PROVIDER RESOURCE SERIES

Insulin Resistance

Fasting Insulin Testing In Capillary Blood Spot

Epidemiology

Currently 64% of US adults are overweight and 30% are obese. Unfortunately, the growing number of overweight and obese Americans includes 16% of children. Being overweight* increases the risk of insulin resistance, metabolic syndrome, and diabetes. Currently, diabetes affects 14.7 million Americans with numbers increasing rapidly; metabolic syndrome is thought to affect 24% of Americans with numbers estimated at 42 million.

Metabolic syndrome is generally characterized by:

- Abdominal obesity
- Increased triglycerides
- Low HDL (good cholesterol)
- High blood pressure
- Elevated fasting blood sugar (lower than diabetes)

*www.cdc.gov/nhs/hus.htm

The Physiology

Insulin resistance occurs when there is a reduction of cellular response to the presence of insulin and a reduced ability of the tissues to take up glucose for energy production. This results in chronically high insulin levels as the body attempts to normalize blood sugar levels. Lifestyle factors such as increased stress, inactivity and excess carbohydrate consumption can contribute to the development of insulin resistance and obesity. Insulin resistance significantly increases the risk for type 2 diabetes, cardiovascular disease, and stroke.

"Given the current epidemic of obesity and the fact that lifestyle interventions can decrease insulin resistance, having a relatively simple way to identify overweight or obese persons who are insulin resistant would be clinically beneficial."

- Dr. Tracey McLaughlin in Ann Intern Med 2003.

Candidates for Fasting Insulin

- Individuals who are overweight or obese or those with known or suspected hyperglycemia, insulin resistance, diabetes, pre-diabetes, family history of diabetes
- Women with irregular menses, scalp hair loss, increased facial/body hair, polycystic ovarian syndrome
- Individuals with signs/symptoms such as: anxiety, palpitations, diaphoresis, fatigue, irritability, weakness/shakiness/dizziness, food/sugar cravings, central obesity, and rising blood sugar levels.

Note: A 12 hour fast is required.

Advantages

- Home kit facilitates collection of ***fasting*** insulin levels
- Fingersticks more acceptable for children
- Ideal in remote or rural locations
- Collection ease allows routine monitoring

"In the identification of insulin resistance, use of the fasting plasma triglyceride concentration, the plasma triglyceride-HDL cholesterol ratio, or fasting plasma insulin concentration offer a reasonable degree of clinical utility. Of these, plasma insulin concentration is the metabolic marker most closely related to insulin resistance." (Annals of Medicine; November, 2003)

Clinical Utility

Early detection of insulin resistance is the key to prevention of harmful changes in the body caused by high levels of insulin and blood sugar. Blood spot screening of fasting insulin can help healthcare providers and their patients monitor insulin levels and target necessary lifestyle interventions to reverse disease risk factors. Fasting insulin level has been shown to be an excellent predictor of insulin sensitivity, especially in people with normal glucose tolerance.

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