DIABETES, HIGH BLOOD PRESSURE AND KIDNEY DISEASE

Backgrounder

About Diabetes

- 20 to 25 per cent of Canadians, more than 5 million people suffer from hypertension. Close to 40 per cent of those who have hypertension also have diabetes, approximately 2 million Canadians have hypertension and diabetes.

- There are two types of diabetes: type 1 and type 2. Both are characterized by elevated blood sugar levels due to an insufficiency of insulin, a hormone that regulates blood glucose levels.

- Type 2 diabetes, formerly called adult-onset diabetes or non-insulin-dependent diabetes mellitus (NIDDM), is more common and occurs when the body is unable to produce enough, or properly use insulin. It is diagnosed later in life, usually after age 30, and accounts for about 90 per cent of all diagnosed cases.

- Type 1 diabetes, formerly called insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes, occurs when the body produces little or no insulin at all and accounts for only five to ten per cent of all diagnosed cases.

- Approximately 5 per cent of Canadians, more than 2 million people, have been diagnosed with diabetes and another 5 per cent of Canadian adults may currently have undiagnosed diabetes.

- Risk factors for developing type 2 diabetes include:
  - Obesity (however, even modest weight gain increases the risk)
  - Family history of diabetes
  - Low HDL cholesterol or high triglycerides
  - Increasing age (age 45 or older)
  - Certain ethnic backgrounds

- Diabetes damages small blood vessels throughout the body, and affects the kidneys as well as other organs and tissues.

About High Blood Pressure (Hypertension)

- High blood pressure, or hypertension, occurs when the blood exerts too much force on the artery walls. This happens if blood vessels constrict, or if too much blood is pumped from the heart.

- A diagnosis of high blood pressure is made when the average of two or more separate blood pressure readings rise above 140/90 mm Hg for an adult. The higher number (systolic) represents the pressure when the heart is pumping blood. The lower number (diastolic) represents the pressure when the heart is resting between beats.

- High blood pressure makes the cardiovascular system work harder, and can eventually damage blood vessels throughout the body or the heart itself.

- Risk factors for developing high blood pressure include:
  - Family history
  - Certain ethnic backgrounds (African Americans)
  - Gender (males are at higher risk)
  - Increasing age
  - Salt intake
  - Obesity/overweight

Kidney Disease and End-Stage Renal Disease (ESRD)

- Healthy kidneys are essential for a healthy body. Kidneys maintain salt and water balance, and help filter out extra water and harmful wastes from the blood to form urine. Urine flows from the kidneys to the bladder through the ureters.

- Sometimes, kidneys can become damaged or diseased, preventing them from working properly. Most kidney diseases attack the nephrons or tiny vessels in the kidneys, causing them to quickly lose their filtering capacity.

- Diabetes and high blood pressure are the two most common causes of kidney disease. Certain medication and physical trauma to the kidneys also are risk factors for kidney disease.

- As kidney disease progresses, it may lead to permanent kidney failure or end-stage renal disease (ESRD), a life-threatening condition in which the patient requires dialysis or kidney transplantation in order to live.

- Dialysis is a procedure that cleans and filters the blood, and removes harmful wastes and extra salts and fluids from the body. Kidney transplantation is a surgical procedure in which a healthy kidney is removed from one individual and implanted into another individual.

- Prognosis for patients with ESRD is bleak. About 30 per cent of those undergoing dialysis and 15 per cent of those receiving their first kidney transplant die within two years.

- Symptoms of kidney disease may go unnoticed, but early detection is critical. Preventing or delaying the progression from kidney disease to ESRD is an essential treatment goal in this patient population.

The Link Between Diabetes, High Blood Pressure and Kidney Disease/ESRD

- High blood pressure is two to three times more common in patients with type 2 diabetes than in patients without diabetes.
  - Individually, diabetes and high blood pressure increase the risk of kidney disease, as well as cardiovascular disease. Together, the risks rise dramatically.
  - Managing diabetes and high blood pressure can reduce the risk of ESRD.

- In Canada, diabetic kidney disease is among the leading causes of ESRD.

- Either together or separately, diabetes and high blood pressure damage the tiny blood vessels in the kidney that act as filters to remove wastes from the blood. Eventually the damaged vessels are destroyed, putting more stress on the healthy vessels, and causing them to become damaged; when the entire filtration system breaks down, the kidneys fail to function.

Economic Burden of Diabetes and ESRD

- Diabetes and its complications use up one in seven health-care dollars in Canada or approximately $9-billion annually.

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