

Acanthosis Nigricans/Insulin Resistance

ACANTHOSIS NIGRICANS

Acanthosis: Latin for **thick**

Nigricans: Latin for **dark**

Acanthosis nigricans is a skin disorder characterized by thick, dark, velvety skin lesions. The lesions can be present in various regions of the body, including:

- the back of the neck (sometimes encircling the entire neck)
- the armpits
- the groin
- the knuckles
- between the legs
- the elbow
- under the breasts
- around the belly button



Acanthosis nigricans on the knuckles.

In Caucasians acanthosis nigricans is often not very darkly pigmented on the neck and is more visible when present under the arms.

In children acanthosis nigricans is an outward sign that they are **insulin resistant**. Insulin is the substance or hormone that controls our blood sugar. When you become insulin resistant you increase the risk of developing type 2 diabetes mellitus. In the past type 2 diabetes mellitus usually developed in adults and used to be called adult-onset diabetes. However during the past twenty years there has been a marked increase in the number of persons, including children, living in the United States who are overweight. Following the rise in obesity there has been a dramatic increase in type 2 diabetes in both adults and now children.



Acanthosis nigricans on the back of the neck with multiple skin tags.



Acanthosis nigricans under the arm.

INSULIN RESISTANCE

Insulin resistance is generally associated with being overweight. All of us have a set point in our body weight relative to our height. Once we exceed that set point we will become insulin resistant. The set point however varies greatly from one person to another. Some individuals can develop insulin resistance when they are just a little overweight while others have to be massively overweight before they become insulin resistant.

Your body weight alone is not always a reflection if you are overweight. For example many professional athletes who weigh 300 pounds are not obese but just have an increase in the amount of muscle on their bodies. A better measurement of increased body fat (obesity) is the body mass index (BMI). The BMI reflects your weight relative to your height. BMI is expressed in the metric system as kilograms per meter squared (kg/m²). The following formula calculates BMI using pounds and inches and then uses a correction factor to provide an answer in kg/m².

$$\text{BMI} = \left(\frac{\text{Weight in Pounds}}{(\text{Height in inches}) \times (\text{Height in inches})} \right) \times 703$$

In adults a BMI greater than 25 kg/m² is defined as being overweight and greater than 30 kg/m² as obese. The criteria are different for children are different since children's heights and weights are constantly changing from birth until the end of puberty. Similar to the growth charts for height and weight for children there is a BMI chart for children. The 50th percentile is the average BMI of a child at any age. Children are at risk for being obese when the BMI is greater than the 85th percentile and are obese when the BMI is greater than the 95 percentile.

On the following pages are the BMI charts for boys (blue) and girls (red). After calculating the BMI, place a point where the value for the BMI and the age of the child intersect.

