

The truth about diabetes



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Diabetes is a killer; in fact, it is among the top ten killers of adults in the United States. “ It can lead to, or contribute to, a number of other serious diseases” (Sizer and Whitney 112). Diabetes means “ syphon” or “ to run through” (Sizer and Whitney 112) therefore denoting the increase in urinary volume excreted by people suffering from this disease. Mellitus means “ sweet”. Diabetes mellitus means increased excretion of sugars being released with the urine, creating a sweet smell at the time of elimination. The patient with this type of disease has a problem with his insulin production or usage. Insulin is a hormone produced in the pituitary gland, that helps to digest the sugars and use them for energy, and must be given through an injection into the arms or legs; if this is not done the gastrointestinal enzymes in a person’s stomach will digest the hormone. A diabetic does not produce adequate insulin or cannot use his own. Diabetes mellitus is not a single disease. This is a heterogeneous syndrome for which several theories of etiology (explanation of the cause of the disease) have been proposed (WebMd Health). Diabetes is a life-threatening disease, but it is not a death sentence. With proper maintenance of insulin, exercise, and diet, diabetes can be controlled. Advances in medicine will create a larger variety of treatment options and help remove the stigma, as well as fears, associated with diabetes.

The signs and symptoms of diabetes are divided into early, secondary, and late signs. Some of the early signs include polyuria (excessive urination) and thirst; another sign can also be a sweet smell from urine. This odor is due to the loss of water through promoting cellular dehydration. Polyuria is the

result of large amounts of glucose, ketone bodies, and protein being excreted by the kidney; an osmotic effect of sugar attracts water and promotes diuresis. The secondary signs include nausea and vomiting, dry mucous membranes with cracked lips, hot flushed skin, abdominal pain and or rigidity, acetone odor of the breath, soft eyeballs because of dehydration, and kidney disease. Other signs include impaired vision or blindness resulting from cataracts and damaged retinas, nerve damage, skin damage, and strokes and heart attacks. The root cause of all of these symptoms is probably the same (Sizer and Whitney 113). Late symptoms include hypotension, oliguria (secretion of a diminished amount of urine in relation to fluids intake) or anuria (the complete suppression of urinary secretion by the kidneys) (American Diabetes Association). Later, decreased circulating fluid volume lessens blood flow to the kidney, thus resulting in renal shutdown with oliguria or anuria. The late are more severe and present more of a problem. Coma and stupor are the final and most extreme symptoms. Electrolyte imbalances, profound shock, and rapidly lowering pH all contribute to the loss of consciousness (Luckmann and Soerensen 1544).

Diabetics can develop a myriad of chronic complications. The health problems relating to diabetes are in the eyes, skin, urinary system, and heart. Glaucoma occurs when pressure builds up in the eye. In most cases this pressure causes drainage of the aqueous humor to slow down to the point that it builds up in the anterior chamber. This pressure pinches the blood vessels that carry blood to the retina and optic nerve, causing less oxygen and nutrients to be delivered to the needed areas in the eye. Vision is gradually lost because the retina and nerve are damaged (American

Diabetes Association). " Treatment is usually medications. People with diabetes are sixty percent more likely to develop cataracts, defined as the clear lens of the eye clouding, and blocking light" (American Diabetes Association). A person may need to wear sunglasses more than usual, and use glare control lenses in his glasses. Retinopathy and glaucoma may also develop in people with diabetes. Retinopathy is the general term used for all of the retinal disorders caused by diabetes. In ketoacidosis a condition called metabolic acidosis arises in untreated diabetes and in the patient whose condition remains uncontrolled by insulin. This is one of the most severe acute complications of diabetes (Luckmann and Sorensen 1567).

Skin changes and infections can occur in a diabetic patient. The different types of skin changes that occur are known as diabetic dermopathy and necrobiosis lipoidica diabetorum, both attributed to microangiopathy (a disease of the small blood vessels), in which a membrane of capillaries thickens (diabetic microangiopathy), or in which clots form in the arterioles and the capillaries. Shin spots are brown spots located on the anterior surfaces of the lower extremities. These are painless and harmless, and initially measure less than one centimeter in diameter. Necrobiosis lipoidica diabetorum is believed to be the result of trauma and consists of lesions that are similar to those that occur in diabetic dermopathy, but is more likely to be associated with ulcerations and necrosis. These lesions are reddish yellow and atrophic. Skin grafts (skin planting or placement of skin from another part of the body onto the damaged skin) are possible solutions to alter the damage caused by this problem. Necrobiosis lipoidica diabetorum, a degenerative disease of the dermal connective tissue characterized

by the development of erythematous papules or nodules in the pretibial area, is present most often in insulin-dependent women, which may later precede the onset of overt diabetes (American Diabetes Association). Infections like these mentioned do occur more in patients with diabetes than in other clients. The mechanisms of the onset of more frequent infections include a defect in the mobilization of inflammatory cells and impairment in the white blood cells. Recurring infections, such as boils and furuncles, in the undiagnosed client often lead the health care provider to suspect diabetes. The loss of sensation or nerve damage may delay the detection of infection. The persistence of glycosuria (sugars in the urine) may encourage bladder infections especially in a neurogenic bladder (a bladder that can not be controlled by the patient) (Brunner). Patients with diabetes are usually more susceptible to some microorganisms and fungi, in part because of the high sugar content in their blood and urine. Two out of three people with diabetes die from heart disease and stroke associated with blood vessel disease (Luckmann and Sorensen 1565-1569). Chronic hyperlipemia is excessive fats in the blood. Vascular degeneration may, in turn, affect the kidneys causing diabetic nephropathy, and the eyes causing diabetic retinopathy and eventually blindness. In addition to this, diabetes can eventually cause nephropathy (Luckmann and Sorensen 1565-1569). A diabetic coma is the result of ketoacidosis. Hyperglycemia is the result of glucose not being transported to the cells because of a lack of insulin. Without available carbohydrates for cellular fuel, the liver begins to convert its glycogen stores back to glucose (glycogenolysis, and then biosynthesis of glucose, called gluconeogenesis); both of these are being produced more than needed. This

unfortunately aggravates the situation by raising the blood sugar to an even higher point (Luckmann and Sorensen 1565).

Not only elderly people acquire diabetes, but also any person of any age and origin can develop diabetes, possibly caused by genetic or environmental factors. Ninety to ninety-five percent of people with diabetes have Type 2 diabetes (International Diabetes Federation). This type usually occurs in people over the age of forty, yet it is now affecting children and adolescents to a greater extent. However, the older one is, the greater the chances are for developing diabetes. Family history and ethnicity are important in predicting the possible onset of diabetes. There has been little research done outside of the United States, but within the United States population of African Americans, Hispanic Americans, Native Americans, Asian Americans, and Pacific Islanders are more likely to develop or have diabetes. Some women develop a temporary type of diabetes called “ gestational diabetes” when they are pregnant. Gestational diabetes develops in two to five percent of all pregnancies, yet usually disappears after the pregnancy is over (WebMd Health). Women that had gestational diabetes or have given birth to a baby of four kilograms (two pounds) or greater are at a greater risk of developing Type 2 diabetes at a later stage in life. Obesity, too, encourages the onset of diabetes, for the fact that over eighty percent of people with Type 2 diabetes are overweight. The more overweight a person is, the greater their risk for developing diabetes. A family history of diabetes increases the risk for the onset of diabetes for closely related family members. Also physical inactivity increases the risk for developing Type 2 diabetes. Type 2 diabetes has been known as adult diabetes because of its

gradual development throughout the life of a person, beginning at middle age. Childhood diabetes is Type 1; it occurs when the pancreas completely stops manufacturing insulin. Both types of diabetes have strong genetic component, tending to run in families. These individuals usually have high blood pressure, abnormal levels of blood fats, and have difficulty with blood clotting (WebMd Health).

The majority of diabetics must learn to give themselves injections of insulin. Insulin may be injected into the stomach or thigh. Another treatment is the insulin pump. This is an alternative to release insulin into a diabetics system. Insulin therapy may be complicated by one or more of six possible complications. These complications include hypoglycemia, tissue hypertrophy or atrophy or both, erratic insulin action, insulin allergy, and insulin resistance. Symptoms of hypoglycemia are altered consciousness, tachycardia, or increased perspiration. Symptoms of hyperglycemia are polyuria or nocturia; the patient may also develop symptoms of ketoacidosis or hyperosmolar coma, tissue hypertrophy or atrophy, and possibly insulin allergies (Luckmann and Sorensen 1565-1575). Sugars in foods that are eaten may cause insulin instability.

The diabetic diet is broken down into two different types; these types are the qualitative diet and the quantitative diet. A qualitative diet is prescribed for persons with mild diabetes. In a qualitative diet, the patient must refrain from adding sugar to his coffee, cereal, and so forth, and avoid foods sweetened with sugar, including, for example, jellies, jams, cakes, and ice cream.

Patients should test their urine regularly and keep periodic health care appointments. The quantitative diet has many other factors besides quantity. It

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is more of a type of exchange diet, with equal values of different foods.

There are two methods for preparing quantitative diets. They are the exchange measure diet and the fixed weighed diet. The exchange-measured diet is based upon the premise that foods that contain the same food value can be exchanged with one another, without altering the patient's basic dietary prescription. Foods can be categorized into six basic groups. These six consist of dairy, vegetable, fruit, bread, meat, and fat exchanges. Each of the foods being exchanged must contain the same amount of protein, fat, and carbohydrates. Thus one cup of skim milk equals one half cup of evaporated milk, having the same amount of calories, carbohydrates, protein, and fat. The fixed weighed diet is a form of quantitative diet. It is more accurate in the amounts that foods are taken in each day. They do not change from day to day. Therefore the quantitative diet is much easier to follow, yet not various or different (Luckmann and Sorensen 1550). " Diabetics must also limit their intake of alcoholic beverages. The sugar that is in most alcoholic drinks is absorbed faster. This will alter the natural insulin production" (Brunner). The diabetic diet plan needs to be individualized to reflect the patient's dietary needs, related to the patient's body weight, or desirable body weight, occupation, age, activities, and type of diabetes (WebMd Health). The best way to control diabetes is a balanced pattern of foods, along with controlling weight, and supporting physical health. Diet alone will not be sufficient.

Physical exercise lowers the blood sugar through the muscles using the sugar as fuel. This process also helps the body use glucose more efficiently. Exercise may help use insulin to work more effectively. Because Type I diabetics require multiple insulin injections daily for survival, leg exercises

help to keep blood flowing through the legs at a faster pace. Walking is a good way to keep the legs fit and to keep blood flowing adequately to the feet. Walking should last for a half to a full hour daily while trying to increase the distance each day. Walking up a flight of stairs using only the balls of the feet is good aerobic exercise. Stretching calves, chair exercises, sitting and standing ten times with arms crossed, leg bends, tiptoe exercises, leg sweeps, and waiving of the feet are good ways to keep the blood flowing through the legs and feet at an adequate pace. Legs and feet are especially important to take care of. Exercise will also aid in a good night's sleep. Light weight lifting can also help lower cholesterol and blood sugars or glucose. In addition, inadequate sleep can lead to development of insulin resistance. This is a prediabetes state in which the cells do not respond to insulin appropriately, so the sugar does not go into the cells from the blood. A new concern being raised regarding diabetes is sleep loss; it may worsen diabetes in people with this disease. In a study of twenty-seven people, short sleepers, having less than six and a half hours per night are about forty percent less insulin sensitive than normal sleepers who slept from seven and a half to eight hours per night (WebMd Health).

Various testing should be done by the patient every day and by a physician yearly. Cholesterol tests should be performed at least once yearly; the target for cholesterol levels is below 200: LDL below 100, HDL below forty-five and tryglycerides should be below 150. The HbA1C test is a finger test that is done every three months. It should be done to show the average blood sugar level, which should be below seven percent as a target. The dilated eye exam is done once a year and the doctor should use eye drops to see into

the back of the eye. Blood pressure is checked at every visit and, the target pressure is 130/80. A foot examination needs to be done at least once a year and checked at least daily by the patient. A PAD evaluation is a blood pressure taken around the ankle to test for arterial disease. This procedure should be started around the age of fifty, or younger if the risks are present. The testing equipment varies by the patient. There is the 1 Touch Ultra System (Axson). " There is also the glucometer (for finger testing), yet with this device it is not advised to use alcohol, for it toughens the skin over a period of time" (Clise). Some elderly patients do not like the new technology, for it is more difficult than the older standard testing supplies. The insulin pump is an alternative to release insulin into a diabetic's system. This device delivers insulin slowly over a period of twenty-four hours. It can also be set to deliver insulin in accordance with meals and hyperglycemia. Insulin pumps are not automatic and are not a cure for diabetes. A higher level of commitment and determination are required in order to work towards achieving appropriate rates and blood glucose levels. In turn, this can reduce the risks for eye disease by seventy-six percent, nerve disease by sixty percent and kidney disease by fifty-six percent (American Diabetes Association). Insulin pumps are predictable, flexible, very accurate, and precise, delivering more stable control than using regular insulin. These pumps deliver the exact amount of insulin programmed in extremely low increments. This pace will allow more freedom in lifestyle and meals. Another possible treatment option that is still under testing is an inhaler for medicine. This is still under research for the correct solution to have in the inhaler. There is also a machine with a needle on the end of a wire that sticks into the side or hip; it is not felt when on the hip. It beeps or vibrates when

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sugar is needed. The medicine goes through the wire and into the side of the body (Axson). People suffering from Type 2 diabetes can require oral hypoglycemic drugs to lower their blood sugar levels, and some may require insulin injections. It is very important to achieve the correct balance of these elements. Too much or too little can impact how a person feels. Persistence of these treatments can reduce the risks for eye disease by seventy-six percent, nerve disease by sixty percent and kidney disease by fifty-six percent (American Diabetes Association). Achieving this balance is a life long commitment for the person suffering from diabetes. The daily routines for a diabetic, include keeping a balanced diet, watching eating times, and keeping an eye out for stress. Too much stress can raise or lower blood sugar levels. Blood sugar checking is a daily routine. If above 100 in the morning, a shot is required; above 100 around noon, a shot is required; above 100 at dinner, a shot is required. Diabetics must check blood sugar at night no matter what (Axson).

Some newly diagnosed diabetics may act differently with personal feelings or fears of the future, but on a personal interview of a young lady of the age of seventeen had the fears of being “ in pain everyday for the shots that I had to give myself” (Axson). “ I would pass it onto my children and thought this was all I was going to have for a midlife crises” (Clise). Mister Clise was told he had two choices, control and live with diabetes or die. He chose to live; this was between the ages of nineteen to thirty two. Miss Axson “ Did not know what to expect and was very scared” (Axson). Miss Axson was diagnosed at the age of fourteen. The past difficulties Miss Axson had with

diabetes were giving too much or too little insulin and controlling eating habits. “ It cut my options down a lot” (Axson).

Diabetes is a killer; in fact it is among the top ten killers of adults in the United States. “ It can lead to or contribute to a number of other serious diseases” (Sizer and Whitney 112). However it is not the end of a normal life. Many diabetics lead productive happy lives. Ensuring good health are daily responsibilities of a diabetic. There is a sweet and nearly constant run of urine through the diabetic patient. Diabetes is not a single disease. It is a combination of several other diseases. Signs and symptoms also vary; they are broken down into early, secondary, and late. Complications also fluctuate depending on the lifestyle and control that the patient has over his insulin. First signs are not good to have and most are, overlooked by the patient. Treatments can range from simple injections to the use of more complicated machinery. Diabetes does not choose a specific race, age, or gender, but any person is at risk. Depending on the diabetic’s lifestyle and habits in everyday life, longevity and normal living will triumph.

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