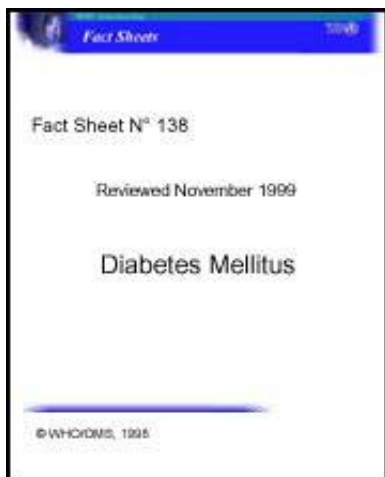
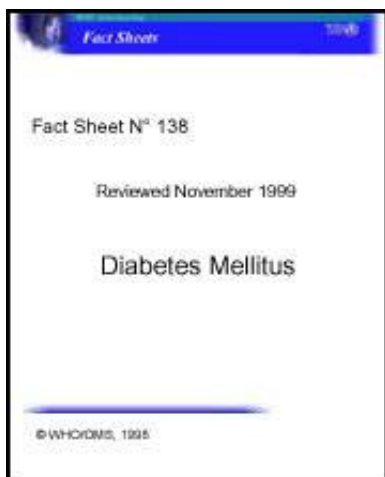


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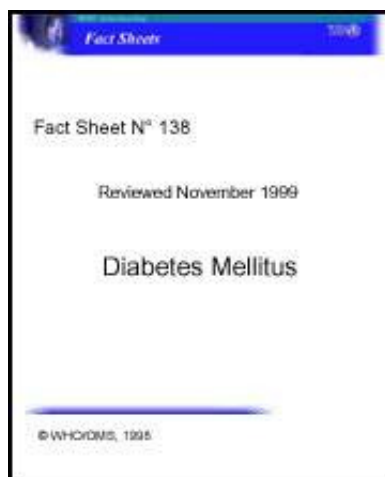
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## Fact sheet No 138: Diabetes Mellitus - Reviewed November 1999 (WHO, 1999, 3 p.)

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### DIABETES MELLITUS

## DIABETES MELLITUS

Recently compiled data show that between 120 and 140 million people suffer from *diabetes mellitus* worldwide, and that this number may well double by the year 2025. Much of this increase will occur in developing countries and will be due to population ageing, unhealthy diets, obesity and a sedentary lifestyle.

By 2025, while most people with diabetes in developed countries will be aged 65 years or more, in developing countries most will be in the 45-64 year age range and affected in their most productive years.

Diabetes mellitus is a chronic disease caused by inherited and/or acquired deficiency in production of insulin by the pancreas, or by ineffectiveness of the insulin produced. Such a deficiency results in increased concentrations of glucose in blood which in turn leads to damage of many of the body's systems, especially

## **the blood vessels and nerves.**

**There are two principal forms of diabetes: Type 1, formerly known as insulin-dependent, and Type 2, formerly named non-insulin dependent. In Type 1 diabetes, the pancreas fails to produce the insulin which is essential for survival. This form develops most frequently in children and adolescents, but is being increasingly noted later in life.**

**Type 2 diabetes is much more common and accounts for about 90-95% of all diabetes cases worldwide. This form of diabetes occurs almost entirely in adults and results from the body's inability to respond properly to the action of insulin produced by the pancreas.**

***Diabetes mellitus* is a hereditary disease. Certain genetic markers are known to increase the risk of developing insulin-dependent diabetes. Such markers have not been described for non-insulin dependent diabetes, though this form is strongly familial.**

**Symptoms: The symptoms of diabetes may be pronounced or subdued. In Type 1 diabetes, the classic symptoms are excessive secretion of urine (polyuria), thirst (polydipsia), weight loss and a feeling of lassitude. These symptoms may be less marked in Type 2 diabetes. In this form, it can also happen that no early symptoms appear and the disease is only diagnosed several years after its onset, when complications are already present.**

**Diagnosis: Diabetes may be diagnosed on the basis of a fasting blood glucose value, or the blood sugar level taken two hours after a 75g challenge of glucose**

**taken orally.**

**Insulin: It was discovered by Frederick Banting and Charles Best in 1921 in Canada. This discovery revolutionized treatment of diabetes and prevention of its complications. It transformed Type 1 diabetes from a fatal to a treatable disease. Oral hypoglycaemic agents, diet and physical exercise are other important components of treatment.**

**People with Type 1 diabetes are usually totally dependent on insulin injections. Such people require daily administration of insulin. For them insulin is a lifesaving medication. The majority of people suffering from diabetes have the non-insulin-dependent form. However, up to 30% of them may use insulin injections some, or all, of the time to control their condition.**

**Insulin is a costly medication and is unavailable or unaffordable in many poor countries, despite being listed by WHO as an essential drug.**

**The price of insulin (without syringes and necessary equipment for monitoring blood glucose levels) varies widely from country to country, ranging from less than US\$ 3 to US\$ 22 a vial. The mean cost of a vial of insulin is lowest in the Middle East (US\$ 2.70) and Southeast Asia (US\$ 2.80) with Africa (US\$ 9.20) and South and Central America (US\$ 12.20) in the middle range. However, in many African countries the cost of a vial of insulin may be the equivalent of a month's salary.**

**Complications: Recent research provides clear evidence of the potential for adequate treatment to delay or even prevent the long term complications of**

**diabetes, which include blindness, kidney failure, heart attacks and even gangrene and amputation of the limbs.**

**DIABETIC RETINOPATHY is the leading cause of blindness and visual disability in adults in economically developed societies. Findings, consistent from study to study, make it possible to suggest that, after 15 years of diabetes, approximately 2% of people become blind while about 10% develop severe visual handicap.**

***Diabetes mellitus* is associated with damage to the small blood vessels in the retina, resulting in loss of vision.**

**Loss of vision due to certain types of glaucoma and cataract may also be more common in people with diabetes than in those without the disease.**

**Loss of vision and blindness in persons with diabetes can be prevented by early detection and treatment of vision-threatening retinopathy: regular eye examinations and timely intervention with laser treatment, or through surgery in cases of advanced retinopathy. A recent study has demonstrated that good metabolic control can also delay the onset and progression of diabetic retinopathy.**

**There is evidence that, even in developed countries, a large proportion of those in need is not receiving such care due to lack of public and professional awareness. In developing countries, in many of which diabetes is now common, such care is inaccessible to the majority of the population.**

**Diabetes is a leading cause of RENAL FAILURE, but its frequency varies between populations and is also related to the severity and duration of the disease. Several measures to slow down the progress of renal damage have been identified. They**

**include control of hyperglycaemia, control of hypertension and restriction of dietary protein. Screening and early detection of diabetic kidney disease are an important means of prevention.**

**HEART DISEASE accounts for 75% of all deaths among people with diabetes in industrialized countries. Risk factors for heart disease in people with diabetes include cigarette smoking, hypertension, hypercholesterolaemia and obesity. Diabetes negates the protection from heart disease which pre-menopausal women, without diabetes, experience. Recognition and management of these conditions may delay or prevent heart disease in people with diabetes.**

**DIABETIC NEUROPATHY is probably the most common complication of diabetes. Studies suggest that 50%, or more, of people with diabetes are affected to some degree. Major risk factors of this condition are the level and duration of hyperglycaemia. Neuropathy can lead to sensory loss and damage to the limbs. It is also a major cause of impotence in diabetic men. This fact is often under-recognized. Foot care is an important means of reducing the impact of diabetic neuropathy.**

**DIABETIC FOOT DISEASE ULCERATION FREQUENTLY LEADING TO AMPUTATION is one of the most costly complications of diabetes, especially in communities with inadequate footwear. It is a result of both vascular and neurological disease processes. Diabetes is the commonest cause of non-traumatic amputation of the lower limb, which may be prevented by regular inspection and good care of the foot.**

**Diabetes in pregnancy may give rise to several adverse outcomes, including**

**congenital malformations, increased birth weight and an elevated risk of prenatal mortality. Strict metabolic control may reduce these risks to the level of those of non-diabetic expectant mothers.**

Diabetes is a serious disease which is becoming increasingly common, especially in developing countries.

However, there are many ways of preventing it and/or of controlling its progress. Early diagnosis and treatment are key factors.

Public and professional awareness of the risk factors for, and symptoms of, diabetes are an important step towards its prevention and control.

**For further information, journalists can contact the Office of Public Relations, WHO, Geneva. Telephone (41 22) 791 2599. Fax (41 22) 791 4858. Email: [inf@who.ch](mailto:inf@who.ch).**

**All WHO Press Releases, Fact Sheets and Features as well as other information on this subject can be obtained on Internet on the WHO home page <http://www.who.ch/>**