



# ZIDOVUDINE (Retrovir, AZT)

## WHAT IS ZIDOVUDINE?

Zidovudine (Retrovir) is a drug used for antiretroviral therapy (ART). It was first manufactured by GlaxoSmithKline. It is manufactured by ViiV Healthcare. The patent on zidovudine expired in 2005 and several generic versions have been approved. Several are available under PEPFAR (see fact sheet 475.) Zidovudine is also known as azido-deoxythymidine, AZT or ZDV.

Zidovudine was the first drug approved for the treatment of HIV. It is a nucleoside analog reverse transcriptase inhibitor, or nuke. These drugs block the reverse transcriptase enzyme. This enzyme changes HIV's genetic material (RNA) into the form of DNA. This has to occur before HIV's genetic code gets inserted into an infected cell's own genetic codes.

## WHO SHOULD TAKE ZIDOVUDINE?

Zidovudine was approved in 1987 as an antiretroviral (ARV) drug for people with HIV infection. Recommended dosages are available for children over 6 weeks old. It is also used to prevent transmission of HIV from a pregnant woman to her newborn baby (see fact sheet 611.)

There are no absolute rules about when to start ART. You and your health care provider should consider your CD4 cell count, your viral load, any symptoms you are having, and your attitude about taking HIV medications. Fact Sheet 404 has more information about guidelines for the use of ART.

If you take zidovudine with other ARV drugs, you can reduce your viral load to extremely low levels, and increase your CD4 cell counts. This should mean staying healthier longer.

Because zidovudine was the first ARV approved, it has been studied more than any other drug. Most new drugs have been tested by comparing them to zidovudine.

"Early treatment" with zidovudine was tested in people with no symptoms of HIV disease. The study showed no benefit to taking zidovudine. But zidovudine is used as part of combination therapy for people who are exposed to HIV through a

workplace accident (needle stick or splash).

Zidovudine greatly reduces transmission of HIV from the mother to her child. It is given to HIV-positive pregnant women from the 4<sup>th</sup> month of pregnancy until their baby is born, and to the newborn baby for 6 weeks.

## WHAT ABOUT DRUG RESISTANCE?

Many new copies of HIV are mutations. They are slightly different from the original virus. Some mutations can keep multiplying even when you are taking an ARV drug. When this happens, the drug will stop working. This is called "developing resistance" to the drug. See Fact Sheet 126 for more information on resistance.

Sometimes, if your virus develops resistance to one drug, it will also have resistance to other ARVs. This is called "cross-resistance".

**Resistance can develop quickly. It is very important to take ARVs according to instructions, on schedule, and not to skip or reduce doses.**

## HOW IS ZIDOVUDINE TAKEN?

The recommended dose of zidovudine for adults is 500mg to 600mg daily. Zidovudine comes in 100mg capsules and 300mg tablets. In 2011 the FDA approved a 100 mg tablet that can be dissolved in water. It is also available in liquid form. In 2009 the FDA approved new dosing guidelines for children at least 4 weeks old. The dose is based on weight. The new guidelines allow for three times or twice daily dosing.

Zidovudine is also available in Combivir and Trizivir. Combivir contains zidovudine and lamivudine. Trizivir contains zidovudine, lamivudine, and abacavir. For more information, see Fact Sheet 417 on Combivir or Fact Sheet 418 on Trizivir.

## WHAT ARE THE SIDE EFFECTS?

When you start ART you may have temporary side effects such as headaches, high blood pressure, or a general sense of feeling ill. These side effects usually get better or disappear

over time. Some patients taking zidovudine continue to have nausea, vomiting, headaches and fatigue.

The most serious side effects of zidovudine are anemia, neutropenia and myopathy. These side effects are not common.

**Anemia** is a shortage of red blood cells caused by damage to bone marrow. It is most common in newborn infants taking zidovudine but disappears after they stop taking the drug. If you get anemia, your doctor might reduce your dose or switch zidovudine for another ARV. If the anemia is severe and you have to keep taking zidovudine, you may need a blood transfusion, or you might take the drug erythropoietin. For more information on anemia, see Fact Sheet 552.

**Myopathy** is muscle pain and weakness. There is no specific treatment for myopathy.

**Neutropenia** is an abnormally low number of neutrophils, the most common type of white blood cell. Neutropenia increases the risk of bacterial and fungal infections.

**Changes in skin and nail color** (darkening of skin and nails) can also occur. This is more common in people with darker skin.

## HOW DOES ZIDOVUDINE REACT WITH OTHER DRUGS?

Zidovudine can interact with other drugs or supplements you are taking. **These interactions can change the amount of each drug in your bloodstream and cause an under- or overdose. New interactions are constantly being identified. Make sure that your health care provider knows about ALL drugs and supplements you are taking. Zidovudine should not be combined with stavudine (d4T, Zerit).**

**Zidovudine's side effects may be worse** if taken with several other drugs.

**Methadone** may increase blood levels of zidovudine. If you take zidovudine and methadone, watch for zidovudine side effects.

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