from acquiring diabetes.

More than 30 per cent of the Palestinian population is currently overweight. As obesity is a major risk factor for diabetes, the lack of information about the beneficial effects of physical activity and proper nutrition is becoming a serious problem. Until now only limited attention has been given to promoting preventive behaviour and nutrition counselling as part of the treatment protocol for diabetes patients, and in public health education in the West Bank. Therefore the WDF, together with the relief agency DanChurchAid and the Augusta Victoria Hospital in Jerusalem, has initiated a programme to address this very issue.

"We have established a referral centre at the Augusta Victoria Hospital. The diabetes programme at the centre addresses diabetes holistically, considering both the clinical, para-

clinical and social factors that influence the diagnosis as well as the quality of care. Also the behavioural patterns that increase the risk of either acquiring diabetes or worsening an already existing diabetic condition are considered by this approach. Our programme follows a three-pronged strategy involving treatment, prevention and capacity building; addressing people with diabetes, high risk groups and the general public," says DanChurchAid Project Manager Uffe Gjerding.

At the hospital, experienced diabetes doctors ensure quality care for diabetes patients as well as training for primary care physicians and nurses in The United Nations' Relief and Works Agency for Palestinian Refugees (UNRWA) and the government system. Parallel to this is the

prevention programme conducting nutrition counselling of obese patients and their relatives.

"Palestine has experienced significant urbanisation in recent years and this has widely contributed to the prevalence of risk factors for diabetes. The transit from a rural to an urban lifestyle seems to be associated with a higher consumption of fat and energy at the household level and people tend to be less active. Also, in some communities it is considered a sign of wealth to be overweight. There is no fast solution to the problem and a diabetes programme in this area therefore has to involve prevention," says Uffe Gjerding.

A healthy day at school

Part of the prevention programme is education at selected schools in Jerusalem. A special education team from the Augusta Victoria Hospital offers courses for pupils and the training of teachers in obesity and its relation to diabetes. A part of the team's strategy is also to include students' families in the projects.

"Once a year we have a 'Healthy Day' at the schools where the students prepare a healthy meal

together with their family. This way we activate the families and ensure they learn how to prepare healthy meals themselves. The activity is carried out by the 'Health Committee' of each school which consists of students supported by the trained teachers and our team. The Health Committee arranges activities focusing on a healthy life style and gives lectures on health topics to the other students," says Ahmad Abu Al Halaweh, Diabetes Project manager at the Augusta Victoria Hospital in Jerusalem.

"We feel that this is the best way to change traditional eating habits. The children eat at the parental home, so in order to grab the problem by the root we need to involve the families," Ahmad Abu Al Halaweh continues.

Looking at the overall programme, Uffe Gjerding is proud to say: "The centre at the Augusta Victoria Hospital has experienced great success. We have reached all of our objectives thanks to the WDF funding and the Palestinian Authorities are beginning to show an increasing interest in our work. Our hope is that the Augusta Victoria Hospital will become a model for general diabetes care in Palestine."

Photo: Miikkkel Østergaard

SAVING FEET ACROSS THE ANDEAN REGION

Of all the complications associated with diabetes, the diabetic foot presents the most alarming figures. With more than 120 million inhabitants faced with an increasing prevalence of diabetes, the Andean Region in South America has engaged in an impressive multinational and multi-organisational project to decrease the rate of lower-extremity complications in people with diabetes.

The programme for prevention and early diagnosis of the diabetic foot is the first to gather the national health authorities, the national diabetes associations and the related scientific societies of the five Andean countries: Peru, Bolivia, Ecuador, Venezuela and Colombia. Initiated by the IDF member associations from the region, the project also involves the Pan American Health Organization (PAHO), the Andean Health Organization (ORAS-CONHU) and the Centre for Disease Control and Prevention (CDC), drawing from their joint expertise in managing educational programmes for disease prevention.

“The wide support from the local health authorities enables us to benefit from the experience accumulated at both the national and regional level in rolling out programmes like this.

The programme is an initiative directed primarily at people with diabetes but also at health professionals at the primary level of health care. With the regional approach we can reach a large proportion of people with diabetes and offer them proper foot care,” says Martha Mora de Garcia Belaunde, president of the Juvenile Diabetics Association of Peru and responsible for the programme.

Prevention through early intervention

The prevalence of diabetes in the Andean region ranges from 4.3% in Colombia to 7.2% in Bolivia in the adult population and the problem is growing in all five Andean countries. Across the region the occurrence of secondary complications caused by diabetes is exploding

as a result of no or poor access to care – the diabetic foot being the most severe problem. By implementing the programme for prevention and early diagnosis of the diabetic foot the objective is to significantly decrease the rate of lower-extremity complications and amputations in people with diabetes.

“The education and training of health care personnel to address the problem of secondary complications is essential to reverse the alarming trend we are seeing. Prevention strategies have shown that 40-85% of all the problems associated with the diabetic foot can be avoided. In Brazil the Diabetic Foot Saving Project resulted in a 90% reduction in major amputations and a recent diabetes awareness project in Mexico demonstrated that the training of health workers in diabetic foot care increased the proportion of patients who receive a foot examination from 47% to 96%,” explains Martha Mora de Garcia Belaunde.

By the end of the project in 2006, 10 primary care centres in each country will have benefited from the programme with a total of 200 trained health personnel per country, implementation of a treatment protocol for the diabetic foot, training materials for self-management and self-examination and implementation of a referral and counter-referral system. The project will target both public and private health facilities as they are closely linked and will work together in providing diabetes treatment. The aim is to reach 3000 patients per country.

“The Andean countries represent some of the highest poverty rates in the world and health is low on the list of national priorities. The involvement of the national ministries of health and the diabetes associations are therefore very important not only in ensuring project sustainability but also in placing diabetes on the public agenda,” says Martha Mora de Garcia Belaunde.

ANNUAL ACCOUNTS 2005

Profit and loss account, 1 January - 31 December 2005		Balance sheet as at 31 december 2005	
	DKK 1,000		DKK 1,000
Donations from Novo Nordisk and others	56,677	Assets	
Administration expenses	-2,958	Locked-up capital	260
Project expenses	-4,594	Fixed assets	260
Other expenses	-521	Receivable donations from Novo Nordisk A/S	13,957
Profit before financials and tax	48,604	Interest receivable	3,447
Financial income	8,742	Other receivables	1
Financial costs	-1,681	Total receivables	17,406
Profit before tax	55,666	Securities	87,017
Net profit for the year	55,666	Cash	45,656
		Current assets	150,079
Proposed appropriation of net profit for the year		Total assets	150,339
Distributions from the World Diabetes Foundation	46,246	Equity and liabilities	
At disposal for future distributions	9,419	Locked-up capital	260
	55,666	Retained earnings for the year	69,665
		Total equity	69,925
		Payable donations	79,647
		Other provisions	767
		Other short-term payables	0
		Total short-term liabilities	80,414
		Total equity and liabilities	150,339

The above is a non-audited abstract of the Annual Accounts 2005

Administrative expenses amounted to 4.5% of the Foundation's total income in 2005

For full details of the annual accounts, please refer to our website:
www.worlddiabetesfoundation.org

WORLD **DIABETES** FOUNDATION

Annual Review 2005

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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