



# DIABETES AND HIV

## WHAT IS DIABETES?

Diabetes is a disease that makes it hard for your body to convert food to energy. Normally, after you eat, your body breaks food down into glucose (also known as "blood sugar") that your blood carries to cells throughout your body.

Your cells use insulin, a hormone made in your pancreas, to help them convert blood sugar into energy. In some people with diabetes, this process slows down, resulting in too much sugar in the blood. This condition is known as hyperglycemia.

If diabetes is not controlled, it can cause damage to your nerves and blood vessels. This can lead to complications like heart and kidney disease, and nerve problems, which can lead to amputation of the affected limb.

## WHAT CAUSES DIABETES?

You can develop diabetes when:

- Your pancreas doesn't make enough insulin (Type 1 diabetes)
- Your cells can no longer use insulin properly, known as insulin resistance (Type 2 diabetes)

Type 2 diabetes is most often associated with HIV.

## RISK FACTORS FOR DIABETES

People who are overweight, rarely exercise, and those with a family history of diabetes are at higher risk of developing diabetes. Additional risk factors include infection with HIV and hepatitis C virus, high blood pressure, high cholesterol and current pregnancy. Smokers are 30-40% more likely to develop type 2 diabetes than nonsmokers. People from certain ethnic backgrounds (African, Hispanic or Asian) may also be at higher risk. Diabetes may also develop as a side effect of certain medications.

## DIABETES AND HIV

Some antiretroviral drugs used to treat HIV are known to increase the risk of diabetes. These include the AZT, ddI and d4T, and some protease inhibitors, including LPV/r (Aluvia).

Recent studies show that people with diabetes are at greater risk of developing active tuberculosis (TB – see Fact Sheet 518). Since people with HIV are also at much higher risk of death from TB, those with diabetes should take extra precautions to avoid TB, including isoniazid preventive therapy (IPT).

## HOW DO I KNOW IF I HAVE DIABETES?

The symptoms of insulin resistance are usually mild and may not be noticeable. They may include:

- Feeling sleepy, especially after meals
- Intense mood swings or extreme hunger after eating sugary snacks or high carbohydrate meals
- High levels of fat in the blood
- Dark skin patches on the neck and armpit area

These symptoms are sometimes referred to as pre-diabetes.

The symptoms of diabetes can include:

- Unusual thirst
- Frequent urination
- Extreme hunger
- Unusual weight loss or weight gain
- Extreme fatigue and irritability
- Frequent infections
- Blurred vision
- Tingling or numbness in the hands and feet
- Slow healing of cuts or bruises

## HOW IS DIABETES DIAGNOSED?

There are three ways to test for blood sugar levels; these are described in Fact Sheet 123 on Blood Sugar and Fats. The most common test is the fasting glucose test. This test measures the amount of sugar in the blood after a person has not eaten for 8 hours.

Your fasting blood sugar level should be checked before starting antiretroviral therapy (ART) and at least every year. If levels are high, other testing may be needed and you may be advised to avoid certain ARVs.

## HOW IS DIABETES TREATED?

The best way to control diabetes is to reduce or eliminate any life-style risk factors related to diet, exercise (see Fact Sheet 802) and smoking (see Fact Sheet 803).

You may also need to change some of your medications, including ARVs.

Many people can control their diabetes with a combination of diet, exercise, and oral medications. For those who can't, insulin is a very safe and effective means of controlling high blood sugar.

## THE BOTTOM LINE

Diabetes is often considered as a life-style disease, and as such tends to emerge in older people (see Fact Sheet 616). As people with HIV are living longer as a benefit of antiretroviral therapy, they are becoming more vulnerable to diabetes.

The best way to avoid diabetes is by limiting or eliminating the controllable risk factors: eat a healthy diet and maintain a healthy weight; take regular exercise; and stop smoking.

Older people are advised to carry out regular checks of blood sugar levels. If these are high, reducing body weight may result in improvement, especially in obese people. In some cases, medicines may be needed to control diabetes, and it may be necessary to change certain antiretrovirals.

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