



DIABETES

MELLITUS

BY

MIRIAM

TUCKER

IS

*Excellent Report  
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## Introduction

Diabetes Mellitus is a metabolic disorder in which the pancreas stops or decreases the production of insulin, a hormone which metabolizes sugar into energy. Initial symptoms are thirst, hunger, excessive urination, weight loss, and weakness.

Diabetes affects one in every 2500 children from ages 1-20, one in every 1000 people aged 20-40 years, one in every 200 people aged 40-50, ~~and~~ one in every 100 people aged 50-60, and one in every 50 people aged 60 and up.

It is estimated that there are approximately 10 million people in the United States who are affected by diabetes, including those who are known, those who are unknown, and those who will later develop the disease.

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Heredity can be a factor in adult-onset diabetes. If both parents are diabetic, there is an almost 100 per cent chance of all the children eventually becoming diabetic. If one parent, and a close relative of the other parent are diabetic, there is an 85 per cent chance of all the children developing it. Although heredity is not a major factor in juvenile-onset diabetes, many cases have been noted in which two or more children in one family have diabetes. This area is currently under study by researchers.

Many famous people, such as Thomas Edison, have had diabetes. Today actor Dan Rowan, actress Mary Tyler Moore, and the great Philadelphia hockey player, Bobby Clark are just a few examples of how, de-

spite complications, diabetics  
can lead healthy, normal,  
and successful lives.

PART I  
HISTORY  
OF  
DIABETES

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Diabetes has been known since ancient times. The first clinical description of the disease was given by Celsus around the year 10 A.D.

The term "diabetes" was introduced by Aretaeus the Cappadocian, around the second century. It comes from the Greek word meaning "to run through" referring to the large quantities of urine which "~~pass~~<sup>run</sup> through" the body.

In 1679, a scientist called Willis noted the sweet taste of a diabetic patient's urine. Soon after, the adjective "mellitus" was added to the term diabetes, meaning "honeylike". (There is another type of diabetes, called diabetes insipidus, or "water diabetes", which is a totally different disorder except for the large amounts of urine.)

In 1788, a breakthrough was made by Lawley, who pointed to the pancreas as the cause of disturbance in diabetes.

Starting with the year 1850, the dietary restriction treatment in the form of almost total starvation was introduced by many noted scientists such as Bouchardat, Von Noorden, Naunyn, Allen, Joslin (founder of the famous clinic) and others.

In 1869, a young German medical student, Paul Langerhans made a great discovery. He noted that certain cells were clustered together in the pancreas for no apparent purpose, and seemed to work differently from the other pancreatic cells. He did not find the purpose of these clusters of cells, but they were named "islets of Langerhans" after

him. The individual cells were later named "beta" cells, as opposed to the alpha cells, which produce glucagon.

In 1874, Kussmaul described the characteristic over-breathing of diabetic acidosis.

In 1889, another breakthrough occurred. J. von Mering and O. Minkowski showed that the complete removal of the pancreas from dogs resulted in a condition that was identical to diabetes mellitus in humans.

Naunyn was the first investigator to describe the hereditary nature of diabetes and also distinguished the juvenile from adult onset diabetes.

In 1909, de Meyer gave the name "insuline" to the hormone that was believed to be contained in the islets

of Langerhans. The word comes from the Latin "insula" meaning "island."

The biggest breakthrough of all occurred in 1921. A young surgeon, Dr. Frederick H. Banting, and his assistant, Dr. Charles Best, found a way to extract the hormone from the pancreas of a dog. They injected it into a depancreatized dog in coma, and the dog lived. On Jan 11, 1922, Leonard Thompson, a 14-year old diabetic boy became the first diabetic human to be treated with insulin. Dr. Banting himself administered the insulin, by injection.

In 1936, the first long-acting insulin, Protamine zinc (PZI) was developed. In 1938, Hagedorn of Denmark developed the second long-acting insulin ~~insulin~~, NPH (Neutral Protamine Hagedorn)

NPH was also prepared independently by Scott and Fisher of Canada in the same year. In 1952 another long-acting insulin called lente was introduced by Hallas-Moller of Denmark.

In 1955, Franke and Fuchs of Germany introduced the first diabetic pills. These pills are not insulin. They only act to stimulate production of insulin by semi-functioning pancreases. In the United States, Tolbutamide (Orinase) was put on the market by Upjohn in 1956; Phenformin (DBI) by U. S. vitamin in 1957; chlorpropamide (Diabinese) by Pfizer in 1958; Acetohexamide (Dymelor) by Lilly in 1964; and Tolazamide (Tolinase) again by Upjohn in 1965.

In 1960, the process of immunoassay, or measurement

of insulin in the blood, was introduced by Berson and Yalow. This opened up a great opportunity for investigation of insulin levels in various conditions such as obesity, mild diabetes, and other hormone problems.

PART III  
THE HOWS  
AND WHYS  
OF DIABETES

## What causes the Excess Sugar?

In the human body, the basic unit is a cell. All of the organs of the body are made up of millions of cells. The fuel for the cells is glucose, a kind of sugar. The glucose is carried to the cells by the bloodstream. Insulin is the substance which allows glucose to enter the cells. Only the brain, heart, and exercising muscle can use glucose in the absence of insulin.

In the non-diabetic, the level of glucose is closely regulated in the blood and generally measures about 80 mg. After meals, the blood glucose normally rises. The elevated blood sugar after meals causes the pancreas to secrete insulin, which then lowers the blood sugar back to its normal

