

## NRTIs (Nucleoside Reverse Transcriptase Inhibitors)

NRTIs, or nucleoside reverse transcriptase inhibitors, are a class of antiretroviral drugs used to treat HIV. They work by competitively inhibiting nucleotide binding to reverse transcriptase and also terminate the elongating DNA chain. Certain drugs have specific indications; for example, ZDV is used for general prophylaxis and during pregnancy to decrease transmission. This drug class is notable because they must be "activated" in the cell and require phosphorylation.



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### Indications

#### HIV

##### [AIDS Band-aid](#)

NRTIs are indicated for treating HIV and target reverse transcriptase activity.

#### Pregnancy and Prophylaxis given ZDV

##### [Pregnant-woman with Purple-axes and Zombie-dove](#)

ZDV, or zidovudine, is a specific NRTI used to provide general prophylaxis as well as for pregnant women who are HIV positive to decrease the risk of fetal transmission.

### Mechanism

#### Inhibit Nucleotide Binding to Reverse Transcriptase

##### [Inhibiting-chains preventing Reversing Train-script from Binding to Nucleotides](#)

NRTIs are a class of drugs that work by competitively inhibiting nucleotide binding to reverse transcriptase. This inhibition prevents the virus from making a DNA copy of its RNA.

#### Chain Termination

##### [Chain Stop](#)

By binding to the viral reverse transcriptase, these medications lead to elongating DNA (which is viral) chain termination. A lack of a 3'-OH group in the incorporated nucleotide analogue prevents DNA chain elongation, and therefore, the viral DNA growth is terminated.

#### Require Phosphorylation

##### [Using Phosphorus-P](#)

NRTIs need to become "activated" and require phosphorylation from the host cell.