Acyclovir (Zovirax)

Acyclovir (Zovirax) is an antiviral medication that inhibits viral replication in organisms of the herpes virus family. This medication is indicated for infections caused by herpes simplex virus and varicella zoster virus. This drug comes in several forms including topical, oral and intravenous. Side effects of oral acyclovir include nausea, vomiting, diarrhea and headache. Side effects of IV acyclovir include nephrotoxicity and neurotoxicity. Special consideration include preventing recurring episodes of herpes simplex virus and administering IV acyclovir at a slow rate.



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Mechanism

Guanosine Analog
G-iguana On-a-log
Acyclovir is a nucleoside analog medication. Specifically, it is a guanosine analog, and lacks a free 3' group, which is necessary for addition of the next nucleotide. Thus, when added to a growing DNA chain, synthesis is halted.

Inhibits Viral Replication
Inhibiting-chains on Virus Replicating
Acyclovir inhibits viral replication through the mechanism of suppressing synthesis of viral DNA. Acyclovir is activated within cells infected with herpes simplex virus or varicella zoster virus. This medication directly targets the thymidine kinase formed by herpesviruses and does not affect human DNA.

Thymidine Kinase Activation
Thyme-dime Kite-ace
This medication used viral thymidine kinase to convert it into acyclovir monophosphate. This is converted into another compound, which then inactivates and competitively inhibits DNA polymerases, halting DNA synthesis in viral cells.

Indications

Herpes Simplex Virus (HSV)
Herpes-harp Virus
Acyclovir decreases the symptoms of oral and genital herpes, but does not eliminate the virus. Topical acyclovir is indicated for initial genital herpes simplex virus. Oral acyclovir is effective against both initial and recurrent oral and genital herpes infections. Intravenous acyclovir is indicated for patients with severe genital herpes infection, or immunocompromised patients with oral herpes.

Varicella Zoster Virus (VZV)
Varsity Zorro Virus
Oral acyclovir is given to patients with varicella (chickenpox) within 24 hours of developing a rash. Older adults with herpes zoster (shingles) are administered high doses of oral acyclovir. Immunocompromised patients with varicella zoster virus are given intravenous acyclovir.

Side Effects (Oral)

Headache
Head-egg lump
Headache and vertigo are common mild neurological side effects of oral acyclovir. Warn the patient about the possibility of developing headaches before administering this medication.

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GI Distress

GI with Flare-gun

Acyclovir has a low bioavailability and is slowly absorbed by the GI tract. This medication may cause symptoms of GI distress, such as nausea, vomiting, and diarrhea.

Side Effects (IV)

CNS Toxicity

CNS-brain with Toxic-green-glow

Patients with renal impairment have a decreased ability to excrete medications. A buildup of acyclovir in the patient's body may cause neurotoxicity as evidenced by agitation, tremors, hallucinations, and delirium. The patient may present with myoclonus or a sudden involuntary jerking movement.

Nephrotoxicity (Crystalline Nephropathy)

Kidney with Toxic-green-glow

Acyclovir may affect the renal tubules and cause increased BUN and creatinine levels indicating nephrotoxicity. Slowly infusing the medication over one hour and ensuring adequate hydration may minimize kidney damage.

Considerations

Prevents Recurrent Episodes

Prevent-sign at Recurrent Episode

The herpes simplex virus is spread through kissing, skin-to-skin contact and intercourse. Oral acyclovir may be administered prophylactically to prevent recurrence of cold sores. To avoid spreading the virus, instruct the patient to always use a condom and to abstain from all sexual contact while symptomatic. To prevent newborn transmission during delivery, pregnant women with genital herpes may be treated with acyclovir closer to term.

Slow IV Infusion

Snail IV

Administer IV acyclovir slowly over one hour to minimize kidney damage caused by the medication accumulation in the renal tubules. Do not administer acyclovir by IV bolus or else renal damage may occur.

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