Levetiracetam (le-ve-teer-a-se-tam)  
Keppra, Keppra XR

**Classification**
Therapeutic: anticonvulsants  
Pharmacologic: pyrrolidines

**Pregnancy Category C**

**Indications**

**Action**
Appears to inhibit burst firing without affecting normal neuronal excitability and may selectively prevent hypersynchronization of epileptiform burst firing and propagation of seizure activity. **Therapeutic Effects:** Decreased incidence and severity of seizures.

**Pharmacokinetics**
Absorption: Rapidly and completely absorbed following oral administration.  
Distribution: Unknown.  
Protein Binding: 10%.  
Metabolism and Excretion: 66% excreted unchanged by the kidneys; some metabolism by the liver (metabolites inactive).  
Half-life: 7.1 hr (in renal impairment).

**TIME/ACTION PROFILE (blood levels)**  
ROUTE ONSET PEAK DURATION  
PO rapid 1–1.5 hr†‡ 12 hr  
†1 hr in the fasting state, 1.5 hr when taken with food  
‡ 4 hr with extended-release

**Contraindications/Precautions**
Contraindicated in: Hypersensitivity.  
Lactation: Lactation.

**Adverse Reactions/Side Effects**
**CNS:** SUICIDAL THOUGHTS, aggression, agitation, anger, anxiety, apathy, depersonalization, depression, dizziness, hostility, irritability, personality disorder, weakness, drowsiness, dyskinesia, fatigue. **Neuro:** Somnolence, confusion, tremor.

**Interactions**
Drug-Drug: None noted.

**Route/Dosage**
PO: (Adults and Children ≥16 yr): 500 mg 2 times daily initially; may be increased by 1000 mg/day at 2-wk intervals up to 3000 mg/day; Extended-release—1000 mg daily, may be increased by 1000 mg at 2–wk intervals up to 3000 mg/day.  
PO: (Children ≥16 yr): 10 mg/kg twice daily; may be increased by 20 mg/kg/day at 2-wk intervals to recommended dose of 30 mg/kg twice daily.  
PO: (Children 6 mo–15 yr): 10 mg/kg twice daily; may be increased by 20 mg/kg/day at 2–wk intervals to recommended dose of 30 mg/kg twice daily.  
PO: (Children 2–12 yr): 7 mg/kg twice daily; may be increased by 14 mg/kg/day at 2-week intervals to recommended dose of 21 mg/kg twice daily.  
PO: (Children 12 yr): 500 mg twice daily initially; may be increased by 1000 mg/kg at 2–wk intervals to recommended dose of 3000 mg/kg/day.  
PO: (Children 1–5 yr): 5 mg/kg twice daily initially; by 1000 mg/kg at 2–wk intervals to recommended dose of 3000 mg/kg/day.  
PO: (Children 0.1–1 yr): 10 mg/kg twice daily; may be increased by 5 mg/kg/day at 2–wk intervals to recommended dose of 30 mg/kg twice daily.

**Primary Generalized Tonic-Clonic Seizures**
PO: (Adults and Children ≥16 yr): 500 mg 2 times daily initially; may be increased by 1000 mg/kg at 2–wk intervals to recommended dose of 3000 mg/kg/day.  
PO: (Children 6–15 yr): 10 mg/kg twice daily; may be increased by 20 mg/kg/day at 2–wk intervals to recommended dose of 30 mg/kg twice daily.  
PO: (Children ≥12 yr): 7 mg/kg twice daily; may be increased by 14 mg/kg/day at 2–wk intervals to recommended dose of 21 mg/kg twice daily.  
PO: (Children 12 yr): 500 mg twice daily initially; may be increased by 1000 mg/kg at 2–wk intervals to recommended dose of 3000 mg/kg/day.  
PO: (Children 1–5 yr): 5 mg/kg twice daily initially; by 1000 mg/kg at 2–wk intervals to recommended dose of 3000 mg/kg/day.  
PO: (Children 0.1–1 yr): 10 mg/kg twice daily; may be increased by 5 mg/kg/day at 2–wk intervals to recommended dose of 30 mg/kg twice daily.

**Myoclonic Seizures**
IV: (Adults and Children ≥16 yr): 500 mg 2 times daily initially; may be increased by 1000 mg/kg at 2–wk intervals to recommended dose of 3000 mg/kg/day.  
PO: (Children 6–15 yr): 10 mg/kg twice daily; may be increased by 20 mg/kg/day at 2–wk intervals to recommended dose of 30 mg/kg twice daily.  
PO: (Children ≥12 yr): 7 mg/kg twice daily; may be increased by 14 mg/kg/day at 2–wk intervals to recommended dose of 21 mg/kg twice daily.  
PO: (Children 12 yr): 500 mg twice daily initially; may be increased by 1000 mg/kg at 2–wk intervals to recommended dose of 3000 mg/kg/day.  
PO: (Children 1–5 yr): 5 mg/kg twice daily initially; by 1000 mg/kg at 2–wk intervals to recommended dose of 3000 mg/kg/day.  
PO: (Children 0.1–1 yr): 10 mg/kg twice daily; may be increased by 5 mg/kg/day at 2–wk intervals to recommended dose of 30 mg/kg twice daily.
Status Epilepticus

IV (Infants and Children < 16yr): 50 mg/kg/dose followed by maintenance dose of 50–100 mg/kg/day IV/PO divided BID.

PO (Children): 50 mg/kg/day divided BID; 7 days by 10 mg/kg/day up to 30 mg/kg/day (maximum reported dose: 60 mg/kg/day).

Renal Impairment

PO, IV (Adults): CCr 50–80 mL/min—500–1000 mg q 12 hr (1000–2000 mg q 24 hr for extended-release); CCr 30–50 mL/min—250–750 mg q 12 hr (500–1500 mg q 24 hr for extended-release); CCr <30 mL/min—250–500 mg q 12 hr (500–1000 mg q 24 hr for extended-release). Doses (intravenous—infusion and injection) —500–1000 mg q 24 hr with a 250–500 mg supplemental dose after dialysis.

NURSING IMPLICATIONS

Assessment

- Assess location, duration, and characteristics of seizure activity.
- Assess patient for CSE adverse effects throughout therapy. These adverse effects are categorized as somnolence and fatigue (continuous), coordination difficulties (dizziness, abnormal gait, or incoordination), and hallucinations (apparation, hitherto, amnesia, spastic, emotional lability, delirium, depression) and usually occur during the first 4 wk of therapy.
- Monitor mood changes. Assess for suicidal tendencies, especially during early therapy. Restrict access to drug available to patient.
- Assess for CSE adverse effects throughout therapy. These adverse effects are categorized as somnolence and fatigue (continuous), coordination difficulties (dizziness, abnormal gait, or incoordination), and hallucinations (apparation, hitherto, amnesia, spastic, emotional lability, delirium, depression) and usually occur during the first 4 wk of therapy.

Patient/Family Teaching

- Instruct patient to take medication as directed. PO: Explain to parents the importance of using a calibrated measuring device for accurate dosing. Take missed doses as soon as possible unless almost time for next dose. Do not double doses. Do not discontinue abruptly; may cause increase in seizure frequency. Advise patient to avoid driving or activities requiring alertness until response to medication is known. Do not resume driving until physician gives clearance based on control of seizure disorder.
- Advise patient and family to notify health care professional if thoughts about suicide or dying, attempts 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 aggressive; being angry or violent; acting on dangerous impulses; an extreme increase in activity and talking; other unusual changes in behavior or mood or if skin rash occurs.

Potential Nursing Diagnoses

Risk for injury (Side Effects)

Implementation

- Do not confuse Keppra (levetiracetam) with Kaletra (lopinavir/ritonavir).
- IV doses should be used temporarily when oral route is not feasible. To convert IV to PO, equivalent dose and frequency may be used.
- PO: May be administered without regard to meals.
- Administer tablets whole; do not administer partial tablets. Do not break, crush, or chew tablets.
- PO: Patients >20 kg should receive oral solution. Administer with calibrated measuring device for accurate dose.

IV Administration

- Intermittent Infusion: Diluent: Dilute dose in 100 mL of 0.9% NaCl, D5W, or LR. Do not administer solutions that are cloudy or contain particulate matter.
- Y-Site Compatibility: diazepam, lorazepam, valproate.
Continued

Levetiracetam

- Advise patient to notify health care professional of all Rx or OTC medications, vita-
mins, or herbal products being taken and to consult with health care professional
before taking other medications.
- Advise female patients to notify health care professional if pregnancy is planned or
suspected or if breastfeeding. Encourage pregnant patients to enroll in the North
American Antiepileptic Drug (NAAED) Pregnancy Registry by calling 1-888-233-
2334; information is available at www.aedpregnancyregistry.org.
- Instruct patient to notify health care professional of medication regimen prior to
treatment or surgery.
- Advise patient to carry identification describing disease process and medication
regimen at all times.

Evaluation/Desired Outcomes

- Decrease in the frequency of or cessation of seizures.

Why was this drug prescribed for your patient?