Understanding insulin resistance; Precursor to diabetes can be reversed

November 6 2012, by Julie Deardorff

Though you may not be living with diabetes, your body could be battling against the hormone insulin. The condition, called insulin resistance, occurs when insulin can't effectively do its job.

"People often don't realize that insulin resistance can develop into diabetes," said Dawn Sherr, a diabetes educator for the American Association of Diabetes Educators. "And if they're not aware they're insulin resistant, they don't know what steps they can take to prevent it."

Insulin resistance is a fuzzy, often misunderstood concept. Here, we answer five common questions.

Q: How does the body become resistant to insulin?

A: When you eat, food is broken down into glucose to be used for energy. Insulin, a hormone produced in the pancreas, tempers the amount of sugar in the bloodstream by helping glucose get into the muscle, fat and/or liver cells. "We think of insulin as a 'key' that opens doors to the body's cells, so glucose can enter," said diabetes educator Gary Scheiner. With insulin resistance, it's like having locks that are frozen or rusty. The keys won't turn, and glucose can't get into the cell. The pancreas, alarmed by the increase in blood sugar, cranks out more insulin.

Eventually, the overworked pancreas breaks down. Blood sugar levels rise even further, causing pre-diabetes and setting the stage for Type 2

diabetes. "Most people think of diabetes as high blood sugar caused by too little insulin," said Scheiner, the author of "Think Like a Pancreas". "But the insulin resistance is really the root cause of almost all cases of Type 2 diabetes."

Q: What is pre-diabetes?

A: The body's cells are insulin resistant; the levels of glucose in the blood are higher than normal, and the pancreas can't make enough insulin to compensate. Recent research suggests long-term damage to the body, especially the heart and circulatory system, may already be occurring at this stage. Pre-diabetes affects approximately 79 million people in the U.S. "That's the equivalent of the total population of 30 states," said David Armstrong, director of the Southern Arizona Limb Salvage Alliance.

Q: How is pre-diabetes detected?

A: A fasting blood glucose panel can pick up pre-diabetes; high blood sugar indicates that insulin resistance is present. Another blood test called c-peptide can also estimate the body's insulin production, said Scheiner. "If the c-peptide is elevated, the pancreas is secreting excessive amounts of insulin in an effort to overcome the insulin resistance," he said.

Q: Can obesity lead to insulin resistance?

A: It's a risk factor. Excess body fat - particularly around the middle - a sedentary lifestyle, a history of polycystic ovary syndrome (PCOS), having a baby that weighed more than 9 pounds, a family history of Type 2 diabetes and belonging to certain ethnic minority groups (African, Hispanic and Native American,) can increase your risk, said Scheiner. High stress levels and the use of steroid medications can be factors.

Q: What other problems are related to insulin resistance?

A: People with insulin resistance are more likely to have too much LDL or "bad" cholesterol, not enough HDL or "good" cholesterol and high triglycerides, which causes hardening of the arteries.

Q: Can insulin resistance and pre-diabetes be reversed?

A: Yes. Losing weight can help because less fat means "fewer hormones that cause insulin resistance," said Scheiner. Physical activity "directly increases the number and effectiveness of insulin receptors," which helps get the glucose into the cell, he said. Certain medications, including Metformin and Thiazolidinedionecan also help.