carBAMazepine (kar-ba-maze-pen)

Carbatol, Epitrol, Equetro, Lamazine, Tegretol, Tegretol CR, Tegretol XR, Tegretol

Classification
Therapeutic: anticonvulsants, mood stabilizers
Pregnancy Category D

Indications

Action
Decreases synaptic transmission in the CNS by affecting sodium channels in neurons. Decreases seizure activity in trigeminal neuralgia or diabetic neuropathy. Decreases mania.


Pharmacokinetics

Absorption: Absorption is slow but complete. Suspensions produce earlier, higher peak, and lower trough levels.

Distribution: Widely distributed. Crosses the blood-brain barrier. Crosses the placenta rapidly and enters breast milk in high concentrations.

Protein Binding: Carbamazepine — 75–95%; epoxide — 50%.

Metabolism and Excretion: Extensively metabolized in the liver by cytochrome P450 3A4 to active epoxide metabolite; epoxide metabolite has anticonvulsant and antipsychotic activity.

Half-life: Carbamazepine — single dose — 25–65 hr, chronic dosing — 17–19 hr; epoxide — 5–6 hr.

TIME/ACTION PROFILE (anticonvulsant activity)

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO-ER</td>
<td>1–2 hr</td>
<td>2–3 hr</td>
<td>12–17 hr</td>
</tr>
<tr>
<td>PO-dos</td>
<td>8–14 hr</td>
<td>12–17 hr</td>
<td>12–17 hr</td>
</tr>
</tbody>
</table>

Contraindications/Precautions
Contraindicated in: Hypersensitivity. Bone marrow suppression. Concurrent use or use within 14 days of HMG inhibitors. Concurrent use of nefazodone, SSRIs, or CYP 3A4 inhibitors. Use of certain CYP 3A4 inhibitors (e.g., ketoconazole, itraconazole, clarithromycin, diltiazem, verapamil, ritonavir, atazanavir, indinavir) may significantly increase levels of active metabolite, increase sedation, and risk of hepatotoxicity. Concurrent use of nefazodone may significantly increase levels of nefazodone; concurrent use contraindicated.

Use cautiously in: Exercise extreme caution in: Parkinson’s disease; Prostatic hyperplasia; Renal disease; Hepatic disease; Pregnancy (use only if potential benefits outweigh risks to the fetus); Lactation; Children; Geriatric patients; Patients with mental retardation; Pedi: 6 months (may cause toxicity).

Adverse Reactions/Side Effects

Drug Interactions

Drug-Drug: May significantly increase levels of nefazodone; concurrent use contraindicated. May ↑ levels, effectiveness of contraceptive hormones, desogen, felbamate, quinidine, warfarin, estrogen-containing contraceptives, lamotrigine, tiotropium, acetaminophen, ibuprofen, salicylates, isoniazid, phenytoin, carbamazepine, lamotrigine, and theophylline. May ↓ levels of active metabolite. May ↓ effectiveness and ↑ risk of toxicity from felbamate, lamotrigine, and carbamazepine levels; may ↑ risk of hepatotoxicity from felbamate, lamotrigine, or carbamazepine levels but ↓ levels of active metabolite. May ↓ effectiveness and ↑ risk of toxicity from carbamazepine, felbamate, lamotrigine, and theophylline. May ↑ blood levels of warfarin. May ↓ levels of warfarin. May ↑ levels of c-peptide. May ↑ levels of prednisone. May ↓ levels of c-peptide. May ↑ plasma levels of theophylline. May ↑ levels of theophylline. May ↑ levels of theophylline. May ↓ levels of theophylline. May ↓ levels of theophylline. May ↓ levels of theophylline. May ↓ levels of theophylline. May ↓ levels of theophylline. May ↓ levels of theophylline. May ↓ levels of theophylline.

MISCELLANEOUS:
Dosage Forms:
Carbatol (tab): 200 mg; 50 mg/mL
Epitrol (tab): 200 mg; 50 mg/mL
Equetro (tab): 600 mg; 200 mg/mL
Lamazine (tab): 100 mg; 25 mg/mL
Tegretol (tab): 100 mg; 25 mg/mL
Tegretol CR (tab): 200 mg; 50 mg/mL
Tegretol XR (tab): 100 mg; 25 mg/mL
Tegretol (cap): 200 mg; 50 mg/mL

References:
Original Russian-language literature.

Hemat: agranulocytosis, aplastic anemia, thrombocytopenia, eosinophilia, leukopenia, lymphadenopathy.

F and E: thirst, polyuria, polydipsia, syncope.

CV: edema, hypertension, hypotension, syncope.

Derm: Stevens-Johnson syndrome, toxic epidermal necrolysis, nail shedding, photosensitivity, rash, urticaria.

GU: oliguria, polyuria, polydipsia, dysuria, hematuria.

Gastro: nausea, vomiting, diarrhea, Constipation, dry mouth, flatulence, abdominal pain, gastroparesis, gastroesophageal reflux disease.

Hepatic: increased liver enzymes, pancreatitis, cholestasis, hepatitis, jaundice, hepatic or renal failure, hyperbilirubinemia, hyperglycemia.

Neuro: ataxia, tremor, paresthesia, mental status changes, memory loss, confusion, agitation, aggression, auditory hallucinations, delusions, hallucinations, psychosis, insomnia, depression, anxiety, exacerbations of mania.

Ocular: blurred vision, central nervous system dysfunction.

Respiratory: cough, dyspnea, tachypnea, interstitial pneumonia.

Misc: chills, fever, multi-organ hypersensitivity reactions.

Other: anorexia, amenorrhea, galactorrhea, increased appetite, weight gain, gallbladder dysfunction, urinary retention, Derm: Stevens-Johnson syndrome, toxic epidermal necrolysis, nail shedding, photosensitivity, rash, urticaria.

Syndrome of inappropriate antidiuretic hormone (SIADH).

Other: anorexia, amenorrhea, galactorrhea, increased appetite, weight gain, gallbladder dysfunction, urinary retention.

Stevens-Johnson syndrome/Tokyo syndrome.

Gastro: nausea, vomiting, diarrhea, Constipation, dry mouth, flatulence, abdominal pain, gastroparesis, gastroesophageal reflux disease.

Hepatic: increased liver enzymes, pancreatitis, cholestasis, hepatitis, jaundice, hepatic or renal failure, hyperbilirubinemia, hyperglycemia.

Neuro: ataxia, tremor, paresthesia, mental status changes, memory loss, confusion, agitation, aggression, auditory hallucinations, delusions, hallucinations, psychosis, insomnia, depression, anxiety, exacerbations of mania.

Ocular: blurred vision, central nervous system dysfunction.

Respiratory: cough, dyspnea, tachypnea, interstitial pneumonia.

Misc: chills, fever, multi-organ hypersensitivity reactions.

Other: anorexia, amenorrhea, galactorrhea, increased appetite, weight gain, gallbladder dysfunction, urinary retention.

Stevens-Johnson syndrome/Tokyo syndrome.

Other: anorexia, amenorrhea, galactorrhea, increased appetite, weight gain, gallbladder dysfunction, urinary retention.

Stevens-Johnson syndrome/Tokyo syndrome.

Stevens-Johnson syndrome/Tokyo syndrome.

Stevens-Johnson syndrome/Tokyo syndrome.
From acetaminophen. May ↑ risk of CNS toxicity from lithium. May ↓ risk of CNS toxicity from lithium. May ↓ duration of action of nondepolarizing neuromuscular blocking agents.

Drug-Drug: Grapefruit juice: ↓ serum levels and oral bioavailability by 40% and therefore may ↓ effects.

Route/Dosage
PO (Adults): Anticonvulsant—200 mg twice daily (tablets) or 100 mg 4 times daily (suspension); ↑ by 200 mg/day q 7 days until therapeutic levels are achieved (range is 600–1200 mg/day in divided doses q 6–8 hr; not to exceed 1 g/day in 12–15-yr-olds. Extended-release products are given twice daily (XR, CR).

Antineur- algic—100 mg twice daily or 50 mg 4 times daily (suspension); ↑ by up to 200 mg/day until pain is relieved, then maintenance dose of 200–1200 mg/day in divided doses (oral range, 400–800 mg/day).

PO (Children 6–12 yr): 100 mg twice daily (tablets) or 50 mg 4 times daily (suspension); ↑ by 100 mg weekly until therapeutic levels are obtained (oral range 400–800 mg/day; not to exceed 1 g/day). Extended-release products (XR, CR) are given twice daily.

PO (Children <6 yr): 10–20 mg/kg/day in 2–3 divided doses; may be ↓ at weekly intervals until optimal response and therapeutic levels are achieved. Usual maintenance dose is 250–350 mg/day (not to exceed 55 mg/kg/day).

NURSING IMPLICATIONS
Assessment
● Monitor closely for subtle changes in behavior that could indicate the emergence or worsening of suicidal thoughts or behavior.

● Monitor for changes in skin condition in early therapy. Stevens-Johnson syndrome and toxic epidermal necrolysis are significantly more common in patients with a particular human leukocyte antigen (HLA) allele, HLA-B*1502 (occurs almost exclusively in patients with Asian ancestry, including South Asian Indians). Screen patients of Asian ancestry for the HLA-B*1502 allele before starting treatment with carbamazepine. If positive, carbamazepine should not be started unless the expected benefit outweighs increased risk of serious skin reactions. Patients who have been taking carbamazepine for more than a few months without developing skin reactions are at low risk of these events ever developing.

● Seizures: Assess frequency, location, duration, and characteristics of seizure activity.

● Trigeminal Neuralgia: Assess for facial pain (location, intensity, duration). Ask patient to identify stimuli that may precipitate facial pain (hot or cold foods, bedclothes, touching face).

● Bipolar Disorder: Assess mood state (mood, orientation, behavior) and cognitive abilities before and periodically during therapy.

● Lab Test Considerations: Monitor CBC, including platelet count, reticulocyte count, serum iron, weekly during the first 2 mo and yearly thereafter for evidence of potentially fatal blood cell abnormalities. Medication should be discontinued if these adverse reactions occur.

● Perform generic testing for the HLA-B*1502 allele in patients of Asian ancestry prior to beginning therapy.

● Liver function tests, urinalysis, and BUN should be routinely performed. May cause ↑ AST, ALT, serum alkaline phosphatase, bilirubin, BUN, serum creatinine, and urine glucose levels.

● Monitor serum total calcium levels every 6 mo or if serum calcium increases. Thyroid function tests and serum calcium concentrations may be ↓, hypocalcemia ↓ seizure threshold.

● Monitor EEG and serum electrolytes before and periodically during therapy. May cause hyperkalemia.

● May occasionally cause ↑ serum cholesterol, high-density lipoprotein, and triglyceride concentrations.

● May cause false-negative pregnancy test results with tests that determine human chorionic gonadotropin.

● Toxicity and Overdose: Serum blood levels should be routinely monitored during therapy. Therapeutic levels range from 4–12 mcg/mL.

Potential Nursing Diagnoses
Behaviors (Indications) (Side Effects)
Cognitive pain (Indications)
Dysphagia or dry mouth (Side Effects)
Implementation
Do not confuse carbamazepine with oxcarbazepine. Do not confuse Tegretol with Trental or Tegretol XR.

● Implement seizure precautions as indicated.

● PO: Administer medication with food to minimize gastric irritation. May take at bedtime to reduce daytime sedation. Tablets may be crushed if patient has diff...
carbamazepine

CONTINUED

 swallow tablets. Do not crush or chew extended-release tablets. Extended-release capsules may be opened and the contents sprinkled on applesauce or other similar foods.

● Do not administer suspension simultaneously with other liquid medications or diluents, mixture produces an orange rubbery mass.

Patient/Family Teaching

● Instruct patient to take carbamazepine around the clock, as directed. Take missed doses as soon as possible but not if next dose is due; no double doses. Notify health care professional if more than one missed dose. Medication should be gradually discontinued to prevent seizures. Instruct patient to read the Medication Guide before starting and with each Rx refill; changes may occur.

● May cause dizziness or drowsiness. Advise patient to avoid driving or other activities requiring alertness until response to medication is known.

● Instruct patient that behavioral changes, skin rash, fever, sore throat, mouth ulcers, acne, bruising, pruritus, unusual bleeding, abdominal pain, chills, rash, pale stools, dark urine, or jaundice should be reported to health care professional immediately. 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 on dangerous impulses; an extreme increase in activity and talking, other unusual changes in behavior or mood occur.

● Instruct patient that coating of Tegretol XR is not absorbed, but is excreted in feces and may be visible in stool.

● Advise patient not to take alcohol or other CNS depressants concurrently with this medication.

● Caution patients to use sunscreen and protective clothing to prevent photosensitivity reactions.

● Inform patient that frequent mouth rinses, good oral hygiene, and sugarless gum or candy may help reduce dry mouth. Saliva substitute may be used. Consult dentist if dry mouth persists 2 wk.

● Instruct patient to notify health care professional of medication regimen before treatment or surgery.

● Advise female patients to use a nonhormonal form of contraception while taking carbamazepine, to avoid breast feeding, and to notify health care professional if pregnancy is planned or suspected or if breast feeding.

● Emphasize the importance of follow-up lab tests and eye exams to monitor for side effects.

● Scarring: Advise patients to carry identification describing disease and medication regimen at all times.

Why was this drug prescribed for your patient?