

# Type 2 Diabetes

Adequate treatment of pre-diabetes and diabetes can add years to the lives of people with Spina Bifida and is worth the effort.

## What is Type 2 Diabetes?

Also called adult onset or non-insulin dependent diabetes, type 2 diabetes is a chronic condition that affects how the body uses insulin to metabolize glucose (sugar), which is the body's main source of fuel. It is the most common type of diabetes, but is also the most preventable.

People who have type 2 diabetes either do not produce enough insulin, or the body resists the effects of the insulin, as a consequence of the metabolic changes that result from being overweight and obese. This problem often comes on slowly, and may initially appear as "pre-diabetes," also called metabolic syndrome.

## What is Pre-diabetes?

Pre-diabetes, a state of "higher than normal blood sugars, but not high enough to be diagnosed as diabetes", causes acanthosis nigricans — a darkening of the skin, beginning at the back of the neck and spreading around the neck, to later involve the axilla (arm pits), and other skin folds. The skin can have a velvety appearance. It is caused by the body making too much insulin and is a definite warning sign that a person is at risk for type 2 diabetes. All people with acanthosis should be evaluated by a physician for type 2 diabetes.

## When Does Pre-Diabetes Become Type 2 Diabetes?

As insulin resistance increases, and the insulin does not work as well, diabetes can result, with elevated blood sugars and spilling of glucose in urine. It must

be treated promptly because elevated blood sugars can damage the kidneys, heart, and eyes; and predispose diabetics to other serious medical problems. A family medical history of type 2 diabetes puts someone at greater risk.

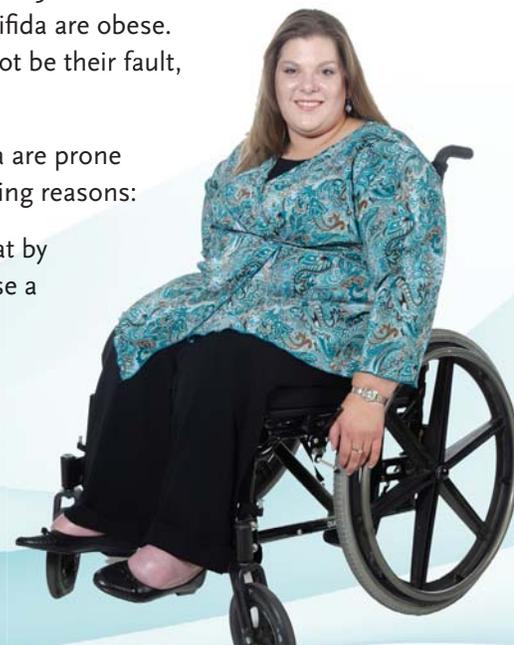
Other risk factors include a person's ethnic group, with Hispanics, African Americans, and American Indians being at particularly high risk. Type 2 diabetes is usually a problem of people older than 45 years old, but is now appearing in children as young as 8 years old.

## What Causes Type 2 Diabetes?

Obesity is the main cause of type 2 diabetes. When BMI is within the 85th to 95th percentile, a person is considered overweight; and obesity occurs when BMI is greater than the 95th percentile. Obesity is a national problem. About 50% of children and adults with Spina Bifida are obese. Although obesity may not be their fault, it is their problem.

People with Spina Bifida are prone to obesity for the following reasons:

- It is harder to "burn fat by exercise" when you use a wheelchair
- Some people with Spina Bifida have a lower metabolic rate, so what they eat, "sticks to them" more easily



- A sedentary lifestyle
- Eating food that tastes good rather than food that is good for you
- Family history of diabetes

### How does a physician evaluate for Diabetes and Pre-Diabetes?

- A history should be taken for symptoms of diabetes:
  - “Polydipsia, polyphagia, and polyuria” – drinking too much, eating too much, and urinating too much
  - Sleep disordered breathing -snoring and pauses in breathing
  - Exercise intolerance.
- An examination might include measurement of weight, arm span, waist; and an assessment for acanthosis
- Blood work might include:
  - Complete blood count
  - Vitamin D levels
  - Comprehensive metabolic panel (which includes liver enzymes and electrolytes)
  - Fasting insulin level; fasting insulin c-peptide; and fasting lipid panel.
  - Hemoglobin A1c test which indicates the body’s long term control of blood sugar

#### Hemoglobin Levels

Normal = less than 5.7%

Pre-Diabetes = 5.7% – 6.4%

Diabetes = 6.5% or higher

### What lifestyle changes are needed for prevention and Treatment?

- Weight loss and exercise are paramount to delaying, preventing and improving type 2 diabetes.
- Eat less and move more. Of the two, eating less is the most important action.
- No person at risk for obesity, including all people with Spina Bifida, should drink sugar drinks. This includes sweetened fruit juices, sweetened iced tea, or soft drinks. Beginning early in life instilling this habit can result in long-term health benefits

- Eat three meals a day of moderate proportion
- Do not snack between meals
- Avoid junk food ( foods that make you fat and provide no nutritional value)
- Consult with a dietician for more formal guidance on healthy eating if needed
- Have regular blood sugar checks at home or your physician’s office. Blood sugar checks may indicate that a change in diet or exercise is needed

### How is Type 2 Diabetes treated?

- When diet and exercise are not sufficient, medication may be required. Metformin, an oral medication is commonly used to control blood sugar, treat the liver abnormalities that accompany type 2 diabetes; and may help with weight loss
- The combination of Topiramate and Phentermine shows some promise as a weight reduction agent, but hasn’t been studied in Spina Bifida patients or in children yet
- Weight loss surgery (“bariatric surgery”) works for some; but can result in diarrhea, which may cause fecal incontinence in people with Spina Bifida who do not have adequate anal sphincter control
- When pills and weight loss measures are not effective, some people require injections
- Supportive programs that emphasize exercise and diet are always helpful
- Routine visits to the doctor are an important part of the treatment process-about every 3 months when sugar is not well controlled, and every 6 months when it is under control

#### Contributing Editor

Gordon Worley, MD.

#### Additional resources

<http://www.diabetes.org/living-with-diabetes/?loc=GlobalNavLWD>

<http://www.diabetes.org/>

This information does not constitute medical advice for any individual. As specific cases may vary from the general information presented here, SBA advises readers to consult a qualified medical or other professional on an individual basis.