The first of a multi-part series on adult-onset (type II) diabetes,
the disease that is quickly reaching epidemic proportions throughout the developed world.

TYPE II DIABETES:

The Epidemic of the New Millennium

PART I: A Spectre Haunts the Land

Like the sword of Damocles, suspended by a single hair, calamity is poised to strike at the heart of our modern world. And like the ancient courtier, whose fate was cast in the midst of plenty, the affluence of our times is the cause of our undoing.

Throughout the ages, humankind has borne frequent witness to the global march of disease and pestilence. Stalking the land with grim determination, the great plagues of the Middle Ages left a wake of human carnage as testimony to their ominous passage. Today, new epidemics continue to lay waste millions of innocent lives. The unfolding tragedy of the Ebola virus in Africa and the worldwide spread of AIDS are two contemporary examples of our enduring battle against the ravages of nature.

While medical science has been vigilant in its engagement against infectious disease, it has been dilatory in its response to new enemies at our gates - the 'maladies of affluence', brought on by a confluence of longevity and lifestyle.

One such enemy, a leading cause of death in the developed world, is diabetes mellitus.

Insulin Resistance

According to Dr. Bernard Zinman, Head of Endocrinology and Metabolism at Toronto's Mt. Sinai Hospital, diabetes is "the epidemic of the new millennium." The origin of the name is Greek, referring to sweetness or honey (mellitus) that passes through (diabetes).

More than 15 million Americans and two million Canadians have contracted the disease and over 70 million Americans exhibit pre-clinical symptoms, most without any knowledge of the fact.

There are two types of diabetes. About one in ten diabetics have insulin-dependent diabetes (IDDM), also known as type I or juvenile-onset diabetes. While IDDM can occur at any age, those typically affected are children and young adults. Type I diabetics lack the ability to produce sufficient insulin to control their blood sugar levels. Nine out of ten diabetics have type II diabetes, also known as non-insulin-dependent (NIDDM) or adult-onset diabetes.

Historically, type II diabetes was known as the disease of middle age; however, that is rapidly changing. Type II diabetes is quickly reaching epidemic proportions in children and adolescents. People with type II diabetes generally produce plenty of insulin and often may have elevated levels of the hormone in their blood. The problem, instead, is the body's resistance to insulin.

Because expression of the disease is largely dependent on lifestyle issues, including diet, weight control and exercise, management of the disease is complex and challenging. Treatment of the diabetic is very different than simply administering an antibiotic or vaccine.

Impact

Diabetes is often underestimated as a simple sugar imbalance that can be readily corrected. In fact, it is a complex medical disorder where a confluence of social, behavioural, dietary and lifestyle factors unmask an underlying genetic susceptibility. The disease has serious long-term implications for cardiovascular health, kidney function and eyesight.

In Canada, diabetes and its complications consumes 15 percent of the nation's health dollars. Data from the U.S. shows that, in the two decades from 1970 to 1990, the prevalence of diabetes exploded. Between 1970 and 1980 alone, there was a 40 percent increase within the population. The World Health Organization (WHO) forecasts that more than 300 million people worldwide will develop the disease within the next 25 years - a staggering 222 percent increase since 1995.

Diabetes in our Modern World: Canada

"Diabetes, which more than two million Canadians have, is going to have an impact on millions more in the years to come if there are no concerted society-wide efforts to stop the epidemic."

The Canadian Diabetes Association
"Diabetes: Impact of Disease Staggering."
Globe and Mail, *November 1, 2000*

The figures are so daunting, the economic impact so staggering, as to almost suspend belief. Throughout the western world, it is jolting governments into action.

In Canada, today, diabetes accounts for 28 percent of all new cases of serious kidney disease and is a primary cause of adult blindness and non-trauma-related limb amputation. The risk of stroke, renal failure and coronary artery disease is four to six times as common in people with diabetes, as in the normal population.

Virtually unknown in Canada's aboriginal community until recently, the disease is now undergoing exponential growth. Within the next two decades an alarming 27 percent of Canada's First Nations peoples are expected to develop the disease - a likely consequence of lifestyle change, decline in indigenous diet, and development of a more sedentary lifestyle with a consequent rise in obesity.

Diabetes in our Modern World: the U.S.A.

In the U.S., the alarming rate of type II diabetes among children and adolescents has prompted the American Diabetes Association to issue a public statement addressing the prevention, treatment and diagnosis of the disease for younger people. Dr. Arlan Rosenbloom, Chair of the ADA Consensus Panel, states, "Type II diabetes in children is an emerging epidemic." Type II diabetes, normally a disease of middle age, was unseen in children until recently. It is now found to occur in young people who are overweight, sedentary, are members of certain ethnic groups, and who may have a family history of the disease.

According to a consensus report issued jointly by the American Diabetic Association, the National Association of Diabetics and Digestive and Kidney Diseases, and the American Academy of Pediatrics, between 45 to 80 percent of diabetics demonstrate a family history of the disease. Over 74 percent have a grandparent or close relative with the disease.

The panel report points out that, while the disease exhibits a strong hereditary component, its recent explosive increase has occurred far too quickly to be the consequence of increased gene frequency or biochemical alterations within the gene pool. The evidence, instead, points directly to the prevailing dominance of environmental factors.

Obesity is a hallmark of type II diabetes. Most children and adults with the disease are overweight or obese at diagnosis. In a 1995 study published in the New England Journal of Medicine, a predisposition toward visceral obesity (deposition of abdominal fat) was found to be associated with increased insulin resistance and may contribute to the early onset of type II diabetes.

The American Diabetes Association, in a recent study on diabetes in children, reports that 85 percent of children contracting the disease are obese. Furthermore, where less than four percent of childhood diabetes in 1990 was type II, the frequency now averages 20 percent and varies from eight percent to 45 percent, depending on the age group.

Diabetes in our Modern World: the World

This alarming emergence of type II diabetes in children is not limited to America. Among junior high school students in Tokyo, diabetes has increased over 90 percent between 1991 and 1995, an explosive and frightening growth trend.

Data from Canada and Australia confirm similar increases. The association of obesity with the emergence of type II diabetes is consistent in all reports. These findings have led the American Diabetes Association to conclude, "a possible explanation for the emergence of type 2 diabetes in children is the increase in obesity and decreasing physical activity of children. Obesity is now reaching epidemic proportions in the U.S. and elsewhere."

Obesity

Obesity, generally accepted as a body mass index (BMI) greater than the 85th percentile for a given age and gender, is among the most pressing medical problems in North America today. Among six-to-seventeen-year-olds the prevalence of obesity more than doubled from 1988 to 1991. In a study of Pediatrics and Adolescent Medicine, it was found that 22 percent of the children fit the criteria for overweight, up significantly from a survey conducted three years prior.

While a direct cause-effect relationship between obesity and type II diabetes has not been established, the correlation is strong. People who are overweight and lead a sedentary lifestyle are showing up in diabetes clinics with increasing frequency. The trend is strong, accelerating, and not limited to the developed world. The disease is also found to be increasing rapidly in Third World nations, such as India, as they adopt the lifestyles and dietary patterns peculiar to the western world.

The verdict is in. We are on the cusp of a tragedy of global proportions. Unless we act quickly and decisively, a growing epidemic of diabetes, already the sixth leading cause of death in the U.S., promises to carve a path of human tragedy that will challenge health care systems throughout the developed world. The haunting spectre of a global epidemic is an ominous portent, which we dare ignore at our peril.