zonisamide (zo-niss-a-mide)

**Indications**
Partial seizures in adults.

**Action**
Raises the threshold for seizures and reduces duration of seizures probably by action on sodium and calcium channels.

**Therapeutic Effects:**
Decreased frequency of partial seizures.

**Pharmacokinetics**

- **Absorption:** Well absorbed following oral administration.
- **Distribution:** Binds extensively to red blood cells.
- **Protein Binding:** 40%.
- **Metabolism and Excretion:** Mostly metabolized by the liver; 35% excreted unchanged in urine. Some metabolism occurs via CYP3A4 enzyme system.
- **Half-life:** 63 hr (plasma).

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

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO</td>
<td>unknown</td>
<td>2–6 hr</td>
<td>24 hr</td>
</tr>
</tbody>
</table>

†Requires 2 weeks of dosing to achieve steady-state blood levels.

**Contraindications/Precautions**

- **Contraindicated in:** Hypersensitivity to zonisamide or sulfonamides.
- **Use Cautiously in:** All patients (may risk of suicidal thoughts/behaviors); Hepatic or renal disease (may require slower titration/more frequent monitoring; risk of metabolic acidosis with renal impairment); Patients with respiratory disorders, diarrhea, or undergoing surgery († risk of metabolic acidosis).

**Adverse Reactions/Side Effects**

- **CNS:** SUICIDAL THOUGHTS, drowsiness, fatigue, agitation/irritability, depression, dizziness, psychomotor slowing, psychosis, weakness.
- **EENT:** Amblyopia, tinnitus.
- **Resp:** Cough, pharyngitis.
- **GI:** Anorexia, nausea, vomiting.
- **F and E:** Metabolic acidosis.
- **GU:** Kidney stones.
- **Derm:** STEVENS-JOHNSON SYNDROME, rash.
- **Metab:** Hyperthermia.
- **Neuro:** Abnormal gait, incoordination, tremor.

**Interactions**

- **Drug-Drug:** Drugs that induce or inhibit CYP3A4 may alter blood levels and effects of zonisamide. Blood levels and effects may be increased by phenytoin, carbamazepine, phenobarbital, or valproate. May enhance the adverse/toxic effect of carbonic anhydrase inhibitors; avoid combination.

**Route/Dosage**

- **PO (Adults and Children ≥16 yr):** 100 mg once daily initially for 2 wk, then titrated to 200 mg daily for 2 wk, with subsequent increments of 100 mg made at 2-wk intervals as required (range 100–600 mg/day). Can be given as a single daily dose or in 2 divided doses.
- **PO (Infants and Children):** Initial: 1–2 mg/kg/day given in two divided doses/day; increase dose in increments of 0.5–1 mg/kg/day every 2 weeks (maximum dose: 20 mg/kg/day).

**NURSING IMPLICATIONS**

- **Assessment:**
  - Monitor closely for notable changes in behavior that could indicate the emergence or worsening of suicidal thoughts or behavior or depression.
  - Monitor patient for development of skin rash. Unexplained rash may require discontinuation of therapy.
  - Assess patient for allergy to sulfa drugs.
  - Lab Test Considerations: Monitor renal function periodically during therapy. May cause ↑ creatinine and BUN.

- **Contraindications:** Use only if potential benefit justifies risk to fetus/infant; potential benefit justifies risk to fetus/infant; potential benefit justifies risk to fetus/infant.

- **Discontinued:**
Measure serum bicarbonate before starting and periodically during therapy. Metabolic acidosis may be more frequent and severe in younger patients.

May cause an increase in serum alkaline phosphatase.

Potential Nursing Diagnoses
Risk for injury (Adverse Reactions)

Implementation
- PO: May be administered with or without meals. Capsules should be swallowed whole.

Patient/Family Teaching
- Instruct patient to take zonisamide as directed, even if feeling well. Consult health care professional if confusion occurs. Do not discontinue abruptly without consulting health care professional; may cause seizures. Instruct patient to read the Medication Guide before starting and with each Rx refill, changes may occur.
- Instruct patient to contact health care professional immediately if skin rash occurs or becomes worse. Patient should also contact health care professional if a child taking zonisamide is not sweating as usual, with or without a fever, or if they develop a fever, rash, oral ulcers, easy bruising, or abnormal muscle movements.
- May cause drowsiness. Caution patient to avoid driving or other activities requiring alertness until cleared by health care professional and effects of medication is known.
- Advise patient to increase fluid intake to at least 6-8 glasses of water daily to minimize risk of kidney stones. Instruct patient to contact health care professional if symptoms of kidney stones (sudden back pain, abdominal pain, blood in urine) occur.
- Advise patient and family to notify health care professional if thoughts about suicide or dying, attempting to commit suicide; new or worse depression; new or worse anxiety; feeling very agitated or restless; panic attacks; trouble sleeping; new or worse irritability; acting violent; being angry or irritable; acting on dangerous impulses; an extreme increase in activity and talking, other unusual changes in behavior or mood occur.

Evaluation/Desired Outcomes
- Decrease in frequency and duration of partial seizures.