acyclovir (ay-sye-kloe-veer)
Sitavir, Xerese, Zovirax

**Classification:** Therapeutic: antivirals
Pharmacologic: purine analogues

**Pregnancy Category:** B (PO, buccal, IV), C (topical)

**Indications**

**PO:** Recurrent genital herpes infections. Localized cutaneous herpes simplex infections (cold sores) in nonimmunosuppressed patients. Mucosal or cutaneous herpes simplex infections and herpes zoster infections in immunosuppressed patients. Herpes simplex encephalitis.

**Buccal:** Recurrent herpes labialis (cold sores) in nonimmunosuppressed patients.

**IV:** Severe initial episodes of genital herpes in nonimmunosuppressed patients. Mucosal or cutaneous herpes simplex infections or herpes zoster infections (shingles) in immunosuppressed patients. Herpes simplex encephalitis.

**Topical:**
- Cream—Treatment of limited non–life-threatening herpes simplex infections in immunocompromised patients (systemic treatment is preferred).
- Ointment—Treatment of limited non–life-threatening herpes simplex infections in immunocompromised patients (systemic treatment is preferred).

**Action**

Interferes with viral DNA synthesis.

**Therapeutic Effects:** Inhibition of viral replication, decreased viral shedding, and reduced time for healing of lesions.

**Pharmacokinetics**

**Absorption:** Despite poor absorption (15–30%), therapeutic blood levels are achieved.

**Distribution:** Widely distributed. CSF concentrations are 50% of plasma. Crosses placenta; enters breast milk.

**Protein Binding:** 30%.

**Metabolism and Excretion:** 90% eliminated unchanged by kidneys; remains metabolized by liver.

**Half-life:**
- Neonates: 4 hr
- Children 1–12 yr: 2–3 hr
- Adults: 2–3.5 hr
- (q in renal failure).

**TIME/ACTION PROFILE (antiviral blood levels)**

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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<tbody>
<tr>
<td>PO</td>
<td>prompt</td>
<td>15–3 hr</td>
<td>4 hr</td>
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<tr>
<td>IV</td>
<td>prompt</td>
<td>1 hr</td>
<td>4 hr</td>
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- = Generic drug name

**Contraindications/Precautions**

**Contraindicated in:** Hypersensitivity to acyclovir or valacyclovir;
- Hypersensitivity to milk protein concentrate (buccal only)

**Use Cautiously in:**
- Pre-existing serious neurologic, hepatic, pulmonary, or fluid and electrolyte abnormalities;
- Renal impairment (dose alteration recommended if CCr < 50 mL/min);
- Geri: Due to age related ↓ in renal function; obese patients (dose should be based on ideal body weight);
- Patients with hypoxia;
- OB, Lactation: Safety not established.

**Adverse Reactions/Side Effects**

**CNS:** SEIZURES, dizziness, headache, hallucinations, trembling.

**GI:** Diarrhea, nausea, vomiting, ↑ liver enzymes, hyperbilirubinemia, abdominal pain, anorexia.

**GU:** Renal failure, crystalluria, hematuria, renal pain.

**Derm:** STEVENS-JOHNSON SYNDROME, acne, hives, rash, unusual sweating.

**Endo:** Changes in menstrual cycle.

**Hemat:** Thrombotic thrombocytopenic purpura/hemolytic uremic syndrome (high doses in immunosuppressed patients)

**Local:** Pain, phlebitis, local irritation.

**MS:** Joint pain.

**Misc:** Polydipsia.

**Interactions**

**Drug-Drug:**
- Probenecid: ↓ blood levels of acyclovir.
- Probably: ↑ blood levels and risk of toxicity from theophylline; dose adjustment may be necessary.
- Cimetidine, probenecid, sulfinpyrazone, sulfinpyrazole: ↑ blood levels and risk of toxicity from theophylline; dose adjustment may be necessary.
- Valproic acid or phenytoin: Concurrent use of other nephrotoxic drugs may ↑ risk of adverse renal effects.
- Zidovudine and IT methotrexate may ↑ risk of CNS side effects.

**Route/Dosage**

**Initial Genital Herpes**

**PO (Adults and Children):** 200 mg q 4 hr while awake (5 times/day) for 7–10 days or 400 mg q 8 hr for 7–10 days, maximum dose in children: 80 mg/kg/day in 3–5 divided doses.

**IV (Adults and Children):** 5 mg/kg q 8 hr or 750 mg/m²/day divided q 8 hr for 5–7 days.

**Chronic Suppressive Therapy for Recurrent Genital Herpes**

**PO (Adults and Children):** 400 mg twice daily or 200 mg, 3–5 times/day for up to 12 mo. Maximum dose in children: 80 mg/kg/day in 2–5 divided doses.

**Concomitant use of other nephrotoxic drugs may ↑ risk of adverse renal effects.**
Intermittent Therapy for Recurrent Genital Herpes
PO (Adults and Children): 200 mg q 4 hr while awake (5 times/day) or 400 mg per 800 mg q 8 hr for 5 days, start at first sign of symptoms. Maximum dose in children: 80 mg/kg/day in 2–5 divided doses.

Acute Treatment of Herpes Zoster in Immunocompromised Patients
PO (Adults): 400 mg q 4 hr while awake (5 times/day) for 7–10 days. Prophylaxis—400 mg 5 times/day.
PO (Children): 20–40 mg/kg/day in 4–5 divided doses.

Herpes Zoster in Immunocompetent Patients
PO (Adults and Children): 400 mg 5 times/day.

Chickenpox
PO (Adults): 20 mg/kg (not to exceed 800 mg/day) for 5 days.

Mucosal and Cutaneous Herpes Simplex Infections in Immunocompromised Patients
IV (Adults and Children ≥12 yr): 5 mg/kg q 8 hr for 7 days.
IV (Children <12 yr): 10 mg/kg q 8 hr for 7 days.

Varicella Zoster Infections in Immunocompromised Patients
IV (Adults): 10 mg/kg q 8 hr for 7–10 days.
IV (Children): 20 mg/kg q 8 hr for 7–10 days.

Renal Impairment
PO, IV (Adults and Children): CCr 10–25 mL/min/1.73 m² — administer normal dose q 12 hr.
CCr 25–50 mL/min/1.73 m² — administer normal dose q 24 hr.
CCr 50–80 mL/min/1.73 m² — administer normal dose q 24 hr.
CCr >80 mL/min/1.73 m² — administer normal dose q 48 hr.

NURSING IMPLICATIONS
Assessment
● Assess known before and daily during therapy.
● Assess frequency of recurrences.
● Monitor neurologic status in patients with herpes encephalitis.

Lab Test Considerations: Monitor BUN, serum creatinine, and CCr before and during therapy. ↑ BUN and serum creatinine levels or ↓ CCr may indicate renal failure.

Potential Nursing Diagnoses
Risk for impaired skin integrity (Indications)
Risk for infection (Patient/Family Teaching)

Implementation
● Do not confuse Zovirax with Derick, Zyrtec, or Zantac.
● Start antiviral treatment as soon as possible after herpes simplex symptoms appear and/or herpes zoster symptoms appear.
PO: Acyclovir may be administered with food or on an empty stomach, with a full glass of water.\footnote{May be more comfortable to apply rounded side of tablet to gum surface. Apply on same side as herpes labialis symptoms within 1 hr of onset of prodromal symptoms (but before appearance of any lesions).}

Varicella Zoster Infections in Immunocompromised Patients
PO (Adults): 20 mg/kg (not to exceed 800 mg/day) for 5 days.

Chickenpox
PO (Adults): 20 mg/kg (not to exceed 800 mg/day) for 5 days.
CONTINUED

acyclovir

Y-Site Compatibility:

- Do not administer acyclovir injectable topically, IM, subcut, PO, or in the eye.
- Observe infusion site for phlebitis. Rotate infusion site to prevent phlebitis.
- Use reconstituted solution within 12 hr. Once diluted for infusion, the solution should be used within 24 hr. Refrigeration results in precipitation, which dissolves at room temperature.

Y-Site Incompatibility:

- At room temperature.

Caution:

- Do not administer acyclovir, nor therapeutic, or as an injection in the eye.
- Acyclovir tablets and acyclovir oral solution should be used within 24 hr. Refrigeration results in precipitation, which dissolves at room temperature.

Patient/Family Teaching

- Instruct patient to take medication as directed for the full course of therapy. Take missed doses as soon as possible but not just before next dose is due; do not double doses. Acyclovir should not be used more frequently or longer than prescribed.
- Advise patient that the additional use of OTC creams, lotions, and ointments may delay healing and may cause spreading of lesions.
- Advise patient to take medication as directed for the full course of therapy. Take missed doses as soon as possible but not just before next dose is due; do not double doses. Acyclovir should not be used more frequently or longer than prescribed.
- Advise patient that the additional use of OTC creams, lotions, and ointments may delay healing and may cause spreading of lesions.
- Advise patient to use condoms and wash hands before and after sexual contact.
- Advise patient to avoid sexual contact while lesions are present.
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severity of recurrences. Immunosuppressed patients may require a longer time, usually 2 weeks, for crusting over of lesions.

- Instruct women with genital herpes to have yearly Papanicolaou smears because they may be more likely to develop cervical cancer.

- **Topical**: Instruct patient to apply ointment in sufficient quantity to cover all lesions every 1 hr, 6 times/day for 7 days. 0.5-in. ribbon of ointment covers approximately 1 square in. Use a larger cut or glove when applying to prevent inoculation of other areas or spread to other people. Keep affected areas clean and dry. Lesion-dressing clothing should be worn to prevent irritation.

- Avoid drug contact in or around eyes. Report any unexplained eye symptoms to healthcare professional immediately; ocular herpetic infection can lead to blindness.

- **Buccal**: Instruct patient on correct application and use of buccal tablet. If buccal tablet does not adhere or falls off within first 6 hours, reposition immediately with same tablet. If tablet cannot be repositioned, apply new tablet. If swallowed within first 6 hours, advise patient to drink a glass of water and apply a new tablet. Do not reapply if tablet falls out after 6 hrs.

### Evaluation/Desired Outcomes

- Crusting over and healing of skin lesions.
- Decrease in frequency and severity of recurrences.
- Acceleration of complete healing and cessation of pain in herpes zoster.
- Decrease in intensity of chickenpox.

**Why was this drug prescribed for your patient?**