

DIABETES IN SUB-SAHARAN AFRICA



The life expectancy of a child with Type 1 diabetes is as low as 7 months in rural Mozambique (1) caused mainly by limited access to insulin and its cost and a lack of infrastructure within the healthcare system. In parallel an emerging epidemic of Type 2 diabetes is developing in this part of the world.

In the developed world Type 1 diabetes (also referred to as Insulin Dependent Diabetes Mellitus) in children is no longer a death sentence. Makame (2) describes how at present 98% of Type 1 patients in the USA are alive 6 years after diagnosis but only 1% of children currently survive 6 years in sub-Saharan Africa.

Banting and Best isolated insulin in 1921 and a child, Leonard Thompson, became the first patient to receive treatment in 1922. In 2000, it is estimated that, worldwide, treatment with insulin prolonged the life of 5.1 million people with Type 1 diabetes (3).



***A young girl admitted in diabetic ketoacidosis in Tanzania
– Photo Professor J.S. Yudkin***

Introduction

Type 1 diabetes is a life-long condition, affecting children, young people, adults and the elderly world-wide. The disease is recognised by a loss of control over the use of the body's glucose and other fuels and is due to the destruction of insulin producing cells in the pancreas (pancreatic islet beta cells). Without insulin people with Type 1 diabetes cannot utilise body fuels and many die within months if not weeks.

The International Insulin Foundation
The International Insulin Foundation (IIF) (UK Registered Charity No. 1099032) was established by an international group of leading academics and physicians in the field of diabetes with the aim of prolonging the life and promoting the health of people with diabetes in developing countries by improving the supply of insulin and diabetes care.

In order to achieve these objectives, a clear analysis of the constraints to insulin access and diabetes care is needed. Increasing the supply of insulin through donations or other means is generous, but may offer only temporary relief.

The roots of the problems of insulin supply and use in care need to be identified and tackled.

To date the IIF has worked in Mali, Mozambique and Zambia in collaboration with the Ministries of Health, National Diabetes Associations and local NGOs in order to assess the health systems of these countries and their capability to treat people with diabetes.

A barrier to survival – The price of insulin
Mozambique and Zambia have measures for patients to receive free or subsidised insulin even though these are not standardised or clear to patients. In Mali no such assistance exists and patients need to bear the total cost of their insulin.

In Mali the Gross Domestic Product (GDP) per capita in real terms in 2000 was US\$ 371.00 per year (4) and the price of a vial of insulin for a patient was US\$ 10.88. This means that a year's supply of insulin would account for approximately 38% of a family's income.

Even at subsidised prices insulin in Mozambique (average price per vial US\$ 1.13) and Zambia

(average price per vial US\$ 2.00) is a financial burden to families in countries where many live on less than US\$ 1.00 per day.

The price of insulin is not only a burden on individual patients, but also on governments. Mozambique spends approximately US\$ 1.50 per person per year on medicines. The government of Mozambique buys 1 vial of insulin at US\$ 4.30 (on average a patient needs 13 vials a year), thus the government needs to prioritise between providing insulin for 1 person for a year, or essential medicines for almost 40 others.



Insulin in a warehouse in Mozambique – Photo D. Beran

Other barriers – The different tools needed for diabetes care

Insulin alone is not enough. Syringes and needles are needed for its delivery. People with diabetes need to monitor their glucose level regularly, either with urine test strips, or in the blood with strips and a glucometer. These tests need to be available and affordable for patients. In Mozambique only 6% of facilities had the necessary tools to carry out a blood glucose analysis (7).

These tests are often unavailable in health centres and patients may need to travel great distances to get tested, adding further to the financial burden. In Mali it was estimated that on average per month a patient in Bamako spent US\$ 21.24 on diabetes care (assuming 1 blood glucose measurement, 8 syringes, 1 vial of insulin, 1 consultation, and travel costs) (5).



A child testing blood glucose with a glucometer in Tanzania – Photo D. Beran

The importance of the Health System

The presence of insulin, syringes and monitoring equipment is vital, but so is a functioning health system with the appropriately trained staff and infrastructure to teach and support patients.

Health systems in sub-Saharan Africa are currently organised for the treatment of episodes of illness and not long-term conditions. Healthcare workers lack familiarity with recognition and treatment of diabetes. In Mali, Mozambique and Zambia there were only 2 specialised diabetes doctors, with another 5-10 healthcare workers having received some training.

Besides clinical training in diabetes, healthcare workers also need to acquire skills in managing and educating patients with the lifelong condition.

In addition to this infrastructure, physical facilities need to be present as do supply networks for insulin and testing equipment.

An emerging epidemic – Type 2 diabetes in sub-Saharan Africa

Access to insulin and testing equipment is a major concern for Type 1 diabetes, but also impacts the treatment of those suffering from Type 2 diabetes. Type 2 diabetes represents 90% of the overall burden of diabetes worldwide with approximately 150 million cases. This is a minimum estimate, as for each diagnosed case there is one undiagnosed case in the developed world and 8 in the developing world (6).

Access to insulin does not have the same urgency for people suffering from Type 2 diabetes, as with Type 1 diabetes, but the tools

for treatment and follow-up as well as the skills needed by healthcare workers are the same.

The global trend to an increase in Type 2 diabetes in African populations is linked to the increase in obesity (7), longevity and other factors such as:

- Increase in development
- Increase in disposable income
- Urbanisation
- Mechanisation
- Globalisation of food markets
- Changes in lifestyles and behaviours (8)



Patients with Type 1 diabetes and their insulin in Zambia – Photo D. Beran

As the prevalence of diabetes continues to rise, the parallel increase in long-term vascular complications of the disease – heart attack and stroke, blindness, kidney failure and gangrene will further strain health care resources (9).

Worldwide, 3.2 million deaths are attributed to diabetes (10) every year compared to 3.1 million (2.8 – 3.5 million) for AIDS (11).

In developed countries most people with diabetes are above the age of retirement, whereas in developing countries those most frequently affected are aged between 35 and 64 (10), therefore impacting people in their most economically productive years.

In most developing countries inadequate resources (financial and human) to address chronic diseases have been major barriers to chronic disease control. Other impediments are the failure to provide key decision makers with current evidence and data on the burden of

chronic diseases; a lack of understanding of the economic factors that influence chronic disease risks; and the current orientation of health systems toward acute care. Chronic disease management is more complex than that for acute problems, as it requires an integrated approach, with patient, family and the community being active participants (12).

Part of the problem is that the International community does not recognise the problem of Non Communicable Diseases (NCD) and diabetes in sub-Saharan Africa as a priority. For example the World Bank has provided over the last 5 years US\$ 4.25 billion in loans to countries for health sector work, about 2.5% which was allocated to NCD prevention and control programmes all of which were in Eastern Europe (12).

Diabetes is not yet considered a major health problem in sub-Saharan Africa, even though it is already a major contributor to ill health and the overall burden placed on the health system. It is amenable to simple preventive measures and can be treated and managed with insulin and medicine, properly trained health workers and a health system able to cope. What is currently lacking is a sense of urgency from local, national and international actors.

What can be done?

In Mali, Mozambique and Zambia the IIF is collaborating with local partners in order to overcome problems in access to and use of insulin and to improve the care of Type 1 diabetes generally. This is being done through specific projects as well as by helping develop newly formulated diabetes policies at the Ministry of Health.

The IIF is currently working on a report that will provide relevant guidance to countries in sub-Saharan Africa how to implement national diabetes programmes.

In parallel the IIF works closely with the World Health Organisation and International Diabetes Federation at an international level to ensure that diabetes care remains on the global health agenda.

The IIF calls for:

- International Donors and Organisations to recognise diabetes as a health problem in developing countries and allocate appropriate resources for this
- National governments in developing countries to adopt policies with regards to diabetes care, including prevention and measures to alleviate the overall financial burden of this condition
- National governments in developed countries to have the foresight to address the problem of diabetes in developing countries before it is too late
- The International Diabetes Federation to continue its support of activities that increase the availability of insulin to those who cannot afford it and be an advocate for people with diabetes worldwide, especially in developing countries
- The private sector to address the issue of cost of insulin, medicines, testing materials and syringes for the world's poorest
- Individuals worldwide to ensure that their government representatives are aware that diabetes is an emerging problem in the developing world

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