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Aciclovir

Aciclovir is the most widely prescribed antiviral drug in the world. It was first available on prescription in 1983.

Aciclovir is a synthetic compound with a similar molecular structure to purine nucleoside. It has been shown to stop the growth of [Herpes simplex virus](#) (HSV), Varicella zoster virus (VZV) (the cause of [chickenpox](#) and [shingles](#)), Epstein Barr Virus (EBV, the cause of [glandular fever](#)), and to a lesser extent Cytomegalovirus (CMV).

Indications for treatment

Aciclovir is used in the treatment of:

- Primary [herpes simplex](#)
- Recurrent episodes of [genital herpes](#)
- Suppression of HSV infections
- The first few days of [Herpes Zoster](#) infections

Dosing regimes

Herpes simplex

- For an initial outbreak in adults and children over 2 years, oral aciclovir 200mg should be taken five times a day for 10 days. Half the adult dose should be used for children under 2 years.
- For recurrent episodes, treatment should be started at the earliest sign and continued for 5 days.
- If long term suppressive therapy is necessary, 400mg is given twice daily.

Aciclovir is also available as a cold-sore cream for the lips and face, and as an ophthalmic ointment for eye infections. It should be applied at the first sign of recurrent infection, often a tingling feeling. It is then rubbed into the affected area every four hours during waking hours for 5 days. It is not suitable to use inside the mouth or other mucous membranes.

Varicella zoster

Aciclovir is an important treatment for herpes zoster ([shingles](#)) but it can also be used to treat varicella ([chickenpox](#)) in adults, or severe infections in children.

Best results are achieved if the treatment begins within 48 hours of the onset of the rash. Oral aciclovir 800mg five times a day for 7 days accelerates the rate of healing of blisters. In zoster infections, it also reduces the severity and duration of pain, and may prevent post-herpetic neuralgia.

Intravenous aciclovir achieves higher blood levels compared to oral aciclovir. It is recommended for severe infections:

- Immunocompromised patients with chickenpox, disseminated herpes zoster or severe herpes simplex
- Acute herpes zoster when it affects the trigeminal nerve (forehead and eyelids)
- Extensive [eczema herpeticum](#)
- Herpes infection of the brain (encephalitis)
- Herpes infections in newborn babies

Intravenous aciclovir is given over one hour every 8 hours for 7 days in a dose of 5 mg/kg for HSV and 10 mg/kg for VZV.

Mechanism of action

To become effective, aciclovir must first be changed to aciclovir monophosphate by an enzyme that is only found in viruses, called thymidine kinase (TK). It is then converted to its active triphosphate form by human enzymes found inside the cells.

CMV does not produce thymidine kinase so the antiviral activity of aciclovir in CMV infections is poor.

Aciclovir triphosphate (AT) is the active form of the drug. It reduces production of viral DNA by competing with a natural compound, deoxyguanosine triphosphate, for the viral DNA polymerase enzyme. Incorporation of AT into the viral DNA completely prevents the synthesis of new DNA.

Viral DNA polymerase binds 10–30 times more strongly to AT than the cellular DNA polymerase. This means aciclovir is not toxic.

Unfortunately, only about 15–20% of the dose of aciclovir is absorbed through the gut wall, which means it must be taken frequently as it only active for two or three hours in the blood stream.

Side Effects

Side effects are uncommon, but include: nausea or vomiting, diarrhoea, headache, fever, confusion, lymphadenopathy, generalized muscle aches and itchy skin.

Aciclovir should be used with caution in patients with kidney disease. The dose should be reduced to prevent accumulation of the drug and to decrease the risk that the drug will damage the kidneys or the nervous system. Aciclovir can also cause abnormal liver function blood tests, and rarely, a lowering of the white cell count.

A pregnancy registry of more than 1000 women who received aciclovir before or during early pregnancy showed no increased rates of miscarriage or birth defects in offspring. However, as with any medicine, it should only be given in pregnancy if the benefits are believed to outweigh the risk.

Related information

On DermNet NZ:

- [Viral skin infections](#)

Other websites:

- [Medsafe datasheet](#)

Books about skin diseases:

See the [DermNet NZ bookstore](#)

Author: Dr Fiona Larsen MB ChB, Dept of Dermatology Greenlane Hospital, Auckland

DermNet does not provide an on-line consultation service.

If you have any concerns with your skin or its treatment, see a [dermatologist](#) for advice.

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