Type 2 Diabetes: An American Epidemic

Mary Kay Sones, a spokesperson with the Centers for Disease Control and Prevention (CDC) estimates that 1 American in 3 born after the year 2001 will develop type 2 diabetes. If obesity trends continue, Dr. K. M. Narayan, chief of the CDC's diabetes epidemiology section, projects "that in 50 years 28 million Americans will have diabetes, up from 18 million in 2003" (Witt, 2003, p. 28). CDC reports over the past ten years show that diabetes is increasing over 30 percent annually. While the federal government claims that the country continues to make progress in improving American's health, there is much more that can and must be done to reduce the impact of type 2 diabetes. More than 12 million adults in the U.S. currently have impaired fasting glucose levels (pre-diabetes) most of whom will go on to develop type 2 diabetes unless they successfully adopt changes in weight management and physical activity to reduce or prevent obesity. According to the National Center for Health Statistics (NHCS) at the end of 2003 more than 65 percent of adults ages 20 to 74 are overweight or obese, up from 31 percent in 1999 (Health Care Strategic Management, 2003).

Frank, a 42 year old advertising executive had always been athletic, but now he was mostly fatigued, almost passing out in meetings. Between running to endless meetings in the office, yelling at people, and eating pizza on the go, he was also running to the bathroom about 20 times a day. Something was terribly wrong and Frank knew it. His doctor had bad news; his weight was killing him. It would likely be a slow death, as his body was being stricken a little at a time. His eyes, heart, kidneys, limbs, and nerves were all at risk. Frank had put on 125 pounds over the last 10 years. He was now carrying 350 pounds on a 6 foot frame. Frank had type 2 diabetes. After being shocked

with the diagnosis of diabetes, Frank was determined to control it, and change his diet and lifestyle. If he is successful, he will be one of the lucky few (Fischman, 2002).

Hillary spent a carefree day swimming and playing at her grandparents over a holiday. By that evening she was in serious pain whenever she went to the bathroom. Her mother, thinking that it was little more than an infection, took her to the doctor the following day. Imagine her mother's surprise when the doctor admitted Hillary into the hospital with something far more serious than a common infection. The 220 pound 10 year old was diagnosed with type 2 diabetes (Gorman, Park, Bjerklie, & Farley, 2003).

Diabetes is a disorder of the very engine of life, in that it causes serious problems at the molecular level, where there is a failure to metabolize glucose (sugar molecules) which are carried by the blood to fuel every part of the body. There is no back up for this system. Deprived of energy, muscles and nerve cells slow their function. The glucose begins to accumulate in the blood, where it can reach concentrations two to four times the normal amount, and sometimes even higher. The excess is excreted by the kidneys which require large amounts of water to dilute the glucose (Gergerding, 2004). As blood sugar levels rise, the body's organs become poisoned, damaged, and eventually stop functioning (Fischman, 2002).

Type 2 diabetes is when the body either doesn't produce enough insulin or the cells cannot use the insulin that is being naturally produced by the body. Insulin is a hormone produced by the pancreas, which a body needs to transport sugar into cells so the sugar can be broken down to create energy. Type 2 diabetes develops when the body's cells are unable to use insulin, a condition known as insulin resistance, or the body doesn't produce enough insulin, resulting in too much sugar remaining in the bloodstream. The

cells become starved for energy and, over time, high blood sugar levels will damage organs and systems within the body, leading to very serious secondary diseases (http://diabetes.org/diabetes, 2004).

A disease at one time primarily seen in older adults, type 2 diabetes now has no age boundaries or gender discriminations. "Just 20 years ago it was rare for anyone under the age of 20 or even 25 to have type 2 diabetes. Now doctors see cases like this everyday" states Julie Rose, Associate Director of the American Diabetes Association, Utah Chapter (Albertsen, 2004). This epidemic increase can't be explained by genetic predisposition to diabetes as once it was. Scores of studies show that the driving factor is the universally significant increase in obesity (http://www.cdc.gov/diabetes/pubs/factsheet.htm, 2003). "I believe the facts are clear on this [subject] in that obesity and sedentary life styles are the major contributing factors of the rapid increases in type 2 diabetes" states Ms. Rose (Albertsen, 2004). Body fat is actively involved in the increased risks associated with diabetes. Fat produces resistin, which is a hormone that makes it difficult for insulin to transport glucose into cells for the necessary energy delivery the body needs. The more fat a body has, the more resistin is in the body. This is a dangerous cycle of destruction, causing the body to exhaust itself as a result of the poor transfer of glucose (energy), and the decreased circulation (oxygen), which eventually damages several major organs and systems (http://www.cdc.gov/diabetes/pubs/factsheet.htm, 2003).

Lifestyle diseases are diseases that appear to increase in frequency as countries become industrialized and people live longer. They are also considered preventable diseases, as lifestyle behavior modification can prevent a large number of people from getting these types of diseases. Examples of lifestyle diseases include: alcoholism,

atherosclerosis, chronic obstructive pulmonary disease, heart disease, and stroke (http://encyclopedia.thefreedirection.com/lifestyle, 2004). Type 2 diabetes is now being called America's newest and most serious lifestyle disease and it's at epidemic levels. This lifestyle disease is very complicated and not easily treated or controlled (http://www.cdc.gov/diabetes, 2004).

Unlike most other chronic diseases, diabetes is an epidemic that causes secondary issues that are also serious life threatening diseases. Secondary complications due to or related to diabetes are as troubling as diabetes itself. They include: eye disease and blindness, kidney disease and dialysis, amputation, cardiovascular disease, flu and pneumonia related deaths, and pregnancy complications. "Among U.S. adults, diabetes is the leading cause of blindness and kidney failure. It can quadruple the risk of heart disease and stroke, and lies behind 90,000 plus amputations a year (Fischman, 2002, p. 58).

According to the CDC, diabetes is the fifth leading cause of death among women and sixth among men. Those numbers increase significantly when secondary complications due to diabetes are factored into the reasons for American deaths. Diabetes is known to be underreported as a cause of death. Studies have found that about 35 to 40 percent of decedents with diabetes don't have diabetes listed anywhere on the death certificate and only 10 percent to 15 percent have it listed as the underlying cause of death. The actual number of deaths due to or related to diabetes may be closer to two and a half million (http://www.cdc.gov/diabetes, 2004).

Diabetes is an expensive disease to treat and is getting more costly with each passing year. A recent study conducted by the American Diabetes Association shows that the

cost of treating people with diabetes is growing disproportionately to increases in other health care costs (http://www.diabetes.org/diabetes, 2004).

Medical costs attributable to diabetes are now in excess of $135 billion in the United States. Costs to individuals and their families include medical care, hospitalization, drugs, insulin, and testing supplies. Diabetics may also have to bear other personal costs, such as increased payments for health care coverage, life insurance and automobile insurance. Hospitalization is the single greatest cost associated with diabetes care, which alone accounts for approximately 65 billion of the above 135 billion. The cost of medical care for a person with diabetes is approximately $12,571 per year, compared with $2,660 for a person without diabetes (http://www.who.int/mediacentre/factsheet , 2004).

Indirect costs include factors such as days of work lost and permanent disability. These are in excess of $38 billion in the U.S. On going sickness, absence, disability, premature retirement or premature deaths cause loss of productivity. There is no definitive study showing what the actual indirect costs are, but estimates have been made that show loss of productivity alone may be as great or greater than the direct cost for health care (http://www.who.int/mediacentre/factsheet ,2004).

Knowing and reacting to personal characteristics is the best way to understand individual risk. Having two or more of the following indicators increases a person's risk factor for developing type 2 diabetes. It is recommended that anyone with two or more of the following factors should see a doctor and review their risk factors and have a blood test:

- People over the age of 40
- People who are overweight (25 lbs. or more)

- People with a family history of diabetes
- People from certain ethnic groups which are at higher risk: African Americans, Hispanics, Native Americans, Asian Americans
- People who get little or no daily exercise (30 minutes or more is recommended)
- People with low amounts of HDL (the good cholesterol) or with high amounts of triglycerides in their blood
- Women who gave birth to a baby weighing over 9 lbs at birth

(http://www.diabetes.org/for-media/2004-press-releases/diabetes-phd.jsp)

There are some well established tests to determine whether or not a person has diabetes, and whether or not they are at risk for diabetes. A fasting blood glucose test is available in any doctor's office, and covered by all insurance plans. The more definitive test is the hemoglobin A1c (HbA1c). While the fasting blood glucose test measures the amount of sugar in the blood at any given time, the HbA1c measures the average blood sugar levels over the past three months. High HbA1c is a marker (indicator) for blindness, kidney disease, heart disease, and nerve damage in people with diabetes. A positive fasting blood glucose test should be followed with another test on a different day to confirm the clinical diagnosis (http://www.my.webmd.com, 2004).

The treatment of type 2 diabetes requires a lot of self-management. Once a person has been diagnosed with diabetes, the health care team will offer initial training and education on how to manage the disease and prevent complications. People with diabetes should be encouraged to join a diabetic support group and call or visit the American Diabetes Association. Involvement with both of these has proved to aid, support and further educate diabetics and family members, thus increasing their comfort levels with the need for self-management, and the confidence to do so effectively.

Treatments vary by person and the level of the disease. Borderline diabetes can usually be controlled with diet and exercise. If and when the disease becomes more

involved, oral medications are used to control it. For cases not manageable by oral medications there is insulin by injection or pump. By monitoring blood sugar levels throughout the day by pricking a finger or forearm to get a drop of blood it can be determined how much medication/insulin is needed. Too little may result in the diabetic becoming tired, sleepy, and even slipping into a coma. Too much and the glucose builds up in the blood, which begins to act like a poison that will cause serious secondary diseases and problems (http://www.mywebmd.com, 2004). "Careful daily monitoring of blood glucose levels is the single most important method for self management. Many diabetics must perform this test multiple times throughout the day. Regulating insulin dosage and calorie intake depends on the accurate reading of these tests. Again, the key is self-management," states Julie Rose (Albertsen, 2004).

There is new technology available on the market for diabetics that have already experienced one or more serious secondary complications. It is called pulse insulin therapy (PIT). Research studies show this technology slows down, stops and even may reverse some of these complications by awakening the liver to store and release glucose as designed allowing insulin to transport glucose into the body's cells over an extended number of days, much like in a person without diabetes (Clark, 2004).

The good news is there are affective and reasonable measures that can be taken to prevent or at the very least delay the onset of type 2 diabetes. The bad news is that there is no cure and none on the horizon. The fact of the matter is that those with diabetes have a clear pathway for successful disease management, and all they need to do is follow it carefully. Self-management is critical to the successful care of diabetes and the associated complications (Alder & Kalb, 2002).

Screening and early detection is fundamental in preventing and managing diabetes. Lifestyle modifications can prevent the onset of type 2 diabetes, or slow down the onset. Once diagnosed, the best approach is careful daily monitoring and strict adherence to the doctor's recommendations. The recurring theme by all health care experts and diabetes specialists calls for eating a healthy diet, and getting regular exercise, known as tight control (http://www.my.webmd.com, 2004).

Type 2 diabetes is at an epidemic rate in the United States with over 18 million diabetics. The costs for dealing with this widespread disease are in excess of $130 billion dollars. The subsequent complications of type 2 diabetes are serious life threatening diseases in and of themselves. Type 2 diabetes has been shown to be directly tied to a similar widespread increase in obesity. In spite of widespread availability of information supporting preventative benefits of controlling weight and getting more exercise, the American population continues to become more obese year after year. There is an all out campaign sponsored by public health associations, the American Diabetes Association, the American Heart Association, insurance companies, managed health care organizations, and employers to effectively get the message out and across to the public. The message is: eat healthy, avoid fats, be aware of your daily calories, and get regular exercise. In other words, some type of lifestyle modification would prevent the onset of most type 2 diabetes. The additional good news is that if you control the onset of type 2 diabetes, you also control the secondary complications associated with diabetes. Even through there is an urgency about getting the message out to the public about diabetes and its terrible complications, it is still a hopeful time. "Realistically it is a hopeful time. There are more people than ever before that are changing their lifestyles through healthier

eating and increased exercise. Doctors, hospitals, and senior centers are all putting out this message. Public education and awareness for these lifestyle behavior modifications is at an all time high" (Albertsen, 2004).

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