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Diabetes

A Failed Approach

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In our May/June 1999 issue of The Newsletter, Trace Elements and Glucose Disorders, it was written that the incidence of diabetes was expected to double in ten years. (Watts, 1999) Now, thirteen years later, the most recent report by the CDC states that the rate of diabetes has almost doubled. To be more precise, the rates have been found to be ninety percent higher since 1997. Almost twenty-six million people, that is children and adults in the U.S. now have diabetes. Approximately one million eight hundred thousand new cases are diagnosed each year, and it was the seventh leading cause of death in the U.S. in 2006.

Diabetes Treatment is a Failure

Obviously the above statistics show that the approach to the treatment of diabetes is greatly flawed and can be construed as a failure. Looking back, diabetes has been recognized for hundreds of years and actually became known as a clinical entity in 1812. Since then, considerable advances have been made in recognizing the underlying mechanisms contributing to the condition as well as in diagnosis, the monitoring of, as well as addressing its long-term complications. Currently, diabetes is classified into two major categories, type 1 and type 2. Type 1 is related to a lack of insulin production and type 2 is related to excess insulin. Regrettably, little progress has been made in the ability to curb type 2 conditions. (Polonsky, 2012). Fradkin, et al. stated that diabetes prevention is not widely practiced in the U.S. and that "the disease's staggering human and financial costs continue to grow." (Fradkin, 2012) As an example of what we are facing, recently a large federal study funded by The National Institutes of Health (NIH) was prematurely stopped two years ahead of schedule because the program was not found to be effective. The study, which was an intensive intervention in type 2 diabetes

included over five-thousand individuals with type 2 diabetes, which were divided into two groups and followed over an eleven year period. The first group received intensive diet and exercise intervention while the second group did not receive any intervention. In designing this study it was expected that the intensive intervention group would have fewer heart attacks, strokes and cardiovascular deaths. However, it was found that there were no differences in the development of these conditions in either group. Further, the ACCORD study (Action to Control Cardiovascular Risk in Diabetes), while reporting that strict aggressive glycemic control in patients with type 2 diabetes reduced the risks of nonfatal heart attacks, it unfortunately found that there was an increase in death rates overall. (NEJM, 2011)

In our view, it appears that much of the problem with the failure for preventing type 2 diabetes is mainstream medicine's focus largely on the end-points of this disease, rather than focusing on causation and prevention. In fact, current goals for diabetes treatment is to lower high blood glucose levels, maintain glycemic control, weight loss, monitoring and treatment of high blood pressure and blood lipids. The long-term goals are for the prevention of, or treatment of problems that arise as a result of complications from diabetes. A critical issue that should strongly be considered, is that "a one size fits all" public health policy approach for a population does little to impact the condition on an individual basis.

Obesity does not cause Diabetes

A common theme that one often hears is that being overweight causes type 2 diabetes. However, this is not correct. There is a great percentage of people who are

overweight and yet do not have diabetes. In fact, a diabetic condition is what causes a person to often become overweight and even obese. This is due to the fact that in most cases individuals who have type 2 diabetes also have high levels of circulating insulin, or hyperinsulinism. Insulin is an anabolic hormone that inhibits the breakdown of fats (lipolysis) and promotes fat deposition (lipogenesis) causing significant weight gain in many patients with type 2 diabetes. It should also be noted that insulin therapy also contributes to weight gain.

Weight Loss does not Cure Diabetes

We do know that weight loss can help greatly in controlling diabetes, which is important. This mechanism is based upon reducing body mass allowing a greater influence of insulin on the remaining cells. However, weight loss alone does not correct the underlying mechanism involving the loss of insulin cellular receptors. Therefore, it is inevitable that the condition would still exist and will eventually manifest clinically in the future, unless the underlying issue is addressed.

There are Different Causes of Diabetes

Probably the most common issue associated with the development of type 2 diabetes is the loss of insulin cellular receptors. This can be a result of diet, such as high sugar and refined carbohydrate intake. As blood glucose rises a loss of the mineral chromium occurs. Chromium is a component in the insulin cellular receptors. A high insulin level also causes an increase in the loss of chromium. As insulin resistance continues, insulin output steadily increases and remains high in most individuals who develop type 2 diabetes. The consequence of this is several fold. Insulin increases weight gain due to its anabolic action. Insulin also has a metabolic suppressing effect due to the antagonistic action on thyroid hormone and leads to vascular and cardiovascular issues due to lipid metabolism disturbance and vascular resistance.

Diabetes Types

Diabetes is classified into two major categories, type 1 and type 2. Type 1 is related to a lack of insulin production and type 2 is related to excess insulin production and comprises ninety to ninety-five percent of diabetic cases. However, diabetes can be further categorized according to their causation.

Type 3

In the past I have classified the other most common condition related to diabetes, which a large group of the population suffers from as type 3 diabetes. Approximately twenty to twenty-five percent of the

diabetic population exhibit what has been commonly referred to as metabolic syndrome X. Metabolic syndrome although very similar to type 2 with many similar factors does not have the same mechanisms of development. This condition has been classified as an insulin-resistance condition, however it is actually more of a condition of insulin antagonism. (Watts, 2007)

Types 4, 5, 6, 7, 8. Endocrine Disorders

Gestational diabetes is also very similar to type two in that it is also involves an insulin resistance component and can be classified as type 4. Gestational diabetes however, is more or less triggered by an estrogen hormonal component. Typically as pregnancy progresses and estrogen levels rise extraordinarily, the insulin level also rises. The hormone estrogen is synergistic to insulin and typically as estrogen levels rise so does insulin.

Polycystic ovarian syndrome (PCOS) can be termed type 5 and shares many mechanisms similar to syndrome X and has hormonal contributors, specifically androgens.

Pituitary diabetes is a result of a disturbance in the hypothalamus and or pituitary where a lack of antidiuretic hormone is released in the blood stream. This condition is often referred to as diabetes insipidus or central diabetes insipidus due to the production of excessive urine and related excessive thirst. Central diabetes can be termed as type 6 diabetes.

Adrenal diabetes is another endocrine condition contributing to blood sugar disturbances. Both adrenal insufficiency and hyperadrenocorticism can contribute to type 7 and type 8 diabetes respectively.

Type 9

Autoimmune conditions can contribute to diabetes and be classified as diabetes type 9. In this case, there can be similarity to the other types, but is associated with insulin antibodies resulting in diminished insulin sensitivity. Type 9 conditions can be triggered by infections, particularly viruses. Antibodies can eventually destroy insulin producing cells and lead to diabetes type 1 where insulin production is lacking or even nil. This form is commonly referred to as latent autoimmune diabetes of adults (LADA).

Type 10

Excess iron is known to accumulate in the liver and pancreas. Iron induced diabetes can be classified as type 10. Excess iron can also cause islet cell destruction due to damage from increased free radical production. This condition is typically related to copper deficiency

as a co-component. The impact of excess iron on the liver is well known.

Diabetes Type 11– Drug Induced Diabetes

There are many drugs that are known to cause diabetes. Rather than classifying them into separate categories we can lump them together as X-factors or type 11. Some drugs known to cause diabetes include; steroids, statins, antipsychotics, diuretics and anti-hypertensives.

Treatment should be Individualized

The reason that treatment and prevention of diabetes is a failure is that the condition is not approached on an individual basis. As can be seen, there are dozens of causes and therefore, a public policy that tries to fit an entire population simply cannot work. Underlying factors related to the development of type 2 diabetes are largely overlooked. A person does not suddenly become diabetic except in rare circumstances. The majority of people develop the condition over a long period of time following a sequence of underlying metabolic developments. It can take up to five years for type 2 diabetes to manifest clinically in predisposed individuals. The progression or stages in the development of type 2 diabetes can be illustrated as follows;

Normal-->Hypoglycemia-->Dysinsulinism-->Hyperinsulinism-->Diabetes.

Progression of each stage of this sequence has a distinct mechanism. A person does not typically go from a normal state to diabetes, but rather passes through each of these progressive stages. For example, hypoglycemia leads to a disruption in normal insulin regulation eventually producing hyperinsulinism and ultimately type 2 diabetes. There can be many factors contributing to or underlying each stage that should be addressed specifically.

Even with glycemic control, if these underlying nutritional needs are not addressed the progression of diabetes and its many complications is inevitable in most cases. Lifestyle intervention studies designed to help patients with diabetes to lose weight found that weight loss did little to reduce cardiovascular events. Even the use of medications for glycemic control revealed that cardiovascular events were actually higher with some forms of medications and a number of trials found that strict glucose control did not stop kidney complications from developing in patients with type 2 diabetes. Even strict control of blood pressure in diabetic patients did not lower cardiovascular events.

Targeted Nutrition, a Key Component for Prevention and Treatment

As we can see there are dozens of factors that can contribute to diabetes, even more than what has been discussed here. It has long been known that nutrition is an essential key component in the prevention and treatment of diabetes but is largely over looked except for broad, generalized recommendations that do not benefit the majority of individuals who develop diabetes. As mentioned previously, each stage of development involves a nutritional component that must be addressed for long-term results. In previous TEI Newsletters I have outlined underlying nutritional factors involved in the development of diabetes as well as metabolic characteristics based upon HTMA profiles. (Watts 1999)

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