List of Drug Monographs

Drug Monographs

ALPRAZOLAM (*Xanax*/*Xanax XR*/*Niravam*)

Classification: Benzodiazepine (BZD).

Indications: Short-acting BZD used to treat GADs and PD. May be used as a short-term adjunct to an SSRI while waiting for the therapeutic effects of the SSRI to develop.

Available Forms: Tablet, 0.25, 0.5, 1, and 2 mg; extended-release capsule, 0.5, 1, and 2 mg; melt, 0.5, 1, 2, and 3 mg.

Dosage:
Xanax: Starting dose, 0.25–0.5 mg up to 2–3 times daily; maximum, 4 mg daily. Can be increased every 3–4 days. Treatment should be limited to as short a period as possible (less than 4 months) and/or reevaluated for continued use. *Xanax XR*: Starting dose, 0.5–1 mg PO, daily, can increase up to 1 mg/day every 3–4 days. *Niravam* (*melt*): Starting dose, 0.25 to 0.5 mg up to 2–3 times daily; maximum, 4 mg daily. Can be increased every 3–4 days.

Administration:
- PO with a glass of water.
- Do not crush, cut, or chew extended-release tablets.
- Orally disintegrating form *(Niravam)* has special instructions.
- Concentrated liquid must be measured with a special dose-measuring spoon or cup.

Side Effects: Drowsiness, lightheadedness, dry mouth, headache, changes in bowel habits, sialorrhea, amnesia, and changes in appetite. Changes in appetite, changes in sexual desire, constipation, dizziness, drowsiness, dry mouth, increased saliva production, lightheadedness, tiredness, trouble concentrating, unsteadiness, and weight changes. Syncope, tachycardia, seizures, respiratory depression, dependency, withdrawal syndrome, and suicidal ideation.

Drug Interactions: This medicine may interact with the following medications:
- Absolute contraindications include clarithromycin, fluvoxamine, and ketoconazole.
- Avoid using with calcium channel blockers, erythromycins, tamoxifen, and zafirlukast.

- Avoid sodium oxybate, as it can increase CNS and respiratory depression. Chloramphenicol, cimetidine (*Tagamet*), clarithromycin (*Biaxin*), onivaptan (*Vaprisol*), cyclosporine (*Gengraf/Neoral*), delavirdine (*Rescriptor*), imatinib (*Gleevec*), isoniazid, itraconazole (*Sporanox*), ketoconazole, nefazodone (*Serzone*), posaconazole (*Noxafil*), protease inhibitors, telithromycin (*Ketek*), and voriconazole (*Vfend*) may increase benzodiazepine levels, risk of CNS depression, and psychomotor impairment.
- The action of benzodiazepines may be potentiated by barbiturates, narcotics, phenothiazines, MAOIs, or other antidepressants.
- *Alert:* This list may not describe all possible interactions. Instruct patients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements used, and if they smoke, drink alcohol, or use illegal drugs.

Pharmacokinetics: Metabolized in the liver (CYP450) and is excreted in the urine. It binds to benzodiazepine receptors and enhances GABA effects.
BZDs enhance the activity of GABA, a major CNS neurotransmitter, known to open CNS Cl-channels leading to an inhibition of subsequent CNS neuronal signaling. BZDs with similar action can differ in their potency and rate of absorption.
- *Metabolism:* By the liver in the CYP450 3A4.
- *Excretion:* Urine.
- *Half-life:* 11.2 hr, 16.3 hr (elderly), 19.7 hr (alcoholic liver disease).

Precautions:
- Do not abruptly stop taking the medication.
- Not prescribed for children.
- Use lowest effective dose for shortest duration.
- Alprazolam can be habit forming; do not increase dosage without checking patient compliance and review of chief complaints.
- Keep out of light in a tightly closed container.
- Store at room temperature.
- See patients as often as necessary to ensure that the drug is working on the panic attacks, determine compliance, and review side effects.
- Instruct patients and their families to watch for worsening depression or thoughts of suicide. Also watch out for sudden or severe changes in feelings such as feeling anxious, agitated, panicky, irritated, hostile, aggressive, impulsive, severely restless, overly excited, hyperactive, or not being able to sleep. If this happens, especially at the beginning of antidepressant treatment or after a change in dose, patient should call the health care provider. Serious reactions to the drug include syncope, tachycardia, seizures, respiratory depression, coma, suicidal ideation, and hypomania/mania.
- Drowsiness or dizziness: Patients should not drive or use machinery or do anything that needs mental alertness until the effects of this medicine are known.
- Caution patients not to stand or sit up quickly, especially if older. This reduces the risk of dizzy or fainting spells. Alcohol may interfere with the effect of this medicine. Avoid alcoholic drinks.
- Do not abruptly withdraw this drug as it may cause seizures.
- Caution should be exercised in the following:
  - MDD, psychosis, or bipolar affective disorder.
  - Respiratory disease.

- Heart disease.
- Liver disease.
- Seizures (convulsions).
- Suicidal thoughts, plans, or attempts by patients or a family member.
- An unusual or allergic reaction to alprazolam, other medicines, foods, dyes, or preservatives.

Patient and Family Education:

- Tell the health care provider of glaucoma, hepatic or renal impairment, drug-abuse history, salivary flow decrease (interferes with ODT absorption), or pregnancy.
- Missed doses should be taken as soon as possible; however, if it is too close to next dose, then it should be skipped.
- Take medicine as prescribed and do not stop it abruptly, without first discussing with health care provider.
- Store alprazolam at room temperature away from moisture, heat, and light. Remove any cotton from the bottle of disintegrating tablets, and keep the bottle tightly closed.
- Before taking this medicine tell the health care provider of medical history of liver disease, kidney disease, lung/breathing problems, drug or alcohol abuse, or any allergies.
- Do not drive, operate heavy machinery, or perform dangerous activities until it is known how this medicine will exert its effects.
- This drug may be habit forming and should be used only by the person for whom it was prescribed. Alprazolam should never be shared with another person, especially someone who has a history of drug abuse or addiction. Keep the medication in a secure place where others cannot get to it.
- Do not purchase alprazolam on the Internet or outside of the United States, as dangerous ingredients may be present. Some Internet purchases of alprazolam have been found to contain haloperidol *(Haldol)*, an antipsychotic drug.

Special Populations:

- *Elderly:* Older patients may be more sensitive to the effects of BZDs. Give 0.25 mg PO bid or tid. Use lowest, most effective dose. Dose adjustment is necessary for patients with liver impairment and/or renal disease due to excessive metabolites excreted by the kidney. Due to increased risk of sedation leading to falls and fractures, all BZDs are included on the Beers List of Potentially Inappropriate Medications for Geriatrics.
- *Renal impairment:* No adjustment needed.
- *Hepatic impairment:* With advanced hepatic disease, start at 0.25 mg PO bid or tid and titrate gradually.
- *Pregnancy*: Category D; can cause teratogenic fetal effects. Infants born to mothers taking BZDs may be at risk for withdrawal symptoms contraindicated in the postnatal period.
- *Lactation:* Excreted in human breast milk; infants can become lethargic and lose weight.
- *Children:* Not indicated for use in children younger than 18 years of age.

AMITRIPTYLINE (*Elavil*)

Classification: Tricyclic antidepressant (TCA).

Indications: Used to treat adults with depression/anxiety.

Available Forms: Tablet, 10, 25, 50, 75, 100, and 150 mg.

Dosage:
Adults: Between 50 and 150 mg PO at bedtime. Dosage can be increased by 25–50 mg/day every 2–3 days until desired effect occurs.

Elderly: Starting dose, 10–25 mg PO at night in elderly patients; increase 10–25 mg/day every 2–3 days; maximum, 300 mg/day.

Children (9–12 years old): 1–3 mg/kg/day PO divided tid with gradual increase by 0.5 mg/kg/day every 2–3 days. Must taper dose gradually to discontinue.

Administration:
- PO with a glass of water.
- Do not abruptly stop taking the medication.
- Use lowest effective dose for shortest duration.

Side Effects: Common reactions include:
- *Most common*: Drowsiness, dry mouth, dizziness, constipation, blurred vision, palpitations, tachycardia, lack of coordination, appetite increase, nausea/vomiting, sweating, weakness, disorientation, confusion, restlessness, insomnia, anxiety/agitation, urinary retention/urinary frequency, rash/urticaria, pruritus, weight gain, libido changes, impotence, gynecomastia, galactorrhea, tremor, hypo/hyperglycemia, paresthesias, and photosensitivity.
- *Less common*: Hypertension or orthostatic hypotension, ventricular arrhythmias, extrapyramidal symptoms, thrombocytopenia.

Drug Interactions:
- Class 1A antiarrhythmics, such as procainamide, quinidine gluconate, quinidine sulfate, disopyramide may increase risk of QT prolongation; and all MAOIs.
- Cisapride (*Propulsid*) may increase risk of QT prolongation, cardiac arrhythmias; dronedarone (*Multaq*) may increase TCA levels and risk of adverse effects, increase risk of QT prolongation, cardiac arrhythmias; flumazenil (*Romazicon*) may increase risk of cardiac arrhythmias, seizures.
- MAOIs such as selegiline (*Eldepryl/Zelapar*), procarbazine (*Matulane*), phenelzine (*Nardil*), tranylcypromine (*Parnate*), isocarboxazid (*Marplan*), selegiline transdermal (*Eldepryl/Zelapar*), rasagiline (*Azilect*) may result in CNS overstimulation, hyperpyrexia, seizures, death.
- Pimozide (*Orap*) may increase risk of CNS depression, psychomotor impairment, QT prolongation, arrhythmias, anticholinergic effects, hyperpyrexia; potassium salts such as potassium acid phosphate, potassium

citrate, potassium chloride, potassium iodide, potassium phosphate/sodium phosphate, potassium acid, phosphate/sodium acid phosphate, and potassium phosphate are contraindicated for solid potassium dose forms.
- Avoid using with amiodarone, cimetadine, clarithromycin, haldoperidol, St. John's wort.
- *Alert:* This list may not describe all possible interactions. Instruct patients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements used, and if they smoke, drink alcohol, or use illegal drugs.
- Weigh risk/benefit of thyroid protection with solid iodide salt forms, may delay solid potassium passage through GI tract and increase risk of ulcerative/stenotic lesions.

Pharmacokinetics:
- TCAs are thought to work by inhibiting reuptake of norepinephrine and serotonin in the CNS, which potentiates the neurotransmitters. They also have significant anticholinergics, antihistaminic, and alpha-adrenergic activity on the cardiac system. These classes of antidepressants also possess class 1A antiarrhythmic activity, which can lead to depression of cardiac conduction, potentially resulting in heart block or ventricular arrhythmias.
- *Metabolism:* Extensively by the liver within the CYP450: 1A2, 2D6 (primary), 3A4 substrate; active metabolites include nortriptyline.
- *Excretion:* Primarily in urine (18% unchanged), feces.
- *Half-life:* 10–26 hr (amitriptyline), 18–44 hr (nortriptyline).

Precautions:
- See patients as often as necessary to ensure that the drug is working on the panic attacks, determine compliance, and review side effects.
- Instruct patients and families to watch for worsening depression or thoughts of suicide. Also, watch out for sudden or severe changes in feelings such as feeling anxious, agitated, panicky, irritated, hostile, aggressive, impulsive, severely restless, overly excited, hyperactive, or not being able to sleep. If this happens, especially at the beginning of antidepressant treatment or after a change in dose, patient should call the health care provider.
- Drowsiness or dizziness: Patients should not drive, use machinery, or do anything that needs mental alertness until the effects of this medicine are known. Other medications that cause drowsiness can add to the drowsiness of imipramine.
- Caution patients not to stand or sit up quickly, especially if older. This reduces the risk of dizzy or fainting spells. Alcohol may interfere with the effect of this medicine. Avoid alcoholic drinks.
- Do not abruptly withdraw this drug, as it may cause headache, nausea, and malaise.
- Advise to protect skin from ultraviolet light due to increased skin sensitivity.
- Grapefruit and grapefruit juice may interact with imipramine.

- Caution should be exercised in the following:
  - MDD, psychosis, or bipolar affective disorder.
  - Contraindicated in patients with a recent myocardial infarction.
  - Blood dyscrasias.
  - Respiratory disease.
  - Heart disease.
  - Liver disease, diabetes mellitus, asthma, and increased intracranial pressure.
  - Seizures (convulsions).
  - Suicidal thoughts, plans, or attempts by patients or a family member.
  - An unusual or allergic reaction to imipramine, other medicines, foods, dyes, or preservatives.

Patient and Family Education:

- Do not stop taking this medicine without notifying the health care provider.
- Anxiety symptoms may temporarily worsen when first starting clomipramine.
- Notify doctor or pharmacist promptly if any of these effects persist or worsen.
- To relieve dry mouth, suck on (sugarless) hard candy or ice chips, chew (sugarless) gum, drink water, or use a saliva substitute.
- To prevent constipation, maintain a diet adequate in fiber, drink plenty of water, and exercise. In case of constipation, consult pharmacist for help in selecting a laxative (e.g., stimulant type with stool softener).
- Inform clinician immediately if any of these unlikely but serious side effects occur: mental/mood changes (e.g., confusion, depression, hallucinations, memory problems), enlarged/painful breasts, unwanted breast milk production, irregular/painful menstrual periods, muscle stiffness/twitching, feelings of restlessness, ringing in the ears, sexual problems (e.g., decreased sexual ability, changes in desire), shakiness (tremors), numbness/tingling of the hands/feet, trouble urinating, severe vomiting.
- Inform clinician immediately if any of these rare but very serious side effects occur: easy bruising/bleeding, signs of infection (e.g., fever, persistent sore throat), unusual/uncontrolled movements (especially of the tongue/face/lips), severe stomach/abdominal pain, dark urine, yellowing of eyes/skin.
- Seek immediate medical attention if any of these rare but very serious side effects occur: black stools, chest pain, fainting, high fever, slow/fast/irregular heartbeat, seizures, vomit that looks like coffee grounds.
- Store amitriptyline at room temperature away from moisture and heat.
- Stopping this medication suddenly could result in unpleasant side effects.
- Take the missed dose as soon as remembered. If it is almost time for the next dose, skip the missed dose and take the medicine at the next regularly scheduled time. *Do not* take extra medicine to make up the missed dose.

Special Populations:

- *Elderly:* Elderly patients may need a reduced dose for they may be more sensitive to usual dosages. 10–25 mg each day with increases of 10–25 mg at bedtime every 2–3 days may be sufficient. Amitriptyline is included in the Beers List of Potentially Inappropriate Medications for Geriatrics.
- *Renal impairment:* Use with caution when renal impairment is suspected. Confer with renal specialist.

- *Hepatic impairment:* Dosing in the presence of hepatic dysfunction is not given; caution is advised; strong anticholinergic properties.
- *Pregnancy:* Safety not established. Use with Category C caution.
- *Lactation:* Excreted in human breast milk.
- *Children:* Monitor closely for suicidal ideation with children, adolescents, and young adults with major depressive or other psychiatric conditions.

ARIPIPRAZOLE (*Abilify*)

Classification: Second-generation (atypical) antipsychotic.

Indications: Schizophrenia (13 years and older), manic and mixed episodes associated with bipolar I disorder, adjunctive treatment to antidepressants for MDD, agitation associated with schizophrenia or bipolar disorder, manic or mixed.

Available Forms: Tablet, 2, 5, 10, 15, 20, and 30 mg; tablet, orally disintegrating, 10 and 15 mg; solution, oral, 1 mg/mL; IM injection, solution, 9.75 mg/1.3 mL.

Dosage: 15–30 mg/day.
- IM 9.75 mg as a single dose (range 5.25–15 mg). Repeated doses may be given with or without food.
- Parenteral administration is intended for IM use only at greater than 2 hr intervals to max of 30 mg/day.

Administration:
- IM or PO; do not administer IV or SC; inject slowly, deep into muscle mass.
- *IM injection has not been evaluated in children.*
- Oral solution may be substituted for tablets on a mg-per-mg basis up to a 25 mg dose. Patients receiving 30 mg tablets should receive 25 mg of solution.
- Dosing for the orally disintegrating tablet is the same as the oral tablet.
- Do not open the orally disintegrating tablets until ready to administer. The orally disintegrating tablet should be taken without liquid. Do not split the orally disintegrating tablet.
- Use oral aripiprazole 10–30 mg/day instead of IM aripiprazole as soon as possible if ongoing therapy is indicated.

Side Effects: Nausea, vomiting; dizziness, insomnia, akathisia, activation; headache, asthenia; sedation; constipation; *saphris*; orthostatic hypotension (occasionally during initial phase); increased risk of death and cerebrovascular events in elderly with dementia-related psychosis; TD; neuroleptic malignant syndrome (rare); seizures (rare).

Drug Interactions: Major substrate of CYP450 3A4, CYP2D6, and CYP3A4. Caution with other CYP2D6 inhibitors (e.g., nefazodone, fluvoxamine, fluoxetine), CYP450 2D6 or CYP3A4 inhibitors. Avoid with metoclopramide (e.g., paroxetine, fluoxetine, duloxetine), and quinidine. May increase plasma levels of aripiprazole.
- Carbamazepine and other CYP450 3A4 inducers may decrease plasma levels of aripiprazole.
- Aripiprazole may enhance effects of antihypertensive medications.
- Aripiprazole may antagonize levodopa and dopamine agonists.
- *Alert:* This list may not describe all possible interactions. Instruct clients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements they use. Also instruct clients to inform whether they smoke, drink alcohol, or use illegal drugs, CNS depressants, and methylphenidate.

Pharmacokinetics:
- *Excretion:* About 25% of a single oral dose is excreted in urine (less than 1% unchanged) and 55% is excreted in feces (18% as unchanged drug).

- *Metabolism:* Primarily metabolized by CYP450 2D6 and CYP450 3A4. Hepatic 50–60% glucuronidation.
- *Absorption:* IM, 100%; PO, 87%.
- *Onset:* IM, 1 hr; PO, 1–3 weeks.
- *Duration:* 2 hr for injectable.
- *Half-life:* 75 hr (aripiprazole) and 94 hr (active aripiprazole metabolite).

Precautions:

Cardiovascular disease; dementia.

- Dysphagia is associated with use of aripiprazole. Use with caution in patients who are at risk for aspiration pneumonia.
- Use with caution in patients with conditions that may develop hypotension (dehydration, overheating, etc.).
- Do not use in patients who are allergic to aripiprazole, seizures; Parkinson's disease; sedation.

Patient and Family Education:

- Store aripiprazole at 59°F–86°F. It can be used for up to 6 months after opening. Protect injection from light by storing in carton until use.
- If you become pregnant, contact provider. You will need to discuss the benefits and risks of using aripiprazole orally disintegrating tablets while pregnant.
- Discuss with provider if you have any of these conditions. A dose adjustment or special tests to safely take aripiprazole may be needed:
  - Liver or kidney disease.
  - Heart disease, high BP, heart rhythm problems.
  - History of heart attack or stroke.
  - History of low WBC counts.
  - History of breast cancer.
  - Seizures or epilepsy.
  - A personal or family history of diabetes.
  - Trouble swallowing.
  - PKU.
- Talk to provider if you have signs of hyperglycemia such as increased thirst or urination, excessive hunger, or weakness. If you have diabetes, check blood sugar levels on a regular basis while taking aripiprazole.
- Avoid alcohol. Maintain adequate hydration; caution when changing position from lying to sitting.

Special Populations:

- *Elderly:* Dosage adjustment is generally not required. Elderly with dementia-related psychosis treated with atypical antipsychotics are at higher risk of death and cerebrovascular events.
- *Renal impairment*: No dosage adjustment is needed.
- *Hepatic impairment*: No dosage adjustment is required.
- *Cardiac impairment:* Use with caution because of the risk of orthostatic hypotension.
- *Pregnancy:* It is not known whether aripiprazole orally disintegrating tablets can cause harm to the fetus.

- *Lactation*: Although there are no data on the excretion of aripiprazole into human milk, it is suggested that women receiving aripiprazole should not breastfeed.
- *Children and adolescents:* Approved for schizophrenia (age 13 and older) and manic/mixed episodes (age 10 and older). Should be monitored more frequently than adults. May tolerate lower doses better.
- *Pregnancy:* Category C.
- *Lactation:* Excretion in breast milk unknown/breast-feeding not recommended.

ARMODAFINIL (*Nuvigil*)

Classification: Stimulant, non-amphetamine.

Indications: Used primarily to treat sleep disorders that result in excessive sleepiness, such as narcolepsy, obstructive sleep apnea, hypopnea syndrome, and shift work sleep disorder.

Available Forms: Tablet, 50, 150, and 250 mg.

Dosage: 150–250 mg PO when prepared for long period of wakefulness.

Administration:
- PO with a glass of water.
- Take without food.

Side Effects:
- Hypertension; arrhythmia; cataplexy; dysmenorrhea; dyspnea; infection; abnormal thinking; weight loss; UTI.
- *Side effects that usually do not require medical attention*: Anxiety; back pain; diarrhea; dizziness; dyspepsia; headache; insomnia; nausea; nervousness; rhinitis.

Drug Interactions: Drug may interact with the following medications: antifungals; CNS depressants (including alcohol); MAOIs; macrolides; phenytoin; estrogen; cyclosporine; SSRIs; TCAs; CNS stimulants; carbamazepine; phenobarbital.

Pharmacokinetics:
- Stimulant; exact mechanism of action unknown. Believed to have similar wake-promoting actions as sympathomimetic agents.
- Rapid absorption in absence of food.
- Peak plasma levels are reached in 2 hr in the fasted state.
- Steady state reached within 7 days of dosing.
- *Half-life:* Average is 15 hr once steady state is reached.

Precautions:
- See client as often as necessary to ensure drug is promoting wakefulness, determine compliance, and review side effects.
- Advise patient to report any new rashes immediately.
- Discontinue drug immediately if any rash is reported.
- Advise patient of risk for transient psychosislike symptoms (ideas of reference, paranoid delusions, and auditory hallucinations).
- May experience transient palpitations and EKG changes.
- Avoid using in clients with left ventricular hypertrophy or mitral valve prolapsed.

Patient and Family Education:
- Do not operate heavy machinery or equipment until reasonably certain that drug will not affect ability to engage in such activities.
- Discontinue medication immediately if rash is noted and follow up with provider.

- May experience palpitations.
- Have patient monitor BP at home and notify provider of persistent BP elevations.
- Store at room temperature between 20°C and 25°C (68°F–77°F).

Special Populations:

- *Elderly*: Clearance reduced in older adults. Use lowest effective dose.
- *Hepatic impairment:* Modify dosage by one half accordingly.
- *Pregnancy*: Category C.
- *Lactation*: No human studies have been performed. Not recommended in breastfeeding mothers.
- *Children*: Not for use in pediatric patients.

ASENAPINE (*Saphris*)

Classification: Antipsychotic drug, atypical (second generation).

Indications: Schizophrenia, manic or mixed episodes associated with bipolar disorder I.

Available Forms: Sublingual tablets, 5 and 10 mg.

Dosage: Initial dose, 5 mg bid; increase to 10 mg bid. Can decrease back to 5 mg bid based on tolerability.

Administration:
- *Place the tablet under the tongue and allow to dissolve completely.* Comes in tablet form.
- *The tablet dissolves within seconds.*
- Do not eat or drink anything for 10–30 min after administration.
- Tablets should not be crushed, chewed, or swallowed.

Side Effects: Akathisia; oral hypoesthesia (numbness); somnolence; dizziness; other extrapyramidal symptoms excluding akathisia; weight gain; insomnia; headache; may induce orthostatic hypotension and syncope in some patients, especially early in treatment; rare neuroleptic malignant syndrome (rare); TD (rare).

Drug Interactions:
- May enhance effects of certain antihypertensive drugs because of its alpha-1-adrenergic antagonism with potential for inducing hypotension.
- Inhibitor of P450 CYP2D6 and may contribute to increased levels.
- Appears to decrease prolactin from baseline.

Pharmacokinetics:
- Rapidly absorbed within 0.5–1.5 hr.
- *Half-life:* Approx. 24 hr.

Precautions:
- Caution should be used when the drug is taken in combination with other centrally acting drugs or alcohol.
- Caution should be used with other drugs that are both substrates and inhibitors for CYP 2D6. For example CYP2D6; may double the level of paroxetine.
- May cause transient increases in serum transaminase; therefore it needs to be monitored during the initial months.
- Elderly patients with dementia-related psychosis treated with antipsychotic drugs are at an increased risk of death. Asenapine is not approved for the treatment of patients with dementia-related psychosis.
- Patients with a preexisting low WBC or a history of drug-induced leukopenia/neutropenia should have their CBC monitored frequently during the first few months of therapy, and asenapine should be discontinued at the first sign of decline in WBC in the absence of other causative factors.

- The use of asenapine should be avoided in combination with other drugs known to prolong the QTc interval, including Class 1A antiarrhythmics (e.g., quinidine, procainamide) or Class 3 antiarrhythmics (e.g., amiodarone, sotalol), antipsychotic medications (e.g., ziprasidone, chlorpromazine, thioridazine), and antibiotics (e.g., gatifloxacin, moxifloxacin).
- Like other drugs that antagonize dopamine D2 receptors, asenapine can elevate prolactin levels, and the elevation can persist during chronic administration.
- As with other antipsychotic drugs, asenapine should be used with caution in patients with a history of seizures or with conditions that potentially lower the seizure threshold; for example, Alzheimer's dementia. Conditions that lower the seizure threshold may be more prevalent in patients 65 years or older.

Patient and Family Education:

- Take exactly as prescribed by the provider. Do not take in larger or smaller amounts or for longer than recommended.
- Asenapine tablets must be placed under tongue and be allowed to dissolve. Do not crush, chew, or swallow.
- No eating or drinking for at least 10–30 min is better—after the drug is absorbed.
- *Avoid drinking alcohol*.
- *Stop using this medication and call provider immediately* if you have very stiff (rigid) muscles, high fever, sweating, confusion, fast or uneven heartbeats, tremors; feel like you might pass out; have jerky muscle movements you cannot control, trouble swallowing, problems with speech; have blurred vision, eye pain, or see halos around lights; have increased thirst and urination, excessive hunger, fruity breath odor, weakness, nausea and vomiting; have fever, chills, body aches, flu symptoms; or have white patches or sores inside your mouth or on your lips.
- Do not stop taking this drug suddenly without first talking to your provider, even if you feel fine. You may have serious side effects if you stop taking the drug suddenly.
- Call provider if symptoms do not improve or get worse.
- Store at room temperature away from moisture and heat.

Special Populations:

- *Elderly:* They may tolerate lower doses better and are more sensitive to adverse effects. It is not approved for treatment of elderly patients with dementia-related psychosis, and such patients are at increased risk of cardiovascular events and death.
- *Renal impairment*: No adjustment is needed.
- *Hepatic impairment*: Lower dose for mild-to-moderate impairment. It is not recommended with severe liver impairment.
- *Cardiac impairment:* Use with caution due to risk of orthostatic hypotension and QTc potential prolongation.
- *Pregnancy:* Category C. There are no adequate and well-controlled studies of asenapine in pregnant women. In animal studies, asenapine increased postimplantation loss and decreased pup weight and survival at doses similar to or less than recommended clinical doses. In these studies there was no increase in the incidence of structural abnormalities caused by asenapine. Asenapine

should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

- *Lactation*: Asenapine is excreted in the milk of rats during lactation. It is not known whether asenapine or its metabolites are excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when asenapine is administered to a nursing woman. It is recommended that women receiving asenapine should not breastfeed.
- *Children and adolescents*: Safety and effectiveness in children and adolescents has not been established.

ATOMOXETINE (*Strattera*)

Classification: Selective norepinephrine reuptake inhibitor (SNRI).

Indications: Stimulant indicated for the treatment of ADHD of children aged 6 and above and adults. Although nonstimulants are considered second-line therapy, they may be a safer alternative than stimulants for patients with a history of substance abuse.

Available Forms: Capsule, 10, 18, 25, 40, 60, 80, and 100 mg.

Dosage: Dosage should be individualized according to the therapeutic needs and response of the patient. *Children: older than 6 yr;* less than 70 kg; start, 0.5 mg/kg PO qam × 3 days, then increase to 1.2 mg/kg PO qam; maximum, 1.4 mg/kg/day, doses greater than 0.5 mg/kg/day may be divided bid. *Greater than 70 kg*: Start, 40 mg PO qam × 3 days, then increase to 80 mg PO qam, may increase to 100 mg/day after 2 to 4 wk if needed; maximum, 100 mg/day. *Adults:* 80 mg qam; start, 40 mg PO qam × 3 days, then increase to 80 mg PO qam, may increase to 100 mg/day after 2 to 4 wk if needed. Maximum: 100 mg/day.

Administration: Taking with food may alleviate GI side effects, requires slower titration if patient is poor CYP2D6 metabolizer or on strong CYP2D6 inhibitor. Periodically reassess need for treatment during maintenance.

Side Effects: Nausea and/or vomiting; fatigue; decreased appetite; abdominal pain; somnolence; constipation; dry mouth; insomnia; priapism; urinary hesitancy or retention or dysuria; dysmenorrhea; hot flashes; severe liver injury; serious cardiovascular events (MI, stroke, sudden death); rapid heart rate and increased BP; suicidal ideation; allergic reactions; decreased growth. *Dispose of patch properly*: Remnants of medication may remain on patch and can be dangerous to children or animals.

Drug Interactions:
MAOIs; CYP2D6 inhibitors; BP agents; albuterol and other beta-2 agonists: action of albuterol on cardiovascular system can be potentiated.

Pharmacokinetics:
- The precise mechanism by which atomoxetine produces its therapeutic effect is unknown.
- Its therapeutic effect may be related to selective inhibition of the presynaptic norepinephrine transporter.
- Minimally affected by food intake.
- Maximal plasma concentration is reached within 1 to 2 hr after dosing.
- Mainly excreted in the urine (80%).
- *Half-life:* Approximately 5 hr.

Precautions:
- Hypersensitivity to atomoxetine or other constituents of the product.
- Use within 2 wk of taking or discontinuing MAOIs.
- Narrow angle glaucoma.

Patient and Family Education:

- Do not crush, open, or chew capsules.
- Avoid touching a broken capsule: Powder is a known ocular irritant and if gets into eyes needs to be flushed out immediately.
- Can be taken with or without food.
- Do not double the dose if a day is missed.
- Call poison control/seek medical attention for overdose.
- Seek medical attention for chest pain, shortness of breath, elevated BP, erections that last more than 4 hr, or any other concerning symptoms.
- Children, adolescents, or adults who are being considered for treatment with atomoxetine should have a careful history (including assessment for a family history of sudden death or ventricular arrhythmia) and physical exam to assess for the presence of cardiac disease, and should receive further cardiac evaluation if findings suggest such disease (e.g., electrocardiogram and echocardiogram). Patients who develop symptoms such as exertional chest pain, unexplained syncope, or other symptoms suggestive of cardiac disease during atomoxetine treatment should undergo a prompt cardiac evaluation.
- Store at room temperature.
- Routinely assess weight and BP.

Special Populations:

- *Elderly:* Safety has not been studied in geriatric patients.
- *Pregnancy:* Category C.
- *Lactation:* Safety unknown.
- *Children:* Has not been studied in children younger than 6 yr; should not be used in children younger than 3 yr.

B COMPLEX (*Vitamin B1/Thiamine Hydrochloride*)

Classification: Vitamin.

Indications: Treat and prevent thiamine deficiency, including thiamine-specific deficiency Wernicke–Korsakoff syndrome (common in patients diagnosed with alcoholism).

Available Forms: Tablet, 50, 100, and 250 mg; enteric-coated tablet, 20 mg; injectable, 100 mg/mL.

Dosage: 1–2 mg of thiamine per day is commonly used. The daily RDAs:
- *Infants: 0–6 months*: 0.2 mg; *7–12 months*: 0.3 mg.
- *Children:* 1–3 years, 0.5 mg; *4–8 years*, 0.6 mg.
- *Males: 9–13 years*, 0.9 mg; *14 years and older*, 1.2 mg.
- *Females: 9–13 years*, 0.9 mg; *14–18 years*, 1 mg; *over 18 years*, 1.1 mg; *pregnant women*, 1.4 mg; *lactating breastfeeding women*, 1.5 mg.

Administration:
- PO with a glass of water.
- May be taken with or without food.
- Do not crush or chew enteric-coated pills. Swallow whole.

Side Effects: Feeling of warmth, restlessness, nausea, pruritus.

Drug Interactions: None indicated.

Pharmacokinetics: Widely distributed. Eliminated in urine.

Precautions:
- Watch for anaphylaxis reaction.

Patient and Family Education:
- Take medication at same time every day.

Special Populations:
- *Elderly:* No contraindications.
- *Renal impairment:* Use with caution.
- *Hepatic impairment*: Use with caution.
- *Pregnancy:* Category A.
- *Lactation:* Contraindicated; excreted in breast milk.
- *Children and adolescents*: Iron toxicity may occur; store out of reach and in child-proof bottles.

BROMOCRIPTINE (*Parlodel*)

Classification: Dopamine agonist.

Indication: Dopamine agonist, restores dopaminergic tone.

Available Forms: Tablets.

Dosage: PO, 2.5–10 mg q 6–8 hr. Continue therapy until NMS is controlled, then taper slowly. Maximum dose is 40 mg/day.

Administration: PO; take with food to avoid GI distress.

Drug Interactions: Avoid concomitant use with efavirenz, itraconazole, posaconazole, protease inhibitors, serotonin 5HT1D agonists; sibutramine; voriconazole.
- Major substrate of CYP3A4. Caution with other CYP3A4 strong inducers or inhibitors.

Pharmacokinetics:
- *Absorption:* 28% bioavailable.
- *Onset:* 1–3 hr.
- *Metabolism:* Via CYP3A4 (major).
- *Half-life:* 15 hr.

Precautions:
- Contraindicated with potent inhibitors of CYP3A4.
- Patients with cardiac valvular fibrosis and other CV disease.
- May cause impulse control disorders. Increased risk of melanoma.

Patient and Family Education: Do not discontinue this medicine without consulting prescriber. Take with meals to avoid GI distress. Urine or perspiration may appear darker.

Special Populations:
- *Pregnancy*: Pregnancy category B.
- *Location*: Breastfeeding is not recommended.
- *Outcome*: Mortality is estimated between 10% and 20%. Recovery is approximately 2 wk.

BUPRENORPHINE HO, BUPRENORPHINE HCL, AND NALOXONE HCL DIHYDRATE (*Subutex, Suboxone*)

Classification: Partial opioid agonists.

Indications: Used to treat opiate dependence.

Note: Under the Drug Addiction Treatment Act of 2000 (DAT A) codified at 21 U.S.C. 823(g), prescription use of this product in the treatment of opioid dependence is limited to physicians who meet certain qualifying requirements, and have notified the Secretary of HHS of their intent to prescribe this product for the treatment of opioid dependence.

Available Forms: Sublingual tablets: *Subutex:* 2 and 8 mg; *Suboxone*: 2 mg/0.5 mg and 8 mg/2 mg.

Dosage: *Subutex:* 8 mg on day 1; 16 mg on day 2; then adjust dose daily until opiate-withdrawal effects are suppressed; *Suboxone* for maintenance: 4–24 mg/day until determined by provider.

Administration:
- Place under tongue until dissolved.
- For doses requiring more than one tablet, place both tablets under tongue at the same time.
- Do not swallow tablets.
- *Missed dose:* Take as soon as remembered. Skip the missed dose if it is almost time for the next scheduled dose. Do not take extra medicine.

Side Effects: Sedation, drowsiness, headache; insomnia, nausea, sweating; hypotension.

Drug Interactions:
- Opiates and other CNS depressants will increase sedation.
- Diazepam may cause respiratory distress or cardiac arrest.
- Macrolide antibiotics may increase drug levels.

Pharmacokinetics:
- *Metabolism:* Liver by CYP 3A4.
- *Half-life:* 37 hr.

Precautions:
- Watch for respiratory depression.
- Supervise ambulation due to sedative effects.

Patient and Family Education:
- Do not drive or engage in other hazardous activities until response to drug is known.
- Avoid alcohol or other CNS depressants.

Special Populations:

- *Elderly:* Use with caution due to sedative effects.
- *Renal impairment:* Use with caution.
- *Hepatic impairment*: Use with caution; may require lower dosage.
- *Pregnancy:* Category B.
- *Lactation:* Safety has not been established.
- *Children and adolescents*: Safety has not been established.

BUPROPION (*Wellbutrin, Zyban*)

Classification: Norepinephrine/dopamine reuptake inhibitor (NDRI).

Indications: Major depression of adults; ADHD in adults and children older than 6 years, used for smoking cessation.

Available Forms: Tablet, 75 and 100 mg; sustained-release tablet, 100 and 150 mg; extended-release tablet, 100, 150, 200, and 300 mg.

Dosage: *Children: Older than 6 years:* 1.4–6 mg/kg/divided bid; maximum, 150 mg/dose, 450 mg/day; maintenance. *Adults:* 100 mg PO tid; start, 100 mg PO bid, dose increase after 3 days; maximum, 150–450 mg/dose, 450 mg/day.

Administration: Depending upon formulation prescribed, taken tid (rapid release), bid; second dose not to be given within 5–6 hr of hs in order to avoid insomnia (SR). SR without food and XL formulations are most commonly used, and XL formulation is recommended if available.

Side Effects: Dry mouth; headache; agitation.
- Seizure threshold significantly decreased particularly at greater than 300–450 mg/day dosage. Use of SR or XL formulation also helpful in reducing risk of seizure.
- Headache, anxiety, tremor, tachycardia, and insomnia; cognitive impairment and mental clouding; delayed hypersensitivity reactions; tachycardia; nausea; increased sweating; blurred vision; dry mouth; weight loss.

Drug Interactions: Can be fatal when combined with MAOIs. Caution use with Gingko biloba, *Phenergan* with codeine, Linezolid, Ethanol.
- Can elevate TCA activity; use with caution.
- Potentially increases plasma levels of other 2D6 metabolites.
- Risk of seizure may be increased by concomitant use of inhibitors of CYP2B6 (e.g., desipramine, sertraline, paroxetine, fluoxetine), due to increased bupropion blood levels. Nausea; dizziness; constipation; tremor; sweating; abnormal dreams; insomnia; tinnitus; pharyngitis; anorexia; weight loss; infection; abdominal pain; diarrhea; anxiety; flatulence; rash; palpitations; myalgia/arthralgia; chest pain; blurred vision; urinary frequency; suicidality; depression, worsening; psychiatric disorder exacerbation; behavioral disturbances; agitation; psychosis; hallucinations; paranoia; mania; seizures; hepatotoxicity; arrhythmias; tachycardia; HTN, severe; elevated intraocular pressure; migraine; Stevens-Johnson syndrome; erythema multiforme; anaphylactic/anaphylactoid reactions.

Pharmacokinetics:
- Inhibits activity of CYP450 2D6, potentially increasing plasma levels of other 2D6 metabolites.
- Converted to an active metabolite.

- Mechanism for smoking cessation unknown.
- Exact mechanism of action for depression unknown.
- Inhibits neuronal uptake of norepinephrine and dopamine.
- *Metabolism:* Liver, excreted mainly in the urine.
- *Half-life:* Parent compound, 10–24 hr; active metabolite, 20–24 hr.

Precautions:

- Use with caution in patients with cardiovascular disease, hepatic impairment, or renal impairment.
- Do not use in patients with seizure disorders, alcoholism, or hypersensitivity to drug/class.
- Do not use with MAO inhibitor until off the drug for 14 days.
- Seizure disorder.
- Bulimia.
- Anorexia nervosa.
- Exual dysfunction.
- *Patients at risk for* seizure *disorders:* May lower seizure threshold.
- Avoid combinations with other CNS stimulants. Injury/intracranial lesion, alcohol or drug abuse, psychiatric disorder, bipolar disorder, suicidality history, suicidal ideation.
- Caution in patients less than 25 years, and with elderly patients.
- Caution if diabetes mellitus, cirrhosis, severe hepatic impairment, renal impairment, recent MI, HTN.

Patient and Family Education:

- Should be taken about the same time every day, preferably in the morning (for XL formulation) with or without food.
- If taking rapid release or SR formulation, take last dose more than 5–6 hr from bedtime, as late dosing can precipitate insomnia.
- May take up to 4–8 wk to show its maximum effect, but some may see symptoms of dysthymia improving in as little as 2 wk.
- If patient plans on becoming pregnant, discuss the benefits versus the risks of using this medicine while pregnant.
- Because this medicine is excreted in the breast milk, nursing mothers should not breastfeed while taking this medicine without prior consultation with a psychiatric nurse practitioner or psychiatrist. Newborns may develop symptoms including feeding or breathing difficulties, seizures, muscle stiffness, jitteriness, or constant crying.
- Do not stop taking this medication unless your health care provider directs you to do so. Report side effects or worsening dysthymia symptoms to your health care provider promptly.
- Treatment should continue for 6–12 months following last reported dysthymic experience.
- Keep these medications out of the reach of children and pets.
  - Store at room temperature.
  - Monitor for worsening psychiatric complaints.

Special Populations:

- *Elderly:* Older individuals tend to be more sensitive to medication side effects such as hypotension and anticholinergic effects. They often require adjustment of medication doses for hepatic or renal dysfunction. Begin at lower dosage; XL formulation recommended.
  - *Elderly:* Caution with use due to polypharmacy and comorbid conditions.
  - *Pregnancy:* Psychotherapy is the initial choice for most pregnant patients with DD. Category C; not recommended during pregnancy, especially first trimester, as there are no adequate studies during pregnancy.
  - *Lactation:* Unsafe.
  - *Children:* Recommended to begin at lower dosage. Monitor closely for suicidal ideation. Psychiatric consultation is recommended due to black box warning of increased suicidal ideation using SSRI therapy in children. May be useful in treating children with comorbid ADHD; ages 6–17.

CARBAMAZEPINE (*Tegretol, Carbatrol, Tegretol XR*)

Classification: Mood-stabilizing anticonvulsant.

Indications: Used alone or in combination with other medications for seizures. Additional uses include the treatment of trigeminal neuralgia. Can be used as extended-release capsules to treat episodes of mania or mixed episodes in patients with bipolar I disorder.

Available Forms: Tablet, 200 mg; chewable tablet, 100 mg; XR capsule, 100, 200, 300, and 400 mg; oral suspension, 100 mg/5 mL.

Dosage: *Adults:* 300–600 mg PO up to qid. Or, 900 mg controlled-release tablets PO every 12 hr. Increase dosage based on blood levels to achieve optimum dosage. Recommended therapeutic lithium levels are 1–1.5 mEq/L for acute mania and 0.6–1.2 mEq/L for maintenance therapy.

Administration:
- Store at room temperature.
- Give with meals to reduce the risk of GI distress.
- Shake oral suspension well.
- Do not administer with grapefruit juice.
- Do not crush capsules or tablets.

Side Effects:
- *CNS:* Fatigue, lethargy, coma, epileptiform seizures, tremors, drowsiness, headache, confusion, restlessness, dizziness, psychomotor retardation, blackouts, EEG changes, worsened mental syndrome, impaired speech, ataxia, uncoordination.
- *CV:* Arrhythmias, bradycardia, reversible ECG changes, hypotension.
- *EENT:* Tinnitus, blurred vision.
- *GI:* Vomiting, anorexia, diarrhea, thirst, nausea, metallic taste, dry mouth, abdominal pain, flatulence, indigestion.
- *GU:* Polyuria, renal toxicity with long-term use, glycosuria, decreased creatinine clearance, albuminuria.
- *Hematologic*: Leukocytosis with leukocyte count of 14,000–18,000/mm.
- *Metabolic*: Transient hyperglycemia, goiter, hypothyroidism, hyponatremia.
- *Musculoskeletal:* Muscle weakness.
- *Skin:* Pruritus, rash, diminished or absent sensation, drying and thinning of hair, psoriasis, acne, alopecia.
- *Other:* Ankle and wrist edema.

Drug Interactions:
- ACE inhibitors, aminophylline, sodium bicarbonate, urine alkalizers, calcium channel blockers (verapamil), carbamazepine, fluoxetine, methyldopa, NSAIDs, probenecid, neuromuscular blockers, thiazide diuretics, caffeine may decrease lithium level and drug effect. Advise patient who ingests large amounts of caffeine to tell prescriber before stopping caffeine. Adjust lithium dosage, as needed.

Pharmacokinetics: Probably alters chemical transmitters in the CNS, possibly by interfering with ionic pump mechanisms in brain cells, and may compete with or replace sodium ions. With oral doses onset and duration of action is unknown.

- *Peak action:* 30 min–1 hr.
- *Half-life:* 18 hr (adolescents); 36 hr (elderly).

Precautions:
- Contraindicated if therapy cannot be closely monitored.
- Avoid using in pregnant patient unless benefits outweigh risks.
- Use with caution in patients receiving neuromuscular blockers and diuretics; in elderly or debilitated patients; and in patients with thyroid disease, seizure disorder, infection, renal or CV disease, severe debilitation or dehydration, or sodium depletion.
- *Alert:* Drug has a narrow therapeutic margin of safety. Determining drug level is crucial to safe use of drug. Do not use drug in patients who cannot have regular tests. Monitor level 8–12 hr after first dose, the morning before second dose is given, two or three times weekly for the first month, and then weekly to monthly during maintenance therapy.
- When drug level is less than 1.5 mEq/L, adverse reactions are usually mild.
- Monitor baseline ECG, thyroid studies, renal studies, and electrolyte levels.
- Check fluid intake and output, especially when surgery is scheduled.
- Weigh patient daily; check for edema or sudden weight gain.
- Adjust fluid and salt ingestion to compensate if excessive loss occurs from protracted diaphoresis or diarrhea. Under normal conditions, patient fluid intake should be 2.5–3 L daily, and patient should follow a balanced diet with adequate salt intake.
- Check urine-specific gravity and report level below 1.005, which may indicate diabetes insipidus.
- Drug alters glucose tolerance in diabetics. Monitor glucose level closely.
- Perform outpatient follow-up of thyroid and renal functions every 6–12 months. Palpate thyroid to check for enlargement.

Patient and Family Education:
- Tell patient to take drug with plenty of water and after meals to minimize GI upset.
- Explain the importance of having regular blood tests to determine drug levels; even slightly high values can be dangerous.
- Warn patient and caregivers to expect transient nausea, large amounts of urine, thirst, and discomfort during first few days of therapy and to watch for evidence of toxicity (diarrhea, vomiting, tremor, drowsiness, muscle weakness, uncoordination).
- Instruct patient to withhold one dose and call prescriber if signs and symptoms of toxicity appear, but not to stop drug abruptly.
- Warn patient to avoid hazardous activities that require alertness and good psychomotor coordination until CNS effects of drug are known.
- Tell patient not to switch brands or take other prescription or OTC drugs without prescriber's guidance.
- Tell patient to wear or carry medical identification at all times.

Special Populations:
- *Elderly:* Use with caution in men with BPH due to increased urinary retention; monitor for dizziness and falls secondary to sedation.
- *Pregnancy/Lactation:* Do not use if breastfeeding.
- *Children:* Approved for use in epilepsy, therefore safety profile exists. Used off label for aggression.

CHLORDIAZEPOXIDE (*Librium*)

Classification: Benzodiazepine (BZD).

Indications: Used to achieve sedation during hypnosis, relieve anxiety, and prevent withdrawal from alcohol; used on a temporary (tapering) basis.

Available Forms: Capsule, 5, 10, and 25 mg; injectable, 100 mg/5 mL.

Dosage: *Adults:* 5–10 mg PO tid to qid. *Children:* 5 mg bid or qid; may be increased/day in 3–10 mg bid or tid. Four divided doses.

Administration:
- Administered PO.
- Use exactly as prescribed.
- Do not increase the dose; take it more frequently or use it for a longer period of time with full glass of water.
- The drug should not be stopped abruptly, but tapered off slowly.
- When used for an extended period of time this medicine may not work as well and may require different dosing.

Side Effects: Some common side effects are drowsiness, ataxia, confusion, skin eruptions, edema, menstrual irregularities, nausea, constipation, extrapyramidal effects, libido changes, or paradoxical stimulation, depression, fatigue, sedation; dizziness, slurred speech, weakness; confusion; nervousness, hyperexcitability; hypersalivation, dry mouth; hallucinations (rare).

Drug Interactions:
- Avoid sodium oxybate as it can increase CNS and respiratory rate.
- May be taken with or without food.
- Write prescription for the shortest duration possible to prevent potential dependence.
- *Missed dose:* Take as soon as remembered. Skip the missed dose if it is almost time for the next scheduled dose. Do not take extra medicine.
- Increased CNS depressive effects when taken with other CNS depressants.

Pharmacokinetics:
- Metabolized in the liver (CYP450) and excreted in the urine.
- Binds to BZD receptors and enhances GABA effects.

Precautions: In general concomitant administration of chlordiazepoxide and other psychotropic drugs is not recommended. Caution should be exercised in administering chlordiazepoxide to patients with a history of psychosis, depression, suicidal ideation, porphyria, or alcohol/drug substance abuse.
- Use with caution in patients with pulmonary impairment/disease.
- History of substance abuse increases risk of dependency.
- Some patients present with disinhibiting behaviors after administration.
- Since dependence may develop, use with caution in patients with history of depression. Chloramphenicol, cimetidine (*Tagamet*), clarithromycin (*Biaxin*), conivaptan (*Vaprisol*), cyclosporine (*Gengraf/Neoral*), delavirdine (*Rescriptor*),

imatinib (*Gleevec*), isoniazid, itraconazole (*Sporanox*), ketoconazole, nefazodone (*Serzone*), posaconazole (*Noxafil*), protease inhibitors, telithromycin (*Ketek*), and voriconazole (*Vfend*) may increase benzodiazepine levels, risk CNS depression, and psychomotor impairment.
- The action of benzodiazepines may be potentiated by barbiturates, narcotics, phenothiazines, MAOIs, or other antidepressants, and can be used if depression, porphyria, suicidal ideation, alcohol/drug-abuse, or psychosis is present.

Patient and Family Education:
- Tell health care provider of glaucoma, hepatic or renal impairment, drug-abuse history, salivary flow decrease (interferes with ODT absorption), or pregnancy.
- Take medicine as prescribed and do not abruptly stop without first consulting with provider.
- Before taking this medicine, tell provider of medical history of liver disease, kidney disease, lung/breathing problems, drug or alcohol abuse, or any allergies.
- Do not drive, operate heavy machinery, or perform dangerous activities until it is known how this medicine will exert its effects.
- This drug may be habit forming and should be used only by the person for whom it was prescribed.
- Take exactly as prescribed. Do not take in larger or smaller amounts or for longer than recommended.
- Can be taken with or without food.
- Exercise caution when driving or operating machinery due to sedative effects of medication.
- Do not drink alcohol.
- Do not stop taking the drug abruptly.

Special Populations:
- *Elderly*: Start with 5 mg every day bid and then gradually increase to 5 mg PO bid or qid. Because of sedative effects and increased risk of falls, all benzodiazepines are included on Beers List of Potentially Inappropriate Medications for Geriatrics.
  Use with caution; may require smaller dosage due to comorbid modalities.
- *Renal impairment:* Adjust dose to 50% of the normal; use with caution; may require dosage if CrCl is below 10.
- *Hepatic impairment:* Caution advised in children with hepatic impairment. Use with caution; may require smaller dosage: 10–20 mg/day in 2–4 doses initially; increase as needed. Because of sedative properties and increased risk of fall and fracture, BZDs are included on the Beers List of Potentially Inappropriate Medications for Geriatrics.
- *Pregnancy*: Category D; positive evidence of human fetal risk.
- *Lactation:* Probably safe for breastfeeding mothers. It is unknown if medication is secreted in breast milk.
- *Children and adolescents*: Not recommended in children under 6 years. In children over 6 initial 10–20 mg/day in 2–4doses: may increase to 20–30 mg/day in 2–3 doses if needed.

CITALOPRAM (*Celexa*)

Classification: Selective serotonin reuptake inhibitor (SSRI).

Indications: Used for major depressive disorder.

Available Forms: Oral tablet, 10, 20, and 40 mg; oral solution, 10 mg/5 mL; tablet, 10, 20, and 40 mg.

Dosage: *Children:* The safety and effectiveness of this drug to treat depression associated with Eating Disorder Not Otherwise Specified have not been established in children under 18 years of age. *Adults:* Starting dose, 20 mg initially once daily in the morning or evening; then increase in 20-mg increments at intervals of no less than 1 wk. *Elderly*: 20 mg/day initially; then slowly increase to 40 mg/day for nonresponding patients only. Increase dose incrementally 20 mg only once per week. Most patients reach efficacy at 40 mg daily; however, some may need 60 mg/day.

Administration:
- Give PO with a glass of water.
- Take with or without food.
- Scored tablets may be crushed.
- Take at regular intervals.
- Caution patients not to stop taking drug except on provider's advice.
- Not prescribed for children.
- Instruct patients to take missed dose as soon as possible. If it is almost time for the next dose, advise to take only that dose.

Side Effects: Nausea.
- *Most common*: Somnolence; headache; asthenia; dizziness; sweating; dry mouth; drowsiness; tremor; diarrhea; abnormal ejaculation; decreased libido; agitation.

Drug Interactions: Linezolid or MAOIs may cause anorexia; nervousness; anxiety; abnormal vision; change in appetite; change in sex drive or performance; diarrhea; constipation; indigestion; nausea.
- *Less common*: Suicidality; worsening depression; serotonin syndrome; seizures; hyponatremia; extrapyramidal symptoms; priapism; acute angle glaucoma.
- Most of the interactions occur with OTC cough and cold preparations. This medicine may also interact with the following medications:
  - Absolute contraindications include MAOIs such as phenelzine (*Nardil*), tranylcypromine (*Parnate*), isocarboxazid (*Marplan*), and selegiline (*Eldepryl*).
  - Avoid using with other SSRIs due to serotonin effect; SNRI drugs such as desvenlafaxine (*Pristiq*) and venlafaxine (*Effexor*); drugs with sympathomimetic properties such as phenylpropanolamine, pseudoephedrine, St. John's wort, haloperidol; diazepam (*Valium*), any other antidepressants; and clopidogrel (*Plavix*), amoxicillin, erythromycins, and lansoprazole (*Prevacid*).
  - Exercise caution with cold medications, NSAIDs, and drugs used for analgesia with opioid properties.

- *Alert:* This list may not describe all possible interactions. Instruct patients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements used, and if they smoke, drink alcohol, or use illegal drugs.

Pharmacokinetics:
- *Onset:* 1–2 wk.
- *Peak:* 4 hr.
- *Metabolism:* Citalopram is extensively metabolized in the liver into DCT, DDCT, and citalopram-*N*-oxide. The CYP enzymes responsible for the metabolism of citalopram are CYP2C19 and CYP3A4.
- *Excretion:* Primarily excreted in the urine. Liver in CYP450 2C19, 3A4 substrate; 2D6 (weak) inhibitor.
  Urine primarily (10% unchanged), feces.
- *Half-life:* 35 hr.

Precautions:
Contraindications: Sensitivity to citalopram; MAOI use within 14 days.

Cautions: Hepatic/renal impairment; history of seizures; mania; hypomania.
- See patients as often as necessary to ensure that the drug is working on the panic attacks, determine compliance, and review side effects.
- Make sure patients realize that they need to take prescribed doses even if they do not feel better right away. It can take several weeks before they feel the full effect of the drug.
- Instruct patients and their families to watch for worsening depression or thoughts of suicide. Also watch out for sudden or severe changes in feelings such as feeling anxious, agitated, panicky, irritated, hostile, aggressive, impulsive, severely restless, overly excited, hyperactive, or not being able to sleep. If this happens, especially at the beginning of antidepressant treatment or after a change in dose, patient should call the health care provider.
- Drowsiness or dizziness: Patients should not drive or use machinery or do anything that needs mental alertness until the effects of this medicine are known.
- Caution patients not to stand or sit up quickly, especially if older. This reduces the risk of dizzy or fainting spells. Alcohol may interfere with the effect of this medicine. Avoid alcoholic drinks.
- Caution patients not to treat themselves for coughs, colds, or allergies without asking a health care professional for advice. Some ingredients can increase possible side effects.
- Dry mouth: Chewing sugarless gum, sucking hard candy, and drinking plenty of water may help. Contact health care provider if the problem persists or is severe.
- Caution should be exercised in the following:
  - Bipolar disorder or a family history of bipolar disorder.
  - Diabetes.
  - Heart disease.
  - Liver disease.
  - Electroconvulsive therapy.
  - Seizures (convulsions).
  - Suicidal thoughts, plans, or attempts by patients or a family member.
  - An unusual or allergic reaction to citalopram, other medicines, foods, dyes, or preservatives.

- Pregnancy or trying to get pregnant.
- Breastfeeding.

Patient and Family Education:

- Do not stop taking medication abruptly or increase dosage without notifying health care provider.
- Store at room temperature. Avoid alcohol use.
- Avoid tasks that require alertness and motor skills until response to drug is established.
- Try to take the medicine at the same time each day. Follow the directions on the prescription label. To get the correct dose of liquid citalopram, measure the liquid with a marked measuring spoon or medicine cup, not with a regular tablespoon. If there is no dose-measuring device available, ask the pharmacist for one.

Special Populations:

- *Elderly*: More sensitive to anticholinergic effects. More likely to experience dizziness, sedation, confusion, hypotension, and hyperexcitability. Generally able to tolerate citalopram better than other SSRIs.
- *Children*: May cause increased anticholinergic effects and hyperexcitability. Not indicated for children.
- *Renal and hepatic impairment:* The initial dose should be reduced in patients with severe renal and/or hepatic impairment. Half-life is doubled in patients with hepatic impairment. Titration upward should be slow and at intervals.
- *Pregnancy:* Category C; potential for persistent pulmonary HTN if more than 20-week gestation.
- *Lactation:* Excreted in human breast milk, some reports of infant somulence. Not recommended.

CLOMIPRAMINE (*Anafranil*)

Classification: Tricyclic antidepressant (TCA).

Indications: An antiobsessional drug that belongs to the class (dibenzazepine) of pharmacologic agents known as tricyclic antidepressants.

Available Forms: Tablet, capsule, 25, 50, and 75 mg.

Dosage: 75–300 mg. Generally 150–250 mg is the most effective dosage for OCD. 75–100 mg dose is usually only used on women weighing in the 100 pound range. Starting dose 25–50 mg, which can then be in creased by 25–50 mg every 1–3 days. It takes 6–10 wk for the full effect to be realized. A dose close to 250 mg taken over 10 wk, on average, produces the best results.

Administration: Take this medicine PO with or without food. Do not abruptly discontinue medication.

Side Effects: Drowsiness, dry mouth, nausea, vomiting, diarrhea, constipation, nervousness, decreased sexual ability, decreased memory or concentration, headache, stuffy nose, change in appetite or weight. *The following side effects should be immediately reported to the clinician:* Uncontrollable shaking of a part of the body, seizures; fast, irregular, or pounding heartbeat; difficulty urinating or loss of bladder control; believing things that are not true, hallucinations (seeing things or hearing voices that do not exist), eye pain; shakiness; difficulty breathing or fast breathing; severe muscle stiffness, unusual tiredness or weakness; sore throat, fever, and other signs of infection.

Drug Interactions:

- The following drugs are contraindicated: antiarrhythmics class IA such as procainamide, quinidine gluconate, quinidine sulfate, disopyramide (*Norpace*) may increase risk of side effects or increase the risk of a QT prolongation.
- Specific medications that may interact with *agent* include cimetidine (*Tagamet*); guanethidine (*Ismelin*); methylphenidate (Concerta, Ritalin, Daytrana); phenytoin (*Dilantin*); warfarin (*Coumadin*); heart or blood pressure medication such as clonidine (*Catapres*) or digoxin (*Lanoxin*); heart rhythm medications such as flecainide (*Tambocor*), quinidine (*Cardioquin, Quinidex, Quinaglute*); or antipsychotic medications such as chlorpromazine (*Thorazine*), haloperidol (*Haldol*), thioridazine (*Mellaril*), lozapine (*Clozaril*), olanzapine (*Zyprexa, Zydis*), quetiapine (*Seroquel*), risperidone (*Risperdal*), or ziprasidone (*Geodon*). Cisapride (*Propulsid*) may increase risk of QT prolongation, cardiac arrhythmias; dronedarone (*Multaq*) may increase TC A levels and risk of adverse effects, increase risk of QT prolongation, cardiac arrhythmias; flumazenil (*Romazicon*) may increase risk of cardiac arrhythmias, seizures.
- MAOIs such as selegiline (*Eldepryl/Zelapar*), procarbazine (*Matulane*), phenelzine (*Nardil*), tranylcypromine (*Parnate*), isocarboxazid (*Marplan*), selegiline transdermal (*Eldepryl/Zelapar*), rasagiline (*Azilect*) may result in CNS overstimulation, hyperpyrexia, seizures, or death.
- Pimozide (*Orap*) may increase risk of CNS depression and psychomotor impairment, QT prolongation, arrhythmias, anticholinergic effects,

hyperpyrexia; potassium salts such as potassium acid phosphate, potassium citrate, potassium chloride, potassium iodide, potassium phosphate/sodium phosphate, potassium acid, phosphate/sodium acid phosphate, and potassium phosphate are contraindicated for solid potassium dose forms.
- Weigh risk/benefit of thyroid protection with solid iodide salt forms, may delay solid potassium passage through GI tract, increase risk of ulcerative/stenotic lesions.

Pharmacokinetics: Presumed to influence obsessive and compulsive behaviors through its effects on serotonergic neuronal transmission.
- Metabolized in the liver extensively (CYP450, 1A2, 2C19, 2D6) and is excreted in the urine (66%) and in the feces.
- *Half-life:* 32 hr.
- The exact neurochemical mechanism of action is unknown, but its capacity to inhibit the reuptake of serotonin (5-HT) is thought to be important.

Precautions:
- Contraindicated with recent MI.
- Do not use if MAOI used within past 14 days.
- Do not use if patient is allergic to similar drugs (TCAs).
- Monitor for suicidal thoughts.
- Report new or worsening symptoms of mood or behavior changes, anxiety, panic attacks, insomnia, or feelings of impulsivity, irritability, agitation, hostility aggressiveness, restlessness, hyperactivity, increased depression or suicidal thoughts. Inhibits norepinephrine and serotonin reuptake.

Patient and Family Education:
- Anxiety symptoms may temporarily worsen when you first start taking clomipramine.
- Do not stop taking this medicine without notifying the health care provider.
- Anxiety symptoms may temporarily worsen when first starting.
- Notify doctor or pharmacist promptly if any of these effects persist or worsen.
- To relieve dry mouth, suck on (sugarless) hard candy or ice chips, chew (sugarless) gum, drink water, or use a saliva substitute.
- To prevent constipation, maintain a diet adequate in fiber, drink plenty of water, and exercise. In case of constipation, consult your pharmacist for help in selecting a laxative (e.g., stimulant-type with stool softener).
- Notify your clinician immediately if any of these unlikely but serious side effects occur: mental/mood changes (e.g., confusion, depression, hallucinations, memory problems), enlarged/painful breasts, unwanted breast milk production, irregular/painful menstrual periods, muscle stiffness/twitching, feelings of restlessness, ringing in the ears, sexual problems (e.g., decreased sexual ability, changes in desire), shakiness (tremors), numbness/tingling of the hands/feet, trouble urinating, severe vomiting.
- Notify your clinician immediately if any of these rare but very serious side effects occur: easy bruising/bleeding, signs of infection (e.g., fever, persistent sore throat), unusual/uncontrolled movements (especially of the tongue/face/lips), severe stomach/abdominal pain, dark urine, yellowing of eyes/skin.

- Seek immediate medical attention if any of these rare but very serious side effects occur: black stools, chest pain, fainting, high fever, slow/fast/irregular heartbeat, seizures, vomit that looks like coffee grounds.

Special Populations:

- *Elderly:* Lower doses are recommended.
- *Renal impairment:* Significant caution is warranted with renal impairment.
- *Hepatic impairment:* Caution is advised in children with hepatic impairment.
- *Pregnancy/Lactation*: This is a category C drug; animal studies have shown adverse fetal effects.
- *Children and adolescents 12–17 years*: There is an increased risk of suicidality in children, adolescents, and young adults. Gradual increase in dose is recommended.

CLONAZEPAM (*Klonopin*)

Classification: Benzodiazepine (BZD).

Indications: Used to treat GADs and PD.

Available Forms: Tablet, 0.5, 1, and 2 mg; wafer melt, 0.125, 0.25, 0.5, and 1.2 mg.

Dosage: *Adults:* Starting dose, start at 0.25 mg PO bid; increase by 0.25–0.5 mg/day every 3 days; may start lower in elderly patients; maximum, 4 mg/day; treatment should be limited to as short a period as possible (less than 4 months) and/or re-evaluated for continued use.

Administration:
- PO with a glass of water.
- Do not abruptly stop taking the medication.
- Use lowest effective dose for shortest duration.
- Clonazepam can be habit forming; do not increase dosage without guidance from the health care provider.

Side Effects:
- *More common:* Drowsiness, lightheadedness, dry mouth; headache, changes in bowel habits, sialorrhea, amnesia, and changes in appetite.
- *Less common*: Syncope, tachycardia, seizures, respiratory depression, dependency, withdrawal syndrome, and suicidal ideation.

Drug Interactions: This medicine may interact with the following medications:
- Absolute contraindications include clarithromycin, fluvoxamine, and ketoconazole.
- Avoid using with calcium channel blockers, erythromycins, tamoxifen, and zafirlukast.
- *Alert:* This list may not describe all possible interactions. Instruct patients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements used, and if they smoke, drink alcohol, or use illegal drugs.

Pharmacokinetics:
- BZDs enhance the activity of GABA, a major CNS neurotransmitter, known to open CNS Cl-channels leading to an inhibition of subsequent CNS neuronal signaling. BZDs with similar action can differ in their potency and rate of absorption.
- *Metabolism:* Extensively metabolized in liver CYP450 3A4.
- *Excretion:* Urine.
- *Half-life:* 20–50 hr.

Precautions:
- See patients as often as necessary to ensure that the drug is working on the panic attacks, determine compliance, and review side effects.
- Instruct patients and families to watch for worsening depression or thoughts of suicide. Also watch out for sudden or severe changes in feelings such as feeling anxious, agitated, panicky, irritated, hostile, aggressive, impulsive, severely

restless, overly excited, hyperactive, or not being able to sleep. If this happens, especially at the beginning of antidepressant treatment or after a change in dose, patient should call the health care provider.
- Drowsiness or dizziness: Patients should not drive or use machinery or do anything that needs mental alertness until the effects of this medicine are known.
- Caution patients not to stand or sit up quickly, especially if older. This reduces the risk of dizzy or fainting spells. Alcohol may interfere with the effect of this medicine. Avoid alcoholic drinks.
- Do not abruptly withdraw this drug as it may cause seizures.
- Caution should be exercised in the following:
  - Heart disease.
  - Liver disease.
  - Seizures (convulsions).
  - Suicidal thoughts, plans, or attempts by patients or a family member.
  - An unusual or allergic reaction to alprazolam, other medicines, foods, dyes, or preservatives.

Patient and Family Education:
- Store clonazepam at room temperature away from moisture, heat, and light. Remove any cotton from the bottle of disintegrating wafers, and keep the bottle tightly closed.
- Clonazepam may be habit forming and should be used only by the person it was prescribed for. Clonazepam should never be shared with another person, especially someone who has a history of drug abuse or addiction. Keep the medication in a secure place where others cannot get to it.

Special Populations:
- *Elderly:* Older patients may be more sensitive to the effects of BZDs. The smallest effective dose should be used. Dose adjustment is necessary for patients with liver impairment and/or renal disease due to excessive metabolites excreted by the kidney. Due to increased risk of sedation leading to falls and fractures, BZDs are included on the Beers List of Potentially Inappropriate Medications for Geriatrics.
- *Pregnancy:* Category D; can cause teratogenic fetal effects. Infants born to mothers taking BZDs may be at risk for withdrawal symptoms in the postnatal period.
- *Lactation:* Excreted in human breast milk; infants can become lethargic and lose weight.
- *Children:* Not indicated for use in children except for treatment of seizures.

CLONIDINE (*Catapres, Catapres-TTS*)

Classification: Alpha-agonist.

Indications: Controlling withdrawal symptoms for opiates or alcohol.

Available Forms: Tablet, 0.1, 0.2, and 0.3 mg; topical (7-day administration), 0.1 mg/24 hr, 0.2 mg/24 hr, and 0.3 mg/24 hr.

Dosage: *Oral:* 0.1–0.3 mg given in divided doses prn as needed. Maximum dose is dependent on clinical response but should not exceed 0.6 mg. *Topical:* Apply once every 7 days.

Administration: *Oral:* Take with a full glass of water; may be taken with or without food. *Topical:* Apply patch on skin without hair. Leave in place for 7 days.

Side Effects: Dry mouth; sedation, dizziness; constipation; weakness, fatigue; insomnia, headache, impotence, loss of libido; major depression; hypotension; nervousness, agitation; nausea, vomiting.

Drug Interactions:
- Do not give with beta-blocker due to CV symptoms.
- Increased sedative and depressive symptoms when given with another CNS depressant.
- Administration with drugs that affect sinus node or AV function may result in bradycardia or AV block.

Pharmacokinetics:
- *Metabolism:* Liver, excreted by kidney.
- *Half-life:* 12–16 hr.

Precautions:
- There have been rare cases of hypertensive crisis and stroke after abrupt discontinuation.
- If used with a beta-blocker, the beta-blocker should be stopped several days before tapering drug.

Patient and Family Education:
- Make position changes slowly and in stages. Dangle feet over bed prior to standing.
- Lie down immediately if feeling faint or dizzy.
- Avoid potentially hazardous activities until effect of medication has been determined.
- *Missed dose:* Take as soon as remembered. If it is almost time for next dose, wait until next regularly scheduled dose. Do not take extra medicine to make up the missed dose.

Special Populations:
- *Elderly:* Use with caution due to sedative effects.
- *Renal impairment:* Use with caution. May require smaller dosage.

- *Hepatic impairment*: Use with caution.
- *Pregnancy:* Category C.
- *Lactation:* Some drug is found in mother's breast milk; discontinue drug or bottle feed.
- *Children and adolescents*: Safety and efficacy not established for children under 12; children are more likely to experience CNS depression with overdose.

CLORAZEPATE (*Tranxene*)

Classification: Benzodiazepine (BZD).

Indications: Used to achieve sedation during hypnosis and to relieve anxiety.

Available Forms: Tablet, 3.75, 7.5, and 15 mg.

Dosage: *Adults*: 15–60 mg dose PO every day divided into bid or tid, or 15–30 mg at bedtime. *Children: 9–12 years:* start 7.5 mg PO bid. Maximum, 60 mg/day. Alternatively, dose can begin at 0.3 mg/kg/day PO divided into bid or qid.

Administration: Taken PO. Should not abruptly stop taking this drug. To discontinue this drug, client must consult with health care provider.

Side Effects: Drowsiness, dizziness, various GI complaints, nervousness, blurred vision, dry mouth, headache, and confusion.

Drug Interactions:
- Avoid sodium oxybate as it can increase CNS and respiratory depression.
- Chloramphenicol, cimetidine (*Tagamet*), clarithromycin (*Biaxin*), conivaptan (*Vaprisol*), cyclosporine (*Gengraf/Neoral*), delavirdine (*Rescriptor*), imatinib (*Gleevec*), isoniazid, itraconazole (*Sporanox*), ketoconazole, nefazodone (*Serzone*), posaconazole (*Noxafil*), protease inhibitors, telithromycin (*Ketek*), and voriconazole (*Vfend*) may increase benzodiazepine levels, risk of CNS depression, and psychomotor impairment.
- The action of benzodiazepines may be potentiated by barbiturates, narcotics, phenothiazines, MAOIs, or other antidepressants. The concomitant use of other CNS depressant drugs is contraindicated.

Pharmacokinetics:
- Metabolized in the liver (CYP 450) and excreted primarily through the urine and feces.
- This drug has depressant effects on the central nervous system by binding to benzodiazepine receptors and enhancing GABA effects.
- *Half-life:* 40–50 hr.

Precautions: Serious reactions to the drug include hepatotoxicity, respiratory depression, seizure exacerbation, suicidality, dependency, and abuse.

Patient and Family Education:
- Do not abruptly stop taking the drug without consulting the prescriber; the dose must be carefully tapered.
- May increase the risk of suicidal thoughts and behavior; be alert for the emergence or worsening of signs and symptoms of depression, unusual changes in mood or behavior, or emergence of suicidal thoughts.
- Avoid taking this drug if there is a known hypersensitivity to the drug or if there is acute narrow-angle glaucoma.
- Do not drive, operate heavy machinery, or do other dangerous activities until its known how clorazepate exerts its effects.

- Do not drink alcohol or take other drugs that may cause sleepiness or dizziness while taking clorazepate without first talking to provider.
- Avoid becoming pregnant while on this drug; if pregnancy occurs, alert health care provider immediately.

Special Populations:

- *Elderly*: The elderly or debilitated patients need to start at 7.5–15 mg/day. Because of its sedative effect and increased risk of falls, all benzodiazepines are included on Beers List of Potentially Inappropriate Medications for Geriatrics.
- *Renal impairment:* No adjustment needed.
- *Hepatic impairment:* Not defined at this time.
- *Pregnancy*: Category D; trimester-specific. There is an increased risk of congenital malformations associated with the use of this drug during the first trimester of pregnancy.
- *Lactation*: Probably safe during lactation but caution advised.
- *Children*: Pediatric dosing is currently unavailable or not applicable. It is not recommended for children under 9 years of age.

CLOZAPINE (*Clozaril, FazaClo*)

Classification: Antipsychotic drug, atypical (second generation).

Indications: Treatment-resistant schizophrenia, reduction in risk of recurrent suicidal behavior in patients with schizophrenia or schizoaffective disorder.

Available Forms: Orally disintegrating tablet, 12.5, 25, 50, and 100 mg.

Dosage: Taper to goal dose. *Children:* Not for pediatric use. *Adults:* 150–300 mg bid; start, 12.5 mg PO daily, bid, increase 25–450 mg/day every 3–7 days; maximum, 900 mg/day; taper dose gradually over 1–2 wk to discontinue.

Administration: Restricted distribution in the USA.

Side Effects: Hypotension, severe; syncope; extrapyramidal symptoms, severe; tardive dyskinesia; neuroleptic malignant syndrome; hyperglycemia, severe; diabetes mellitus; seizures; priapism; stroke; TIA; QT prolongation; hypersensitivity reaction; anaphylactic reaction; angioedema; erythema multiforme; leukopenia; neutropenia; agranulocytosis; suicidality; somnolence; increased appetite; fatigue; rhinitis; URI; nausea/vomiting; cough; urinary incontinence; salivation; constipation; fever; dystonia; abdominal pain; anxiety; dizziness; dry mouth; tremor; rash; akathisia; dyspepsia; tachycardia; hyperprolactinemia/gynecomastia; weight gain.

Drug Interactions: Triptorelin; ginseng; *Haldol*; sodium oxybate; ziprasidone. Caution with diabetes and HTN.

- Tablets may be given with or without food.
- Take the regular oral tablet with a full glass of water.
- The orally disintegrating tablet (*Fazaclo*) can be taken without water. Advise patients to keep the tablet in its blister pack until ready to take. The patient should gently peel back the foil from the blister pack and drop the tablet onto dry hand; place the tablet in mouth; it will begin to dissolve right away; allow it to dissolve in the mouth without chewing; swallow several times as the tablet dissolves. If desired, advise patients to drink liquid to help swallow the dissolved tablet.
- If one-half of an orally disintegrating tablet is prescribed, advise patients to break the tablet in half and throw the other half away. DO NOT save the other half for later use.
- If patients stop taking clozapine for more than 2 days in a row, caution patients to call providers before starting to take it again.
- Store clozapine at room temperature away from moisture and heat.
- Risk or severity of bone marrow suppression may be increased if given in conjunction with medications that suppress bone marrow.
- Use with caution if given in conjunction with alcohol, CNS depressants, or general anesthesia.
- May enhance effects of antihypertensive drugs.
- May need to reduce clozapine dose if given in conjunction with CYP450 1A2 inhibitors (e.g., fluvoxamine).

- May need to increase clozapine dose if given in conjunction with CYP450 1A2 inducers (e.g., cigarette smoke).
- CYP450 2D6 inhibitors (e.g., paroxetine, fluoxetine, and duloxetine) and CYP450 3A4 inhibitors (e.g., nefazodone, fluvoxamine, and fluoxetine) can raise clozapine levels, but usually dosage adjustment is not required.
- *Alert:* This list may not describe all possible interactions. Instruct clients to provide a list of all the medicines, herbs, nonprescription drugs, or dietary supplements they use.

Pharmacokinetics:
- Exact mechanism of action unknown.
- Antagonizes dopamine D2 receptors and serotonin 5-HT2 receptors.
- *Metabolism:* Metabolized by multiple CYP450 enzymes including 1A2, 2D6, and 3A4.
- *Half-life:* 4–66, 5–16 hr.

Precautions: Hypersensitivity to drug/class.
- Caution if renal impairment, hepatic impairment, dementia, Parkinson's disease, neuroleptic malignant syndrome history.
- Increased risk of fatal myocarditis, especially during, but not limited to, the first month of therapy. Promptly discontinue clozapine if myocarditis is suspected.
- Life-threatening agranulocytosis can occur. Baseline WBC and ANC should be done before initiation of treatment, during treatment, and for at least 4 wk after discontinuing treatment.
- Use with caution in patients with glaucoma or enlarged prostate.
- *Do not use in patients with:*
  - Myeloproliferative disorder.
  - Uncontrolled seizure history, cardiac disease, cerebrovascular disease, hypotension, hypovolemia, dehydration, aspiration pneumonia risk, May impair body temperature regulation, PKU (phenylalanine-containing forms), diabetes mellitus or diabetes mellitus risk, Caution in elderly patients, pediatric or adolescent patients, drug-induced leukopenia or neutropenia history, suicide risk.
  - Granulocytopenia.
  - Paralytic ileus.
  - CNS depression.
  - Allergic symptoms to clozapine.

Patient and Family Education:
- Drug effects can linger 7–8 wk after last dose.
- Monitor CBC, glucose, and cholesterol throughout treatment course—WBC/ANC at baseline, then every wk × 6 months, then every 2 wk × 6 months, then every 4 wk for treatment duration and every week × 4 wk after D/C; fasting glucose at baseline if diabetes risk factors, then periodically; see package insert for additional recommendations based on results of WBC/ANC monitoring.
- Restricted distribution in the USA—permission granted through the FDA.

- Clozapine will only be provided in 1- or 2-wk supplies, depending on frequency of WBC monitoring. Follow-up visits and weekly blood cell counts are required to monitor therapy and to keep appointments.
- Take prescribed dose with or without food. Take with food if stomach upset occurs.
- Keep tablet in unopened blister until just before use. Remove tablet by peeling the foil from the back of the blister and then immediately place the tablet (or half tablet, if ordered) in mouth, allow the tablet to disintegrate, and then swallow with saliva.
- Do not stop taking clozapine when feeling better.
- If medication needs to be discontinued, it will be slowly withdrawn over a period of 1–2 wk unless safety concerns (e.g., low WBC) require a more rapid withdrawal.
- *Immediately report to provider* if any of these conditions occur: altered mental status, change in personality or mood, chest pain, fever, flu-like symptoms, frequent urination, general body discomfort, involuntary body or facial movements, lethargy, mucous membrane sores or other signs of possible infection, muscle rigidity, pounding in the chest, rapid or difficult breathing, rapid or irregular heartbeat, seizures, sore throat, sweating, swelling of feet or ankles, unexplained fatigue, unexplained shortness of breath, unquenchable thirst, weakness, or weight gain.
- *If you have diabetes*, monitor blood glucose more frequently when drug is started or dose is changed and inform provider of significant changes in readings.
- *If you are taking antihypertensive drugs*, monitor BP at regular intervals.
- *If you have history of seizures or factors predisposing to seizures*, clozapine may cause seizures. Do not engage in any activity in which sudden loss of consciousness could cause serious risk to you or others (e.g., driving, swimming, climbing).
- *Avoid* strenuous activity during periods of high temperature or humidity.
- *Avoid* alcoholic beverages and sedatives (e.g., diazepam) while taking clozapine.
- Get up slowly from lying or sitting position and avoid sudden position changes to prevent postural hypotension. Hot tubs and hot showers or baths may make dizziness worse.
- Take sips of water, suck on ice chips or sugarless hard candy, or chew sugarless gum if dry mouth occurs.
- Clozapine may impair your judgment, thinking, or motor skills, or it may cause drowsiness. Thus, use with caution while driving or performing other tasks requiring mental alertness until tolerance is determined.

Special Populations:

- *Elderly:* Caution with use due to polypharmacy and comorbid conditions. May tolerate lower doses better. Elderly with dementia-related psychosis treated with atypical antipsychotics are at higher risk of death and cerebrovascular events.
- *Renal impairment*: Use with caution.
- *Hepatic impairment*: Use with caution.
- *Cardiac impairment:* Use with caution, especially if patient is taking concomitant medication.

- *Pregnancy:* Category B. Animal studies do not show significant evidence of safety.
- *Lactation:* It is not known whether clozapine is secreted in human breast milk. It is recommended to either discontinue drug or bottle feed. Infants of women who choose to breastfeed while on this drug should be monitored for possible adverse effects.
- *Children:* Not for use in children who show adverse effects. There are no controlled studies in humans. Clozapine should be used only when the potential benefits outweigh potential risks to the fetus.

CYPROHEPTADINE (*Periactin*)

Classification: Antihistamine.

Indications: Hay fever; treatment of nightmares, including nightmares related to posttraumatic stress disorder; serotonin syndrome and in cases of hyperserotoninaemia. Can also be used as a preventive measure against migraine in children and adolescents. Can relieve SSRI-induced sexual dysfunction and drug-induced hyperhidrosis (excessive sweating). Also used in the treatment of cyclical vomiting syndrome and to stimulate the appetite.

Available Forms: Tablets.

Dosage: 12 mg PO followed by 2 mg q2 hr until symptoms improve.

Administration: PO; take with food to avoid GI distress.

Drug Interactions: No interactions to avoid concomitant use.

Pharmacokinetics:
- *Absorption:* Complete.
- *Metabolism:* Hepatic.
- *Half-life:* 1–4 hr.

Precautions:
- Contraindicated in narrow-angle glaucoma.
- Concurrent use of MAOIs.
- Bladder neck obstruction, GI obstruction.
- May cause CNS depression.

Patient and Family Education: Avoid use with other depressants, sleep-inducing medications unless approved by prescriber. Possible dizziness and drowsiness (caution when driving or engaging in tasks requiring alertness).

Special Populations:
- *Elderly:* May be inappropriate in the elderly due to anticholinergic effects although for short-term use, weigh risk versus benefit.
- *Pregnancy:* Pregnancy category B.
- *Lactation:* Excretion in breast milk unknown.
- *Outcome:* Symptoms improve in 24 hr although mental confusion can last for several days.

DANTROLENE (*Dantrium*)

Classification: Skeletal muscle relaxant.

Indications: Muscle relaxant, malignant hyperthermia, management of hyperthermia, neuroleptic malignant syndrome, muscle spasticity, serotonin syndrome.

Available Forms: Capsules; powder for reconstitution (contains mannitol).

Dosage: *NMS*: IV, 1 mg/kg; may repeat up to a maximum cumulative dose of 10 mg/kg; then switch to oral therapy. Use for up to 10 days.

Administration: IV or PO; use within 6 hr of reconstitution.

Drug Interactions: No interactions but it is recommended to avoid concomitant use. Dantrolene may increase the effects of alcohol, CNS depressants. Levels of dantrolene may be increased by CYP3A4 inhibitors and decreased by strong CYP3A4 inducers.

Pharmacokinetics:
- *Absorption:* IV, 100%; PO: slow but complete.
- *Onset:* IV, immediate; PO, 6 hr.
- *Metabolism:* CYP3A4 substrate.
- *Half-life:* 8.7 hr.

Precautions: Active hepatic disease; IV administration requires cardiac monitoring; extravasation monitoring.

Patient and Family Education:
- Do not use alcohol, prescription or OTC antidepressants, sedatives, or pain medications without consulting prescriber.
- Drowsiness, dizziness, and lightheadedness (avoid driving or engaging in tasks that require alertness).

Special Populations:
- *Pregnancy*: Pregnancy category C.
- *Lactation*: Breastfeeding is not recommended.
- *Elderly*: In general, dose selection for an elderly patient should be cautious, reflecting the greater frequency of decreased hepatic, renal, or cardiac function, and of concomitant disease or other drug therapy.

DESIPRAMINE (*Norpramin*)

Classification: Tricyclic antidepressant (TCA).

Indications: Used to treat adults with depression/anxiety.

Available forms: Tablet, 10, 25, 50, 75, 100, and 150 mg.

Dosage: Starting dose, 25–75 mg PO daily, with a maximum of 300 mg/day. May be given in divided doses; must taper slowly to discontinue.

Administration:
- PO with a glass of water.
- Do not abruptly stop taking the medication.
- Not prescribed for children.
- Use lowest effective dose for shortest duration.

Side Effects:
- *More common:* Drowsiness, dizziness, constipation, nausea/vomiting, urinary retention or frequency, libido changes, weight gain, general nervousness, galactorrhea, rash, and urticaria.
- *Less common*: Cardiac arrhythmias, extrapyramidal symptoms, clotting disturbances, worsening depression, suicidality, hyperthermia, and hypertension.

Drug Interactions: This medicine may interact with the following medications:
- Absolute contraindications include class IA antiarrhythmics, MAOIs such as phenelzine (*Nardil*), tranylcypromine (*Parnate*), isocarboxazid (*Marplan*), and selegiline (*Eldepryl*).
- Avoid using with cimetadine, amiodarone, clarithromycin, erythromycin, haldoperidol, and St. John's wort.
- *Alert:* This list may not describe all possible interactions. Instruct patients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements used, and if they smoke, drink alcohol, or use illegal drugs.

Pharmacokinetics:
- TCAs are thought to work by inhibiting reuptake of norepinephrine and serotonin in the CNS, which potentiates the neurotransmitters. They also have significant anticholinergics, antihistaminic, and alpha-adrenergic activity on the cardiac system. These classes of antidepressants also possess class 1A antiarrhythmic activity, which can lead to depression of cardiac conduction potentially resulting in heart block or ventricular arrhythmias.
- *Metabolism:* Primarily in the liver via the CYP450: 2C19, 2D6 (primary) substrate.
- *Excretion:* Urine.
- *Half-life:* 12–27 hr.

Precautions:

- See patients as often as necessary to ensure that the drug is working on the panic attacks, determine compliance, and review side effects.
- Instruct patients and families to watch for worsening depression or thoughts of suicide. Also watch out for sudden or severe changes in feelings such as feeling anxious, agitated, panicky, irritated, hostile, aggressive, impulsive, severely restless, overly excited, hyperactive, or not being able to sleep. If this happens, especially at the beginning of antidepressant treatment or after a change in dose, patient should call the health care provider.
- Drowsiness or dizziness: Patients should not drive or use machinery or do anything that needs mental alertness until the effects of this medicine are known. Other medications that cause drowsiness can add to the drowsiness of desipramine.
- Caution patients not to stand or sit up quickly, especially if older. This reduces the risk of dizzy or fainting spells. Alcohol may interfere with the effect of this medicine. Avoid alcoholic drinks.
- Do not abruptly withdraw this drug as it may cause headache, nausea, and malaise.
- Advise to protect skin from ultraviolet light due to increased skin sensitivity.
- Grapefruit and grapefruit juice may interact with desipramine.
- Caution should be exercised in the following:
  - MDD, psychosis, or bipolar affective disorder.
  - Contraindicated in patients with a recent myocardial infarction.
  - Blood dyscrasias.
  - Respiratory disease.
  - Heart disease.
  - Liver disease.
  - Seizures (convulsions).
  - Psychoses or schizophrenia.
  - Suicidal thoughts, plans, or attempts by patients or a family member.
  - An unusual or allergic reaction to desipramine, other medicines, foods, dyes, or preservatives.

Patient and Family Education:

- Store desipramine at room temperature away from moisture and heat.
- Stopping this medication suddenly could result in unpleasant side effects.
- Take the missed dose as soon as remembered. If it is almost time for the next dose, skip the missed dose and take the medicine at the next regularly scheduled time. *Do not* take extra medicine to make up the missed dose.

Special Populations:

- *Elderly:* Older patients may be more sensitive to the effects of TCAs. The smallest effective dose should be used (beginning at 10–25 mg/day). Dose adjustment is necessary for patients with liver impairment.
- *Pregnancy:* Category C; unknown effects as there is limited study.
- *Lactation:* Excreted in human breast milk, use caution.
- *Children:* Not indicated for children; used off label in children 6–12 years of age; however, alternative medications are preferred.

DESVENLAFAXINE (*Pristiq*)

Classification: Serotonin/norepinephrine reuptake inhibitor (SNRI).

Indications: Used to treat MDD, GAD, PD, and social anxiety disorder.

Available forms: Extended-release capsule, tablet, 50 and 100 mg.

Dosage: Starting dose, 50 mg PO, daily. Doses greater than 50 mg/day are rarely more effective; maintenance may increase adverse drug reaction risk; consider dose 50 mg every other day if poorly tolerated in elderly.

Administration: PO, with or without food. Do not crush, cut, or chew capsule or tablet.
- Take at regular intervals.
- Caution patients not to stop taking drug except on provider's advice.
- Not prescribed for children.
- Instruct patients to take missed dose as soon as possible. If it is almost time for the next dose, advise to take only that dose.

Side Effects:
- Most common: Nausea, vomiting, headache, insomnia, dizziness, somnolence, decreased libido and GI distress, sexual dysfunction, palpitations, nervousness, and hypertension.
- Less common: Worsening depression, suicidality, hypersensitivity reactions; urinary retention; increased blood pressure.

Drug Interactions: Most of the interactions, similar to other NRIs, can occur with OTC cough and cold preparations. This medicine may also interact and cause elevated response in TCAs and fatal interaction if combined with the following medications:
- Absolute contraindications include MAOIs such as phenelzine (*Nardil*), tranylcypromine (*Parnate)*, isocarboxazid (*Marplan),* and selegiline (*Eldepryl).*
- Avoid using with other SSRIs due to serotonin effect; SNRI drugs such as desvenlafaxine (*Pristiq*) and venlafaxine (*Effexor*), and all triptan agents. Exercise caution with cold medications, NSAIDs, and drugs used for analgesia with opioid properties.
- *Alert:* This list may not describe all possible interactions. Instruct patients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements used, and if they smoke, drink alcohol, or use illegal drugs.

Pharmacokinetics:
- SNRI agents are potent inhibitors of neuronal serotonin and norepinephrine reuptake and weak inhibitors of dopamine reuptake.
- Demonstrate slightly higher efficacy than the SSRI class due to the dual effect.
- Relative to SSRIs, SNRI agents seem to be more effective in treating chronic pain issues that coexist with depression and may produce more stimulative effects.

- They are highly bound to plasma proteins and have a large volume of distribution.
- *Metabolism:* Liver inactivation via CYP 3A4.
- *Excretion:* Urine 64–69% (45% unchanged); 11 hr (O-desmethylvenlafaxine).
- *Half-life:* 11 hr, 13–14 hr (moderate to severe hepatic impairment), 13–18 hr (mild to severe renal impairment), 23 hr (ESRD).
- Not metabolized by P450s, so more predictable plasma levels than many other antidepressants, including venlafaxine.
- *Half-life:* 9–13 hr.

Precautions:

- See patients as often as necessary to ensure that the drug is working on the panic attacks, determine compliance, and review side effects.
- Make sure patients realize that they need to take prescribed doses even if they do not feel better right away. It can take several weeks before they feel the full effect of the drug.
- Instruct patients and families to watch for worsening depression or thoughts of suicide. Also watch for sudden or severe changes in feelings such as feeling anxious, agitated, panicky, irritated, hostile, aggressive, impulsive, severely restless, overly excited, hyperactive, or not being able to sleep. If this happens, especially at the beginning of antidepressant treatment or after a change in dose, patient should call the health care provider.
- Drowsiness or dizziness: Patients should not drive or use machinery or do anything that needs mental alertness until the effects of this medicine are known.
- Caution patients not to stand or sit up quickly, especially if older. This reduces the risk of dizzy or fainting spells. Alcohol may interfere with the effect of this medicine. Avoid alcoholic drinks.
- Caution patients not to treat themselves for coughs, colds, or allergies without asking a health care professional for advice. Some ingredients can increase possible side effects.
- Dry mouth: Chewing sugarless gum, sucking hard candy, and drinking plenty of water may help. Contact a health care provider if the problem persists or is severe.
- Caution should be exercised in the following:
  - Bipolar disorder or a family history of bipolar disorder.
  - Diabetes.
  - Heart disease.
  - Liver disease.
  - Seizures (convulsions).
  - Suicidal thoughts, plans, or attempts by patients or a family member.
  - An unusual or allergic reaction to venlafaxine, other medicines, foods, dyes, or preservatives.
  - Pregnancy or trying to get pregnant.
  - Breastfeeding.

Patient and Family Education:

- Store at room temperature. Take any unused medication after the expiration date to the local pharmacy on drug give-back day. Avoid throwing the medication into the environment. Try to take the medicine at the same time each day. Follow the directions on the prescription label.

- Should be taken about the same time every day, morning or evening, and can be taken with or without food.
- May take up to 4 wk to be fully effective, but patient may see symptoms of depression improving in as little as 1–2 wk.
- If patient plans on becoming pregnant, discuss the benefits versus the risks of using this medicine while pregnant. This medicine is excreted in breast milk; nursing mothers should not breastfeed while taking this medicine.
- This medication should be used only when clearly needed during pregnancy. Discuss the risks and benefits with your doctor.
- If this medication is used during the last 3 months of pregnancy, newborn may have feeding or breathing difficulties, seizures, muscle stiffness, jitteriness, or constant crying.
- This medication should not be stopped unless the health care provider directs. Report any adverse symptoms to the health care provider promptly.
- This drug passes into breast milk. Because of the potential risk to the infant, breastfeeding while using this drug is not recommended.
- Caution should be exercised when using this drug on the elderly because they may be more sensitive to the effects of the drug.
- Similar to other SNRIs.
- Do not administer with MAOIs and use caution when combining with other drugs that have activating properties.
- Use with caution in patients with a history of seizures or heart disease.

Patient and Family Education: Similar to other SNRIs.

Special Populations:

- *Elderly:* Older individuals tend to be more sensitive to medication side effects such as hypotension and anticholinergic effects. Often require adjustment of medication doses for hepatic or renal dysfunction. Elderly patients may tolerate lower doses better and there is a reduced risk of suicide. May assist in treatment of chronic or depression-related physical pain.
- *Pregnancy:* Psychotherapy is the initial choice for most pregnant patients with mild to moderate MDD. Category C drug, as there are no adequate studies during pregnancy. Particular caution with exposure (avoid if possible) during first trimester. An individual risk-benefit analysis must be done to determine appropriate treatment in pregnant women with MDD.
- *Children:* Psychotherapy is the initial choice for most pregnant patients with MDD. Monitor closely, as risk of suicidal ideation is greatest in adolescents. Monitor for excessive activation effects or undiagnosed bipolar disorder. Obtain consultation with a pediatric psychiatric specialist.

DEXMETHYLPHENIDATE (*Focalin*)

Classification: Methylphenidate (amphetamine derivative).

Indications: Stimulant indicated for the treatment of ADHD in children and adults.

Available Forms: Capsule, 2.5, 5, and 10 mg.

Dosage: Dosage should be individualized according to the therapeutic needs and responses of the patient. All stimulant preparations should be administered at the lowest effective dosage. *Children: Older than 6 years*: 2.5–10 mg PO bid; start, 2.5 mg PO bid, increase 5–10 mg/day every 7 days; maximum, 20 mg/day; to convert from methylphenidate, start at 50% of current methylphenidate daily dose; space doses at least 4 hr apart.

Adults: 2.5–10 mg bid, 2.5 mg PO bid, increase 5–10 mg/day every 7 days; maximum, 20 mg/day; to convert from methylphenidate start at 50% of current methylphenidate daily dose; space doses at least 4 hr apart.

Administration: Do not crush or chew; may be given with or without food.

Side Effects: Decreased appetite; dizziness; dry mouth; irritability; insomnia; upper abdominal pain; nausea and/or vomiting; weight loss; headaches; anxiety; psychiatric events: increase in manic states for bipolar patients, aggression, tics, tremors; long-term growth suppression: patients should be monitored throughout treatment, if there appears to be growth suppression, the treatment should be discontinued; rash; pyrexia; palpitations, tachycardia, elevated BP, sudden death, MI, cardiomyopathy; Stevens-Johnson syndrome and toxic epidermal necrolysis; impotence, libido changes.

Drug Interactions: Urinary acidifying agents; MAOIs; adrenergic blockers; antihistamines; antihypertensives; veratrum alkaloids; ethosuximide; TCAs; meperidine; phenobarbital; phenytoin; chlorpromazine; *Haldol*; lithium; norepinephrine; propoxyphene.

Pharmacokinetics:
- Absorbed by the GI tract.
- Amphetamines are noncatecholamine sympathomimetic amines with CNS-stimulant activity.
- The mode of therapeutic action in ADHD is not known. Amphetamines are thought to block the reuptake of norepinephrine and dopamine into the presynaptic neuron and increase the release of these monoamines into the extraneural space.
- *Metabolism:* Liver; excreted in the urine.
- *Half-life:* 2–4.5 hr.

Precautions:
- Advanced arteriosclerosis, symptomatic cardiovascular disease, moderate-to-severe HTN.
- Hyperthyroidism.

- Known hypersensitivity or idiosyncratic reaction to sympathomimetic amines.
- Glaucoma.
- Agitated states.
- Patients with a history of drug abuse: Amphetamines have a high potential for abuse. Administration of amphetamines for an extended period of time may lead to drug dependence. Particular attention should be paid to the possibility of patients obtaining this class of medication for nontherapeutic use or distribution to others, and the drugs should be prescribed or dispensed sparingly.
- During or within 14 days following the administration of MAOIs, hypertensive crisis may result.
- Preexisting psychosis.
- Seizure history: Some studies have shown the potential for lowering the seizure threshold.

Patient and Family Education:

- Store at room temperature, protected from light.
- Keep out of reach of children.
- Seek medical care for any signs of heart problems (chest pain, shortness of breath), fainting, psychotic symptoms, overdose, or any other concerns.
- Routinely assess weight and BP.
- Treatment should be initiated at low dosages and then titrated over 2 – 4 wk until an adequate response is achieved, or unacceptable adverse effects occur.
- If one stimulant is not effective, another should be attempted before second-line medications are considered. Although some children benefit from daily stimulant therapy, weekend and summer "drug holidays" are suggested for children whose ADHD symptoms predominantly affect schoolwork or to limit adverse effects (e.g., appetite suppression, abdominal pain, headache, insomnia, irritability, tics).

Special Populations:

- *Elderly:* Use caution with polypharmacy and comorbid conditions; has not been studied for use in this population.
- *Pregnancy:* Category C; based on animal data, drug may cause fetal harm.
- *Lactation:* Possibly unsafe.
- *Children:* Has not been studied in children younger than 6 years; should not be used in children younger than 3 years.

DEXTROAMPHETAMINE AND AMPHETAMINE (*Adderall*)

Classification: Amphetamine.

Indications: Stimulant indicated for the treatment of ADHD in children and adults.

Available Forms: Capsule, 5, 7.5, 10, 12.5, 15, 20, 25, and 30 mg.

Dosage: Dosage should be individualized according to the therapeutic needs and response of the patient. All stimulant preparations should be administered at the lowest effective dosage. *Children: 3–5 years old*: 2.5–40 mg/day PO divided daily tid q am; start, 2.5–10 mg PO qam, increase 2.5 –10 mg/day every week, give divided doses at 4–6-hr intervals; maximum, doses greater than 40 mg/day rarely more effective. *Greater than 6 years old*: 5–40 mg/day; may convert from IR to ER at same total daily dose qam. *13–17 years old*: 10–20 mg/day PO divided daily tid qam; start, 5 mg PO qam or bid, increase 5 mg/day every week, give divided doses at 4–6-hr intervals, doses mg/day daily; maximum, 40 mg/day; may convert from IR to ER at same total daily dose qam, doses greater than 40 mg/day rarely more effective. *Adults:* 5–40 mg/day PO divided daily tid; start, 5 mg PO qam or bid, increase 5 mg/day every week, give divided doses; at 4–6-hr intervals, maximum, 60 mg/day; doses greater than 40 mg/day rarely more effective.

Administration: Swallow capsules whole with water or other liquids. If patient cannot swallow the capsule, open it and sprinkle the medicine over a spoonful of applesauce. Swallow all of the applesauce and medicine mixture without chewing immediately. Follow with a drink of water or other liquid. Never chew or crush the capsule or the medicine inside the capsule. It can be taken with or without food.

Side Effects: Decreased appetite; dizziness; dry mouth; irritability; insomnia; upper abdominal pain; nausea and/or vomiting; weight loss; headaches; anxiety; psychiatric events (increase in manic states for bipolar patients, aggression, tics, tremors); long-term growth suppression (patients should be monitored throughout treatment, if there appears to be growth suppression, the treatment should be discontinued); rash; pyrexia; palpitations, tachycardia, elevated BP, sudden death, MI, cardiomyopathy; Stevens-Johnson syndrome and toxic epidermal necrolysis; impotence, libido changes.

Drug Interactions: Urinary acidifying agents; MAOIs; adrenergic blockers; antihistamines; antihypertensives; veratrum alkaloids; ethosuximide; TCAs; meperidine; phenobarbital; phenytoin; chlorpromazine; *Haldol*; lithium; norepinephrine; propoxyphene.

Pharmacokinetics:

- Absorbed by the GI tract.
- Amphetamines are noncatecholamine sympathomimetic amines with CNS-stimulant activity.

- The mode of therapeutic action in ADHD is not known. Amphetamines are thought to block the reuptake of norepinephrine and dopamine into the presynaptic neuron and increase the release of these monoamines into the extraneural space.
- *Excretion:* Urine.
- *Half-life:* 9–14 hr.

Precautions:
- Advanced arteriosclerosis, symptomatic cardiovascular disease, moderate-to-severe HTN.
- Hyperthyroidism.
- Known hypersensitivity or idiosyncratic reaction to sympathomimetic amines.
- Glaucoma.
- Agitated states.
- Patients with a history of drug abuse: Amphetamines have a high potential for abuse. Administration of amphetamines for an extended period of time may lead to drug dependence. Particular attention should be paid to the possibility of subjects obtaining this class of medication for nontherapeutic use or distribution to others, and the drugs should be prescribed or dispensed sparingly.
- During or within 14 days following the administration of MAOIs, hypertensive crisis may result.
- Preexisting psychosis.
- Seizure history; some studies have shown the potential for lowering the seizure threshold.

Patient and Family Education:
- Store at room temperature, protected from light.
- Keep out of reach of children.
- Seek medical care for any signs of heart problems (chest pain, shortness of breath), fainting, psychotic symptoms, overdose, or any other concerns.
- Routinely assess weight and BP.
- Treatment should be initiated at low dosages and then titrated over 2–4 wk until an adequate response is achieved or unacceptable adverse effects occur.
- If one stimulant is not effective, another should be attempted before second-line medications are considered. Although some children benefit from daily stimulant therapy, weekend and summer "drug holidays" are suggested for children whose ADHD symptoms predominantly affect schoolwork, or to limit adverse effects (e.g., appetite suppression, abdominal pain, headache, insomnia, irritability, tics).

Special Populations:
- *Elderly*: Caution with polypharmacy and comorbid conditions; has not been studied for use in this population.
- *Pregnancy*: Category C; based on animal data, they may cause fetal harm.
- *Lactation*: Possibly unsafe.
- *Children*: Has not been studied in children younger than 3 years old.

DIAZEPAM (*Valium*)

Classification: Benzodiazepine (BZD).

Indications: Alcohol dependence short-acting BZD to treat GAD and withdrawal PD.

Available Forms: Tablet, 2, 5, and 10 mg; liquid, 5 mg/5 mL; concentrate, 5 mg/5 mL.

Dosage: *Adults:* 2–10 mg PO bid-qid; alternate, 2–10 mg IM/IV q3–4 hr prn.

Administration:
- PO with a full glass of water.
- May be taken with or without food.
- Write prescription for the shortest duration possible to prevent potential dependence.
- *Missed dose:* Take as soon as remembered. Skip the missed dose if it is almost time for the next scheduled dose. Do not take extra medicine.
- Do not abruptly stop taking the medication.
- Not prescribed for children.
- Use lowest effective dose for shortest duration.
- Diazepam can be habit forming; do not increase dosage without guidance from the health care provider.

Side Effects: Depression, fatigue, sedation; dizziness, slurred speech, weakness; confusion; nervousness, hyperexcitability; hypersalivation, dry mouth; hallucinations (rare).
- Syncope, tachycardia, seizures, respiratory depression, coma, dependency, abuse, withdrawal if abrupt discontinuation, suicidal ideation, and hypomania/mania.
- Common: Drowsiness, lightheadedness, dry mouth; depression, headache, constipation; diarrhea; confusion, nausea, vomiting, insomnia, tachycardia, nasal congestion, blurred vision, hypotension, rigidity, sialorrhea, dermatitis, syncope, ataxia, amnesia, impaired coordination, irritability, altered libido, dysarthria, appetite change, weight changes, and urinary hesitancy.

Drug Interactions:
- Increased CNS depressive effects when taken with other CNS depressants.
- Cimetidine may reduce the clearance and raise levels of diazepam.
- Flumazenil may cause seizures.
- Absolute contraindications include clarithromycin, fluvoxamine, and ketoconazole.
- Avoid using with calcium channel blockers, erythromycins, tamoxifen, and zafirlukast.
- *Alert:* This list may not describe all possible interactions. Instruct patients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements used, and if they smoke, drink alcohol, or use illegal drugs.

Pharmacokinetics:

- BZDs enhance the activity of GABA, a major CNS neuroinhibitor. Although the exact physiologic action is unknown, the thought is that different BZDs act on different receptors in the CNS. BZDs with similar action can differ in their potency and rate of absorption.
- *Metabolism:* Extensively metabolized by the liver within the CYP450: 2C19, 3A4 substrate. Active metabolites include desmethyldiazepam.
- *Excretion:* Urine.
- *Half-life:* 20–50 hr.

Precautions:

- Use with caution in patients with pulmonary impairment/disease.
- History of substance abuse increases risk of dependency; use with caution in patients with history of substance abuse.
- Some patients present with disinhibiting behaviors after administration.
- See patients as often as necessary to ensure that the drug is working on the panic attacks, determine compliance, and review side effects.
- Instruct patients and families to watch for worsening depression or thoughts of suicide. Also watch out for sudden or severe changes in feelings such as feeling anxious, agitated, panicky, irritated, hostile, aggressive, impulsive, severely restless, overly excited, hyperactive, or not being able to sleep. If this happens, especially at the beginning of antidepressant treatment or after a change in dose, patient should call the health care provider.
- Drowsiness or dizziness: Patients should not drive or use machinery or do anything that needs mental alertness until the effects of this medicine are known.
- Caution patients not to stand or sit up quickly, especially if older. This reduces the risk of dizzy or fainting spells. Alcohol may interfere with the effect of this medicine. Avoid alcoholic drinks.
- Do not abruptly withdraw this drug, as it may cause seizures.
- Caution should be exercised in the following:
  - MDD, psychosis, or bipolar affective disorder.
  - Respiratory disease.
  - Heart disease.
  - Liver disease.
  - An unusual or allergic reaction to diazepam, other medicines, foods, dyes, or preservatives.

Patient and Family Education:

- Store diazepam at room temperature away from moisture, heat, and light. Remove any cotton from the bottle of disintegrating tablets, and keep the bottle tightly closed.
- Diazepam may be habit forming and should be used only by the person for whom it was prescribed. Do not take in larger or smaller amounts or for longer than recommended.
- Can be taken with or without food.
- Exercise caution when driving or operating machinery; due to sedative effects, diazepam should never be shared with another person, especially someone who has a history of drug abuse or addiction. Keep the medication in a secure place where others cannot get to it.

- Do not drink alcohol.
- Do not stop taking diazepam on the drug abruptly. Some purchases of alprazolam from the Internet have been found to contain haloperidol (Haldol), an antipsychotic drug.

Special Populations:

- *Elderly*: Older patients may be more sensitive to the effects of BZDs. Start with the smallest effective dose, initial dose 2–2.5 mg, 1–2 times/day; increase as needed. Because of the sedative properties and increased risk of falls and fractures, diazepam is on the Beers just of potentially inappropriate medications for geriatrics.
- *Renal*: Dose adjustment is necessary for patients with renal and liver impairment: Use with caution. Initial dose 2–2.5 mg, 1–2 times/day; increase as needed.
- *Hepatic impairment*: Use with caution. Initial dose 2–2.5 mg, 1–2 times/day; increase as needed.
- *Pregnancy*: Category D; can cause teratogenic fetal effects. Infants born to mothers taking BZDs may be at risk for withdrawal symptoms in the postnatal period.
- *Lactation*: It is unknown whether medication is excreted in human breast milk; discontinue drug or bottle feed. Infants can become lethargic and lose weight.
- *Children and adolescents*: Not indicated for use in children/adolescents.

DICYCLOMINE (*Bentyl*)

Classification: Anticholinergic drug.

Indications: Abdominal cramping associated with opiate withdrawal.

Available Forms: Capsule, 10 and 20 mg; liquid, 10 mg/5 mL syrup, 20 mg/2 mL syrup.

Dosage: 40 mg 4 times daily. May begin with 20 mg 4 times daily and increase after 1 wk to reduce side effects.

Administration:
- PO with glass of water.
- Measure liquid medicine with a special dose measuring spoon or cup, not a regular tablespoon.

Side Effects: Confusion, disrupted thoughts; palpitations and/or arrhythmias; decreased urination; drowsiness, dizziness; blurred vision; nausea and/or vomiting; anorexia; pruritus or rash; stuffy nose, dry mouth.

Drug Interactions:
- The following medications may exacerbate side effects: amantadine, antiarrhythmic agents of class 1, antihistamines, antipsychotic agents, BZDs, MAOIs, narcotic analgesics, nitrites and nitrates, sympathomimetic agents, and tricyclic antidepressants.
- May antagonize the effects of antiglaucoma agents.
- Should be avoided when intraocular pressure is present and when taking corticosteroids.
- May affect GI absorption of digoxin.
- May antagonize the effects of metoclopramide.
- Avoid simultaneous use of antacids.

Pharmacokinetics:
- *Half-life:* 1.8 hr.

Precautions:
- May increase risk of heatstroke by decreasing sweating.

Patient and Family Educations:
- Use caution when driving or operating machinery.
- Avoid drinking alcohol.
- Avoid become overheated or dehydrated during exercise and hot weather.
- Tell health care provider about all prescription and OTC medications due to interaction.

Special Populations:
- *Elderly*: Use caution; dosage should start at the low end.
- *Renal impairment*: Use with caution.
- *Hepatic impairment*: Use with caution.

- *Pregnancy*: Category B.
- *Lactation*: Contraindicated.
- *Children and adolescents*: Safety and efficacy has not been established.
- *Other*: Use with caution in patients with the following: autonomic neuropathy, hepatic/renal disease, ulcerative colitis, hyperthyroidism, hypertension, coronary heart disease, heart failure, cardiac tachyarrhythmia, hiatal hernia, and prostatic hypertrophy.

DIVALPROEX SODIUM (*Depacon, Depakene, Depakote, Depakote ER, Depakote Sprinkle*)

Classification: Mood-stabilizing anticonvulsant.

Indications: Treatment of the manic episodes of bipolar disorder, major depressive disorder, taken long-term for prevention of both manic and depressive phases of bipolar disorder, especially the rapid-cycling variant; treatment of epilepsy, certain side effects of autism, chronic pain associated with neuropathy, and migraine headaches.

Available Forms: Injection, 100 mg/mL; syrup, 250 mg/5 mL. *Valproic acid*: capsule, 250 mg; syrup, 200 mg/5 mL; tablet (crushable), 100 mg; tablet extended (enteric-coated), 200 release, 250 and 500 mg. *Divalproex sodium*: Capsules (sprinkle), 125 mg; tablet (delayed release), 125, 250, and 500 mg; tablet (extended release), 250 extended release, 250 and 500 mg.

Dosage:

Mania:

- *Adults:* Initially, 750 mg daily PO in divided doses, or 25 mg/kg *Depakote ER* once daily. Adjust dosage based on patient's response; maximum dose for either form is 60 mg/kg daily.

To prevent migraine headache:

- *Adults:* Initially, 250 mg delayed-release divalproex sodium PO bid. Some patients may need up to 1000 mg daily. Or, 500 mg Depakote ER PO daily for 1 wk; then 1000 mg PO daily. Adjusted dose: For elderly patients, start at lower dosage. Increase dosage more slowly and with regular monitoring of fluid and nutritional intake, and watch for dehydration, somnolence, and other adverse reactions.

Administration:

- Oral: Give drug with food or milk to reduce adverse GI effects.
- Do not mix syrup with carbonated beverages, as the mixture may be irritating to oral mucosa.
- Do not give syrup to patients who need sodium restriction. Check with prescriber.
- Capsules may be swallowed whole or opened and contents sprinkled on a teaspoonful of soft food. Patient should swallow the capsule immediately without chewing.
- Monitor drug level and adjust dosage as needed.
- Incompatibilities: None reported.

Side Effects:

- CNS: Asthenia, dizziness, headache, insomnia, nervousness, somnolence, tremor, abnormal thinking, amnesia, ataxia, depression, emotional upset, fever, sedation.
- CV: Chest pain, edema, hypertension, hypotension, tachycardia.
- EENT: Blurred vision, diplopia, nystagmus, pharyngitis, rhinitis, tinnitus.

- GI: Abdominal pain, anorexia, diarrhea, dyspepsia, nausea, vomiting, pancreatitis, constipation, increased appetite.
- Hematologic: Bone marrow suppression, hemorrhage, thrombocytopenia, bruising, petechiae.
- Hepatic: Hepatotoxicity.
- Metabolic: Hyperammonemia, weight gain.
- Musculoskeletal: Back and neck pain.
- Respiratory: Bronchitis, dyspnea.
- Skin: Alopecia, flu syndrome, infection, erythema multiforme, hypersensitivity reactions, Stevens-Johnson syndrome, rash, photosensitivity reactions, pruritus.

Drug Interactions: Aspirin, chlorpromazine, clonazepam, topiramate, cimetidine, erythromycin, felbamate, carbamazepine, lamotrigine, phenobarbital, phenytoin, rifampin, warfarin, zidovudine. Alcohol use is discouraged.

Pharmacokinetics:

- *Peak action:* Oral, between 15 min and 4 hr. Facilitates the effects of the inhibitory neurotransmitter GABA.
- *Half-life:* 6–16 hr.

Precautions:

- May increase ammonia, ALT, AST, and bilirubin lab levels.
- May increase eosinophil count and bleeding time. May decrease platelet, RBC, and WBC counts.
- May cause false-positive results for urine ketone levels.
- Contraindicated in patients hypersensitive to the drug and in those with hepatic disease or significant hepatic dysfunction, and in patients with a UCD.
- Safety and efficacy of Depakote ER in children less than age 10 years have not been established.
- Obtain liver function test results, platelet count, and PT and INR before starting therapy, and monitor these values periodically.
- Adverse reactions may not be caused by valproic acid alone because it is usually used with other anticonvulsants.
- Never withdraw a drug suddenly, because sudden withdrawal may worsen seizures. Call the prescriber at once if adverse reactions develop.
- Patients at high risk for hepatotoxicity include those with congenital metabolic disorders, mental retardation, or organic brain disease; those taking multiple anticonvulsants; and children younger than 2 years of age.
- Notify the prescriber if tremors occur; a dosage reduction may be needed.
- Weight gain is common. Monitor BMI and assess for pre-diabetes and dyslipidemia.
- Sedation is common.
- Therapeutic level is 50–100 mcg/mL.
- When converting patients from a brand-name drug to a generic drug, use caution because breakthrough seizures may occur.
- May cause thrombocytopenia or tremors.
- *Alert:* Sometimes fatal, hyperammonemic encephalopathy may occur when starting valproate therapy in patients with UCD. Evaluate patients with UCD risk factors before starting valproate therapy. Patients who develop symptoms

of unexplained hyperammonemic encephalopathy during valproate therapy should stop taking the drug, undergo prompt appropriate treatment, and be evaluated for underlying UCD.
- *Alert:* Fatal hepatotoxicity may follow nonspecific symptoms, such as malaise, fever, and lethargy. If these symptoms occur during therapy, notify the prescriber at once, because patients who might be developing hepatic dysfunction must stop taking the drug.
- *Alert:* Life-threatening pancreatitis has been reported following initiation of therapy as well as after prolonged use. Monitor the patient for developing symptoms and discontinue treatment if pancreatitis is suspected.

Patient and Family Education:
- Take the drug with food or milk to reduce adverse GI effects.
- Do not chew capsules; irritation of mouth and throat may result.
- It may take several weeks or longer to optimize mood stabilizing effects.
- Capsules may be either be swallowed whole or carefully opened and contents sprinkled on a teaspoonful of soft food. Swallow the capsule immediately without chewing.
- Keep drugs out of children's reach.
- Warn about the consequences of stopping drug therapy abruptly.
- Avoid driving and indulging in other potentially hazardous activities that require mental alertness until the drug's CNS effects are known.
- Women should call their prescriber if become pregnant or plan to become pregnant during therapy.
- Syrup should not be mixed with carbonated beverages; mixture may be irritating to mouth and throat.
- Keep drug out of children's reach.
- Do not stop drug therapy abruptly.
- Call the prescriber if malaise, weakness, lethargy, facial swelling, loss of appetite, or vomiting occurs.

Special Populations:
- *Elderly*: Caution is advised when using this drug in the elderly due to more sensitivity to the drug. Initiate treatment at a lower dose and then escalate the dose more slowly.
- *Pregnancy*: Category D. This medication should only be used when clearly needed or required utmost during pregnancy.
- *Lactation*: Secreted as the drug is secreted into breast milk. Increased risk of neural tube defects (1 in 20) and other major birth defects have been reported, especially when the fetus is exposed during first 12 weeks of pregnancy.
- *Children*: Caution must be exercised when using this drug in a child or adolescent. The drug is not recommended for use in children or adolescents under age 18 years for MDD.
- *Alert:* Antidepressants increased the risk of suicidal thinking and behavior (suicidality) in short-term studies in children and adolescents with depression and other psychiatric disorders. Caution is advised when using this drug in children because they may be more sensitive to the side effects of the drug, especially loss of appetite and weight loss. It is important to monitor weight and growth in children who are taking this drug.

DONEPEZIL HYDROCHLORIDE (*Aricept*)

Classification: Cholinesterase inhibitor.

Indications: Used to treat dementia of the Alzheimer's type. Has been proven effective in patients with mild to moderate as well as severe AD.

Available Forms: Tablet, oral solution, rapidly dissolving tablet.

Dosage:
- Initially 5 mg PO once daily.
- Upward titration to 10 mg/day should not occur for at least 4–6 wk.
- Effective dose range is 5–10 mg/day.

Administration:
- Orally, once daily, just prior to retiring. Swallow tablets whole; do not crush, split, or chew. May be given with or without food.
- Rapidly dissolving tablet: Place on tongue, allow to dissolve, then swallow.
- Oral solution: Measure dose with a calibrated oral syringe.

Side Effects: Nausea; vomiting; diarrhea; loss of appetite; weight loss; frequent urination; muscle cramps; joint pain, swelling, or stiffness; pain; excessive tiredness; drowsiness; headache; dizziness; nervousness; depression; confusion; changes in behavior; abnormal dreams; difficulty falling asleep or staying asleep; discoloration or bruising of the skin; red, scaling, itchy skin. *Serious side effects that may require medical attention:* Fainting; slow heartbeat; chest pain; black or tarry stools; red blood in stools; bloody vomit; vomit that looks like coffee grounds; inability to control urination; difficulty urinating or pain when urinating; lower back pain; fever; seizures.

Drug Interactions: This medicine may interact with the following medications: other cholinesterase inhibitors; neuromuscular blockers; parasympathomimetics; amantadine; amiodarone; amoxapine; antiretroviral protease inhibitors; antimuscarinics; barbiturates; bosentan; carbamazepine; clozapine; cyclobenzaprine; digoxin; disopyramide; fluoxetine; fluvoxamine; fosphenytoin; general anesthetics; imatinib, ST I-571; ketoconazole; local anesthetics; maprotiline; nefazodone; nilotinib; NSAIDs; olanzapine; orphenadrine; oxcarbazepine; paroxetine; phenothiazines; phenytoin; ranolazine; rifampin; rifapentine; sedating H-1 blockers; sertraline; St. John's wort; tricyclic antidepressants; troglitazone; cimetidine; clarithromycin; dalfopristin; delavirdine; dexamethasone; diltiazem; efavirenz; erythromycin; gefitanib; itraconazole; modafinil; nevirapine; propafenone; quinidine; verapamil; voriconazole.

Pharmacokinetics:
- Cholinesterase inhibitor—selectively inhibits acetylcholinesterase.
- Peak plasma levels are reached in 3–4 hr.
- Bioavailability of 100%
- *Half-life:* Average 70 hr.

Precautions: Parasympathetic effects may occur in patients with the following conditions: asthma; coronary disease; peptic ulcer; arrhythmias; epilepsy; parkinsonism; bradycardia and intestinal or urinary tract obstruction could be exacerbated by the stimulation of cholinergic receptors.

Patient and Family Education: Store at controlled room temperature between 15°C and 30°C (59°F–86°F).

Special Populations:

- *Hepatic impairment*: No specific dosage adjustments are needed. Adjust dose to patient response and tolerance.
- *Pregnancy*: The uterus could be stimulated along with induction of labor.

DOXEPIN (*Sinequan, Silenor*)

Classification: Tricyclic antidepressant (TCA).

Indications: Used for anxiety/depression.

Available Forms: Capsule, 10, 25, 50, 75, 100, and 150 mg; solution, 10 mg/mL.

Dosage: *Adults:* 150–300 mg PO at bedtime. The initial dose is 25–75 mg PO at bedtime. Maximum, 300 mg/day. *Children:* Dosing is currently unavailable or not applicable.

Administration: Take this medication regularly and at the same time every day in order to get the most benefit. Do not stop taking this medication without consulting the health care provider. If this medicine should be taken only once a day, take at bedtime to reduce daytime sleepiness.

Side Effects: Common reactions include drowsiness, dry mouth, dizziness, constipation, blurred vision, palpitations, tachycardia, uncoordination, appetite increase, nausea/vomiting, sweating, weakness, disorientation, confusion, restlessness, insomnia, anxiety/agitation, urinary retention/frequency, rash/urticaria, pruritus, weight gain, libido changes, impotence, gynecomastia, galactorrhea, tremor, hypo/hyperglycemia, paresthesias, and photosensitivity.

Drug Interactions:

- The following drugs are contraindicated with doxepin: antiarrhythmics class 1 A such as procainamide, quinidine gluconate, quinidine sulfate, and disopyramide (*Norpace*) which may increase risk of QT prolongation.
- Cisapride (*Propulsid*) may increase risk of QT prolongation, cardiac arrhythmias; dronedarone (*Multaq*) may increase TCA levels and risk of adverse effects, increase risk of QT prolongation, cardiac arrhythmias; flumazenil (*Romazicon*) may increase risk of cardiac arrhythmias, seizures.
- MAOIs such as selegiline (*Eldepryl/Zelapar*), procarbazine (*Matulane*), phenelzine (*Nardil*), tranylcypromine (*Parnate*), isocarboxazid (*Marplan*), selegiline transdermal (*Eldepryl/Zelapar*), rasagiline (*Azilect*) may result in CNS overstimulation, hyperpyrexia, seizures, death.
- Pimozide (*Orap*) may increase risk of CNS depression, psychomotor impairment, QT prolongation, arrhythmias, anticholinergic effects, hyperpyrexia; potassium salts such as potassium acid phosphate, potassium citrate, potassium chloride, potassium iodide, potassium phosphate/sodium phosphate, potassium acid, phosphate/sodium acid phosphate, and potassium phosphate are contraindicated for solid potassium dose forms.
- Weigh risk/benefit of thyroid protection with solid iodide salt forms; may delay solid potassium passage through GI tract and increase risk of ulcerative/stenotic lesions.

Pharmacokinetics:

- Metabolized extensively in the liver (CYP450, 2 C9/19, 2 D6) and is excreted in the urine.

- The exact mechanism of action is unknown; inhibits norepinephrine and serotonin reuptake.

Precautions: Determine history of allergies, especially to other tricyclic antidepressants or any other allergies. This medication should not be used if patient has narrow-angle glaucoma or, problems urinating (e.g., due to enlarged prostate), lung disorders (such as, bronchitis, emphysema), long-term constipation, long-term heartburn, or diabetes.

Patient and Family Education:
- Take the drug with food or milk to reduce adverse GI effects.
- Do not chew capsules; irritation of mouth and throat may result.
- It may take several weeks or longer to optimize mood stabilizing effects.
- Capsules may either be swallowed whole or carefully opened and contents sprinkled on a teaspoonful of soft food. Swallow the capsule immediately without chewing.
- Keep drugs out of children's reach.
- Warn about the consequences of stopping drug therapy abruptly.

Special Populations:
- *Pregnancy:* Pregnancy Category B: use with extreme caution.
- *Lactation:* Doxepin is excreted in human milk. Because of the potential for serious adverse reactions in nursing infants from doxepin, a decision should be made whether to discontinue nursing or to discontinue the drug, taking into account the importance of the drug to the mother.
- *Pediatric use:* Safety and effectiveness of drug in children have not been established.
- *Elderly:* Caution is advised when using this drug in the elderly because they may be more sensitive to its side effects, especially dizziness, drowsiness, confusion, and difficulty urinating.

DROPERIDOL (*Inapsine*)

Classification: First-generation (typical) antipsychotic.

Indications: Droperidol injection is indicated to reduce the incidence of nausea and vomiting associated with surgical and diagnostic procedures.

Available Forms: Solution for injection.

Dosage: Initial, 0.625–2.5 mg; additional doses of 1.25 mg may be given to desired effect.

Administration: IM, IV (slowly).

Drug Interactions: Caution with other agents that prolong QTc interval. Avoid use with artemether, dronedarone, lumefantrine, metoclopramide, nilotinib, pimozide, quinine, tetrabenazine, thioridazine, and ziprasidone.

Pharmacokinetics:
- *Absorption:* Injection 100%.
- *Onset:* 30 min.
- *Duration:* 2–4 hr.
- *Metabolism:* Hepatic; extensive protein binding.
- *Half-life:* 2–3 hr.

Precautions:
- Risk of QT prolongation and torsades de pointes.
- Limit use to prevention of surgical nausea and vomiting.
- Usage outside of labeled indication not recommended.
- Excessive sedations.
- Seizures.

Patient and Family Education:
- May cause orthostatic hypotension. Use caution when changing from lying to sitting position.
- Immediately report any palpitations, confusion, loss of thought processes, and respiratory difficulty.

Special Populations:
- *Elderly*: Caution in elderly due to increased risk of adverse reactions.
- *Pregnancy*: Pregnancy category C.
- *Lactation*: Breast feeding not recommended.

DULOXETINE (*Cymbalta*)

Classification: Serotonin/norepinephrine reuptake inhibitor (SNRI).

Indications: Used to treat MDD and GAD.

Available Forms: Capsule, enteric coated, 20, 30, and 60 mg.

Dosage: Starting dose, 30 mg daily for 1 wk; increase by 30 mg increments weekly. Can use a maximum of 120 mg daily; however, more than 60 mg is rarely more effective and can increase side effects. Maximum dose is 60 mg total daily. Do not cut/crush/chew/sprinkle.

Administration:
- PO with a glass of water.
- Do not crush, cut, chew, or sprinkle capsules.
- Take at regular intervals.
- Caution patients not to stop taking drug except on provider's advice.
- Not prescribed for children.
- Instruct patients to take missed dose as soon as possible. If it is almost time for the next dose, advise to take only that dose.

Side Effects:
- Most common: Nausea, vomiting, headache, insomnia, dizziness, somnolence, decreased libido and sexual dysfunction, palpitations, nervousness, hypertension, and hot flashes.
- Less common: Worsening depression, suicidality, and hypersensitivity reactions.

Drug Interactions: There are many drug–drug interactions. Most of the interactions occur with OTC cough and cold preparations. This medicine may also interact with the following medications:
- Absolute contraindications include MAOIs such as phenelzine *(Nardil)*, tranylcypromine *(Parnate)*, isocarboxazid *(Marplan)*, selegiline *(Eldepryl)*, and phenothiazines.
- Avoid using with ciprofloxacin *(Cipro)* or other SSRIs due to serotonin effect; SNRI drugs such as desvenlafaxine *(Pristiq)* and venlafaxine *(Effexor)*, caffeine.
- *Alert:* This list may not describe all possible interactions. Instruct patients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements used, and if they smoke, drink alcohol, or use illegal drugs.

Pharmacokinetics:
- *Metabolism:* Extensively metabolized in the liver by the CYP 1A2 and 2D6 into inactive metabolites.
- *Excretion:* Urine 70% (less than 1% unchanged).
- *Half-life:* 12 hr.

Precautions:

- See patients as often as necessary to ensure that the drug is working on the panic attacks, determine compliance, and review side effects.
- Make sure patients realize that they need to take prescribed doses even if they do not feel better right away. It can take several weeks before they feel the full effect of the drug.
- Instruct patients and families to watch for worsening depression or thoughts of suicide. Also, watch out for sudden or severe changes in feelings such as feeling anxious, agitated, panicky, irritated, hostile, aggressive, impulsive, severely restless, overly excited, hyperactive, or not being able to sleep. If this happens, especially at the start of antidepressant treatment or after a change in dose, patient should call the health care provider.
- Drowsiness or dizziness. The patient should not drive or use machinery or do anything that needs mental alertness until the effects of this medicine are known.
- Caution patients not to stand or sit up quickly, especially if older. This reduces the risk of dizzy or fainting spells. Alcohol may interfere with the effect of this medicine. Avoid alcoholic drinks.
- Caution patients not to treat themselves for coughs, colds, or allergies without asking a health care professional for advice. Some ingredients can increase possible side effects.
- Dry mouth: Chewing sugarless gum, sucking hard candy, and drinking plenty of water may help. Contact health care provider if the problem persists or is severe.
- Caution should be exercised in the following:
  - Bipolar disorder or a family history of bipolar disorder.
  - Diabetes.
  - Heart disease.
  - Liver disease.
  - Seizures (convulsions).
  - Suicidal thoughts, plans, or attempts by patients or a family member.
  - An unusual or allergic reaction to venlafaxine, other medicines, foods, dyes, or preservatives.
  - Pregnancy or trying to get pregnant.
  - Breastfeeding.

Patient and Family Education:

- Store at room temperature. Take any unused medication after the expiration date to the local pharmacy on drug give-back day. Avoid throwing the medication into the environment.
- Try to take the medicine at the same time each day. Follow the directions on the prescription label.
- Should be taken about the same time every day, morning or evening, and can be taken with or without food.
- May take up to 4 wk to be fully effective, but patient may see symptoms of depression improving in as little as 1–2 wk.
- This medication should not be stopped unless the health care provider directs. Report any adverse symptoms to the health care provider promptly.
- Caution should be exercised when using this drug on the elderly because they may be more sensitive to the effects of the drug.

Special Populations:

- *Elderly*: The initial dose should be reduced in patients with severe renal and/or hepatic impairment. Titration upward should be slow and at intervals. Higher dose may be required in the treatment of anxiety disorders in geriatric patients; however, this patient population is more at risk of developing hyponatremia from SSRIs and SNRIs.
- *Pregnancy*: Category C; potential for persistent pulmonary HTN if greater than 20-wk gestation. This medication should be used only when clearly needed during pregnancy. Discuss the risks and benefits with your doctor. If patient plans on becoming pregnant, discuss the benefits versus the risks of using this medicine while pregnant. Because this medicine is excreted in the breast milk, nursing mothers should not breastfeed while taking this medicine. If this medication is used during the last 3 months of pregnancy, newborn may have feeding or breathing difficulties, seizures, muscle stiffness, jitteriness, or constant crying.
- *Lactation*: Excreted in human breast milk; caution should be taken.
- *Children*: Not indicated for children.

ESCITALOPRAM (*Lexapro*)

Classification: Selective serotonin reuptake inhibitor (SSRI).

Indications: For treating MDD and GAD.

Available Forms: Tablet, 5, 10, and 20 mg; oral solution.

Dosage: *Adults:* Starting dose, 10–20 mg PO, daily, may increase after 1 wk to a maximum of 20 mg/day. Dose should stay at 10 mg/day. *Children (12–17 years)*; start at 10 mg PO, daily, may increase after 3 wk; maximum, 20 mg/day.

Administration:
- PO with a glass of water.
- Take with or without food.
- Take at regular intervals, preferably in the morning.
- Caution clients not to stop taking drug except on provider's advice.
- Safety not established for children younger than 18 years in GAD.
- Instruct client to take missed dose as soon as possible. If it is almost time for the next dose, advise to take only that dose.

Side Effects:
- Most common: Somnolence; headache; asthenia; dizziness; sweating; dry mouth; tremor; insomnia; anorexia; nervousness; anxiety; abnormal vision; change in appetite; change in sex drive or performance; diarrhea; constipation; indigestion; and nausea.
- Less common: Suicidality, worsening depression, serotonin syndrome, seizures, hyponatremia, extrapyramidal symptoms, priapism, and acute angle glaucoma. Nervousness, dry mouth, constipation, asthenia, diaphoresis, anxiety, headache, drowsiness, anorexia, dyspepsia, suicide risk, fatigue, fever, palpitations, hot flashes, nasal congestion, pharyngitis, sinusitis, nausea, diarrhea, abdominal pain, vomiting, flatulence, increased appetite, sexual dysfunction, weight loss, muscle pain, upper respiratory tract, infection, cough, respiratory distress, rash, pruritus, diaphoresis, flu-like syndrome.

Drug Interactions: Most of the interactions occur with OTC cough and cold preparations.
- This medicine may also interact with the following medications:
  - Absolute contraindications include MAOIs such as phenelzine *(Nardil)*, tranylcypromine *(Parnate)*, isocarboxazid *(Marplan)*, cyproheptadine, flecainide, carbamazepine, vinblastine, insulin, oral diabetic agents, lithium, TCAs, phenytoin, tryptophan, warfarin, and selegiline *(Eldepryl)*.
  - Avoid using with other SSRIs due to serotonin effect; SNRI highly protein-bound drugs such as desvenlafaxine *(Pristiq)* and venlafaxine *(Effexor)*; drugs with sympathomimetic properties such as phenylpropanolamine; pseudoephedrine; St. John's wort; haloperidol; and diazepam *(Valium)*; any other antidepressants; and clopidogrel *(Plavix)*; amoxicillin; erythromycins; and lansoprazole *(Prevacid)*.
  - Exercise caution with cold medications, NSAIDs, and drugs used for analgesia with opioid properties.

- Concomitant use with SSRIs, SNRIs, or tryptophan is not recommended.
- Use caution when concomitantly consuming drugs that affect hemostasis (NSAIDs, aspirin, warfarin).

- *Alert:* This list may not describe all possible interactions. Instruct clients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements used, and if they smoke, drink alcohol, or use illegal drugs.

Pharmacokinetics:

- *Metabolism:* Liver; CYP450: 2C19, 2D6, CYP 3A4 substrate; 2D6 (weak) inhibitor.
- *Excretion:* Only 10% excreted in urine.
- *Half-life:* 27–32 hr, but is increased by 50% in elderly clients.
- SSRIs are metabolized in the liver by cytochrome P-450 MFO microsomal enzymes.
- Highly bound to plasma proteins and have a large volume of distribution. Peak plasma levels are reached in 2–10 hr.
- Steady-state plasma levels are achieved in 1 wk with escitalopram.
- Hence, addition of serotonergic medications to a client's regimen must not occur until 2–3 wk after discontinuation of an SSRI.
- *Half-life:* 27–32 hr.

Precautions:

- *Clinical worsening/suicide risk:* Monitor for clinical worsening, suicidality, and unusual change in behavior, especially during the initial few months of therapy or at times of dose changes.
- Serotonin syndrome or NMS-like reactions: Manage with immediate discontinuation and continue monitoring.
- Discontinuation of treatment with Lexapro: A gradual reduction in dose rather than abrupt cessation is recommended whenever possible.
- Seizures: Prescribe with care in clients with history of seizure.
- Activation of mania/hypomania: Use cautiously in clients with a history of mania.
- Hyponatremia: Can occur in association with SIADH.
- Abnormal bleeding: Use caution in concomitant use with NSAIDs, aspirin, warfarin, or other drugs that affect coagulation.
- Interference with cognitive and motor performance: Use caution when operating machinery.
- Use in clients with concomitant illness: Use caution in clients with diseases or conditions that produce altered metabolism or hemodynamic response.
- See client as often as necessary to ensure that the drug is working on the panic attacks, determine compliance, and review side effects.
- Make sure clients realize that they need to take prescribed doses even if they do not feel better right away. It can take several weeks before they feel the full effect of the drug.
- Instruct clients and families to watch for worsening depression or thoughts of suicide. Also watch out for sudden or severe changes in feelings such as feeling anxious, agitated, panicky, irritable, hostile, aggressive, impulsive, severely restless, overly excited, and hyperactive, or not being able to sleep. If this happens, especially at the beginning of antidepressant treatment or after a change in dose, clients should call the health care provider.

- Drowsiness or dizziness: clients may become drowsy or dizzy and should not drive or use machinery or do anything that needs mental alertness until the effects of this medicine are known.
- Caution clients not to stand or sit up quickly, especially if an older client. This reduces the risk of dizzy or fainting spells. Alcohol may interfere with the effect of this medicine. Avoid alcoholic drinks.
- Caution clients not to treat themselves for coughs, colds, or allergies without asking health care professional for advice. Some ingredients can increase possible side effects.
- Dry mouth: Chewing sugarless gum or sucking hard candy and drinking plenty of water may help. Contact a health care provider if the problem does not persist, go away, or is severe.
- Caution should be exercised in the following:
  - Bipolar disorder.
  - In clients with bipolar disorder or a family history of bipolar disorder.
  - Diabetes.
  - Heart disease.
  - Liver disease.
  - Electroconvulsive therapy.
  - Seizures (convulsions).
  - Suicidal thoughts, plans, or attempts by client or a family member.
  - An unusual or allergic reaction to citalopram, sertraline, other medicines, foods, dyes, or preservatives.
  - Women who are pregnant, trying to get pregnant.
  - Breastfeeding.

Patient and Family Education:

- Store at room temperature.
- Try to take the medicine at the same time each day. Follow the directions on the prescription label. To get the correct dose of liquid escitalopram, measure the liquid with a marked measuring spoon or medicine cup, not with a regular tablespoon. If there is no dose-measuring device available, ask the pharmacist for one.
- Drug may cause dizziness or drowsiness. Warn client to avoid driving and other hazardous activities that require alertness and good psychomotor coordination until effects of drug are known.
- Tell client to consult prescriber before taking other prescription or OTC drugs.
- Advise client that full therapeutic effect may not be seen for 4 wk or longer.

Special Populations:

- *Elderly*: A dose of 10 mg daily is recommended for geriatric clients. The initial dose should be reduced in clients with severe renal and/or hepatic impairment. Titration upward should be slow and at intervals.
- *Pregnancy*: Category C; potential for persistent pulmonary HTN if greater than 20-weeks gestation.
- *Lactation*: Excreted in human breast milk, some reports of infant somulence.
- *Children*: May be given to children older than 12 years of age. Monitoring of suicidal ideations is important.

- *Elderly*: Caution is advised when using this drug in the elderly due to more sensitivity to the drug.
- *Pregnancy*: Avoid using this drug during the third trimester for it leads to adverse effects in the newborn. This medication should only be used when clearly needed during pregnancy.
- *Lactation*: Secreted into breast milk.
- *Children*: Caution when using this drug in a child or adolescent; must balance the potential risks with the clinical need. Antidepressants increased the risk of suicidal thinking and behavior (suicidality) in short-term studies in children and adolescents with depression and other psychiatric disorders. Caution is advised when using this drug in children because they may be more sensitive to the side effects of the drug, especially loss of appetite and weight loss. It is important to monitor weight and growth in children who are taking this drug.

ESZOPICLONE (*Lunesta*)

Classification: Non-benzodiazepine GABA receptor agonist.

Indications: Treatment of insomnia in the nondepressed patient.

Available Forms: Tablet, 1, 2, and 3 mg.

Dosage: 2 mg PO immediately before patient is ready for sleep. May increase to 3 mg if clinically indicated in non-elderly patients.

Administration:
- PO with a glass of water.
- Drowsiness and/or dizziness will be exacerbated with concomitant alcohol consumption; alcohol should be avoided while taking this medication.
- Caution clients not to stop taking drug abruptly if used long-term.

Side Effects:
- Hallucinations; behavior changes; SSRI-treated patients taking eszopiclone may experience impaired concentration, aggravated depression, and manic reaction.
- Side effects that usually do not require medical attention: Unpleasant taste; nausea; daytime drowsiness; headache; vomiting; dizziness; infection; pain; pharyngitis.

Drug Interactions:
- This medicine may interact with the following medications: antifungals; rifampin; ritonavir; SSRIs; CNS depressants (including alcohol).

Pharmacokinetics:
- Non-BZDs hypnotic. Mechanism of action is thought to occur at the level of the GABA receptor complex.
- Weakly bound to plasma proteins.
- Peak plasma levels are reached in 1 hr.
- Bioavailability is 80%.
- *Half-life:* Average is 6 hr.

Precautions:
- See patient as often as necessary if long-term use is indicated.
- Ensure that patient is aware he/she is not to exceed maximum dosage and is not taking other CNS depressant medications.
- Instruct patient to monitor for behavior changes.
- If patient is drowsy or dizzy, patient should not drive, use machinery, or attempt to accomplish any task that requires mental alertness.
- Avoid alcohol, as concomitant use may exacerbate symptoms.

Patient and Family Education: Store at room temperature between 15°C and 30°C (59°F–86°F). Throw away any unused medication after the expiration date. An FDA-approved patient medication guide, which is available with the product information, must be dispensed with this medication.

Special Populations:

- *Elderly*: Recommended starting dose for elderly patients who have difficulty falling asleep is 1 mg. For elderly patients who have difficulty staying asleep, the recommended dose is 1–2 mg.
- *Hepatic impairment*: The starting dose should be 1 mg in patients with severe hepatic impairment. Monitor closely.
- *Pregnancy*: Category C.
- *Lactation*: No human studies have been performed. Not recommended in breastfeeding mothers.
- *Children*: Safety and efficacy have not been established.

FLUOXETINE (*Prozac*)

Classification: Selective serotonin reuptake inhibitor (SSRI).

Indications: Used to treat MDDs, OCD, bulimia depression nervosa, and PD.

Available Forms: Capsule, 10, 20, and 40 mg; capsule, delayed release (*Prozac Weekly*), 90 mg; solution syrup, 20 mg/5 mL; tablet, 10 mg.

Dosage: *Immediate release* (*Prozac Daily*): *Adults:* 20–80 mg PO qam. Starting dose, 10 mg PO, daily for 7 days; 20 mg PO qam; may be increased after several weeks. Maximum, 80 mg/day. *Capsule, delayed release* (*Prozac Weekly*): Pediatric dosing in 8–18 year olds is 10–20 mg. *Extended release:* Not recommended for acute treatment; starting with 10 mg PO every day for 7 days.

Administration:
- PO with a glass of water.
- Take with or without food.
- Take at regular intervals.
- Caution patients not to stop taking drug except on provider's advice.
- Prozac Daily may be prescribed for children as young as 7 years for selected conditions; precautions do apply.
- Prozac Weekly is not prescribed for children.
- Do not prescribe Prozac Weekly for acute treatment.
- Instruct patients to take missed dose as soon as possible. If it is almost time for the next dose, advise to take only that dose.
- Do not take fluoxetine with grapefruit juice, as it may increase blood levels of the drug.
- Avoid use of herbs that have a sedative effect.
- Fluoxetine may increase the levels of phenytoin and TCAs. Alcohol should be avoided while using fluoxetine.
- Use of buspirone, bromocriptine, levodopa, dextromethorphan, lithium, meperidine, nefazodone, paroxetine, pentazocine, sertraline, sumatriptan, tramadol, trazodone, tryptophan, and venlafaxine can cause a serotonin syndrome.
- Fluoxetine can be taken with or without food.
- Caution while driving, riding a bicycle, or operating machinery, as this drug causes drowsiness.

Side Effects:
- Most common: Dizziness, headache, insomnia, nervousness, anxiety, somnolence, and change in sex drive or performance.
- Less common: Allergic reactions (skin rash, itching, or hives); swelling of the face, lips, or tongue; psoriasis; arthralgias; asthenia, diarrhea, anorexia; feeling faint or lightheaded, falls, nausea; dizziness, dry mouth; constipation; tremor, dyspepsia; suicidal thoughts or other mood changes; unusual bleeding or bruising; fatigue; tremor; change in appetite; increased sweating; indigestion, nausea; flu syndrome; ejaculatory dysfunction, libido decrease; rash; and abnormal vision.

Drug Interactions: Most of the interactions occur with OTC cough and cold preparations. This medicine may also interact with the following medications:

- Absolute contraindications include MAOIs such as phenelzine *(Nardil)*, tranylcypromine *(Parnate)*, isocarboxazid *(Marplan*), and selegiline *(Eldepryl)*.
- Avoid using with other SSRIs due to serotonin effect; SNRI drugs such as desvenlafaxine *(Pristiq)* and venlafaxine *(Effexor)*; drugs with sympathomimetic properties such as phenylpropanolamine, pseudoephedrine, St. John's wort, haloperidol; diazepam *(Valium)*, any other antidepressants; and clopidogrel *(Plavix)*.
- Exercise caution with cold medications, arrhythmia medications such as flecainide, aspirin, and other NSAIDs, and drugs used for analgesia with opioid properties.
- *Alert:* This list may not describe all possible interactions. Instruct patients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements used, and if they smoke, drink alcohol, or use illegal drugs. The following drugs are known to interact with fluoxetine:
- Linezolid *(Zyvox)* may increase the risk of serotonin syndrome and neuroleptic syndrome, and in combination with fluvoxamine *(Luvox)* may increase rasagiline (*Azilect*) levels.
- MAOIs contraindicated within 5 wk of fluoxetine use because it may increase the risk of serotonin syndrome, neuroleptic syndrome, and in combination with fluvoxamine *(Luvox)* may increase rasagiline *(Azilect)* levels, and risk of adverse effects.
- Pimozide *(Orap)* may increase the risk of bradycardia, increase pimozide levels, risk of QT prolongation, cardiac arrhythmias.
- Thioridazine *(Mellaril)* may increase thioridazine levels, risk of QT prolongation, cardiac arrhythmias, and may increase risk of SIADH, hyponatremia, serotonin syndrome, and neuroleptic and malignant syndrome.

Pharmacokinetics:

- *Metabolism:* Liver; CYP450 2C19, 2D6 (primary) substrate; 2C19, 3A4 (weak) inhibitor; active metabolite excreted in the urine (80%) and feces (15%). Urine 80% (11.6% unchanged), feces.
- Selectively inhibits serotonin reuptake.
- *Half-life:* 4–6 days (fluoxetine), 9.3 days (nor-fluoxetine).
- See patients as often as necessary to ensure that the drug is working on the panic attacks, determine compliance, and review side effects.
- Make sure patients realize that they need to take prescribed doses even if they do not feel better right away. It can take several weeks before they feel the full effect of the drug.
- Instruct patients and families to watch for worsening depression or thoughts of suicide. Also, watch out for sudden or severe changes in feelings such as feeling anxious, agitated, panicky, irritated, hostile, aggressive, impulsive, severely restless, overly excited, hyperactive, or not being able to sleep. If this happens, especially at the beginning of antidepressant treatment or after a change in dose, patient should call the health care provider.
- Drowsiness or dizziness: Patients should not drive or use machinery or do anything that needs mental alertness until the effects of this medicine are known.

- Caution patients not to stand or sit up quickly, especially if older. This reduces the risk of dizzy or fainting spells. Alcohol may interfere with the effect of this medicine. Avoid alcoholic drinks.
- Caution patients not to treat themselves for coughs, colds, or allergies without asking a health care professional for advice. Some ingredients can increase possible side effects.
- Dry mouth: Chewing sugarless gum, sucking hard candy, and drinking plenty of water may help. Contact a health care provider if the problem persists or is severe.
- Caution should be exercised in the following:
  - Bipolar disorder or a family history of bipolar disorder.
  - Diabetes.
  - Heart disease.
  - Liver disease.
  - Electroconvulsive therapy.
  - Seizures (convulsions).
  - Suicidal thoughts, plans, or attempts by patients or a family member.
  - An unusual or allergic reaction to fluoxetine, other medicines, foods, dyes, or preservatives.
  - Pregnancy or trying to get pregnant.
  - Breastfeeding patients younger than 25 years.
- *Alert:* Should also be exercised with the following conditions: diabetes mellitus, hyponatremia, seizures, mania/hypomania, or volume depletion.

Patient and Family Education:

- Store at room temperature. Take any unused medication after the expiration date to the local pharmacy on drug give-back day. Avoid throwing the medication into the environment.
- Discuss any worsening anxiety, aggressiveness, impulsivity, or restlessness.
- Report any severe, abrupt onset, or changes in symptoms to health professionals. May be reflective of increased risk of suicidal thinking.
- Increased risk of suicidality in children, adolescents, and young adults with major depressive or other psychiatric disorders especially during the first months of treatment.
- Inform health care provider of glaucoma, hypoglycemia, or abnormal bleeding tendencies.
- Therapeutic effects may take 4 wk to fully develop, but side effects may be noticeable.
- *Alert:* For the concomitant use of NSAIDs, aspirin, warfarin, and any other drugs that alter platelets within 1 week of beginning therapy.

Special Populations:

- *Elderly:* No actual contraindications exist, but due to the long half-life of the drug, it has been placed on the Beers List of Potentially Inappropriate Medications for Geriatrics.
- *Renal impairment*: No adjustment is needed for those with kidney disease.
- *Hepatic impairment*: Dose may need to be decreased in patients with liver disease.

- *Pregnancy*: Category C; this is the longest used SSRI in pregnant women. Every attempt should be made to discontinue in the third trimester secondary to development of neonatal distress upon delivery.
- *Lactation*: Not approved for lactation and breastfeeding.
- *Children*: Approved in pediatric population only for MDD and OCD. Monitoring for increased suicidal ideation is critical.

FLUPHENAZINE (*Prolixin*)

Classification: Antipsychotic drug, typical, first-generation

Indications: Psychotic and bipolar disorders.

Available Forms: Tablet, 1, 2.5 (scored), 5 (scored), and 10 mg (scored); decanoate for long-acting IM or SC administration, 25 mg/mL; short-acting IM injection, 2.5 mg/mL; elixir, 2.5 mg/5 mL; concentrate, 5 mg/mL.

Dosage:
- *Oral*: Initial, 0.5–10 mg/day in divided doses; maximum, 40 mg/day.
- *IM (short-acting)*: Initial, 1.25 mg; 2.5–10 mg/day can be given in divided doses every 6–8 hr; maximum dose, generally 10 mg/day.
- *Fluphenazine decanoate (long-acting)*: Initial, 12.5–25 mg (0.5–1 mL); subsequent doses and intervals determined in accordance with the patient's response; generally no more than 50 mg/2 mL given at intervals not longer than 4 wk.

Administration:
- Oral solution should not be mixed with drinks containing caffeine, tannic acid (tea), or pectinates (apple juice).
- 12.5 mg/mL every 2 wk is equivalent to 10 mg daily of oral fluphenazine.
- Onset of action is at 24–72 hr after administration with significant antipsychotic actions evident within 48–96 hr.

Side Effects: Motor side effects from blockage of D2 in striatum; elevations in prolactin from blockage of D2 in the pituitary; worsening of negative and cognitive symptoms due to blockage of D2 receptors in the mesocortical and mesolimbic dopamine pathways; sedation, blurred vision, constipation, dry mouth; weight gain; dizziness, hypotension; possible increased incidence of diabetes or dyslipidemia with conventional antipsychotics is unknown; neuroleptic-induced deficit syndrome; akathisia; extrapyramidal symptoms, parkinsonism, TD; galactorrhea, amenorrhea; sexual dysfunction; priapism; decreased sweating, depression; hypotension, tachycardia, syncope.

Drug Interactions:
- May decrease the effects of levodopa and dopamine agonists.
- May increase effects of antihypertensive drugs except for guanethidine, whose actions may be antagonized by fluphenazine.
- Concurrent use with CNS depressants may produce additive effects.
- Additive anticholinergic effects may occur if used with atropine or related compounds.
- Alcohol and diuretics increase the risk of hypotension.
- Some patients on neuroleptics and lithium developed an encephalopathic syndrome similar to NMS.
- Use with epinephrine may lower BP.

Pharmacokinetics:
- *Half-life:* Oral formulation, approx. 15 hr; IM formulation, approx. 6.8–9.6 days.

Precautions:
- May decrease the effects of levodopa and dopamine agonist.
- May increase the effects of antihypertensive drugs.
- Additive effects may occur if combined with CNS depressants.
- Some neuroleptics and lithium have caused an encephalopathic syndrome similar to NMS in some patients.
- Fluphenazine and epinephrine may lower BP.
- Additive anticholinergic effects may occur if used with atropine or related compounds.
- Alcohol and diuretics may increase the risk of hypotension.
- Do not use if in a comatose state.
- Do not use if patient is taking cabergoline, pergolide, or metrizamide.
- Do not use if there is proven allergy or sensitivity to fluphenazine.

Patient and Family Education:
- Avoid this medication if you have an allergy to aspirin. Inform your provider of all drug allergies.
- Take exactly as prescribed by the provider. Do not take in larger or smaller amounts or for longer than recommended.
- Can be taken with or without food.
- Avoid becoming overheated or dehydrated during exercise and in hot weather. You may be more prone to heat stroke.
- Avoid getting up too fast from a sitting or lying position. Get up slowly and steady yourself to prevent a fall.
- Avoid drinking alcohol.
- Stop using this medication and call provider immediately if you have very stiff (rigid) muscles, high fever, sweating, confusion, fast or uneven heartbeats, tremors; feel like you might pass out; have jerky muscle movements you cannot control, trouble swallowing, problems with speech; have blurred vision, eye pain, or see halos around lights; have increased thirst and urination, excessive hunger, fruity breath odor, weakness, nausea, and vomiting; have fever, chills, body aches, flu symptoms; or have white patches or sores inside your mouth or on your lips.
- Do not stop taking the drug suddenly without first talking to your provider, even if you feel fine. You may have serious side effects if you stop taking the drug suddenly.
- Call provider if symptoms do not improve or get worse.
- Store at room temperature away from moisture and heat.

Special Populations:
- *Elderly*: Lower initial dose (1–2.5 mg/day) and slower titration. Elderly are more susceptible to adverse effects. It is not approved for treatment of elderly patients with dementia-related psychosis, and such patients are at increased risk of cardiovascular events and death.
- *Renal impairment*: Use with caution and with slower titration.
- *Hepatic impairment*: Use with caution and with slower titration.
- *Cardiac impairment*: Cardiovascular toxicity can occur, especially orthostatic hypotension.
- *Pregnancy*: Category C. Some animal studies have demonstrated adverse effects; there are no controlled studies in humans. Infants whose mothers took

a phenothiazine during pregnancy have exhibited EPS, jaundice, hyperreflexia, and hyporeflexia. Psychotic symptoms may worsen during pregnancy, necessitating some form of treatment. Atypical antipsychotics may be preferable.

- *Lactation*: Drug crosses to the infant through breast milk; dystonia, TD, and sedation have been observed in the infant. Recommend discontinuing drug or bottle feed.
- *Children and adolescents*: Safety and efficacy of fluphenazine is not established for children and adolescents. Decanoate and enanthate injectable formulations are contraindicated in children younger than 12 years. It is generally considered second-line treatment after trial with atypical antipsychotics.

FLURAZEPAM (*Dalmane, Dalmadorm*)

Classification: Benzodiazepine

Indications: Treatment of insomnia.

Available Forms: Capsule, 15 and 30 mg.

Dosage: 15–30 mg PO immediately before patient is ready for sleep.

Administration:
- PO with a glass of water.
- Drowsiness and/or dizziness will be exacerbated with concomitant alcohol consumption; alcohol should be avoided while taking this medication.
- Caution clients not to stop taking drug abruptly if used long-term.

Side Effects:
- Hallucinations; behavior changes.
- Side effects that usually do not require medical attention: nausea; daytime drowsiness; headache; vomiting; dizziness; diarrhea; dry mouth; nervousness.

Drug Interactions: This medicine may interact with the following medications: antifungals; CNS depressants (including alcohol); digoxin; macrolides; phenytoin.

Pharmacokinetics:
- BZD, hypnotic.
- Mechanism of action is thought to occur at the level of the GABA receptor complex.
- Highly bound to plasma proteins.
- Peak plasma levels are reached in 0.50–2 hr.
- Metabolized by CYP450 3A4 and excreted through the urine.
- Average half-life of patent drug is 2–3 hr, half-life of metabolite is 40–114 hr.

Precautions:
- See patient as often as necessary if long-term use is indicated.
- Ensure that patient is aware he/she is not to exceed maximum dosage.
- Instruct patient to monitor for behavior changes.
- If patient is drowsy or dizzy, patient should not drive, use machinery, or attempt to accomplish any task that requires mental alertness.
- Avoid alcohol, as concomitant use may exacerbate symptoms.

Patient and Family Education:
- Store at room temperature between 20°C and 25°C (59°F–77°F).
- Discard unused medication after the expiration date.

Special Populations:
- *Elderly*: More sensitive to hypnotics. Use lowest effective dose, maximum 15 mg. Due to sedation and increased risk of falls, all BZDs are placed on Beers List of Potentially Inappropriate Medications for Geriatrics.

- Modify dosage accordingly in patients with hepatic function impairment, typical 15 mg maximum dose.
- *Pregnancy*: Category X. Absolute contraindication.
- *Lactation*: No human studies have been performed. Not recommended in breastfeeding mothers. Drug is excreted in breast milk.
- *Children*: Not for use in children less than 15 years of age.

FLUVOXAMINE (*Luvox*)

Classification: SSRI

Indications: Used to treat OCD, social anxiety disorder.

Available Forms: Tablet, 25, 50, and 100 mg; extended-release capsule, 100 and 150 mg. *Note:* Some formulations not available as generic medications.

Dosage: Starting dose, 50 mg/day; maintenance 100 mg PO nightly, dose increase by 50 mg/day weekly; maximum, 300 mg/day.

Administration:
- PO with a glass of water.
- Take with or without food. Controlled release tablets must remain intact and not be split or crushed prior to administration.

Side Effects: May cause significant sedation (unique among SSRIs); administer at bedtime due to sedation; side effects similar to paroxetine and other SSRIs also observed. May be used for clients with coexisting OCD or other anxiety disorders. May be associated with less sexual side effects than other SSRIs.

Drug Interactions: Most of the interactions occur with OTC cough and cold preparations. This medicine may also interact with the following medications:
- Absolute contraindications include MAOIs such as phenelzine *(Nardil)*, tranylcypromine *(Parnate)*, isocarboxazid *(Marplan)*, and selegiline *(Eldepryl)*.
- Use with caution and in low doses.
- ASA and NSAIDs: Increased risk of bleeding.
- CNS depressants: May increase depressant effects.
- Other SSRIs or SARIs: May cause serotonin syndrome in combination with other medications such as tramadol, high-dose triptans, or the antibiotic linezolid.
- Use with caution in patients taking blood thinners *(Coumadin)*, other antidepressants, antihistamines, lithium, TCAs, and certain antibiotics, such as erythromycin, clarithromycin, azithromycin SNRI drugs such as desvenlafaxine *(Pristiq)* and venlafaxine *(Effexor)*; drugs with sympathomimetic properties such as phenylpropanolamine, pseudoephedrine, St. John's wort, haloperidol; diazepam *(Valium)*, and any other antidepressants; and clopidogrel *(Plavix)*, and lansoprazole *(Prevacid)*, for these medications pharmacokinetics and dynamics may change.
- Exercise caution with cold medications, NSAIDs, and drugs used for analgesia with opioid properties.
- *Alert:* This list may not describe all possible interactions. Instruct patients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements used, and if they smoke, drink alcohol, or use illegal drugs.
- MAOIs: Extreme risk for serotonin syndrome.
- Take at regular intervals.
- Caution patients not to stop taking drug except on provider's advice.
- Not prescribed for children.

- Instruct patients to take missed dose as soon as possible. If it is almost time for the next dose, advise to take only that dose.

Side Effects:

- Most common: Somnolence; headache; asthenia; dizziness; sweating; dry mouth; tremor; anorexia; nervousness; anxiety; abnormal vision; change in appetite; change in sex drive or performance; diarrhea; constipation; indigestion; and nausea.
- Less common: Suicidality, worsening depression, seizures, hyponatremia; allow 2-week washout period post-MAOI prior to initiation.
- TCAs: Plasma levels may be increased by SSRIs, so add extrapyramidal symptoms, priapism, and acute angle glaucoma.

Pharmacokinetics:

- Highly bound to plasma proteins and have a large volume of distribution.
- Readily absorbed in the GI tract, metabolized in the liver, and excreted in the urine. Dosages may be decreased in patients with liver or kidney disease.
- Caution advised in elderly clients.
- *Metabolism:* Liver extensively; CYP450 1A2, 2D6 inhibitor.
- *Peak plasma levels:* Reached in 2–10 hr.
- *Half-life:* Variable, but most SSRIs have half-lives of 20–24 hr. A notable exception is fluoxetine (*Prozac*), and its active metabolite, norfluoxetine, which have half-lives of 2–4 days and 8–9 days, respectively. Hence, addition of serotonergic medications to a patient's regimen must not occur until 2–3 wk after discontinuation of an SSRI (some recommend a 5-week "washout" period for fluoxetine prior to initiation of an MAOI).
- *Excretion:* Urine primarily (2% unchanged).
- *Half-life:* 16.3 hr, 25.9 hr (elderly).

Precautions

- Adverse effects and side effects are commonly observed before therapeutic effects.
- Many side effects are dose dependent and may improve over time.
- Taper discontinuation to avoid withdrawal symptoms.
- See patients as often as necessary to ensure that the drug is working on the panic attacks, determine compliance, and review side effects.
- Make sure patients realize that they need to take prescribed doses even if they do not feel better right away. It can take several weeks before they feel the full effect of the drug.
- Instruct patients and families to watch for worsening depression or thoughts of suicide. Also watch out for sudden or severe changes in feelings such as feeling anxious, agitated, panicky, irritated, hostile, aggressive, impulsive, severely restless, overly excited, hyperactive, or not being able to sleep. If this happens, especially at the beginning of antidepressant treatment or after a change in dose, patient should call the health care provider.
- Drowsiness or dizziness: Patients should not drive or use machinery or do anything that needs mental alertness until the effects of this medicine are known.

- Caution patients not to stand or sit up quickly, especially if older. This reduces the risk of dizzy or fainting spells. Alcohol may interfere with the effect of this medicine. Avoid alcoholic drinks.
- Caution patients not to treat themselves for coughs, colds, or allergies without asking a health care professional for advice. Some ingredients can increase possible side effects.
- Dry mouth: Chewing sugarless gum, sucking hard candy, and drinking plenty of water may help. Contact health care provider if the problem persists or is severe.
- Caution should be exercised in the following:
  - Bipolar disorder or a family history of bipolar disorder.
  - Diabetes.
  - Heart disease.
  - Liver disease.
  - Electroconvulsive therapy.
  - Seizures (convulsions).
  - Suicidal thoughts, plans, or attempts by patients or a family member.
  - An unusual or allergic reaction to fluvoxamine, other medicines, foods, dyes, or preservatives.
  - Pregnancy or trying to get pregnant.
  - Breastfeeding.

Patient and Family Education

- Should be taken about the same time every day, morning or evening, and can be taken with or without food (with food if there is any stomach upset).
- May start with half of lowest effective dose for 3–7 days, then increase to lowest effective dose to diminish side effects.
- Administration time may be adjusted based on observed sedating or activating drug effects.
- May take up to 4–8 wk to show its maximum effect at this dose, but some may see symptoms of dysthymia improving in as little as 2 wk.
- If patient plans on becoming pregnant or is pregnant, discuss the benefits versus the risks of using this medicine while pregnant.
- Because this medicine is excreted in the breast milk, nursing mothers should not breastfeed while taking this medicine without prior consultation with a psychiatric nurse practitioner or psychiatrist. Newborns may develop symptoms including feeding or breathing difficulties, seizures, muscle stiffness, jitteriness, or constant crying.
- Do not stop taking this medication unless the health care provider directs. Report side effects or worsening symptoms to the health care provider promptly.
- The medication should be tapered gradually when changing or discontinuing therapy.
- Dosage should be adjusted to reach remission of symptoms and treatment should continue for at least 6–12 months following last reported dysthymic experience.
- Caution is advised when using this drug in the elderly because they may be more sensitive to the effects of the drug. Elderly patients should receive a lower starting dose.

- Keep these medications out of the reach of children and pets.
- Store at room temperature. Take any unused medication after the expiration date to the local pharmacy on drug give-back day. Avoid throwing the medication into the environment.

Special Populations

- *Elderly*: Older individuals tend to be more sensitive to medication side effects such as hypotension and anticholinergic effects. They often require adjustment of medication doses for hepatic or renal dysfunction. SSRIs with shorter half-lives (e.g., paroxetine) may be more desirable for geriatric populations than SSRIs with longer half-lives (e.g., fluoxetine). SSRIs have been associated with increased risk of falls in nursing home residents and neurologic effects in patients with Parkinson's disease. Elderly patients are more prone to SSRI-induced hyponatremia.
- Renal and hepatic impairment: Initial dose should be reduced in patients with severe renal and/or hepatic impairment. Titration upward should be slow and at intervals.
- *Pregnancy*: Psychotherapy is the initial choice for most pregnant patients with DD. Most SSRIs are Category C drugs, due to adverse effects; first trimester teratogenicity has been observed in animal studies. If continued during pregnancy, dosage may need to be increased to maintain euthymia due to physiologic changes associated with pregnancy. Neonatal withdrawal and serotonin syndrome may occur in third trimester, persistent pulmonary HTN if more than 20-week gestation.
- *Lactation*: Considered generally safe; substantial human data show no or minimal risk to breast milk production or to the infant.
- *Children*: Initial SSRI dosing is not indicated for children. Increasing doses may require more gradual increments, and discontinuation may require a more gradual taper.

GALANTAMINE (*Razadyne and Razadyne ER*)

Classification: Cholinesterase inhibitor.

Indications: Used to treat mild to moderate Alzheimer's disease (AD).

Available Forms: Immediate-release tablet, extended-release capsule, and oral solution.

Dosage: *IR tablets:* Initially, 4 mg PO bid. After 4 wk, may increase to 8 mg PO bid. *ER capsules:* 8 mg PO daily in the morning; after 4 wk may increase to 16 mg PO daily in morning. *Oral solution:* Equivalent to the immediate-release tablets.

Administration:
- Orally.
- Take with food to limit drug intolerance.

Side Effects: Nausea; vomiting; diarrhea; loss of appetite; stomach pain; heartburn; weight loss; extreme tiredness; dizziness; pale skin; headache; uncontrollable shaking of a part of body; depression; difficulty falling asleep or staying asleep; runny nose. *Serious side effects that may require medical attention:* Difficulty urinating; blood in the urine; pain or burning while urinating; seizures; slowed heartbeat; fainting; shortness of breath; black and tarry stools; red blood in the stools; bloody vomit; vomit that looks like coffee grounds.

Drug Interactions: This medicine may interact with the following medications: cholinesterase inhibitors; conivaptan; fluoxetine; neuromuscular blockers; parasympathomimetics; paroxetine; amantadine; amiodarone; amoxapine; anti-retroviral protease inhibitors; antimuscarinics; aprepitant, fosaprepitant; barbiturates; cimetidine; clarithromycin; clozapine; cyclobenzaprine; delavirdine; digoxin; disopyramide; efavirenz; erythromycin; fluconazole; fluvoxamine; general anesthetics; imatinib, STI-571; itraconazole; ketoconazole; local anesthetics; maprotiline; nefazodone; nilotinib; olanzapine; orphenadrine; phenothiazines; sedating H-1 blockers; St. John's wort; tricyclic antidepressants; troglitazone; troleandomycin; voriconazole; beta-blockers; bosentan; carbamazepine; phenytoin; quinidine; rifabutin; diltiazem; fosphenytoin; nevirapine; nicardipine; NSAIDs; oxcarbazepine; rifampin; rifapentine; terbinafine; verapamil; zafirlukast.

Pharmacokinetics:
- Cholinesterase inhibitor; reversible inhibitor of acetylcholinesterase.
- Peak plasma levels are reached in approximately 1 hr.
- Bioavailability is 90%.
- *Half-life:* Average 7 hr.

Precautions:
- If treatment is stopped for several days with the intent to restart, then patient should be started back with the initial dose and then slowly re-titrated to the highest tolerated dose.
- Moderate hepatic impairment.

- Patients should be cautioned about engaging in tasks that require mental alertness such as operating heavy machinery or driving until reasonably certain that the drug does not affect them adversely.
- Pulmonary disease.
- Use with caution in patients with cardiac disease.
- May exacerbate symptoms of Parkinson's disease.

Patient and Family Education: Store galantamine at room temperature and away from excess heat and moisture. Throw away any medication that is outdated or no longer needed.

Special Populations:

- *Hepatic impairment*: Do not use in patients with severe hepatic dysfunction. Dose should not exceed 16 mg/day PO. Monitor liver function.

GUANFACINE (*Intuniv*)

Classification: Selective alpha-2a-adrenergic receptor agonist (SARI).

Indications: Selective alpha-2a-adrenergic receptor agonist indicated for the treatment of ADHD in children and adolescents aged 6–17 years.

Available Forms: Capsule, 1, 2, 3, and 4 mg.

Dosage: *Children: 6–17 years:* 1–4 mg PO daily; start, 1 mg PO daily, increase by 1 mg/day every week; alternate, 0.05–0.12 mg/kg PO daily. *Adults:* Not for adult use.

Administration: Do not give with high fat meals; do not cut/crush/chew; taper dose by 1 mg/day every 3–7 days to discontinue.

Side Effects: Somnolence; headache; fatigue; upper abdominal pain; nausea; irritability; dizziness; hypotension; decreased appetite; dry mouth; constipation; syncope; AV block, bradycardia, sinus arrhythmia; dyspepsia; chest pain; asthma; emotional lability, anxiety, depression, insomnia, nightmares, sleep changes.

Drug Interactions: CYP3A4/5 inhibitors; UP3A4 inducers; valproic acid; antihypertensive medications; CNS depressants.

Pharmacokinetics:
- Guanfacine is a selective alpha-2a-adrenergic receptor agonist that has a 15–20 times higher affinity for this receptor subtype than for the alpha-2b or alpha-2c subtypes.
- It is a known antihypertensive agent: By stimulating alpha-2a-adrenergic receptors, guanfacine reduces sympathetic nerve impulses from the vasomotor center to the heart and blood vessels, resulting in decreased peripheral vascular resistance and a reduction in heart rate.
- Time to peak plasma concentration is 5 hr.
- *Metabolism:* Liver, excreted in urine.
- *Half-life:* 18 hr.

Precautions:
- Hypersensitivity to guanfacine or concomitant use with other products containing guanfacine *(Tenex)*.
- Not for use in children younger than 6 years; safety beyond 2 years of treatment has not been established.
- Adult and geriatric populations—not labeled for use.

Patient and Family Education:
- Swallow whole with water, milk, or other liquid.
- Store at room temperature.
- Do not take with a high fat meal—plasma concentrations will increase.
- Use with caution when operating heavy equipment or machinery until response to treatment is known.
- Avoid use with alcohol.

- Avoid dehydration and becoming overheated.
- Have BP and heart rate assessed while taking.
- Taper dose by 1 mg/day every 3–7 days to D/C (abrupt cessation may cause increased plasma catecholamines, rebound HTN, nervousness/anxiety).

Special Populations:

- *Elderly*: There is no adult dosing for this medication.
- *Pregnancy*: Category B.
- *Lactation*: Safety unknown.
- *Children*: For use in ages 6–17. Use with caution.

HALOPERIDOL (*Haldol*)

Classification: First-generation (typical) antipsychotic.

Indications: Used to treat psychotic disorders and control motor tics and verbal tics in adults and children who have Tourette's disorder (condition characterized by motor or verbal tics). Also used to treat severe behavioral problems such as explosive, aggressive behavior or hyperactivity in children who cannot be treated with psychotherapy or with other medications.

Available Forms: Tablet (scored), 0.5, 1, 2, 5, 10, and 20 mg; concentrate, 2 mg/mL; solution, 1 mg/mL; injection, 5 mg/mL (immediate release); decanoate injection, 50 mg haloperidol as 60.5 mg/mL, haloperidol decanoate, 100 mg haloperidol as 141.04 mg/mL haloperidol decanoate weeks as.

Dosage:
- PO, 1 to 20 mg/day
- Immediate-release injection, 2 to 5 mg each dose
- Decanoate injection, 10 to 20 times the effective daily dose of oral formulation, administered every 4 weeks

Drug Interactions: Dopamine agonists may diminish therapeutic effect. Carbamazepine increases metabolism of haloperidol. Caution must be exercised with other agents that prolong QT interval.

Administration:
- *Oral:* Once daily or in divided doses at the beginning of treatment during rapid escalation; increase as needed; can be dosed up to 100 mg/day.
- *Immediate-release injection:* Initial dose 2–5 mg; subsequent doses may be given as often as every hour; patient should be switched to oral administration ASAP.
- *Decanoate injection:* Initial dose 10–15 times the effective oral dose for patients maintained on low antipsychotic doses (up to equivalent of 10 mg/day oral haloperidol). Initial dose may be as high as 20 times previous oral dose for patients maintained on higher antipsychotic doses: maximum, 100 mg. If higher dose is required, the remainder can be administered 3–7 days later. Administer total dose every 4 wk.
- Patient must stay hydrated.
- Haloperidol is frequently dosed too high. High CYP2D6 inhibitor. Doses may actually worsen negative symptoms of schizophrenia and increase EPS side effects.

Side Effects: Neuroleptic-induced deficit syndrome; akathisia; EPS, parkinsonism, tardive dyskinesia, tardive dystonia; galactorrhea, amenorrhea; dizziness, sedation; dry mouth, constipation, urinary retention, blurred vision; decreased sweating; hypotension, tachycardia, hyperlipidemia; weight gain; rare NMS; rare seizures; rare jaundice, agranulocytosis, leukopenia; haloperidol with anticholinergics may increase intraocular pressure; reduces effects of anticoagulants; plasma levels of haloperidol lowered by rifampin; may enhance effects of antihypertensive agents; haloperidol with lithium may contribute to development of encephalopathic syndrome.

Drug Interactions:
- May decrease the effects of levodopa, dopamine agonists.
- May increase the effects of antihypertensive drugs except for guanethidine.
- Additive effects with CNS depressants, dose of other should be reduced.
- May interact with some pressor agents (epinephrine) to lower blood pressure.

Pharmacokinetics:
- *Absorption:* Injection, 100%; oral, 60–70%.
- *Onset:* IM and IV, 30–60 min.
- *Duration:* 2–6 hr.
- *Metabolism:* Hepatic 50–60% glucuronidation.
- *Half-life:* Approximately 12–36 hr.

Precautions:
- Keep patient recumbent for at least 30 min following injection to minimize hypotensive effects.
- Discontinue if patient develops symptoms of neuroleptic malignant syndrome (NMS).
- Use with caution in patients with respiratory depression.
- May alter cardiac conduction and prolong QT interval.
- Risk of extrapyramidial symptoms (EPS) and tardive dyskinesia and hyperprolactinemia.
- Seizures.
- Excessive sedation problems.
- Avoid extreme heat exposure.
- May experience rapid shift to depression if used to treat mania.
- Patients with thyrotoxicosis may experience neurotoxicity.
- Do not use with Lewy body dementia or Parkinson's disease.
- Use with caution in patients with QTc prolongation, hypothyroidism, familial long-QT syndrome.
- Do not use if there is a proven allergy to haloperidol.

Patient and Family Education:
- Maintain adequate hydration.
- Avoid contact (liquid) with skin; may cause contact dermatitis.
- Do not take within 2 hr of antacid.
- Take exactly as prescribed.
- Avoid getting up too fast from sitting or lying position. Get up slowly and steady yourself to prevent a fall.
- Avoid drinking alcohol.
- Stop using this medication and call provider immediately if you have very stiff (rigid) muscles, high fever, sweating, confusion, fast or uneven heartbeats, tremors; feel like you might pass out; have jerky muscle movements you cannot control, trouble swallowing, problems with speech; have blurred vision, eye pain, or seeing halos around lights; have increased thirst and urination, excessive hunger, fruity breath odor, weakness, nausea and vomiting; have fever, chills, body aches, flu symptoms, or have white patches or sores inside mouth or on lips.
- Do not stop taking drug suddenly without first talking to provider, even if you feel fine. May have serious side effects if you stop taking the drug suddenly.

- Call provider if symptoms do not improve, or get worse.
- Store at room temperature away from moisture and heat.

Special Populations:

- *Elderly*: Elderly patients are at an increased risk of death; use with extreme caution.
- Lower doses should be used and patient monitored closely. Do not use in elderly patients with dementia.
- *Lactation*: Breastfeeding not recommended.
- *Other renal impairment*: Use with caution in patients with myasthenia gravis, Parkinson's disease, and seizures.
- *Hepatic impairment*: Use with caution.
- *Cardiac impairment*: Because of risk of orthostatic hypertension, use with caution.
- *Pregnancy*: Category C; some animal studies show adverse effects, no controlled studies in humans.
- *Lactation*: Category C.
- *Children and adolescents*: Safety and efficacy not established. Not intended for use with children under age 3. Generally consider as second line, not first line.

HYDROXYZINE (*Vistaril*)

Classification: Antihistamine.

Indications: Anxiolytic non-BZD used to treat GADs and PD.

Available Forms: Capsule, suspension, and injections.

Dosage: *Adults:* 50–100 mg PO every 6 hr as needed; maximum, 600 mg daily. *Pediatric (6–12 years)*: 12.5–25 mg PO q6–8 hr prn; alternative: 0.5–1 mg/kg IM q4–6 hr prn; (*older than 12 years*), see adult dosing.

Administration:
- PO with a glass of water.
- No concern about discontinuation symptoms.
- Little potential for abuse, tolerance, and physical or psychological dependence.

Side Effects: Wheezing, dyspnea, seizures, dry mouth, drowsiness, dizziness, ataxia, weakness, slurred speech, headache, agitation, bitter taste, and nausea.

Drug Interactions: This medicine may interact with the following medications:
- Absolute contraindications include potassium chloride, urinary acidifiers.
- Avoid using with all MAOIs.
- *Alert*: This list may not describe all possible interactions. Instruct patients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements used, and if they smoke, drink alcohol, or use illegal drugs.

Pharmacokinetics:
- Hydroxyzine suppresses regions of the subcortical areas of the CNS. It antagonizes central and peripheral histamine H1 peripheral receptors.
- *Metabolism:* By the liver, where it is converted to the active metabolite cetirizine.
- *Excretion:* Primarily in urine.
- *Half-life:* 20–25 hr.

Precautions:
- See patients as often as necessary to ensure that the drug is working on general anxiety, determine compliance, and review side effects.
- Instruct patients and families to watch for worsening depression or thoughts of suicide. Also, watch out for sudden or severe changes in feelings such as feeling anxious, agitated, panicky, irritated, hostile, aggressive, impulsive, severely restless, overly excited, hyperactive, or not being able to sleep.
- Drowsiness or dizziness: Patients should not drive or use machinery or do anything that needs mental alertness until the effects of this medicine are known.
- Caution patients not to stand or sit up quickly, especially if older. This reduces the risk of dizzy or fainting spells. Alcohol may interfere with the effect of this medicine. Avoid alcoholic drinks.
- Hydroxyzine potentiates other CNS depressants; this must be taken into consideration when administering other agents concurrently.

- Caution should be exercised in the following:
  - Renal disease.
  - Suicidal thoughts, plans, or attempts by patients or a family member.
  - An unusual or allergic reaction to hydroxyzine, other medicines, foods, dyes, or preservatives.

Patient and Family Education:

- Store hydroxyzine at room temperature away from moisture, heat, and light.
- Take this medicine with a full glass of water.
- Measure liquid medicine with a special dose-measuring spoon or cup, not a regular tablespoon. If there is no dose-measuring device available, ask the pharmacist for one.
- Take the missed dose as soon as remembered. If it is almost time for the next dose, wait until then to take the medicine and skip the missed dose. Do not take extra medicine to make up the missed dose.

Special Populations:

- *Elderly*: Older patients may be more sensitive to the effects of hydroxyzine. The smallest effective dose should be used. Dose adjustment is necessary for patients with mild renal disease due to excessive metabolites excreted by the kidney. Due to its strong anticholinergic properties, the drug is included in the Beers List of Potentially Inappropriate Medications for Geriatrics.
- *Pregnancy*: Category C; no teratogenic effects noted in animal studies; however, limited human data are available. Use with caution.
- *Lactation*: Safety is unknown.
- *Children*: Can be used in children as young as 6 years.

IBUPROFEN (*Motrin*)

Classification: NSAID.

Indications: Generalized pain associated with opiate withdrawal.

Available Forms: Tablet, 400, 600, and 800 mg.

Dosage: 1200–3200 mg daily divided as follows: 300 mg qid or 400, 600, or 800 mg tid or qid; maximum, not to exceed 3200 mg/day.

Administration:
- PO with meals or milk to reduce GI upset.
- *Missed dose:* Take as soon as remembered. Skip the missed dose if it is almost time for the next scheduled dose. Do not take extra medicine.

Side Effects: Heartburn, nausea, vomiting; constipation, bloating; GI ulceration, occult blood loss.

Drug Interactions:
- Heparin may prolong bleeding time.
- May increase lithium toxicity.
- Garlic, ginger, and ginkgo may increase bleeding time.

Pharmacokinetics:
- *Metabolism:* Liver.
- *Excretion:* Eliminated in urine.
- *Half-life*: 2–4 hr.

Precautions:
- Watch for toxic hepatitis, peptic ulcer disease, and anaphylaxis.

Patient and Family Education:
- Notify health care provider immediately of passage of dark tarry stools, coffee ground emesis, or other GI distress.
- Do not take with aspirin.
- Avoid alcohol and NSAIDs.

Special Populations:
- *Elderly*: No contraindications.
- *Renal impairment*: Use with caution.
- *Hepatic impairment*: Use with caution; may require smaller dosage.
- *Pregnancy*: Category B.
- *Lactation*: No contraindication.
- *Children and adolescents*: Safe use under age 6 has not been established.

IMIPRAMINE (*Tofranil*)

Classification: Tricyclic antidepressant (TCA).

Indications: Used to treat adults with depression/anxiety.

Available Forms: *Tofranil:* Tablet, 25 and 50 mg; *Tofranil PM:* Capsule, 75, 100, 125, and 150 mg; tablet, 10, 25, and 50 mg.

Dosage: *Adults*: Starting dose, 25–75 mg PO nightly and increase by 25–50 mg/day every 3–4 days; maintenance dose, typically in divided doses, 75–300 mg/day. *Elderly:* 100 mg/day. Can be given in divided doses. Must taper dose gradually to discontinue. *Children: For depression:* Start, 1.5 mg/kg/day PO divided tid, increase by 1–1.5 mg/kg/day every 3–4 days; maximum, 5 mg/kg/day. *More than 12 years*: Start, 30–40 mg/day PO divided qid-tid and increase by 10–25 mg/day every 3–4 days; maximum, 100 mg/day if used for antidepressant effect.

Administration: Oral formulations require tid-qid.
- PO with a glass of water.
- Do not crush, cut, or chew extended-release tablets.
- Do not abruptly stop taking the medication.
- Not prescribed for children except when used for nocturnal enuresis and depression in children as young as 6 years.
- Use lowest effective dose for shortest duration dosing.

Side Effects: Similar to amitriptyline.
- More common: Drowsiness, dizziness, constipation; nausea/vomiting, urinary retention or frequency, libido changes, weight gain, general nervousness, and galactorrhea.
- Less common: Cardiac arrhythmias, extrapyramidal symptoms, clotting disturbances, worsening depression, suicidality, hyperthermia, and hypertension.
- Cardiac arrhythmias.
- Fatigue, sedation, and weight gain.
- Sexual dysfunction.

Drug Interactions: This medicine may interact with the following medications:
- Absolute contraindications include class 1A antiarrhythmics, MAOIs such as phenelzine (Nardil), tranylcypromine (Parnate), isocarboxazid (Marplan), and selegiline (Eldepryl).
- Avoid using with cimetadine, amiodarone, clarithromycin, haldoperidol, and St. John's wort.
- *Alert:* This list may not describe all possible interactions. Instruct patients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements used, and if they smoke, drink alcohol, or use illegal drugs.
- MAOIs: Risk for extreme hypertension.
- CNS depressants (e.g., alcohol): TCAs increase effects.
- Direct-acting adrenergic agonists (e.g., epinephrine): TCAs increase effects.

- Anticholinergic drugs (e.g., antihistamines): TCAs increase effects. Do not use in combination.
- SSRIs and other medications: serotonin syndrome.

Pharmacokinetics:

- TCAs are thought to work by inhibiting reuptake of norepinephrine and serotonin in the CNS, which potentiates the neurotransmitters. They also have significant anticholinergics, antihistaminic, and alpha-adrenergic activity on the cardiac system. These classes of antidepressants also possess class 1A antiarrhythmic activity, which can lead to depression of cardiac conduction potentially resulting in heart block or ventricular arrhythmias.
- *Metabolism:* Metabolized extensively by the liver to the active metabolite desipramine form by CYP450 2D6. Also metabolized by CYP450 1A2.
- *Excretion:* Primarily in urine, up to less than 5% unchanged, also excreted in the bile/feces.
- *Half-life:* 11–25 hr.

Precautions:

- See patients as often as necessary to ensure that the drug is working on the panic attacks, determine compliance, and review side effects.
- Instruct patients and families to watch for worsening depression or thoughts of suicide. Also, watch out for sudden or severe changes in feelings such as feeling anxious, agitated, panicky, irritated, hostile, aggressive, impulsive, severely restless, overly excited, hyperactive, or not being able to sleep. If this happens, especially at the beginning of antidepressant treatment or after a change in dose, patient should call the health care provider.
- Drowsiness or dizziness: Patients should not drive or use machinery or do anything that needs mental alertness until the effects of this medicine are known. Other medications that cause drowsiness can add to the drowsiness of imipramine.
- Caution patients not to stand or sit up quickly, especially if older. This reduces the risk of dizzy or fainting spells. Alcohol may interfere with the effect of this medicine. Avoid alcoholic drinks.
- Do not abruptly withdraw this drug as it may cause headache, nausea, and malaise.
- Advise to protect skin from ultraviolet light due to increased skin sensitivity.
- Grapefruit and grapefruit juice may interact with imipramine.
- Caution should be exercised in the following:
  - MDD, psychosis, or bipolar affective disorder.
  - Contraindicated in patients with a recent myocardial infarction.
  - Blood dyscrasias.
  - Respiratory disease.
  - Heart disease.
  - Liver disease.
  - Seizures (convulsions).
  - Suicidal thoughts, plans, or attempts by patients or a family member.
  - An unusual or allergic reaction to imipramine, other medicines, foods, dyes, or preservatives.
  - Overdose may result in lethal cardiotoxicity or seizure.

- Use with caution in patients having a history of seizure or heart disease.
- Avoid in patients with a history of cardiac arrhythmia. Monitor with EKG.

Patient and Family Education:

- Store imipramine at room temperature away from moisture and heat.
- Stopping this medication suddenly could result in unpleasant side effects.
- Take the missed dose as soon as remembered. If it is almost time for the next dose, skip the missed dose and take the medicine at the next regularly scheduled time. Do not take extra medicine to make up the missed dose.
- Should be taken about the same time every day, with or without food. May cause prolonged sedation. Do not drive until the effect of this medication is known.
- Administration time may be adjusted based on observed sedating or activating drug effects.
- May take up to 4–8 wk to show its maximum effect, but patient may see symptoms of dysthymia improving in as little as 2 wk.
- If patient plans on becoming pregnant, discuss the benefits versus the risks of using this medicine while pregnant.
- Because this medicine is excreted in breast milk, nursing mothers should not breastfeed while taking this medicine without prior consultation with a psychiatric nurse practitioner or psychiatrist. Newborns may develop symptoms including feeding or breathing difficulties, seizures, muscle stiffness, jitteriness, or constant crying.
- Do not stop taking this medication unless the health care provider directs. Report symptoms to the health care provider promptly.
- Drug should be tapered gradually.
- Treatment should continue for at least 6–12 months following last reported dysthymic experience.
- Keep these medications out of the reach of children and pets.

Special Populations:

- *Elderly:* Older patients tend to be more sensitive to the medication side effects such as hypotension and anticholinergic effects. They often require adjustment of medication doses for hepatic or renal dysfunction TCAs. Dose adjustment is necessary for geriatric patients, and in patients with liver impairment
- *Pregnancy:* Category D; some clinical reports of congenital malformations, but no direct causal link.
- *Lactation*: Excreted in human breast milk; alternative medications are recommended.
- *Pregnancy*: Category D; not recommended in pregnancy, as there are no adequate studies showing potential for side effects during pregnancy.
- *Children*: Tofranil is indicated. Not recommended for children less than 6 years old with nocturnal enuresis or with depression. Monitor for suicidal ideation with depression. Tofranil PM is not approved for use in children under the age of 12.

ISOCARBOXAZID (*Marplan*)

Classification: Monoamine oxidase inhibitor (MAOI).

Indications: An antidepressant and anxiolytic.

Available Forms: Tablet, 10 mg.

Dosage: Starting dose, 20 mg/day; maintenance dose, 20–60 mg/day, in divided doses.

Administration: PO, tid-qid dosing.

Side Effects:
- Hypertensive crisis, secondary to excessive consumption of dietary tyramine (e.g., soft cheeses, aged fish, aged meat, and avocados).
- CNS stimulation.
- Orthostatic hypotension.
- Sexual dysfunction.

Drug Interactions:
- SSRIs, SNRIs, and TCAs: Risk for extreme hypertension.
- Indirect-acting adrenergic agonists (e.g., ephedrine): Increases MAOI effects.
- Antihypertensive drugs may dangerously lower blood pressure.

Pharmacokinetics:
Duration of action: May last 2–3 wk following discontinuation due to irreversible MAO inhibition.

Precautions:
- Adverse effects and side effects are commonly observed before therapeutic effects.
- Dietary restrictions require substantial patient adherence.

Patient and Family Education:
- Should be taken about the same time every day, with or without food.
- Substantial education required on dietary changes and importance of dietary adherence.
- Patient should advise all health care providers that he/she is on an MAOI prior to initiating new medications.
- Administration time may be adjusted based on observed sedating or activating drug effects.
- May take up to 4–8 wk to show its maximum effect, but some may see symptoms of dysthymia depression improving in as little as 2 wk.
- Do not take if risk of pregnancy or pregnant.
- Because this medicine is excreted in the breast milk, nursing mothers should not breastfeed while taking this medicine. Newborns may develop symptoms including feeding or breathing difficulties, seizures, muscle stiffness, jitteriness, or constant crying.

- Report potential side effects to the health care provider promptly.
- Keep these medications out of the reach of children and pets.

Special Populations:

- *Elderly*: Requires lower drug dose in adult patients over 65 years old. Due to common need for polypharmacy, it is not recommended.
- *Pregnancy*: Psychotherapy is the initial choice for most pregnant patients with MDD. Generally not recommended during pregnancy.
- *Children*: Not recommended for children less than 16 years of age.

LAMOTRIGINE (*Lamictal, Lamictal XR*)

Classification: Mood-stabilizing anticonvulsant.

Indications: Used to treat bipolar disorder in adults.

Available Forms: Tablet, 25, 100, 150, and 200 mg; chewable tablet, 2, 5, and 25 mg.

Dosage: Starting dose for adults is 25 mg by mouth every day for 2 wk; then 50 mg every day for 2 wk; then 100 mg every day for 1 wk; maximum, 200 mg/day.

Administration:
- Discontinue medicine at first sign of a rash.
- This medicine should be taken as directed and is well tolerated in the recommended doses.
- Individuals taking this medicine should carry an identification card to alert medical personnel who might be caring for them.
- The potential carcinogenic, mutagenic, and fertility effects are unknown.
- Category C drug and should be used in pregnancy if the potential benefit outweighs the risk. It is not known whether excreted in breast milk so caution should be exercised when it is administered to nursing women.
- Pediatric use under the age of 18 years has not been established. Individuals taking opioid-containing medicines, such as cough and cold preparations, antidiarrheal preparations, and opioid analgesics with lamotrigine may not benefit from these medicines.
- Concomitant use is unknown.
- Does not interfere with drug testing using urine samples.

Side Effects: Common reactions to the drug include dizziness, headache, diplopia, ataxia, asthenia, nausea, blurred vision, somnolence, rhinitis, rash, pharyngitis, vomiting, cough, flu syndrome, dysmenorrhea, uncoordination, insomnia, diarrhea, fever, abdominal pain, depression, tremor, anxiety, vaginitis, speech disturbance, seizures, weight loss, photosensitivity, nystagmus, constipation, and dry mouth.

Drug Interactions: Avoid using the following drugs with this medicine:
- Oral progesterone contraceptives (may decrease hormonal contraceptive levels).
- Etonogestrel subdermal implant (may decrease hormonal contraceptive levels).
- Ginkgo biloba, Eun-haeng, fossil tree, ginkyo, icho, ityo, Japanese silver apricot, kew tree, maidenhair tree, salisburia, silver apricot, ginkgo (may decrease anticonvulsant efficacy).
- Medroxyprogesterone acetate (may decrease hormonal contraceptive levels).
- St. John's wort (may decrease lamotrigine levels as clearance is increased).

Pharmacokinetics: Metabolized by the liver (CYP450). Excreted in the urine (94%) and feces (2%).
- *Half-life:* 25 hr.

Precautions:
- Discontinue medicine at first sign of a rash. Incidence is 0.8% in children 2–6 years of age and 0.3% in adults. Most life-threatening rashes occur in the first 2–8 wk of treatment.
- Caution should be exercised when administering this medicine to patients with suicide risk, pregnancy, hepatic impairment, renal impairment, and hypersensitivity to antiepileptic drugs.
- Use in patients under the age of 18 has not been established.
- Individuals taking opioid-containing medicines, such as cough and cold preparations, antidiarrheal preparations, and opioid analgesics may not benefit from these medicines.

Patient and Family Education:
- Do not stop taking this drug suddenly; it must be tapered by your health care provider.
- Notify your health care provider immediately if your depression symptoms increase.

Special Populations:
- *Elderly*: Caution should be exercised when administering this drug to the elderly.
- *Renal impairment*: For moderate to severe impairment, decrease dose by 25%. If there is severe impairment, decrease dose by 50%.
- *Pregnancy*: Category C drug. Animal studies show adverse fetal effect(s) but no controlled human studies.
- *Lactation*: It is considered unsafe for breastfeeding mothers. Medication administration requires cessation of breastfeeding.
- *Children*: Serious rashes requiring hospitalizations and discontinuance of treatment include the Stevens–Johnson syndrome and rare cases of toxic epidermal necrolysis and rash-related deaths. Incidence is 0.8% in children 2–6 years of age and 0.3% in adults. Most life-threatening rashes occur in the first 2–8 wk of treatment.

LISDEXAMFETAMINE (*Vyvanse*)

Classification: Amphetamine.

Indications: Stimulant indicated for the treatment of ADHD in children and adults.

Available Forms: Capsule, 20, 30, 40, 50, 60, and 70 mg.

Dosage: Dosage should be individualized according to the therapeutic needs and response of the patient. All stimulant preparations should be administered at the lowest effective dosage. *Children: 6–12 years old:* 30 mg PO qam; maximum, 70 mg/day; may increase dose 10–20 mg/day every week; use lowest effective dose. *Adults:* 30 mg qam; maximum, 70 mg/day; may increase dose 10–20 mg/day every week; use lowest effective dose.

Administration: Swallow capsules whole with water or other liquids. If patient cannot swallow the capsule, open it and mix with water. Follow with a drink of water or other liquid. It can be taken with or without food.

Side Effects: Decreased appetite; dizziness; dry mouth; irritability; insomnia; upper abdominal pain; nausea and/or vomiting; weight loss; headaches; anxiety; psychiatric events: increase in manic states for bipolar patients, aggression, tics, tremors; long-term growth suppression: patients should be monitored throughout treatment, if there appears to be growth suppression, the treatment should be discontinued; rash; pyrexia; palpitations, tachycardia, elevated BP, sudden death, MI, cardiomyopathy; Stevens–Johnson syndrome and toxic epidermal necrolysis; impotence, libido changes.

Drug Interactions: Urinary acidifying agents; MAOIs; adrenergic blockers; antihistamines; antihypertensives; veratrum alkaloids; ethosuximide; TCAs; meperidine; phenobarbital; phenytoin; chlorpromazine; *Haldol*; lithium; norepinephrine; propoxyphene.

Pharmacokinetics:
- Absorbed by the GI tract.
- Amphetamines are noncatecholamine sympathomimetic amines with CNS-stimulant activity.
- The mode of therapeutic action in ADHD is not known. Amphetamines are thought to block the reuptake of norepinephrine and dopamine into the presynaptic neuron and increase the release of these monoamines into the extraneural space.
- Prodrug converted to dextroamphetamine.
- *Metabolism:* Liver; mainly excreted in the urine.
- *Half-life:* 12 hr.

Precautions:
- Advanced arteriosclerosis, symptomatic cardiovascular disease, moderate-to-severe HTN.
- Hyperthyroidism.

- Known hypersensitivity or idiosyncratic reaction to sympathomimetic amines.
- Glaucoma.
- Agitated states.
- Patients with a history of drug abuse: Amphetamines have a high potential for abuse. Administration of Amphetamines for an extended period of time may lead to drug dependence. Particular attention should be paid to the possibility of patients obtaining this class of medication for nontherapeutic use or distribution to others, and the drugs should be prescribed or dispensed sparingly.
- During or within 14 days following the administration of MAOIs, hypertensive crisis may result.
- Preexisting psychosis.
- Seizure history: Some studies have shown the potential for lowering the seizure threshold.

Patient and Family Education:

- Store at room temperature, protected from light.
- Keep out of reach of children.
- Seek medical care for any signs of heart problems (chest pain, shortness of breath), fainting, psychotic symptoms, overdose, or any other concerns.
- Routinely assess weight and BP.
- Treatment should be initiated at low doses and then titrated over 2–4 wk until an adequate response is achieved or unacceptable adverse effects occur.
- If one stimulant is not effective, another should be attempted before second-line medications are considered. Although some children benefit from daily stimulant therapy, weekend and summer "drug holidays" are suggested for children whose ADHD symptoms predominantly affect schoolwork or to limit adverse effects (e.g., appetite suppression, abdominal pain, headache, insomnia, irritability, tics).

Special Populations:

- *Elderly*: Caution with polypharmacy and comorbid conditions; has not been studied for use in this population.
- *Pregnancy*: Category C; based on animal data, they may cause fetal harm.
- *Lactation*: Possibly unsafe.
- *Children:* Has not been studied in children younger than 6 years; should not be used in children younger than 3 years.

LITHIUM (*Eskalith, Lithobid*)

Classification: Non-anticonvulsant mood stabilizer first-line.

Indications: Used to treat mania in bipolar disorder. Initially, lithium is often used in conjunction with antipsychotic drugs as it can take up to a month for it to have an effect. Lithium is also used as prophylaxis for depression and mania in bipolar disorder. It is sometimes used for other psychiatric disorders, such as cycloid psychosis and major depressive disorder.

Available Forms: Capsule, 150, 300, and 600 mg; slow-release tablet, 300 mg; controlled-release tablet, 300 and 450 mg; syrup, 300 mg (8 mEq lithum/5 mL).

Dosage: *Adults:* 300–600 mg/day PO up to qid, or 900 mg controlled-release tablet PO every 12 hr. Increase dosage based on blood levels. Recommended therapeutic lithium levels are 1–1.5 mEq/L for acute mania and 0.6–1.2 mEq/L for maintenance therapy.

Administration:
- PO.
- Give the drug after meals with plenty of water to minimize GI upset.
- Do not crush controlled-release tablets.

Side Effects:
- CNS: Fatigue, lethargy, coma, epileptiform seizures, tremors, drowsiness, headache, confusion, restlessness, dizziness, psychomotor retardation, blackouts, EEG changes, impaired worsened mental syndrome, impaired speech, ataxia, incoordination.
- CV: Arrhythmias, bradycardia, reversible ECG changes, hypotension.
- EENT: Tinnitus, blurred vision.
- GI: Vomiting, anorexia, diarrhea, thirst, nausea, metallic taste, dry mouth, abdominal pain, flatulence, indigestion.
- GU: Polyuria, renal toxicity with long-term use, glycosuria, decreased creatinine clearance, albuminuria.
- Hematologic: Leukocytosis with leukocyte count of 14,000–18,000/mm.
- Metabolic: Transient hyperglycemia, goiter, hypothyroidism, hyponatremia.
- Musculoskeletal: Muscle weakness.
- Skin: Pruritus, rash, diminished or absent sensation, drying and thinning of hair, psoriasis, acne, alopecia.
- Other: Ankle and wrist edema.

Drug Interactions:
- ACE inhibitors, aminophylline, sodium bicarbonate, urine alkalizers, calcium channel blockers (verapamil), carbamazepine, fluoxetine, methyldopa, NSAIDs, probenecid, neuromuscular blockers, thiazide diuretics, diuretics.
- Diuretics, especially loop diuretics, may inhibit lithium elimination and increase lithium toxicity.
- Caffeine may decrease lithium levels and drug effects. Advise patients who ingest large amounts of caffeine.

Pharmacokinetics:
- Probably alters chemical transmitters in the CNS, possibly by interfering with ionic pump mechanisms in brain cells, and may compete with or replace sodium ions. The peak action is between 30 min and 1 hr.
- *Half-life:* 18 hr (adolescents); 36 hr (elderly).

Precautions:
- May increase glucose and creatinine levels.
- May decrease sodium, T3, T4, and protein-bound iodine levels.
- May increase WBC and neutrophil counts.
- Contraindicated if therapy cannot be closely monitored.
- Avoid using in pregnant patients unless benefits outweigh risks.
- Use with caution in patients receiving neuromuscular blockers and diuretics; in elderly or debilitated patients; and in patients with thyroid disease, seizure disorder, infection, renal or CV disease, severe debilitation or dehydration, or sodium depletion.
- *Alert:* Drug has a narrow therapeutic margin of safety. Determining drug level is crucial to the safe use of the drug. Do not use the drug in patients who cannot have regular tests done. Monitor levels 8–12 hr after the first dose, the morning before the second dose is given, 2 or 3 times weekly for the first month, and then weekly to monthly during maintenance therapy.
- When the drug level is less than 1.5 mEq/L, adverse reactions are usually mild.
- Monitor baseline ECG, thyroid studies, renal studies, and electrolyte levels.
- Check fluid intake and output, especially when surgery is scheduled.
- Weigh patient daily; check for edema or sudden weight gain.
- Adjust fluid and salt ingestion to compensate if excessive loss occurs from protracted diaphoresis or diarrhea. Under normal conditions, patient's fluid intake should be 2.5–3 L daily; patient should follow a balanced diet with adequate salt intake.
- Check urine-specific gravity and report levels below 1.005, which may indicate diabetes insipidus.
- Drug alters glucose tolerance in diabetics. Monitor glucose level closely.
- Perform outpatient follow-up of thyroid and renal functions every 6–12 months. Palpate thyroid to check for enlargement.

Patient and Family Education:
- Tell the patient to take the drug with plenty of water and after meals to minimize GI upset.
- Explain the importance of having regular blood tests to determine drug levels; even slightly high values can be dangerous.
- Warn patients and caregivers to expect transient nausea, large amounts of urine, thirst, and discomfort during the first few days of therapy and to watch for evidence of toxicity (diarrhea, vomiting, tremor, drowsiness, muscle weakness, incoordination).
- Instruct patients to withhold one dose and call the prescriber if signs and symptoms of toxicity appear, but do not stop drug abruptly.
- Warn patients to avoid hazardous activities that require alertness and good psychomotor coordination until the CNS effects of drug are known.
- Tell patients not to switch brands or take other prescription or OTC drugs without the prescriber's guidance.

- Tell patients to wear or carry medical identification at all times.
- Expect transient nausea, large amounts of urine, thirst, and discomfort during first few days of therapy; watch for evidence of toxicity (diarrhea, vomiting, tremor, drowsiness, muscle weakness, uncoordination).

Special Populations:

- *Elderly*: Initial dose reduction and possibly lower maintenance doses due to age-related changes and sensitivity to side effects.
- *Pregnancy*: Category D; positive evidence of fetal harm has been demonstrated.
- *Children*: Not approved in children less than 12 years of age; use with caution and monitor closely for side effects and suicidality. Children may experience more frequent and severe side effects.

LOPERAMIDE (*Imodium*)

Classification: Anti-diarrheal drug.

Indications: Diarrhea associated with opiate withdrawal.

Available Forms: Capsule, 2 mg.

Dosage: Four mg (two capsules) followed by 2 mg (one capsule) after each unformed stool. Daily dose should not exceed 16 mg (eight capsules). Clinical improvement is usually observed within 48 hr.

Administration:
- PO with a full glass of water.
- May be taken with or without food.
- *Missed dose:* Take as soon as remembered. Skip the missed dose if it is almost time for the next scheduled dose. Do not take extra medicine.

Side Effects: Anaphylactic reactions (rare); stomach pain/bloating; diarrhea that is bloody, watery, or worsening; flu-like symptoms with skin reaction/rash; dizziness; fatigue; constipation; mild stomach pain; mild skin pruritus, rash.

Drug Interactions: When given concurrently with saquinavir, the therapeutic efficacy of saquinavir should be closely monitored.

Pharmacokinetics:
Half-life: 11 hr.

Precautions:
- Discontinue if constipation, abdominal distention, or ileus develop.

Patient and Family Education:
- Do not take if stools are bloody, black, or tarry.
- Do not use this medication to treat diarrhea caused by antibiotic use.
- Drink extra water to prevent dehydration.
- It may take up to 48 hr for symptoms to improve.
- Call health care provider if symptoms do not improve after treatment for 10 days.
- Exercise caution when driving or operating machinery.

Special Populations:
- *Elderly:* No dose adjustments required.
- *Renal impairment:* No dose adjustments required.
- *Hepatic impairment*: Use with caution; monitor for signs of CNS toxicity.
- *Pregnancy:* Category C.
- *Lactation:* Contraindicated.
- *Children and adolescents*: Use with caution; monitor fluid and electrolyte balance.

LORAZEPAM (*Ativan*)

Classification: Benzodiazepine (BZD).

Indications: Used for sedation during hypnosis.

Available Forms: Tablet, 0.5, 1, and 2 mg.

Dosage: *Adults:* Procedural sedation: 0.05 mg/kg IM ×1; maximum dose 4 mg. *Procedural sedation:* 0.05 mg/kg IM; maximum 4 mg/dose given 2 hr before operation. *Elderly:* IV: 0.044–0.0 5 mg/kg ×1; maximum dose 4 mg/dose; 2 mg/dose 15–20.4 mg/dose; 2 mg/dose in elderly given 15–20 min prior to hypnosis. *Children:* 0.05 mg/kg PO; IM or IV: 0.05 mg/kg PO, ×1; maximum dose 2 mg/dose. Give PO dose 1 hr.

- Give PO 1 hr prior to procedures; give IM dose more than 2 hr from prior dose and IV 15–20 min prior to procedure.

Administration:

- Can be given PO, IM, and IV. Missed doses need to be given as soon as possible; however, if it is time for the next dose, do not administer a double dose.
- This drug can be taken with food to help prevent stomach irritation.
- Smoking can decrease the effectiveness of this drug.
- If a dose is missed, it should be taken as soon as possible. If it is time for the next dose, skip the missed dose and resume usual dosing schedule.

Side Effects: Dizziness, weakness, and unsteadiness; a few other side effects include nausea, constipation, and fatigue.

Drug Interactions:

- The administration of lorazepam (*Ativan*) and sodium oxybate (*Xyrem*) has been contraindicated as this combination may increase the risk of CNS and respiratory depression.
- The following drugs should be used with great caution because they may increase the risk of CNS depression: aripiprazole (*Abilify*), dexmedetomidine (*Precedex*), and propofol (*Diprivan*).
- Probenecid may increase lorazepam (*Ativan*) levels and risk of toxicity. Before taking drugs that cause drowsiness such as antihistamines (diphenhydramine), anti-seizure drugs (carbamazepine), medicine for sleep (sedatives), muscle relaxants, narcotic pain relievers (codeine), psychiatric medicines (phenothiazines such as chlorpromazine, or tricyclics such as amitriptyline), and/or tranquilizers, notify health care provider.

Pharmacokinetics:

- The drug enhances GAB.
- Metabolized by the liver (CYP450)
- Enhances GABA effects, which inhibit the transmission of nerve signals and thus reduces nervous excitation.
- Metabolized by the liver (CYP450)
- *Half-life:* 14 hr.

Precautions: Avoid abrupt withdrawal for long-term use, use of alcohol in depressed patients, intra-arterial administration, and use in drug-abuse patients.

Patient and Family Education:

- Notify health care provider if there are problems with the liver or kidneys, alcohol or drug consumption, glaucoma, lung problems, or if treated for psychiatric disorders.
- Grapefruit juice should be avoided as it slows the body's breakdown of the drug and can lead to dangerous blood concentrations.
- Herbs with sedative effects should be avoided.
- Alcoholic beverages should be avoided. Lithium with lorazepam can cause children's body temperature to drop.
- Use of CNS depressants can cause respiratory depression.
- Birth control pills, theophylline, caffeine, and other stimulants can reduce the effects of lorazepam.
- Heparin, macrolide antibiotics, probenecid, quetiapine, and valproic acid can increase the effects of lorazepam.
- Store in a tightly closed container and keep at room temperature away from excess heat and moisture.

Special Populations:

- *Elderly*: Caution is advised. Because of its sedative property effect and increased risk of falls, all benzodiazepines are included on Beers List of Potentially Inappropriate Medications for Geriatrics.
- *Renal impairment:* No adjustment is needed if using the oral form; however, dose may need to be adjusted if using the IV form.
- *Hepatic impairment:* May require decreasing the dose, and if patient has hepatic failure or impaired liver function use should be avoided.
- *Pregnancy*: Category D. This drug should not be used in women who are pregnant. Lorazepam is associated with an increased risk of birth defects.
- *Lactation:* Should not be used in women who are breastfeeding.
- *Children*: Safety has not been established in children under 12 years; long-term effects are unknown in children less than 12 years old.

MEMANTINE (*Namenda*)

Classification: N-Methyl-D-Aspartate (NMDA) receptor antagonist.

Indications: Used to treat moderate to severe AD.

Available Forms: Immediate-release tablet; oral solution; extended-release capsule.

Dosage: *Oral dosage: Immediate-release tablets or oral solution:* 5 mg PO once daily, titrate slowly to increase the dose by 5 mg/week over a 3-wk period to achieve target dose of 10 mg PO bid at week 4. *Extended-release capsules:* 7 mg PO once daily. Increase dose in increments at minimum intervals of 1 wk up to the target dose of 28 mg once daily, making sure previous dose is well tolerated before advancing.

Administration:
- Oral, IV.
- Take with or without food.
- Do not cut/divide/chew.
- May sprinkle contents on applesauce.

Side Effects: Extreme tiredness; dizziness; confusion; headache; sleepiness; constipation; vomiting; pain anywhere in the body, especially the back; coughing. *Serious side effects that may require medical attention:* Shortness of breath; hallucination; Stevens–Johnson syndrome; seizures; suicidal ideation.

Drug Interactions: Dofetilide; procainamide; quinidine; acetazolamide; adefovir; alkalinizing agents; amantadine; antimuscarinics; bromocriptine; cimetidine; dextromethorphan; digoxin; entecavir; ketamine; lamivudine, 3CT; levodopa; metformin; methazolamide; midodrine; morphine; pergolide; pramipexole; quinine; ropinirole; trimethoprim; trospium; vancomycin; amiloride; hydrochlorothiazide; nicotine; ranitidine; triamterene.

Pharmacokinetics:
- *Peak concentration:* Immediate-release: 3–7 hr; extended-release: 9–12 hr.
- Bioavailability 100%
- Can be detected in the CSF 30 min after IV infusion.
- *Half-life:* Average 60–80 hr.

Precautions:
- Patients with severe hepatic disease; renal failure.
- Memantine has not been evaluated in patients with known seizure disorders. Patients who are taking memantine and have seizures or a history of seizure disorder should be monitored closely.

Patient and Family Education:
- Do not divide, cut, or chew the capsules.
- Contents of capsule may be sprinkled on applesauce.

- Store memantine at room temperature and away from excess heat and moisture.
- Throw away any medication that is outdated or no longer needed.
- Take the missed dose as soon as remembered. However, if it is almost time for the next dose, skip the missed dose and continue regular dosing schedule. Do not take a double dose to make up for a missed one.

Special Populations:

- *Hepatic impairment:* In patients with mild to moderate hepatic impairment, no dose adjustments are needed; however, caution is advised when using this drug in patients with severe hepatic dysfunction.
- *Renal impairment*: In patients with CrCl 30 mL/min or greater, no adjustment is needed; if CrCl is 5–29 mL/min based on Cockcroft–Gault equation, a target dose of 5 mg PO twice daily of immediate release is recommended or a target dose of 14 mg/day of the extended-release capsule is recommended. Not recommended for patients with CrCl less than 5 mL/min.

METHADONE HCl (*Methadose Oral Concentrate*)

Classification: Partial opioid agonist.

Indications: Detoxification treatment of opioid and maintenance treatment for opiate dependence.

Available Forms: Oral concentrate, 10 mg/1 mL.

Dosage: *Short-term detoxification:* Titrated to a daily dose of 40 mg in divided doses. *Maintenance treatment:* 80–120 mg/day.

Administration:
- PO with a full glass of water.
- May be taken with or without food.
- *Missed dose:* Take as soon as remembered. Skip the missed dose if it is almost time for the next scheduled dose. Do not take extra medicine.

Side Effects: Dizziness, sedation; nausea, vomiting, sweating; bradycardia, palpitations; dysphoria, euphoria; respiratory depression, pulmonary edema.

Drug Interactions:
- May experience withdrawal symptoms when given opioid antagonists, mixed agonist/antagonists, and partial agonists.
- Antiretroviral agents result in increased clearance and decreased plasma levels.
- Rifampin may cause decrease in serum levels and possible withdrawal symptoms.
- Phenytoin may cause up to 50% decrease in serum levels, leading to withdrawal symptoms.
- St. John's wort, phenobarbital, and carbamazepine may result in withdrawal symptoms.

Pharmacokinetics:
Half-life: 8–59 hr.

Precautions:
- Death has been reported when methadone is abused in conjunction with BZDs.
- Caution should be used when giving drugs capable of inducing electrolyte disturbance that may prolong the QT interval.
- Should not be abruptly discontinued.
- Use with caution in hypothyroidism, Addison's disease, and prostatic hypertrophy and respiratory insufficiency.
- May result in hypotension in patients who have inability to maintain stable blood pressure.
- Use with extreme caution with head injuries.

Patient and Family Education:
- Take exactly as prescribed. Do not take in larger or smaller amounts or for longer than recommended.
- Can be taken with or without food.

- Exercise caution when driving or operating machinery due to sedative effects of medication.
- Do not drink alcohol.
- Do not stop taking the drug abruptly.

Special Populations:

- *Elderly:* Use with caution due to sedative effects.
- *Renal impairment:* Use with caution.
- *Hepatic impairment*: Use with caution.
- *Pregnancy:* Category C. There are no controlled studies of methadone use in pregnant women that can be used to establish safety.
- *Lactation:* Some drug is found in mother's breast milk; discontinue drug or bottle feed.
- *Children and adolescents*: Safety and efficacy has not been established.

METHYLPHENIDATE TRANSDERMAL (*Daytrana Patch*)

Classification: Methylphenidate (Amphetamine derivative).

Indications: Indicated for the treatment of ADHD in children and adults.

Available Forms: Transdermal patch, 10, 15, 20, and 30 mg/9 hr patch.

Dosage: Dosage should be individualized according to the therapeutic needs and response of the patient. All stimulant preparations should be administered at the lowest effective dosage. *Children: Older than 6 years:* 1 patch daily × 9 hr, off × 15 hr; start, 10 mg/9 hr patch daily, may increase to next size patch every 7 days; maximum, 30 mg/9 hr patch daily. *Adults: 18–65 years old:* 1 patch daily × 9 hr, off × 15 hr; start, 10 mg/9 hr patch daily, may increase to next size patch every 7 days; maximum, 30 mg/9 hr patch daily.

Administration: Apply same titration when converting from PO; apply to hip 2 hr before desired effect; drug effects may persist 5 hr after patch removal; rotate sites; do not alter/cut patch.

Side Effects: Decreased appetite; dizziness; dry mouth; irritability; insomnia; upper abdominal pain; nausea and/or vomiting; weight loss; headaches; anxiety; psychiatric events: increase in manic states for bipolar patients, aggression, tics, tremors; long-term growth suppression: patients should be monitored throughout treatment, if there appears to be growth suppression, the treatment should be discontinued; rash; pyrexia; palpitations, tachycardia, elevated BP, sudden death, MI, cardiomyopathy; Stevens–Johnson syndrome and toxic epidermal necrolysis; impotence, libido changes; skin irritation.

Drug Interactions: Urinary acidifying agents; MAOIs; adrenergic blockers; antihistamines; antihypertensives; veratrum alkaloids; ethosuximide; TCAs; meperidine; phenobarbital; phenytoin; chlorpromazine; *Haldol*; lithium; norepinephrine; propoxyphene.

Pharmacokinetics:
- Absorbed by the GI tract.
- Noncatecholamine sympathomimetic amines with CNS-stimulant activity.
- The mode of therapeutic action in ADHD is not known. Thought to block the reuptake of norepinephrine and dopamine into the presynaptic neuron and increase the release of these monoamines into the extraneural space.
- *Metabolism:* Liver, mainly excreted in the urine.
- *Half-life:* 3.5 hr.

Precautions:
- Advanced arteriosclerosis, symptomatic cardiovascular disease, moderate-to-severe HTN.
- Hyperthyroidism.
- Known hypersensitivity or idiosyncratic reaction to sympathomimetic amines.
- Glaucoma.
- Agitated states.

- Patients with a history of drug abuse have a high potential for abuse with this drug; administration of Amphetamines for an extended period of time may lead to drug dependence. Particular attention should be paid to the possibility of patients obtaining this class of medication for nontherapeutic use or distribution to others, and the drugs should be prescribed or dispensed sparingly.
- During or within 14 days following the administration of MAOIs, hypertensive crisis may result.
- Preexisting psychosis.
- Seizure history: Some studies have shown the potential for lowering the seizure threshold.

Patient and Family Education:

- Store at room temperature, protected from light.
- Keep out of reach of children.
- Seek medical care for any signs of heart problems (chest pain, shortness of breath), fainting, psychotic symptoms, overdose, or any other concerns.
- Routinely assess weight and BP.
- Treatment should be initiated at low doses and then titrated over 2–4 wk until an adequate response is achieved or unacceptable adverse effects occur.
- Dispose of properly, away from children or animals (remnant medication may persist on patch).
- If one stimulant is not effective, another should be attempted before second-line medications are considered. Although some children benefit from daily stimulant therapy, weekend and summer "drug holidays" are suggested for children whose ADHD symptoms predominantly affect schoolwork or to limit adverse effects (e.g., appetite suppression, abdominal pain, headache, insomnia, irritability, tics).

Special Populations:

- *Elderly:* Caution with polypharmacy and comorbid conditions; has not been studied for use in this population.
- *Pregnancy:* Category C; based on animal data, they may cause fetal harm.
- *Lactation:* Possibly unsafe.
- *Children:* Has not been studied in children younger than 6 years; should not be used in children younger than 3 years.

METHYLPHENIDATE (*Methylin*)

Classification: Methylphenidate (Amphetamine derivative).

Indications: Used primarily to treat narcolepsy and ADHD.

Available form: Tablets, capsule, 10, 20, 30, 40, and 50 mg.

Dosage: Five to 15 mg PO bid. Start with 10 mg; increase to the therapeutic needs and response of the patient. All stimulant preparations should be administered at the lowest effective dose. *Children: Older than 6 years:* 20–60 mg PO qam; start, 20 mg PO qam; increase 10–20 mg/day q week. Give divided doses at 4–6 hr intervals.

Administration:
- PO with a glass of water.
- May be sprinkled on soft food; give before meals.

Side Effects: Decreased appetite; dizziness.
- Palpitations; stroke; myocardial infarction; sudden death in patients with structural cardiac defects; hypertension; arrhythmia; overstimulation; restlessness; seizures; infection; abnormal thinking; weight loss; somnolence; changes in libido; urticaria; dry mouth; irritability; insomnia; upper abdominal pain; nausea and/or vomiting; headaches; anxiety; psychiatric events: increase in manic states for bipolar patients, aggression, tics, tremors; long-term growth suppression: patients should be monitored throughout treatment, if there appears to be growth suppression, the treatment should be discontinued; rash; pyrexia; palpitations, tachycardia, elevated BP, sudden death, MI, cardiomyopathy; Stevens–Johnson syndrome; toxic epidermal necrolysis; impotence, libido changes.
- *Side effects that usually do not require medical attention*: Anxiety; insomnia; diarrhea; constipation; dizziness; nausea; nervousness; rhinitis; dry mouth.
- *Contraindications:* Advanced arteriosclerosis; symptomatic cardiovascular disease; moderate-to-severe hypertension; hyperthyroidism; glaucoma; history of drug abuse, agitated states; or within 14 days of MAOIs.

Drug Interactions: Drug may interact with urinary acidifying agents; the following medications: CNS depressants (including alcohol); MAOIs; SSRIs, adrenergic blockers; antihistamines; antihypertensives; CNS stimulants; veratrum alkaloids; ethosuximide; TCAs; meperidine; phenobarbital; phenytoin; warfarin chlorpromazine; *Haldol*; lithium; norepinephrine; propoxyphene.

Pharmacokinetics:
- Stimulant; blocks reuptake of NE and dopamine.
- Absorbed by the GI tract.
- Amphetamines are noncatecholamine sympathomimetic amines with CNS-stimulant activity.
- The mode of therapeutic action in ADHD is not known. Amphetamines are thought to block the reuptake of norepinephrine and dopamine into the presynaptic neuron and increases the release of these monoamines into the extraneuronal space.

- Food prolongs time to maximum concentration by 2.5 hr.
- Peak plasma levels are reached in 3 hr.
- *Half-life:* Average is 12 hr (mean half-life average shortened by 1–2 hr in children).
- *Metabolism:* Liver, mainly excreted in the urine.
- *Half-life:* 3–4 hr.

Precautions:

- See client as often as necessary to ensure drug is promoting positive cognitive and behavioral results.
- Advise patient to report any new rashes immediately.
- Discontinue drug immediately if any rash is reported.
- Advise patient of risk for transient psychosislike symptoms (ideas of reference, paranoid delusions, and auditory hallucinations) and aggressive behaviors.
- Client may develop drug tolerance or dependence.
- Advanced arteriosclerosis, symptomatic cardiovascular disease, moderate-to-severe HTN.
- Hyperthyroidism.
- Known hypersensitivity or idiosyncratic reaction to sympathomimetic amines.
- Glaucoma.
- Agitated states.
- Patients with a history of drug abuse: Amphetamines have a high potential for abuse.
- May experience transient palpitations and EKG changes.
- Avoid using in clients with left ventricular hypertrophy or mitral valve prolapse.
- During or within 14 days following the administration of MAOIs, hypertensive crisis may result.
- Preexisting psychosis.
- Seizure history: Some studies have shown the potential for lowering the seizure threshold.
- Potential for growth inhibition in pediatric clients.
- Advise patient not to suddenly discontinue medication, taper off.

Patient and Family Education:

- Do not operate heavy machinery or equipment until reasonably certain that drug will not affect ability to engage in such activities.
- Discontinue medication immediately if rash is noted and follow up with provider.
- Store at room temperature between 15°C and 30°C (59°F–86°F). Throw away any unused medication after the expiration date.
- May experience palpitations.
- Have patient monitor BP at home and notify provider of persistent BP elevations.
- Discontinue or hold medication in presence of chest pain and do not restart until reassessed by provider.
- May experience transient blurred vision.
- Keep out of reach of children.
- Seek medical care for any signs of heart problems (chest pain, shortness of breath), fainting, psychotic symptoms, overdose, or any other concerns.

- Routinely assess weight and BP.
- Treatment should be initiated at low doses and then titrated over 2–4 wk until an adequate response is achieved or unacceptable adverse effects occur.
- If one stimulant is not effective, another should be attempted before second-line medications are considered. Although some children benefit from daily stimulant therapy, weekend and summer "drug holidays" are suggested for children whose ADHD symptoms predominantly affect schoolwork, or to limit adverse effects (e.g., appetite suppression, abdominal pain, headache, insomnia, irritability, tics).

Special Populations:

- *Elderly*: More sensitive to stimulants. Use lowest effective dose. Caution with polypharmacy and comorbid conditions.
- *Hepatic impairment:* Modify dose by one-half accordingly.
- *Pregnancy:* Category C; based on animal data, they may cause fetal harm.
- *Lactation:* Excreted in breast milk. No human possibly unsafe studies have been performed. Not recommended in breastfeeding mothers.
- *Children*: For use in children 12 years of age or older. Has not been studied in children younger than 6 years; should not be used in children younger than 3 years.

MIDAZOLAM (*Versed*)

Classification: Benzodiazepine (BZD).

Indications: Used for relaxation during hypnotic sessions.

Available Forms: Syrup (liquid); injectable form, 1, 2, and 5 mg/mL; preservative-free solution.

Dosage: IM, IV, PO. Schedule IV drug; requires a prescription with a maximum of 5 refills/6 mo.

Procedural IV Dosing:

- *Adults under 60 years:* 1 mg IV every 2–3 min with a maximum of 2.5 mg/dose. Cumulative doses over 5 mg are rarely needed. *Over 60 years:* Maximum dose 1.5 mg total. Cumulative doses over 3.5 mg are rarely needed. *Children: 6 month to 5 years:* 0.05–0.1 mg/kg ×1; repeat every 2–3 min as needed. Maximum 0.6 mg/kg total. Cumulative dose rarely over 6 mg. *Children 6 to 12 years:* 0.025–0.05 mg/kg ×1; repeat every 2–3 min before procedure. Maximum dose 0.4 mg. Cumulative dose rarely above 10 mg. *Children over 12 years:* 0.5–2 mg IV ×1; repeat every 2–3 min when needed. Cumulative dose above 10 mg is rarely needed.

PO:

- *Children over 6 years:* 0.25–0.5 mg/kg PO ×1 with a maximum of 20 mg. Give 20–30 min before procedure. *Under 6 years:* May need up to 1 mg/kg/dose.

IM:

- *Children over 6 years:* 0.1–0.15 mg/kg IM ×1 with maximum of 0.5 mg/kg total. Cumulative dosing over 10 mg rarely needed. Give 15–30 min before procedure.

Side Effects: Nausea, vomiting, and reduced heart rate. Serious side effects include difficulty breathing, irregular heart rate, allergic reactions, respiratory depression and/or cardiac arrest, airway obstruction, oxygen desaturation, apnea and sometimes death.

Drug Interactions: Substrate of CYP3A4 (major). Avoid concomitant use with efavirenz, protease inhibitors, fluconazole, isoniazid, macrolide antibiotics, propofol, and certain statins. Avoid grapefruit juice with oral syrup.

- Given by slow IV administration (more than 2 min) with careful attention to proper venous placement to avoid extravasation.
- Do not give rapid IV injection in neonates, as severe hypotension and seizures were reported.
- This drug can also be given IM.
- The sedative effect of IV midazolam is accentuated by any other drugs that may depress the central nervous system, particularly narcotics such as morphine.

- Caution is also advised when midazolam is administered concomitantly with drugs that are known to inhibit the P450 34A enzyme system such as cimetidine (*Tagamet*), erythromycin, diltiazem (*Cardizem*), verapamil (*Calan/Isoptin/Verelan*), ketoconazole, and itraconazole (*Sporanox*).
- Both cimetidine and ranitidine increased the mean steady-state concentration of blood level for midazolam.
- Erythromycin doubled the half-life of midazolam.
- No significant adverse interactions have been noted with commonly used premedications or drugs used during anesthesia, including atropine, scopolamine, diazepam, hydroxyzine, succinylcholine, or topical local anesthetics.

Pharmacokinetics:
- *Absorption:* Oral = rapid.
- *Onset:* IM, 15 min; IV, 1–5 min; PO, 30–60 min.
- *Duration:* Mean = 2 hr; up to 6 hr.
- *Metabolism:* Hepatic via CYP3A4; 95% protein binding.
- Metabolized by the liver (CYP450: 3A4 substrate) and excreted in the urine.
- Drug binds to benzodiazepine receptors and enhances GABA effects.
- *Half-life:* 1–2. 5 hr; prolonged in cirrhosis, CHF, obesity, elderly.

Precautions:
- Loss of consciousness.
- May cause severe respiratory depression or apnea; appropriate resuscitative equipment must be available.
- Titrate dose cautiously.
- Decrease dose by 30% if narcotics or other CNS depressants are given. Caution must be exercised in patients with compromised respiratory function or renal or hepatic impairment.
- Use only in hospital/ambulatory care setting with continuous respiratory and cardiac monitoring, appropriate ventilation/intubation equipment, and personnel trained/skilled in airway management.
- One dedicated person other than practitioner performing the procedure should continuously monitor deeply sedated pediatric patients.
- Reactions such as agitation, involuntary movements, hyperactivity, and combativeness have been reported in adult and pediatric patients.
- Should such reactions occur, caution should be exercised before continuing administration.

Patient and Family Education:
- Avoid use of alcohol or prescription or OTC sedatives; driving; or tasks that require alertness for a minimum of 24 hr after administration.
- There may be some loss of memory following administration.
- Tell practitioner if pregnant or nursing.
- Midazolam is associated with a high incidence of partial or complete impairment of recall for the next several hours.
- Do not mix alcohol or any other depressant drug and midazolam without the health care provider's knowledge.
- Do not operate hazardous machinery or a motor vehicle until the effects of the drug have subsided or until one full day after anesthesia.

Special Populations:

- *Elderly*: Glaucoma, angle closure, COPD, and congestive heart failure are contraindications to the sedative effects. decreased for elderly or debilitated patients. Because of its sedative property and increased risk of falls, all benzodiazepines are included on Beers List of Potentially Inappropriate Medications for Geriatrics.
- *Pregnancy:* Pregnancy category D; has shown positive evidence of human fetal risk.
- *Lactation:* No breast feeding for 24 hr after administration. Safety unknown as there is inadequate literature to assess risk.
- *Renal impairment:* Caution should be used and renal function checked prior to beginning treatment with dose adjustment as necessary.
- *Hepatic impairment:* Caution should be used and liver function checked prior to beginning treatment with dose adjustment as necessary.
- *Children*: Use caution in neonates, as rapid IV injection can cause severe hypotension and seizures.

MIRTAZAPINE (*Remeron*)

Classification: Noradrenergic and specific serotonergic antidepressant (NaSSA).

Indications: Mirtazapine is used to treat depression.

Available Forms: Tablet, 7.5, 15, 30, and 45 mg.

Dosage: Starting dose, 5–15 mg nightly; titrate up to 15–45 mg/day. *Adults:* 15–45 mg PO at bedtime. Initial dose is usually 15 mg PO at bedtime. *Children:* Dosing is currently unavailable or not applicable.

Administration: PO, with or without food, at bedtime.

Side Effects:
- *Serious:* Agranulocytosis.
- Anticholinergic effects; *blood dyscrasias:* neutropenia and agranulocytosis; orthostatic hypotension or hypertension; somnolence and sedation, dizziness, tremor, confusion; increased risk for hyperlipidemia; dry mouth; significant appetite increase and weight gain (greater than 7% body mass); asthenia; decreased appetite, hypercholesteremia, constipation, hyperglyceridemia, influenza-like symptoms, abnormal dreams, abnormal thinking, tremor, confusion, peripheral edema, myalgia, back pain, urinary frequency.

Drug Interactions:
- *Sedatives:* Effects may be exacerbated by use of other sedatives.
- *MAOIs:* Risk for drug toxicity.
- *CNS stimulants* (e.g., amphetamines): May lower.
- Given PO; regular tablet is given with water.
- To take the disintegrating tablets (*RemeronolTab*), keep the tablet in its blister pack until ready to use. Open the package and peel the foil from the tablet blister. Do not push a tablet through the foil or it may break the tablet. Using dry hands, remove the tablet, place in mouth, and let it dissolve. Do not swallow the tablet whole. Do not chew it. Swallow several times and flush it away with water.

Pharmacokinetics: Metabolized extensively in the liver (CYP450 1A2, 2C9, 2D6, and 3A4) and excreted in the urine (75%) and feces (15%). Prolonged half-life of 20–40 hr, which is increased further in patients with hepatic or renal impairment.

Precautions: Caution should be exercised if the patient has the following conditions: bipolar disorder, hypotension, cerebrovascular diagnosis, hypovolemia, seizure threshold disorder, dehydration.
- *Anticholinergic drugs* (e.g., antihistamines): Increase effects.
- Use with caution in patients with hepatic impairment or renal impairment.
- *Patients at risk for seizure disorders:* May lower seizure threshold.
- Monitor with CBC and history for signs of agranulocytosis or severe neutropenia.
- Low incidence of sexual dysfunction.
- Usually dosed at bedtime due to associated drowsiness (may be helpful in patients with insomnia or anxiety)

- May alter liver function.
- Adverse effects and side effects are commonly observed before therapeutic effects.

Patient and Family Education:

- Take 60–90 min prior to bedtime, due to associated drowsiness. Do not drive until the effect of this medication is known.
- May cause stomach upset or blood pressure changes (particularly with getting up suddenly).
- This medication may increase appetite or craving for carbohydrates. Monitoring diet and exercise is important.
- May take up to 4–8 wk to show its maximum effect at this dose, but some may see symptoms of depression improving in as little as 2 wk.
- If planning on becoming pregnant or are pregnant, discuss the benefits versus the risks of using this medicine while pregnant.
- Because this medicine is excreted in the breast milk, nursing mothers should not breastfeed while taking this medicine without prior consultation with a psychiatric nurse practitioner or psychiatrist. Newborns may develop symptoms including feeding or breathing difficulties, seizures, muscle stiffness, jitteriness, or constant crying.
- Do not stop taking this medication unless the health care provider directs. Report side effects or worsening symptoms to the health care provider promptly.
- Dosage should be adjusted to reach remission of symptoms and treatment should continue for at least 4–9 months following remission of symptoms.
- Avoid discontinuing the drug without tapering the dosage.
- Talk to the health care provider about any other medications in use. Mirtazapine is not FDA approved for use in the elderly because they may be more sensitive to the effects of the drug. Elderly patients should receive a lower starting dose.
- Keep these medications out of the reach of children and pets.

Special Populations:

- *Elderly*: Older individuals tend to be more sensitive to medication side effects such as hypotension and anticholinergic effects. They often require adjustment of medication doses for hepatic or renal dysfunction. Recommended to begin at lower dosage.
- *Pregnancy:* Psychotherapy is the initial choice for most pregnant patients with DD. Category C, not recommended during pregnancy, especially first trimester, as there are no adequate studies during pregnancy. Animal studies show adverse fetal effects, but no controlled human studies have been conducted.
- *Children:* Not recommended. There is an increased risk of suicidality in children, adolescents, and young adults, especially during the first months of treatment. Mirtazapine is not approved by the FDA for use in children. Use only after consultation with psychiatric specialist.
- *Renal impairment:* Dosage has not been defined.
- *Hepatic impairment:* Dosage has not been defined.

MODAFINIL (*Provigil*)

Classification: Stimulant, non-amphetamine

Indications: Used primarily to treat sleep disorders that result in excessive sleepiness such as narcolepsy, obstructive sleep apnea, hypopnea syndrome, and shift work sleep disorder.

Available Forms: Tablet, 100 and 200 mg.

Dosage: Two hundred mg PO when prepared for long periods of wakefulness. Maximum dose is 400–800 mg. Rarely more effective with dosing greater than 200 mg.

Administration:
- PO with a glass of water.
- Take with or without food.

Side Effects:
- Hypertension; arrhythmia; cataplexy; dysmenorrhea; dyspnea; infection; abnormal thinking; weight loss; UTI.
- *Side effects that usually do not require medical attention*: Anxiety; back pain; diarrhea; dizziness; dyspepsia; headache; insomnia; nausea; nervousness; rhinitis.

Drug Interactions: Drug may interact with the following medications: antifungals; CNS depressants (including alcohol); MAOIs; macrolides; phenytoin; estrogen; cyclosporine; SSRIs; TCAs; CNS stimulants; carbamazepine.

Pharmacokinetics:
- Stimulant, exact mechanism of action unknown. Believed to have similar wake-promoting actions as sympathomimetic agents.
- Rapid absorption in absence of food.
- Peak plasma levels are reached in 2–4 hr.
- Steady state reached within 2–4 days of dosing.
- *Half-life:* Average is 15 hr once steady state is reached.

Precautions:
- See client as often as necessary to ensure drug is promoting wakefulness, determine compliance, and review side effects.
- Advise patient to report any new rashes immediately.
- Discontinue drug immediately if any rash is reported.
- Advise patient of risk for transient psychosislike symptoms (ideas of reference, paranoid delusions, and auditory hallucinations).
- May experience transient palpitations and EKG changes.
- Avoid using in clients with left ventricular hypertrophy or mitral valve prolapse.

Patient and Family Education:
- Do not operate heavy machinery or equipment until reasonably certain that drug will not affect ability to engage in such activities.

- Discontinue medication immediately if rash is noted and follow up with provider.
- May experience palpitations.
- Have patient monitor BP at home and notify provider of persistent BP elevations.
- Store at room temperature between 20°C and 25°C (68°F–77°F).

Special Populations:

- *Elderly*: More sensitive to stimulants. Use lowest effective dose.
- *Hepatic impairment:* Modify dose by one-half accordingly.
- *Pregnancy*: Category C.
- *Lactation*: No human studies have been performed. Not recommended in breastfeeding mothers.
- *Children*: Not for use in pediatric patients.

NALOXONE (*Narcan*)

Classification: Opioid antagonist.

Indications: Used to counter the effects of opiate overdose, for example, heroin or morphine overdose. Naloxone is specifically used to counteract life-threatening depression of the central nervous system and respiratory system.

Available Forms: Injection, 0.4 mg.

Dosage: *Adults:* 0.4–2 mg IM/SC/ETT every 2–3 min when needed. 0.005 mg/kg IV, then 0.0025–0.16 mg/kg/hr IV, continuous infusion. May repeat every 1–2 hr if symptoms recur, question diagnosis if no response after 10 mg. *Children:* 0.1 mg/kg IV every 2–3 min or 0.1 mg/kg IM every 3–8 min when needed. May repeat every 1–2 hr if symptoms recur for under 1 mo olds. *For 1 mo–5 years and under 20 kg*: 0.1 mg/kg IV every 2–3 min when needed or 0.1 mg/kg IO/IM/SC/ETT every 3–8 min when needed. May repeat every 1–2 hr if symptoms recur. *Over 5 years of age or over 20 kg:* 2 mg IV every 3–8 min when needed or 0.0005 mg/kg IV 1, then 0.0025–0.16 mg/kg/hour continuous IV. May repeat 1–2 hr if symptoms recur.

Administration: SC, IM, or IV.

Side Effects: Common reactions include tachycardia, hypertension, hypotension, nausea, vomiting, tremor, withdrawal symptoms, diaphoresis, pulmonary edema, and irritability (pediatric).

Drug Interactions: This medicine may also interact with:
- Topiramate (may increase risk of CNS depression and psychomotor impairment).
- Tramadol and tramadol/acetaminophen (may not reverse all symptoms of overdose, increase risk of seizures).
- This drug blocks effects of all opioids, including opioid-containing cough suppressants and opioid analgesics.

Pharmacokinetics:
- Metabolized in the liver (CYP450). The drug is excreted in the urine.
- The drug antagonizes the various opioid receptors.
- *Half-life:* 64 min.

Precautions: Caution is advised in patients with cardiovascular disease, opioid addiction, hepatic impairment, or renal impairment, and in patients on cardiotoxic drugs.

Patient and Family Education: Stop using naloxone and call the doctor if chest pain, lightheadedness, seizure, or difficulty breathing develops.

Special Populations:
- *Renal impairment:* No adjustment is needed.

- *Hepatic impairment:* Caution is advised in children with hepatic impairment; dosing not defined.
- *Pregnancy*: Category C drug.
- *Lactation:* Safety in lactation is unknown. Caution is advised.
- *Children*: Dose adjustment may be required in children with renal impairment, but no specific pediatric dosing adjustments are defined. Caution is advised in children with hepatic impairment.

NALTREXONE (*Revia*)

Classification: Opioid antagonist.

Indications: Used primarily in the management of narcotic drug and alcohol dependence and opioid addictions but is being tested for use in depersonalization disorders.

Available Forms: Tablet and injection, 25, 50, and 100 mg.

Dosage: In studies, average dose of 120 mg per day was used once daily for 6–10 wk up to 12 wk.

Administration:
- Take with a full glass of water.
- May be taken with or without food unless stomach upset occurs.
- Do not stop taking drug without provider's advice.
- Do not take opioids while on this medicine.
- *Missed dose:* Take the medication as soon as remembered. If it is almost time for the next dose, skip the missed dose and wait until next regularly scheduled dose. Do not take extra medicine to make up the missed dose.

Side Effects: Depression, nervousness, irritability; sedation/somnolence, suicidal attempt/ideation, skin rash, pharyngitis, hepatocellular injury, aches, pains, change in sex drive or performance, feeling anxious, dizzy, restlessness, fearful, headache, loss of appetite, nausea, runny nose, sinus problems, sneezing, stomach cramps, and trouble sleeping.

Drug Interactions: This medicine may also interact with the following medications:
- Topiramate (*Topamax*) may increase risk of CNS depression and psychomotor impairment.
- Tramadol (*Rybix/Ryzolt/Ultram*) and tramadol/acetaminophen may not reverse all symptoms of overdose, increase risk of seizures, block effects of all opioids, including opioid-containing cough suppressants. Carry ID card or medical ID bracelet stating that you are taking medication.
- Thioridazine may cause lethargy and somnolence with concurrent use.
- May not experience significant benefit from concurrent use of opioid-containing medicines such as cold and cough preparations, antidiarrheal preparations, and opioid analgesics.

Pharmacokinetics: Opioid antagonists such as naltrexone are metabolized in the liver. They are completely absorbed from the GI tract. Elimination is primarily by glomerular filtration. Naltrexone and its metabolites may undergo enterohepatic recirculation. Elimination from the system takes 5–10 days. Initial peak is within 2 hr, followed by a second peak 2–3 days later. Measurable levels can occur for more than 1 month after initial dosing. Exposure is 3- to 4-fold higher with IM administration compared to oral administration.
- Pure opioid receptor antagonist.

- Subject to significant first-pass metabolism.
- *Half-life:* 4 hr.

Precautions:

- Do not drive, operate machinery, or do anything that requires mental alertness until it is known how this drug exerts its effects.
- Caution individuals not to stand or sit up quickly, as dizziness is a side effect of this medicine.
- Check liver enzyme levels.
- Do not initiate treatment until confirmed abstinence from opioids for 7–10 days.
- Urine drug screen is often not sufficient proof that patient is opioid-free; therefore, health care provider may choose to give naloxone challenge before beginning treatment and periodically thereafter.
- Tell individual not to take any medicine that contains opioids during treatment, as this could cause serious injury, coma, or death.
- Avoid pregnancy and nursing while taking this medicine.
- Attempts by patient to overcome blocking effects by using large amounts of opiates may result in life-endangering opioid intoxication.

Patient and Family Education:

- *Missed dose:* Take the medication as soon as remembered. If it is almost time for the next dose, skip the missed dose and wait until next regularly scheduled dose. Do not take extra medicine to make up the missed dose.
- Use caution when driving or operating machinery.
- If stomach upset occurs, take with food.
- Wear medical identification indicating naltrexone use.
- This drug may increase sensitivity to lower doses of opioids; large doses of heroin or any other opiate may cause coma and death.
- Do not take this medicine within 7–10 days of taking an opioid drug.
- Exercise caution when driving or performing other tasks requiring mental alertness and coordination.
- Stop taking the medicine if any of the following develops: allergic reaction, stomach pain lasting more than a few days, white bowel movements, dark urine, or yellowing of eyes.
- Combine with psychotherapy or other counseling methods for full treatment effect.
- Notify health care provider if there is shortness of breath, coughing, or wheezing, as naltrexone *(Vivitrol)* injections may cause allergic pneumonia.
- Nausea may result after a naltrexone (*Vivitrol*) injection.

Special Populations:

- *Elderly:* Trials of subjects over 65 years of age did not include sufficient numbers to determine the safety and efficacy in the geriatric population.
- *Hepatic impairment*: Use with caution due to hepatotoxic effects. Caution advised in children with hepatic impairment. Contraindicated in acute hepatitis and hepatic failure.
- *Renal impairment:* Caution advised in renal use with caution impairment.

- *Pregnancy:* Category C; the safety and efficacy of this medicine has not been established.
- *Lactation*: Nursing mothers should not take this medicine, as it has a potential for serious adverse effects in infants. The safety and efficacy of this medicine has not been established.
- *Children*: Safety and effectiveness has not been established in the pediatric population.

NEFAZODONE (*Serzone*)

Classification: Serotonin-2 antagonist/reuptake inhibitor (SARI).

Indications: Antidepressant.

Available Forms: Tablet, 50, 100, 150, 200, and 250 mg.

Dosage: Starting dose, 50 mg/day; maintenance dose, 100–400 mg/day; typically administered in divided doses.

Administration: Administration with or after food may decrease side effects, but may impair drug absorption.

Side Effects: Anticholinergic effects; hepatotoxicity; orthostatic hypotension; headache, drowsiness, insomnia, agitation, dizziness, or sedation; priapism; dry mouth, nausea, and constipation; muscle weakness; sexual dysfunction, significantly less than with SSRIs.

Drug Interactions:
- *Sedatives:* Effects may be exacerbated by use of other sedatives.
- May be used as adjunct to SSRI therapy.
- *MAOIs:* Extreme risk for drug toxicity.

Pharmacokinetics:
- Inhibits activity of CYP450 3A4, which may alter metabolism of other medications.
- *Half-life:* Parent compound, 2–4 hr.
- *Metabolism:* Metabolized to an active metabolite that has a half-life of 12 hr, which is inactivated by CYP450 2D6.
- *Half-life:* Parent compound, 2–4 hr.

Precautions:
- Use with caution in patients with renal impairment.
- Avoid in patients with hepatic impairment or preexisting liver disease and avoid combining with other medications with hepatic effects.
- Monitor with routine serum liver function tests.
- Caution in patients at risk for seizure disorders: May lower seizure threshold.
- Extremely low but life-threatening potential for liver damage (1:300,000 patient-years).
- Adverse effects and side effects are commonly observed before therapeutic effects.

Patient and Family Education:
- Should be taken about the same time every day, morning or evening, although typically it is started in the morning, and can be taken with or without food (with food if there is any stomach upset).
- May take up to 4–8 wk to reach its full maximum effect at this dose, but some may see symptoms of depression improving in as little as 2 wk.

- If client plans on becoming pregnant or is pregnant, discuss the benefits versus the risks of using this medicine while pregnant.
- Because this medicine is excreted in breast milk, nursing mothers should not breastfeed while taking this medicine without prior consultation with a psychiatric nurse practitioner or psychiatrist. Newborns may develop symptoms including feeding or breathing difficulties, seizures, muscle stiffness, jitteriness, or constant crying.
- Do not stop taking this medication unless the health care provider directs. Report side effects or worsening symptoms to the health care provider promptly.
- The medication should be tapered when changing or discontinuing therapy.
- Dosage should be adjusted to reach remission of symptoms and treatment should continue for at least 4–9 and 6–12 months following remission of symptoms.
- Caution is advised when using this drug in the elderly because they may be more sensitive to the effects of the drug. Elderly patients should receive a lower starting dose.
- Keep these medications out of the reach of children and pets.

Special Populations:

- *Elderly:* Older individuals tend to be more sensitive to medication side effects such as hypotension and anticholinergic effects. They often require adjustment of medication doses for hepatic or renal dysfunction. Begin treatment at half the standard dose. Do not use in clients with hepatic disease. Be cautious, as the drug has sedative effects.
- *Pregnancy:* Psychotherapy is the initial choice for most pregnant patients with MDD. Category C drug; not recommended for use during pregnancy, especially during the first trimester, as there are no adequate studies during pregnancy.
- *Children:* Psychiatric consultation is recommended due to black box warning of increased suicidal ideation using SSRI therapy in children.

NICOTINE (*Nicotrol NS, Nicotrol Inhaler, Commit, Habitrol, NicoDerm, Nicotrol ProStep, Nicorette Gum, Nicorette DS*); varenicline, (*Chantix*)

Classification: Nicotinic receptor agonist.

Indications: Commonly used to treat tobacco nicotine dependence.

Available Forms: Gum, 2 and 4 mg; lozenges, 2 and 4 mg; spray, 0.5 mg; inhaler, 4 mg; transdermal patch, 7, 14, and 21; 5, 10, and 15; and 11 and 22 mg/day.

Dosage: *Oral:* Chew one piece of gum during urge to smoke. Repeat as needed up to 30 pieces/day. *Inhaler:* Spray twice in each nostril every hour up to 40 times daily. *Topical:* Apply one transdermal patch every 24 hr as follows: *Habitrol and Nicoderm:* 21 mg/day for 6 wk, then 14 mg/day for 2 wk, then 7 mg/day for 2 wk. For patients with CV disease, who weigh less than 45 kg, or who smoke less than ½ pack per day: 14 mg/day for 6 wk, then 7 mg/day for 4 wk. *Prostep:* 22 mg/day for 4–8 wk, then 11 mg/day for 2–4 wk. For patients with CV disease, who weigh less than 45 kg, or who smoke less than ½ pack per day: 11 mg/day for 4–8 wk. *Nicotrol:* Wear patch for 16 hr/day. 15 mg/day for 4–12 wk, then 10 mg/day for 2–4 wk, then 5 mg/day for 2–4 wk.

Administration:
- Chew gum as directed.
- Remove old patch before applying new one.
- Apply patch to nonhairy skin surface.
- Patches are heat sensitive; store at or below 30°C.

Side Effects: Headaches, dizziness, lightheadedness; insomnia, irritability; tachycardia, palpitations; sore mouth, throat, tingling of tongue; skin rash, pruritus; runny nose, nasal irritation, watery eyes.

Drug Interactions:
- May increase metabolism of caffeine, theophylline, insulin, propranolol, acetaminophen.
- Coffee and cola may decrease absorption of gum.

Pharmacokinetics:
Half-life: 30–120 min.

Precautions:
- Contraindicated immediately post-MI, severe angina pectoris, or life-threatening arrhythmias.

Patient and Family Education:
- Chew gum for 30 min at a time to get full effect.
- Chew only one piece of gum at a time.
- Discontinue use of patch if local skin reaction occurs.
- Smoking while using the patch increases adverse reactions.

Special Populations:

- *Elderly:* Use with caution; can cause unsavory reactions.
- *Renal impairment:* No contraindications.
- *Hepatic impairment*: No contraindications known.
- *Pregnancy:* Category D (nasal spray, transdermal patch); category C (gum).
- *Lactation:* Use only if benefits outweigh the risk associated.
- *Children and adolescents*: Safety and efficacy not established; long-term effects in children/adolescents are unknown.

NORTRIPTYLINE (*Pamelor*)

Classification: Tricyclic antidepressant (TCA).

Indications: Used to treat adults with depression/anxiety.

Available Forms: Capsule, 10, 25, 50, and 75 mg; oral solution, 10 mg/5 mL (480 mL).

Dosage: *Adults:* Starting dose, 25–50 mg/day; maintenance PO dose, typically 50–200 mg/day if used for antidepressive effects. PO in 3–4 divided doses nightly and increase by 25–50 mg/day every 2–3 days. *Elderly*: 10–25 mg PO nightly and increase by 10–25 mg/day every 2–3 days. Maximum, 150 mg/day. May be given once per day once tolerated in divided doses. Must taper the dose gradually to discontinue. *Children: (6–12 years, unlabeled use)*: Starting dose, 1–3 mg/kg/day PO divided tid-qid. *Greater than 12 years*: Starting dose, 30–50 mg/day PO divided qd-qid; maximum, 150 mg/day. *Alternative dosing*: 1–3 mg/kg/day PO divided daily and tid.

Administration:
- PO with a glass of water.
- Do not abruptly stop taking the medication.
- Approved in children with enuresis and depression as young as 6 years.
- Use lowest effective dose for shortest duration.

Side Effects: Similar to amitriptyline; cardiac arrhythmias, fatigue, sedation, and weight gain; sexual dysfunction.
- *More common:* Drowsiness, dizziness, constipation; nausea/vomiting, urinary retention or frequency, libido changes, weight gain, general nervousness, galactorrhea, gynecomastia, rash, and urticaria.
- *Less common*: Cardiac arrhythmias, extrapyramidal symptoms, clotting disturbances, worsening depression, suicidiality, hyperthermia, and hypertension.

Drug Interactions: This medicine may interact.
- *MAOIs:* Risk for extreme hypertension.
- *CNS depressants* (e.g., alcohol): TCAs increase effects.
- *Direct-acting adrenergic agonists* (e.g., epinephrine): TCAs increase effects.
- *Anticholinergic drugs* (e.g., antihistamines): TCAs increase effects with the following medications:
  - Absolute contraindications include class IA antiarrhythmics, MAOIs such as phenelzine (*Nardil*), tranylcypromine (*Parnate*), isocarboxazid (*Marplan*), and selegiline (*Eldepryl*).
  - Avoid using with cimetadine, amiodarone, clarithromycin, erythromycin, haldoperidol, St. John's wort.
- *Alert:* This list may not describe all possible interactions. Instruct patients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements used, and if they smoke, drink alcohol, or use illegal drugs.

Pharmacokinetics:
- *Metabolism:* Metabolized to an inactive form by CYP450, TCAs are thought to work by inhibiting reuptake of norepinephrine and serotonin in the CNS,

which potentiates the neurotransmitters. They also have significant anticholinergic, antihistaminic, and alpha-adrenergic activity on the cardiac system. These classes of antidepressants also possess class 1A antiarrhythmic activity, which can lead to depression of cardiac conduction potentially resulting in heart block or ventricular arrhythmias.

- *Metabolism:* Extensively metabolized by liver CYP 2D6 substrate.
- *Excretion:* Urine primarily, feces.
- *Half-life:* Approximately 18–44 hr.

Precautions:

- Adverse effects.
- See patients as often as necessary to ensure that the drug is working on the panic attacks, determine compliance, and review side effects, which are commonly observed before therapeutic effects.
- Many side effects are dose dependent and may improve over time.
- Overdose may result in lethal cardiotoxicity.
- Monitor with routine EKG.
- Instruct patients and families to watch for worsening depression or thoughts of suicide. Also watch out for sudden or severe changes in feelings such as feeling anxious, agitated, panicky, irritated, hostile, aggressive, impulsive, severely restless, overly excited, hyperactive, or not being able to sleep. If this happens, especially at the beginning of antidepressant treatment or after a change in dose, patient should call the health care provider.
- Drowsiness or dizziness: Patients should not drive or use machinery or do anything that needs mental alertness until the effects of this medicine are known. Other medications that cause drowsiness can add to the drowsiness of imipramine.
- Caution patients not to stand or sit up quickly, especially if older. This reduces the risk of dizzy or fainting spells. Alcohol may interfere with the effect of this medicine. Avoid alcoholic drinks.
- Do not abruptly withdraw this drug as it may cause headache, nausea, and malaise.
- Advise to protect skin from ultraviolet light due to increased skin sensitivity.
- Grapefruit and grapefruit juice may interact with imipramine.
- Caution should be exercised in the following:
  - MDD, psychosis, or bipolar affective disorder.
  - Contraindicated in patients with a recent myocardial infarction.
  - Blood dyscrasias.
  - Respiratory disease.
  - Heart disease.
  - Liver disease.
  - Seizures (convulsions).
  - Suicidal thoughts, plans, or attempts by patients or a family member.
  - An unusual or allergic reaction to imipramine, other medicines, foods, dyes, or preservatives.

Patient and Family Education:

- Should be taken about the same time every day, with or without food. May cause prolonged sedation. Do not drive until the effect of this medication is known.

- Administration time may be adjusted based on observed sedating or activating drug effects.
- May take up to 4–8 wk to show its effects, but patient may see symptoms of depression improving in as little as 2 wk.
- If patient plans on becoming pregnant, discuss the benefits versus the risks of using this medicine while pregnant.
- Because this medicine is excreted in the breast milk, nursing mothers should not breastfeed while taking this medicine without prior consultation with a psychiatric nurse practitioner or psychiatrist. Newborns may develop symptoms including feeding or breathing difficulties, seizures, muscle stiffness, jitteriness, or constant crying.
- Do not stop taking this medication unless the health care provider directs. Report symptoms to the health care provider promptly.
- Drug should be tapered gradually when discontinued.
- Dosage should be adjusted to reach remission of symptoms and treatment should continue for at least 4–9 months following remission of symptoms.
- Keep these medications out of the reach of children and pets.
- Store nortriptyline at room temperature away from moisture and heat.
- Stopping this medication suddenly could result in unpleasant side effects.
- Take the missed dose as soon as remembered. If it is almost time for the next dose, skip the missed dose and take the medicine at the next regularly scheduled time. *Do not* take extra medicine to make up the missed dose.

Special Populations:

- *Elderly:* Older individuals may be more sensitive to medication side effects such as hypotension and anticholinergic effects. Often require adjustment of medication doses for hepatic or renal dysfunction. The smallest effective dose is necessary for patients with melancholia, liver impairment, and unipolar depression. However, cardiac side effects and fall risk are of great concern in this population. Side effects may be more pronounced and require decreased dosage.
- *Pregnancy:* Category D; not recommended in pregnancy. Some clinical reports of congenital malformations, but no direct causal link. Alternative medications are recommended.
- *Lactation:* Excreted in human breast milk, bottle feed if possible or use with caution.
- *Children:* Not recommended. This drug is indicated for children under the age of 12. Greater than 6 years old with nocturnal enuresis or with depression. Monitor for suicidal ideation with depression.

OLANZAPINE (*Zyprexa*)

Classification: Second-generation (atypical) antipsychotic.

Indications: Schizophrenia, monotherapy, or combination therapy for acute mixed or manic episodes associated with bipolar I disorder, maintenance monotherapy of bipolar I disorder, and agitation associated with schizophrenia or bipolar I disorder.

Available Forms: Tablet, 2.5, 5, 7.5, 10, 15, and 20 mg; orally disintegrating tablet ODT, 5, 10, 15, and 20 mg. *Symbyax* (olanzapine/floxetine combination): IM formulation, 5 mg/mL (each vial contains 10 mg); olanzapine–fluoxetine combination capsule, 6 mg/25 mg, 6 mg/50 mg, 12 mg/25 mg, 12 mg/50 mg.

Dosage:
- 5–10 mg/day, up to maximum 20 mg/day (PO oral or IM).
- 6–12 mg/olanzapine/25–50 mg fluoxetine (olanzapine–fluoxetine combination).

Administration:
- Injectable formulation may be more easily administered to patient with delusional disorder.
- Tablets may be given with or without food.
- Advise patient to take the missed dose as soon as s/he remembers. Skip the missed dose if it is almost time for the next scheduled dose. Do not take extra medicine to make up the missed dose.
- Store at room temperature away from moisture, heat, and light.

Side Effects: Can increase risk for diabetes and dyslipidemia; dizziness, sedation; weight gain; dry mouth, constipation, dyspepsia; peripheral edema; joint pain, back pain, chest pain, extremity pain, abnormal gait, ecchymosis; tachycardia; orthostatic hypotension (usually during initial dose titration); hyperglycemia; increased risk of death and cerebrovascular events in elderly with dementia-related psychosis; TD tardive dyskinesia (rare); rash on exposure to sunlight (rare); neuroleptic malignant syndrome NMS (rare); seizures (rare).

Drug Interactions:
- May increase effects of antihypertensive medications.
- May antagonize levodopa and dopamine agonists.
- May need to reduce dose if given with CYP450 1A2 inhibitors (e.g., fluvoxamine).
- May need to increase dose if given with CYP450 1A2 inducers (e.g., cigarette smoke, carbamazepine).
- *Alert:* This list may not describe all possible interactions. Instruct clients to provide a list of all the medicines, herbs, nonprescription drugs, or dietary supplements they use.

Pharmacokinetics:
- *Metaboliam:* Metabolites are inactive.
- *Metabolism:* Inactive.
- *Half-life:* 21–54 hr.

Precautions:

- Use with caution in patients with conditions that predispose to hypotension (dehydration, overheating). Watch closely for hypotension if given IM formulation.
- Use with caution in patients with prostatic hypertrophy, narrow angle-closure glaucoma, paralytic ileus.
- Use with caution in patients who are at risk for aspiration pneumonia.
- IM formulation is not recommended to be given with parenteral benzodiazepines. If patients need a parenteral benzodiazepine, it should be given at least 1 hr after IM formulation olanzapine (*Zyprexa*).
- *Do not use if there is a proven allergy.*
- *Do not give IM formulation:*
  - If patient has unstable medical condition (e.g., acute MI, unstable angina pectoris, severe hypotension, and/or bradycardia, sick sinus syndrome, recent heart surgery).
  - If patient has known risks of narrow angle-closure glaucoma.

Patient and Family Education:

- Take exactly as prescribed by the provider. Do not take in larger or smaller amounts or for longer than recommended.
- Can be taken with or without food.
- For olanzapine orally disintegrating tablets, DTs, keep the tablet in its blister pack until patient is ready to take it. Open the package and peel back the foil from the tablet blister. Do not push a tablet through the foil. Using dry hands, remove the tablet and place it in the mouth; it will begin to dissolve right away.
- Do not swallow the tablet whole. Allow it to dissolve in the mouth without chewing. If desired, drink liquid to help swallow the dissolved tablet.
- *If you have diabetes*: Check blood sugar levels on a regular basis while taking olanzapine.
- You can gain weight or have high cholesterol and triglycerides while taking this drug, especially if a teenager. Your blood will need to be tested often.
- Do not stop taking the drug suddenly without first talking to provider, even if you feel fine. You may have serious side effects if you stop taking the drug suddenly.
- Call provider if symptoms do not improve or get worse.
- Store at room temperature away from moisture, heat, and light.

Special Populations:

- *Elderly:*
  - May tolerate lower doses better. Elderly with dementia-related psychosis treated with atypical antipsychotics are at higher risk of death and cerebrovascular events. It can increase incidence of stroke.
  - If IM formulation is given, the recommended starting dose is 2.5–5 mg. A second injection of 2.5–5 mg may be given 2 hr after the first injection. No more than 3 injections should be administered within 24 hr.
- *Renal impairment:* No dose adjustment is required for oral formulation. Consider lower starting dose (5 mg) for IM formulation. It is not removed by hemodialysis.
- *Hepatic impairment:* Starting oral dose, 5 mg for patients with moderate-to-severe hepatic function impairment; increase dose with caution. Consider

lower starting dose (5 mg) for IM formulation. Check patient liver function tests a few times a year.

- *Cardiac impairment*: Use with caution because of risk of orthostatic hypotension.
- *Pregnancy:* Category C. Some animal studies show adverse effects. There are no controlled studies in humans. Should be used only when the potential benefits outweigh potential risks to the fetus. Olanzapine may be preferable to anticonvulsant mood stabilizers if treatment is required during pregnancy.
- *Lactation:* It is not known if olanzapine is secreted in human breast milk. It is recommended to either discontinue drug or bottlefeed. Infants of women who choose to breastfeed while on this drug should be monitored for possible adverse effects.
- *Children and adolescents:*
  - Probably safe and effective for behavioral disturbances in this population.
  - IM formulation has not been studied in patients younger than 18 years, and is not recommended for use in this population.
  - Should be monitored more frequently than adults.

OXAZEPAM (*Serax*)

Classification: Benzodiazepine (BZD).

Indications: Treatment of alcohol withdrawal; sedation during hypnosis and to treat anxiety.

Available Forms: Capsule, 10, 15, and 30 mg; tablet, 15 mg.

Dosage: 30–60 mg/day in 3–4 divided doses. *Adults:* Anxiety: 10–30 mg PO 3 to qid; *Elderly:* 10–15 mg PO 3 or qid.

Administration:
- PO with a full glass of water.
- May be taken with or without food.
- Write prescription for the shortest duration possible in order to prevent potential dependence.
- *Missed dose:* Take as soon as remembered. Skip the missed dose if it is almost time for the next scheduled dose. Do not take extra medicine.
- If discontinuing the drug, health care provider will gradually taper.
- Dose may need to be gradually decreased in order to avoid side effects such as seizures.
- When used for an extended period, this medication may not work as well and may require different dosing.
- Stop smoking while taking this drug as it may decrease the effectiveness of oxazepam.

Side Effects: Clumsiness or unsteadiness, confusion, unusual risk behaviors, hyperactivity, hallucinations, jaundice, lightheadedness, dizziness drowsiness, and slurred speech; weakness; confusion; nervousness, hyperexcitability; hypersalivation, dry mouth; hallucinations (rare).

Drug Interactions: Increased CNS depressive effects when taken with other CNS depressants.

Precautions:
- Use with caution in patients with pulmonary impairment/disease.
- History of substance abuse increases risk of dependency; use with caution in patients with history of substance abuse.
- Some patients present with disinhibiting behaviors after administration.
- Do not use with patients with narrow-angle glaucoma.
- Some depressed patients may experience worsening of suicidal thoughts.
- Oxazepam should not be used with sodium oxybate as it may increase the risk of CNS and respiratory depression.
- Probenecid may be used with great caution; may increase the risk of CNS depression (aripiprazole, dexmedetomidine, and propofol). May increase oxazepam levels and risk of toxicity. The health care provider needs to be notified prior to taking drugs that cause drowsiness, such as antihistamines (diphenhydramine), anti-seizure drugs (carbamazepine), medicine for sleep (sedatives), muscle relaxants, narcotic pain relievers (codeine), psychiatric

medicines (phenothiazines such as chlorpromazine, or tricyclics such as amitriptyline), and/or tranquilizers.

Pharmacokinetics: Metabolized in the liver (CYP450). Enhances the GABA effects.

- *Half-life:* 8.2 hr.
- *Precautions:* Monitor CBC and liver profiles. Serious reactions include leukopenia, hepatic impairment, and abuse.

Patient and Family Education:

- Take exactly as prescribed.
- Tell the provider if treated for another psychiatric illness such as depression.
- Refrain from driving or operating dangerous machinery until the effect of this drug is known.
- Can be taken with or without food.
- Exercise caution when driving or operating machinery due to sedative effects of medication.
- Do not drink alcohol for it can cause serious problems.
- There is a potential for dependence on the drug, so extra care is given if increasing the dose or abruptly discontinuing it.
- If pregnant during therapy or intend to become pregnant, communicate this information to the health care provider.
- Avoid alcohol.
- Do not abruptly stop taking this medication.

Special Populations:

- *Elderly:* Caution should be exercised and the initial dose should be the lowest possible due to the drowsiness effect. Initial dose 30 mg in 3 divided doses: Can increase up to 60 mg/day in 3–4 doses if needed. Because of its sedative property and increased risk of falls, all benzodiazepines are included on Beers List of Potentially Inappropriate Medications for Geriatrics.
- *Renal impairment:* Use with caution. May increase drug levels.
- *Hepatic impairment:* Use with caution. Because of its short half-life, it is a preferred BZD for those with liver disease.
- *Pregnancy*: Category D; do not use unless benefits outweigh risks.
- *Lactation:* Some caution advised with breastfeeding.
- *Children*: Drug is found in mother's breast milk; discontinue drug or bottlefeed.
- *Children and adolescents*: *Under 6:* Safety and efficacy has not been established. Long-term effects for children and adolescents unknown. Absolute dosage for pediatric patients 6–12 years of age has not been established.

PALIPERIDONE (*Invega*)

Classification: Antipsychotic drug, atypical (second generation).

Indications: Schizophrenia, bipolar disorder, other psychotic disorders, behavioral responses in dementia, behavioral disturbances in children and adolescents, disorders associated with problems with impulse control.

Available Forms: Tablet (extended-release), 3, 6, and 9 mg.

Dosage: 6 mg/day; maximum dose: 12 mg/day.

Administration:
- Initial dose, 6 mg/day taken in the morning.
- Can increase by 3 mg/day every 5 days.

Side Effects: Dizziness; sedation, and hypotension; motor side effects, especially at high doses; elevation in prolactin; weight gain; may increase risk for diabetes and dyslipidemia; rare TD (much less than conventional antipsychotics); sedation; hypersalivation; weight gain; orthostatic hypotension; tachycardia; hyperglycemia associated with ketoacidosis or osmolar coma or death has been reported in patients taking atypical antipsychotics. *Elderly*; in elderly patients with dementia-related psychosis*:* increased risk of death and cerebrovascular events; neuroleptic malignant syndrome (rare); seizures (rare).

Drug Interactions:
- May increase effects of antihypertensive agents.
- May decrease the effects of levodopa and dopamine agonists.
- May increase QTc prolongation of other drugs that also increase the QTc interval.

Pharmacokinetics:
- Active metabolite of risperidone.
- *Half-life:* Approximately 23 hr.

Precautions:
- Use with caution with conditions that predispose to hypotension (dehydration, overheating).
- Use with caution in patients at risk for aspiration pneumonia since dysphagia has been associated with antipsychotic use.
- Prolongs QTc interval.
- Priapism is reported with other antipsychotics including risperidone, and paliperidone is an active metabolite of risperidone.
- *Do not use* if patient is taking other medications or has conditions that prolong QTc interval (pimozide, thioridazine, selected antiarrhythmics, recent AMI, and uncompensated heart failure).
- *Do not use* if patient has preexisting severe GI narrowing.
- *Do not use if allergic to or sensitive to* paliperidone or risperidone.

Patient and Family Education:

- Take exactly as prescribed by the provider. Do not take in larger or smaller amounts or for longer than recommended.
- *Avoid becoming overheated or dehydrated during exercise and in hot weather*. You may be more prone to heat stroke.
- *Avoid getting up too fast from a sitting or lying position*. Get up slowly and steady yourself to prevent a fall.
- *Avoid drinking alcohol*.
- *Stop using this medication and call provider immediately* if you have very stiff (rigid) muscles, high fever, sweating, confusion, fast or uneven heartbeats, tremors; feel like you might pass out; have jerky muscle movements you cannot control, trouble swallowing, problems with speech; have blurred vision, eye pain, or see halos around lights; have increased thirst and urination, excessive hunger, fruity breath odor, weakness, nausea and vomiting; have fever, chills, body aches, flu symptoms; or have white patches or sores inside your mouth or on your lips.
- Do not stop taking the drug suddenly without first talking to your provider, even if you feel fine. You may have serious side effects if you stop taking the drug suddenly.
- Call provider if your symptoms do not improve or get worse.
- Store at room temperature away from moisture and heat.

Special Populations:

- *Elderly:* They may tolerate lower doses better and are more sensitive to adverse effects. It is not approved for elderly patients with dementia-related psychosis; such patients are at increased risk of cardiovascular events and death.
- *Renal impairment*: For mild impairment, maximum dose recommended is 6 mg/day. For moderate-to-severe impairment, maximum dose recommended is 3 mg/day.
- *Hepatic impairment*: No dose adjustment recommended for mild-to-moderate impairment. Use in patients with severe impairment has not been studied.
- *Cardiac impairment:* Use with caution due to risk of orthostatic hypotension.
- *Pregnancy:* Category C. Animal studies show adverse effects; there are no controlled studies in humans. Psychotic symptoms may worsen during pregnancy and necessitate some form of treatment. Paliperidone may be preferable to anticonvulsant mood stabilizers and conventional antipsychotics. Effects of hyperprolactinemia on the fetus are unknown.
- *Lactation*: Some drugs may be found in mother's breast milk, and it is recommended that it either be discontinued or infant be bottle fed. Infants who are breastfed while mother is on paliperidone need to be monitored for adverse effects.
- *Children and adolescents*: Safety and efficacy are not established for paliperidone for children and adolescents. Children and adolescents will need to be monitored more closely than adults.

PAROXETINE (*Paxil, Paxil CR*)

Classification: Selective serotonin reuptake inhibitor (SSRI).

Indications: Used to treat anxiety and depression.

Available Forms: Tablet, 10, 20, 30, and 40 mg; controlled-release tablet, 12.5 and 25 mg; suspension 10 mg/5 mL.

Dosage: *Adults*: 20–50 mg PO each day. Starting dose is usually 20 mg PO qam; maximum 50 mg/day. Anxiety 20 mg PO qam; maximum 50 mg/q day.

Administration: Administered PO. Never stop an antidepressant medicine without first talking to a health care provider. Do not start new medicines without notifying the health care provider. Take this medicine, usually once daily.
- PO with a glass of water.
- May be taken with or without food; capsule form is usually taken with food after breakfast or after evening meal. It may take 4 wk before an effect is noticed.

Side Effects:
- Nausea, somnolence, headache, asthenia, dizziness, constipation, libido decrease, diarrhea, sedation, sweating, dry mouth, ejaculatory dysfunction, tremor, anorexia, nervousness, anxiety, and abnormal vision.
- Worsening depression; suicidality; serotonin syndrome, neuroleptic syndrome; when combined with fluvoxamine (*Luvox*) may increase rasagiline (*Azilect*) levels, risk of adverse effects.
- MAOIs: Contraindicated within 5 wk of sertraline use because it may increase the risk of serotonin syndrome, neuroleptic syndrome, and in combination with fluvoxamine (*Luvox*) may increase rasagiline (*Azilect*) levels, risk of adverse effects.
- Pimozide (*Orap*) may increase the risk of bradycardia, increase pimozide levels, risk of QT prolongation, cardiac arrhythmias.
- Thioridazine (*Mellaril*) may increase thioridazine levels, risk of QT prolongation, cardiac arrhythmias, risk of SIADH, hyponatremia, serotonin syndrome, neuroleptic and malignant syndrome; extrapyramidal symptoms; withdrawal syndrome; mania; seizures; hyponatremia; SIADH; hypoglycemia; serum sickness; vasculitis; anaphylactoid reaction; rash, severe; erythema multiforme; pulmonary fibrosis; altered platelet function; priapism; acute narrow angle glaucoma. *Side effects that usually do not require medical attention:* Nausea; headache; insomnia; nervousness; somnolence; asthenia; diarrhea; dizziness; dry mouth; tremor; sweating; ejaculatory dysfunction; constipation; decreased libido; visual changes.

Drug Interactions: This medicine may interact with the following medications: linezolid; all MAOIs; pimozide; thioridazine; almotriptan; desvenlafaxine; duloxetine; triptans; venlafaxine; St. John's wort; sibutramine; olanzapine/floxetine; haloperidol; milnacipran.

Pharmacokinetics: Metabolized in the liver (CYP450, 2 D6) and is excreted in the urine (64%) and feces (36%).

- Selectively inhibits CNS neuronal uptake of serotonin.
- Highly bound to plasma proteins.
- Peak plasma levels are reached in 5 hr.
- Bioavailability is 100%.
- *Half-life:* Average 21 hr.

Precautions: There is an increased risk of suicidality in younger patients and young adults.

- Patients should avoid consuming alcohol while taking any of these medications.
- Use with caution in patients with history of seizure disorders.
- Avoid abrupt withdrawal of this class of drug. Dosage should be tapered down prior to discontinuation.
- Monitor closely for clinical worsening and suicide risk.
- See patient as often as necessary if long-term use is indicated.
- Patients should be advised not to participate in hazardous tasks until reasonably certain that the drug does not affect them adversely.
- Photosensitivity may occur; sunscreen and protective clothing should be used to protect against ultraviolet light or sunlight until tolerance is determined.

Patient and Family Education:

- Inform health care provider if there is seizure disorder, renal/liver impairment, glaucoma, alcohol addition, or a bleeding disorder.
- It may take 4 wk before full therapeutic effects are noticed.
- Side effects may occur within the first week of treatment.
- Store at room temperature between 15°C and 30°C (59–86°F). Store suspension at or below 25°C (77°F).
- Discard unused medication after the expiration date.

Special Populations:

- *Elderly*: Dosage is usually reduced in half for elderly patients, to 10 mg PO qam and a maximum dose of 40 mg/day for treatment of anxiety and depression. Start with lowest dose and titrate up slowly.
- *Renal impairment:* Renal dose adjustment may be required. In adult dosing, if the CrCl is below 30, then the initial dose is started at 10 mg every day.
- *Hepatic impairment:* In adults with severe impairment the dose is started at 10 mg every day.
- *Pregnancy*: There is positive evidence of human fetal risk.
- *Lactation:* There is minimal risk to the baby during lactation.
- *Children*: Caution should be exercised and clients closely monitored for the duration of treatment.

PHENELZINE (*Nardil*)

Classification: Monoamine oxidase inhibitor (MAOI).

Indications: Used as an antidepressant and anxiolytic.

Available Forms: Tablet, 15 mg.

Dosage: Starting dose, 15 mg/day; maintenance dose, 15–90 mg/day in divided doses.

Administration: PO, bid-tid dosing.

Side Effects:
- Orthostatic hypotension.
- Hypertensive crisis, secondary to excessive consumption of dietary tyramine (e.g., soft cheeses, aged fish, aged meat, and avocados) or tryptophan-rich foods.
- CNS stimulation.
- Orthostatic hypotension.
- Sexual dysfunction.

Drug Interactions:
- *High potential for interactions*: Do not use with other MAOI or antidepressants.
- Avoid products containing sympathomimetic stimulants or dextromethorphan.
- Concurrent use with antihypertensive agents may lead to exaggeration of hypotensive effects.
- Examples of drugs to avoid include alpha 1-agonists, amphetamines, buproprion, buspirone, dextromethorphan, linezolid, meperidine, methyldopa, methylphenidate, mirtazapine, SSRIs, SARIs, SNRIs, and TCAs.
- *SSRIs, SNRIs, and TCAs:* Risk for extreme hypertension.
- *Indirect-acting adrenergic agonists* (e.g., ephedrine): Increase MAOI effects.
- Antihypertensive drugs may dangerously lower blood pressure.

Pharmacokinetics:
- *Duration of action:* May last 2–3 wk following discontinuation.
- *Half-life:* Approximately 11 hr, but irreversible MAO inhibition prolongs effects.

Precautions:
- Not approved by the FDA for the treatment of depression in children 16 years of age or under.
- *Diabetic patients:* Use with caution and monitor blood glucose.
- *Glaucoma:* Potential increase in IOP.
- *Patients at risk for seizure disorders:* May lower seizure threshold.
- Patients with hyperthyroidism or being treated with thyroid hormone: Increased risk of proarrhythmias.
- Generally well tolerated in elderly patients with controlled diet.
- Adverse effects and side effects are commonly observed before therapeutic effects.
- Dietary restrictions require substantial patient adherence.

Patient and Family Education:

- Should be taken about the same time every day, with or without food.
- Substantial education required on dietary changes and importance of dietary adherence.
- Patient should advise all health care providers that he/she is on MAOI prior to initiating new medications.
- Administration time may be adjusted based on observed sedating or activating drug effects.
- May take up to 4–8 wk to show its maximum effect, but some may see symptoms of depression improving in as little as 2 wk.
- Do not take if risk of pregnancy or pregnant.
- Because this medicine is excreted in the breast milk, nursing mothers should not breastfeed while taking this medication. Newborns may develop symptoms including feeding or breathing difficulties, seizures, muscle stiffness, jitteriness, or constant crying.
- Report potential side effects to the health care provider promptly.
- Keep these medications out of the reach of children and pets.

Special Populations:

- *Elderly:* Requires 1/3 drug dose in adult patients over 65 years old. Due to common need for polypharmacy, it is not recommended.
- *Pregnancy:* Psychotherapy is the initial choice for most pregnant patients with MDD. Generally not recommended during pregnancy.
- *Children:* Not recommended for children less than 16 years of age.

PIMOZIDE (*Orap*)

Classification: Antipsychotic drug, typical (first generation).

Indications: Suppress motor and phonictics in Tourette's syndrome, or for psychotic disorders in patients who have failed to respond satisfactorily to standard treatment.

Available Forms: Tablet (scored), 1 and 2 mg.

Dosage: Initial dose, 1–2 mg/day in divided doses; can increase dose every other day; maximum dose, 10 mg/day or 0.2 mg/kg per day. Children: Initial dose, 0.05 mg/kg per day at night; can increase every 3 days; maximum dose, 10 mg/day or 0.2 mg/kg per day.

Administration:
- Take by mouth with or without food, usually once a day at bedtime.

Side Effects:
- Motor side effects from blockage of D2 in striatum; elevations in prolactin from blockage of D2 in the pituitary; worsening of negative and cognitive symptoms due to blockage of D2 receptors in the mesocortical and mesolimbic dopamine pathways; sedation, blurred vision, constipation, dry mouth; weight gain; dizziness, and hypotension; possible increased incidence of diabetes or dyslipidemia with conventional antipsychotics is unknown; neuroleptic-induced deficit syndrome; akathisia; extrapyramidal symptoms, parkinsonism, TD; galactorrhea, amenorrhea; sexual dysfunction.

Drug Interactions:
- May decrease the effects of levodopa and other dopamine agonists.
- May increase QTc prolongation of other QTc prolonging drugs.
- May increase the effects of antihypertensive drugs.
- Pimozide levels may be increased by CYP450 3A4 inhibitors, such as fluoxetine, sertraline, fluvoxamine, and nefazodone, and foods such as grapefruit juice.
- Pimozide and fluoxetine may cause bradycardia.
- Additive effects may occur if combined with CNS depressants.
- Some neuroleptics and lithium have caused an encephalopathic syndrome similar to NMS in a few patients.
- Pimozide and epinephrine may lower BP.

Pharmacokinetics:
- *Metabolism:* Metabolized by CYP450 3A and to a lesser extent by CYP450 1A2.
- *Half-life:* Approximately 55 hr.

Precautions:
- With signs of neuroleptic malignant syndrome, treatment must be discontinued immediately.
- Use caution in patients with alcohol withdrawal or convulsive disorders because seizure threshold is lowered.

- Other disorders and overdose may be masked by antiemetic properties of this drug.
- Epinephrine with some pressors may lower BP.
- Use with caution in Parkinson's disease or Lewy body dementia.
- Pimozide, at higher doses, may prolong QTc interval; use with caution with drugs that can induce bradycardia (beta-blockers, calcium channel blockers, clonidine, digitalis).
- Use with caution in patients with hypokalemia and/or hypomagnesemia, or those taking drugs that can induce hypokalemia and/or magnesemia (diuretics, stimulant laxatives, IV amphotericin B, glucocorticoids, and tetracosactide).
- Due to potential elongation of QTc interval, it can potentially cause arrhythmias or sudden death.
- Do not use if patient is in a coma or has CNS depression.
- Do not use if patient is taking another drug with QTc prolongation (thioridazine, antiarrhythmics, moxifloxacin, or sparfloxacin).
- Do not use if there is a history of QTc prolongation, cardiac arrhythmias, recent AMI, uncompensated heart failure.
- Avoid use if patient is taking drugs that inhibit pimozide metabolism (macrolide antibiotics, azole antifungal agents, protease inhibitors, nefazodone, fluvoxamine, fluoxetine, sertraline).
- Do not use if there is a proven allergy to pimozide or sensitivity to any phenothiazine.

Patient and Family Education:

- Take exactly as prescribed by the provider. Do not take in larger or smaller amounts or for longer than recommended.
- Can be taken with or without food.
- Avoid becoming overheated or dehydrated during exercise and in hot weather. You may be more prone to heat stroke.
- Avoid getting up too fast from a sitting or lying position. Get up slowly and steady yourself to prevent a fall.
- Avoid drinking alcohol.
- Stop using this medication and call provider immediately if you have very stiff (rigid) muscles, high fever, sweating, confusion, fast or uneven heartbeats, tremors; feel like you might pass out; have jerky muscle movements you cannot control, trouble swallowing, problems with speech; have blurred vision, eye pain, or see halos around lights; have increased thirst and urination, excessive hunger, fruity breath odor, weakness, nausea, and vomiting; have fever, chills, body aches, flu symptoms; or have white patches or sores inside your mouth or on your lips.
- Do not stop taking drug suddenly without first talking to provider, even if you feel fine. You may have serious side effects if you stop taking the drug suddenly.
- Call provider if your symptoms do not improve or if they get worse.
- Store at room temperature away from moisture and heat.

Special Populations:

- *Elderly*: May tolerate lower doses better and are more sensitive to adverse effects. Not approved for treatment of elderly patients with dementia-related

psychosis; such patients are at increased risk of cardiovascular events and death.

- *Renal impairment*: Use with caution.
- *Liver impairment*: Use with caution.
- *Cardiac impairment*: QTc interval should be evaluated prior to initiation of treatment with pimozide as it causes QTc prolongation, which may be enhanced by bradycardia and hypokalemia. Use with caution with medications that also prolong QTc interval. Avoid in patients with a known history of QTc prolongation (recent AMI and uncompensated heart failure).
- *Pregnancy*: Category C. Some animal studies show adverse effect; there are no controlled studies in humans. Psychotic symptoms may worsen during pregnancy, necessitating some form of treatment. Atypical antipsychotics may be preferable.
- *Lactation*: It is not known if it is secreted in human breast milk, but assumed so. Not recommended for use because of potential cardiovascular effects or tumorigenicity in infants. Either discontinue drug or bottle feed.
- *Children and adolescents*: Safety and efficacy established for patients older than 12 years. Similar preliminary safety established for patients aged 2–12 years. Generally used as second-line treatment after trials with atypical and other conventional antipsychotics.

PROPRANOLOL (*Inderal*)

Classification: Beta-blocker.

Indications: Primarily used as cardiac drug but also useful for treating "stage fright." Due to its ability to slow heart rate, it can produce a calming effect and decrease anxiousness prior to a performance.

Available Forms: Tablets and oral solution.

Dosage: Single dose of 5–10 mg orally taken 20–30 min prior to the anxiety-producing event.

Administration:
- PO with a glass of water.
- Not appropriate for children.

Side Effects:
- *More common:* Fatigue, dizziness, constipation; bradycardia, hypotension, depression, insomnia, weakness, disorientation, nausea, diarrhea; allergic reaction, purpura, alopecia, and impotence.
- *Less common*: Congestive heart failure, severe bradycardia, bronchospasm, exfoliative skin disorders, and Raynaud's phenomena.

Drug Interactions: This medicine may interact with the following medications:
- Absolute contraindications include thoridazine.
- Avoid using with cimetadine, central alpha-2 agonists, COX-2 inhibitors, fibric acid derivatives, opioid analgesics, insulin, and NSAIDs.
- *Alert:* This list may not describe all possible interactions. Instruct patients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements used, and if they smoke, drink alcohol, or use illegal drugs.

Pharmacokinetics:
- Beta-blockers such as propranolol nonselectively antagonize beta-1 and beta-2 adrenergic receptors. Beta-1-antagonism in the heart results in a slower heart rate and decreased force of contraction.
- *Metabolism:* Liver extensively; CYP 1A2, 2C19, and 2D6 (primary).
- *Excretion:* Urine (less than 1% unchanged).
- *Half-life:* 3–5 hr, 8–11 hr (ER).

Precautions:
- Advise clients to take a trial dose at home so they can predict the drug's effects when encountering the phobic situation.
- Drowsiness or dizziness: Patients should not drive or use machinery or do anything that needs mental alertness until the effects of this medicine are known.
- Caution patients not to stand or sit up quickly, especially if older. This reduces the risk of dizzy or fainting spells. Alcohol may interfere with the effect of this medicine. Avoid alcoholic drinks.

- Caution should be exercised in the following:
  - Respiratory disease—especially asthma.
  - Heart disease.
  - Diabetes mellitus.
  - Liver disease.
  - An unusual or allergic reaction to propranolol, other medicines, foods, dyes, or preservatives.

Patient and Family Education:

- Store propranolol at room temperature away from moisture, heat, and light.
- Always take this medication with a full glass of water.
- To get the correct dose, measure the liquid with a marked measuring spoon or medicine cup, not with a regular tablespoon. If a dose-measuring device is not available, ask the pharmacist for one.

Special Populations:

- *Elderly:* Exercise caution with propranolol *(Inderal)* in the elderly due to decreased endorgan function, along with other drug therapy. Dose adjustment is necessary for patients with liver impairment and/or renal disease due to excessive metabolites excreted by the kidneys.
- *Pregnancy:* Category C.
- *Lactation:* Excreted in human breast milk, caution advised.
- *Children:* Not indicated for children.

QUETIAPINE (*Seroquel, Seroquel XR*)

Classification: Atypical antipsychotic (Second generation).

Indications: Schizophrenia, depressive episodes associated with bipolar disorder, monotherapy or combination therapy for acute manic episodes associated with bipolar I disorder, acute and maintenance treatment of schizophrenia.

Available Forms: Tablet, 25, 50, 100, 200, 300, and 400 mg; extended-release tablet, 200, 300, and 400 mg.

Dosage:
- 400–800 mg/day in one (*Seroquel XR*) or two (*Seroquel*) doses for schizophrenia and bipolar mania.
- 300 mg once per day for bipolar depression.
- Dose for the initial 5 days of therapy is 50 mg (Day 1), 100 mg (Day 2), 200 mg (Day 3), 300 mg (Day 4), and 400 mg (Day 5). After Day 5, the dose should be adjusted within the recommended dose range of 400–600 mg/day based on response and tolerability. *Adults:* 25 mg twice daily initially, with increases in total daily dose of 25–50 mg divided into 2 or 3 doses on the second and third days, as tolerated, to a total dose range of 300–400 mg daily by the fourth day. Can be given at a maximum dose of 800 mg/day. *Elderly*: 25 mg/day initially. The dose should be increased daily in increments of 25–50 mg/day to an effective dose, depending on the clinical response and tolerability of the patient.

Administration:
- Tablets may be given with or without food.
- Take this medicine with a full glass of water.
- Advise patient not to crush, chew, or break an extended-release tablet. Swallow the pill whole. Breaking the pill may cause too much of the drug to be released at one time.
  - Advise patient to take the missed dose as soon as remembered. Skip the missed dose if it is almost time for the next scheduled dose. Do not take extra medicine to make up the missed dose.

Side Effects: Can increase risk for diabetes and dyslipidemia; dizziness, sedation palpitations; blurred vision; dry mouth, constipation, dyspepsia, abdominal pain, weight gain; tachycardia; hyperglycemia; increased risk of death and cerebrovascular events in elderly with dementia-related psychosis; palpitations; fatigue; asthenia; somnolence; dizziness; cough; orthostatic hypotension (usually during initial dose titration); neuroleptic malignant syndrome (rare); seizures (rare).

Drug Interactions:
- Alcohol and other CNS depressants may increase CNS depression.
- May increase hypotensive effects of antihypertensives.
- May increase the clearance of hepatic enzyme inducers such as phenytoin.
- May decrease total free thyroxine (T4), serum levels of quetiapine may be increased.
- However, no dose adjustment is required.

- *Alert:* This list may not describe all possible interactions. Instruct clients to provide a list of all the medicines, herbs, nonprescription drugs, or dietary supplements they use.
- May increase serum cholesterol, triglycerides, AST, ALT, WBC count, and gamma-G GT levels.
- May produce false-positive pregnancy test result.

Pharmacokinetics:
- *Metabolism:* Metabolites are inactive.
- *Onset:* Unknown.
- *Peak:* 1.5 hr.
- *Metabolism:* Metabolized by the liver into the metabolite, *N* -desalkyl-quetiapine. The CYP enzymes responsible for the metabolism of quetiapine are CYP2D6 and CYP3A4.
- *Excretion:* Primarily excreted in the urine (73%), and the remaining amount of the drug is excreted in the feces (27%).
- *Half-life:* 6–7 hr.

Precautions:
- Use with caution in patients who are at risk for aspiration pneumonia.
- Manufacturer recommends to examine for cataracts before and every 6 months after starting quetiapine.
- Use with caution in patients with Alzheimer's dementia; history of breast cancer; cardiovascular disease; cerebrovascular disease; dehydration; hepatic impairment; seizures; hypothyroidism.
- *Do not use if there is a proven allergy*.
- *Contraindications:* None known.

Patient and Family Education:
- Take exactly as prescribed by the provider. Do not take in larger or smaller amounts or for longer than recommended.
- Can be taken with or without food.
- Quetiapine can cause side effects that may impair thinking or reactions. Be careful if you drive or do anything that requires you to be awake and alert.
- Quetiapine may cause high blood sugar (hyperglycemia). Talk to provider if any signs of hyperglycemia such as increased thirst or urination, excessive hunger, or weakness. If diabetic, check blood sugar levels on a regular basis.
- Drink fluids often, especially during physical activity.
- Avoid becoming overheated or dehydrated during exercise and in hot weather. You may be more prone to heat stroke.
- Avoid getting up too fast from a sitting or lying position. Get up slowly and steady yourself to prevent a fall.
- *Avoid drinking alcohol*.
- *Stop using this medication and call provider immediately* if you have very stiff (rigid) muscles, high fever, sweating, confusion, fast or uneven heartbeats, tremors; feel like you might pass out; have jerky muscle movements you cannot control, trouble swallowing, problems with speech; have blurred vision, eye pain, or see halos around lights; have increased thirst and urination, excessive hunger, fruity breath odor, weakness, nausea and vomiting; have fever, chills,

body aches, flu symptoms; or have white patches or sores inside your mouth or on your lips.
- Do as ordered; do not stop taking the drug suddenly without first talking to the health care provider, even if you feel fine. You may have serious side effects if you stop taking the drug suddenly.
- Call provider if symptoms do not improve or get worse.
- Store at room temperature away from moisture and heat.
- Avoid alcohol.
- Change positions slowly to reduce hypotensive effect.
- Avoid tasks that require alertness and motor skills until response to drug is established.

Special Populations:
- *Elderly*: Generally lower dose is used (e.g., 25–100 mg twice a day). Higher dose can be used if tolerated. Elderly with dementia-related psychosis treated with atypical antipsychotics are at higher risk of death and cerebrovascular events.
- *Renal impairment*: No dose adjustment is required.
- *Hepatic impairment*: Dose may need to be reduced.
- *Cardiac impairment:* Use with caution because of risk of orthostatic hypotension.
- *Pregnancy*: Category C. Some animal studies show adverse effects. There are no controlled studies in humans. It should be used only when the potential benefits outweigh potential risks to the fetus. Quetiapine may be preferable to anticonvulsant mood stabilizers if treatment is required during pregnancy.
- *Lactation:* It is not unknown whether the drug is secreted in human breast milk. It is recommended to either discontinue drug or bottle feed. Infants of women who choose to breastfeed while on this drug should be monitored for possible adverse effects.
- *Children and adolescents:* Not officially recommended for patients breastfeeding younger than 18 years.
- Probably safe and effective for behavioral disturbances in this population.
- Should be monitored more frequently than adults. May tolerate lower doses better.
- Watch for activation of suicidal ideation. Inform parents or guardian of this risk so they can help monitor the risk. Increased risk of suicidal thinking and behavior in children and adolescents with major depressive disorder and other psychiatric disorders.

RAMELTEON (*Rozerem*)

Classification: Non-Benzodiazepine GABA receptor agonist.

Indications: Treatment of insomnia characterized by difficulty with sleep onset in the nondepressed patient.

Available Form: Tablet.

Dosage: 8 mg PO taken within 30 min of going to bed.

Administration:
- PO with a glass of water.
- Take at least 2 hr after a meal.
- Drowsiness and/or dizziness will be exacerbated with concomitant alcohol consumption; alcohol and CNS depressants should be avoided while taking this medication.

Side Effects:
- Hallucinations; behavior changes; insomnia; SSRI-treated patients taking ramelteon may experience impaired concentration, aggravated depression, and manic reaction.
- *Side effects that usually do not require medical attention*: Nausea; daytime drowsiness; headache; vomiting; dizziness; diarrhea; fatigue.

Drug Interactions: This medicine may interact with the following medications: antifungals; fluvoxamine; rifampin; SSRIs; CNS depressants (including alcohol).

Pharmacokinetics:
- Non-BZDs hypnotic. Mechanism of action: melatonin receptor agonist.
- Highly bound to plasma proteins.
- Peak plasma levels are reached in 0.75 hr.
- Bioavailability is only 1.8%.
- Metabolized by CYP450 1A2 and 3A4.
- *Half-life:* Average is 1–2.6 hr.

Precautions:
- See patient as often as necessary if long-term use is indicated.
- Ensure that patient is aware he/she is not to exceed maximum dosage.
- Instruct patient to monitor for behavior changes.
- If patient is drowsy or dizzy, patient should not drive, use machinery, or attempt to accomplish any task that requires mental alertness.
- Avoid alcohol and CNS depressants, as concomitant use may exacerbate symptoms.

Patient and Family Education:
- Store at 25°C (77°F); drug will remain stable between 15°C and 30°C (59°F–77°F).
- Discard unused medication after expiration date.

- An FDA-approved patient medication guide, which is available with the product information, must be dispensed with this medication.

Special Populations:

- *Elderly*: Impaired hepatic function: Do not use in patients with impaired hepatic function.
- *Pregnancy*: Category C.
- *Lactation*: No human studies have been performed. Not recommended in breastfeeding mothers.
- *Children*: Safety and efficacy have not been established.

RISPERIDONE (*Risperdal, Risperdal Consta*)

Classification: Atypical antipsychotic (second generation).

Indications: Schizophrenia (age 13 and older), monotherapy or combination therapy for acute mixed or manic episodes associated with bipolar I disorder (age 10 and older), and treatment of irritability associated with autistic disorder in children and adolescents aged 5–16 years.

Available Forms: Tablet, 0.25, 0.5, 1, 2, 3, 4, and 6 mg; orally disintegrating tablet, 0.5, 1, and 2 mg; liquid, 1 mg/mL (30-mL bottle); long-acting depot microspheres formulation for deep IM formulation, 25 mg vial/kit, 37.5 mg vial/kit, 50 mg vial/kit.

Dosage:

Schizophrenia:

- *Adults:* Drug may be given once or twice daily. Initial dosing is generally 2 mg/day. Increase dosage at intervals not less than 24 hr, in increments of 1–2 mg/day, as tolerated, to a recommended dose of 4–8 mg/day PO for adults with acute psychosis. Periodically and bipolar disorder.
- 0.5–2.0 mg/day PO for children and elderly.
- 25–50 mg IM, every 2 wk reassess to determine the need for maintenance treatment with an appropriate dose.
- *Adolescents aged 13–17*: Start treatment with 0.5 mg once daily, given as a single daily dose in either morning or evening. Adjust dose, if indicated, at intervals not less than 24 hr, in increments of 0.5 or 1 mg/day, as tolerated, to a recommended dose of 3 mg/day. There are no data to support use beyond 8 wk.

Irritability, including aggression, self-injury, and temper tantrums associated with an autistic disorder:

- *Adolescents and children aged 5 and older who weigh 20 kg (44 lb) or more:* Initially, 0.5 mg PO once daily or divided bid. After 4 days, increase dose to 1 mg. Increase dosage further in 0. 5 mg increments at intervals of at least 2 wk.
- *Children aged 5 and older who weigh less than 20 kg:* Initially, 0.25 mg PO once daily or divided bid. After 4 days, increase dose to 0.5 mg. Increase dosage further in 0. 25 mg increments at intervals of at least 2 wk. Increase cautiously in children who weigh less than 15 kg (33 lb).

Administration:

- Give drug with or without food.
- Advise patient to take the missed dose as soon as remembered. Skip the missed dose if almost time for the next scheduled dose.
- Open package by peeling off foil backing with dry hands.
- Measure the liquid form of risperidone with a special dose-measuring spoon or cup, not a regular tablespoon.
- Do not mix the liquid form with cola or tea.
- Phenylalanine contents of ODTs are as follows: 0.5 mg tablet contains 0.14 mg phenylalanine; 1 mg tablet contains 0.28 mg phenylalanine; 2 mg tablet contains 0.56 mg phenylalanine; 3 mg tablet contains 0.63 mg phenylalanine; 4 mg tablet contains 0.84 mg phenylalanine.

IM:

- Continue oral therapy for the first 3 wk of IM injection therapy until injections take effect, then stop oral therapy.
- To reconstitute IM injection, inject premeasured diluent into vial and shake vigorously for at least 10 sec. Suspension appears uniform, thick, and milky; particles are visible, but no dry particles remain. Use drug immediately, or refrigerate for up to 6 hr after reconstitution. If more than 2 min pass before injection, shake vigorously again. See manufacturer's package insert for more detailed instructions.
- Refrigerate I M injection kit and protect it from light. Drug can be stored at temperature less than 77°F (25°C) for no more than 7 days before administration.

Side Effects: Can increase risk for diabetes and dyslipidemia; extrapyramidal symptoms (dose dependent); hyperprolactinemia (dose dependent); dizziness.

- Akathisia, somnolence, dystonia, headache, insomnia, headache, agitation, anxiety; nausea, sedation, weight gain, constipation, abdominal pain; tachycardia; sedation; sexual, parkinsonism dysfunction; hyperglycemia; increased risk of death and cerebrovascular events in elderly with dementia-related psychosis; TD (rare); suicide attempt, dizziness, fever, hallucination, mania, impaired concentration, abnormal thinking and dreaming, tremor, hypoesthesia, fatigue, depression, nervousness.
- Tachycardia, chest pain, orthostatic hypotension (rare, usually during initial dose, titration); neuroleptic malignant syndrome (rare); seizures (rare); peripheral edema, syncope, hypertension.
- Rhinitis, sinusitis, pharyngitis, ear disorder.
- Constipation, nausea, vomiting, dyspepsia, abdominal pain, anorexia, dry mouth, increased saliva, diarrhea.
- Urinary incontinence, increased urination, abnormal orgasm, vaginal dryness, weight gain, hyperglycemia, weight loss.
- Arthralgia, back pain, leg pain, myalgia.
- Coughing, dyspnea, upper respiratory infection.
- Rash, dry skin, photosensitivity reactions, acne, injection site pain.
- Tooth disorder, toothache, injury, decreased libido.

Drug Interactions:

- May increase effects of antihypertensive medications.
- May antagonize levodopa and dopamine agonists.
- Plasma levels of risperidone may be reduced if given in conjunction with antihypertensives, carbamazepine, clozapine.
- Plasma levels of risperidone may be increased if given in conjunction with CNS depressants, dopamine agonists, levodopa, fluoxetine, or paroxetine.
- Plasma levels of risperidone may be increased if given in conjunction with clozapine, but no dose adjustment is required.
- *Alert:* This list may not describe all possible interactions. Instruct clients to provide a list of all the medicines, herbs, nonprescription drugs, or dietary supplements they use.

Pharmacokinetics:

- *Elimination:* 7–8 wk after last injection (long-acting formulation).

- *Metabolism:* Metabolites are active; metabolized by CYP450 2D6. Blocks dopamine and 5-HT 2 receptors in the brain.
- *Half-life:* 3–20–24 hr (oral formulation); 3–6 days (long-acting formulation).

PO onset is unknown.

Peak action = 1 hr.

Duration of effect is unknown.

IM 3 wk, 4–6 wk, 7 wk.

Precautions:

- Use with caution in patients with conditions that predispose to hypotension (dehydration, overheating).
- May increase prolactin level.
- May decrease hemoglobin level and hematocrit.
- Sun exposure may increase risk of photosensitivity reactions.
- Contraindicated in patients hypersensitive to drug and in breastfeeding women.
- Use cautiously in patients with prolonged QT interval, cerebrovascular disease, dehydration, hypovolemia, history of seizures, or conditions that could affect metabolism or hemodynamic responses.
- Use cautiously in patients exposed to extreme heat.
- Use cautiously in patients at risk for aspiration pneumonia.
- Priapism has been reported.
- *Do not use if there is a proven allergy.*
- Use IM injection cautiously in those with hepatic or renal impairment.
- *Alert:* Obtain baseline BP measurements before starting therapy, and monitor pressure regularly. Watch for orthostatic hypotension, especially during first dose adjustment.
- *Alert:* Fatal cerebrovascular adverse events (stroke, transient ischemic attacks) may occur in elderly patients with dementia. Drug is not safe or effective in these patients.
- Monitor patient for tardive dyskinesia, which may occur after prolonged use. It may not appear until months or years later and may disappear spontaneously or persist for life, despite stopping drug.
- Life-threatening hyperglycemia may occur in patients taking atypical antipsychotics. Monitor patients with diabetes regularly.
- Monitor patient for weight gain.
- Periodically reevaluate drug's risks and benefits, especially during prolonged use.
- *Alert:* Watch for evidence of NMS (extrapyramidal effects, hyperthermia, autonomic disturbance), which is rare but can be fatal.
- *Alert:* Monitor patient for symptoms of metabolic syndrome (significant weight gain and increased BMI, hypertension, hyperglycemia, hypercholesterolemia, and hypertriglyceridemia).

Patient and Family Education:

- Take exactly as prescribed by the provider. Do not take in larger or smaller amounts or for longer than recommended.
- Can be taken with or without food.

- You may be more sensitive to temperature extremes (very hot or cold conditions) when taking this medication. Avoid getting too cold, or becoming overheated or dehydrated.
- Drink plenty of fluids, especially in hot weather and during exercise.
- Risperidone can cause side effects that may impair thinking or reactions. Be careful if you drive or do anything that requires you to be awake and alert.
- Risperidone may cause high blood sugar (hyperglycemia). Talk to your provider if any signs of hyperglycemia, such as increased thirst or urination, excessive hunger, or weakness occur. If diabetic, check blood sugar levels on a regular basis.
- The risperidone orally disintegrating tablet may contain phenylalanine. Talk to your provider before using this form of risperidone if you have PKU.
- *Avoid drinking alcohol*. It can increase some of the side effects.
- *Do not* mix the liquid form with cola or tea.
- *Stop using this medication and call provider immediately* if you have fever, stiff muscles, confusion, sweating, fast or uneven heartbeats, restless muscle movements in face or neck, tremor (uncontrolled shaking), trouble swallowing, feeling light-headed, or fainting.
- Do not stop taking the drug suddenly without first talking to provider, even if you feel fine. You may have serious side effects if you stop taking the drug suddenly.
- Call provider if symptoms do not improve or get worse.
- Store at room temperature away from moisture, light, and heat. Do not freeze the liquid form of risperidone.
- Warn patient to avoid activities that require alertness until effects of drug are known.
- Warn patient to rise slowly, avoid hot showers, and use other precautions to avoid fainting when starting therapy.
- Advise patient to use caution in hot weather to prevent heatstroke.
- Tell patient to take drug with or without food.
- Instruct patient to keep the ODT in the blister pack until just before taking it. Use dry hands to peel a part of the foil to expose the tablet; do not attempt to push it through the foil. After opening the pack, dissolve the tablet on tongue without cutting or chewing.
- Tell patient to use sunblock and wear protective clothing outdoors.
- Advise patient to avoid alcohol during therapy.

Special Populations:

- *Elderly*:
  - Initially 0.5 mg orally a day; then increase to 0.5 mg twice a day. Titrate once a week for doses above 1.5 mg twice a day.
  - Long-acting risperidone: 25 mg every 2 wk. Oral administration should be continued for 3 wk after the first injection.
  - Elderly with dementia-related psychosis treated with atypical antipsychotics are at higher risk of death and cerebrovascular events.
- *Renal impairment:*
  - Initially 0.5 mg orally twice a day for the first week. Increase to 1 mg twice a day during the second week.

- Long-acting risperidone should not be given to patients with renal function impairment unless s/he can tolerate at least 2 mg/day orally.
- Long-acting risperidone should be given 25 mg every 2 wk. Oral administration should be continued for 3 wk after the first injection.

- *Hepatic impairment:*
  - Initially 0.5 mg orally twice a day for the first week. Increase to 1 mg twice a day during the second week.
  - Long-acting risperidone should not be given to patients with hepatic function impairment unless s/he can tolerate at least 2 mg/day orally.
  - Long-acting risperidone should be given 25 mg every 2 wk. Oral administration should be continued for 3 wk after the first injection.
- *Cardiac impairment:* Use with caution because of risk of orthostatic hypotension. There is a greater risk of stroke if given to elderly patients with atrial fibrillation.
- *Pregnancy:* Category C. Some animal studies show adverse effects. There are no controlled studies in humans. It should be used only when the potential benefits outweigh potential risks to the fetus. Risperidone may be preferable to anticonvulsant mood stabilizers if treatment is required during pregnancy. Effects of hyperprolactinemia on the fetus are unknown.
- *Lactation*: Drug is secreted in human breast milk. It is recommended to either discontinue the drug or bottle feed. Advise women who choose to breastfeed while on this drug should be monitored for possible adverse effect.
- *Children and adolescents:*
  - Safe and effective for behavioral disturbances in this population.
  - Risperidone is the most frequently used atypical antipsychotic medication in this population.

RIVASTIGMINE TARTRATE (*Exelon and Exelon patch*)

Classification: Cholinesterase inhibitor.

Indications:
- Used for the treatment of mild to moderate dementia of the Alzheimer's type.
- Used for the treatment of mild to moderate dementia associated with Parkinson's disease.

Available Forms: Capsule, oral solution, patch.

Dosage: *Oral:* Starting dose, 1.5 mg PO bid. After 2 weeks, if the dose is well tolerated, may be increased to 3 mg bid. Dose may be increased to 6 mg bid. The maximum dose is 6 mg bid (12 mg/day).
Transdermal: Starting dose, one 4.6 mg/24-hr patch transdermally daily. After 4 weeks, may increase to the 9.5 mg/24-hr patch. Recommended maintenance dose and maximum dose is 9.5 mg/24 hr.

Administration:
- *Oral*: Should be taken with meals in divided doses in the morning and evening. May be swallowed directly from the syringe provided, or may be mixed with a small amount of water, cold fruit juice, or soda. Oral solution and capsules may be interchanged at equal doses.
- *Patch:* Remove previous transdermal patch before placement of a new one.

Side Effects: Nausea; vomiting; loss of appetite; heartburn or indigestion; stomach pain; weight loss; diarrhea; constipation; gas; weakness; dizziness; headache; extreme tiredness; lack of energy; tremor or worsening of tremor; increased sweating; difficulty falling asleep or staying asleep; confusion.
Serious side effects that may require medical attention: Fainting; black and tarry stools; red blood in stools; bloody vomit; vomit that looks like coffee grounds; difficult or painful urination; seizures; depression; anxiety; aggressive behavior; hearing voices or seeing things that do not exist; uncontrollable movements and muscle contractions; Stevens-Johnson syndrome.

Drug Interactions: This medicine may interact with the following medications: amantadine; other cholinesterase inhibitors; neuromuscular blockers; orphenadrine; cyclobenzaprine; parasympathomimetics; disopyramide; sedating H-1 blockers; amoxapine; antimuscarinics; clozapine; digoxin; general anesthetics; local anesthetics; maprotiline; nicotine; NSAIDs; olanzapine; phenothiazines; tricyclic antidepressants.

Pharmacokinetics: Selective inhibitor of brain acetylcholinesterase and butylcholinesterase.

Oral:
- Peak plasma concentrations reached in approximately 1 hr.
- Bioavailability after a 3 mg dose is 36%, indicating a significant first pass effect.
- Should be taken with food to enhance bioavailability.

Topical:
- Peak plasma concentrations are typically reached in 8 hr (range from 8–16 hr).
- Steady state of medication affected by body weight.
- Approximately 50% of the drug load is released from the transdermal system over 24 hr.

Precautions: Patients with a carbamate hypersensitivity; rivastigmine is a carbamate derivative.

Patient and Family Education:
Oral:
- Store at 25°C (77°F); excursions permitted to 15°C to 30°C (59°F–86°F).
- Store in a tight container. Store solution in an upright position.
- Do not place rivastigmine solution in the freezer or allow to freeze.
- When oral solution is combined with cold fruit juice or soda, the mixture is stable at room temperature for up to 4 hr.
- Throw away any medication that is outdated or no longer needed.

Patches:
- Apply once daily to clean, dry, hairless, intact skin.
- May apply to back, chest, or upper arm.
- Rotate application sites daily. Do not apply to the same site more than once every 14 days.
- Apply patch at approximately the same time every day. Remove the old patch before replacing with a new one.
- May wear while swimming, bathing, showering, or in hot weather.
- Avoid excessive sunlight or saunas.

SERTRALINE (*Zoloft*)

Classification: Selective serotonin reuptake inhibitor (SSRI).

Indications: Used primarily to treat depression but may also be used for OCD, PD, posttrauma stress, PMDD, or social anxiety.

Available Forms: Tablet, 25, 50, and 100 mg; concentrate solution, 20 mg/mL (60 mL).

Dosage: Starting dose, 50 mg/day; maintenance dose, 50–75 mg incrementally; maximum, 200 mg daily.

Administration:
- PO with a glass of water.
- Take with or without food. Concentrate solution must be diluted immediately prior to use with water or juice (other than grapefruit juice).
- Take at regular intervals.
- May be prescribed for children as young as 6 years of age for selected conditions (25 mg/day); *precautions do apply*.
- Instruct patients to take missed dose as soon as possible. If it is almost time for the next dose, advise to take only that dose.

Side Effects: Displays some inhibition of dopamine reuptake, which may be beneficial to some.
- Patients (e.g., those experiencing hypersomnia, low energy, or mood reactivity), but problematic to others (e.g., causing overactivation in patients with panic disorder). May see a little more GI side effect (diarrhea) than others in class.
- Nervousness, headache and nausea, insomnia; serotonin syndrome; dry mouth, easy bruising, or excess perspiration; diarrhea.
- Withdrawal syndrome (including neonatal withdrawal syndrome): Symptoms may include dizziness, muscle aches, headache, nausea, vomiting, gait instability, agitation, and/or "electric shock" sensations.
- Sexual dysfunction (more than 50% of men and women).
- Hyponatremia (e.g., in geriatric patients taking diuretics).
- Side effects are most common during the first or second week of therapy. Starting with a lower dosage and gradually increasing it, and taking the medication with food will limit some of these side effects.
- *Most common*: Dizziness, headache, insomnia, somnolence, and change in sex drive or performance.
- *Less common*: Allergic reactions (skin rash, itching, or hives); swelling of the face, lips, or tongue; feeling faint or lightheaded; falls; hallucination; loss of contact with reality; seizures; suicidal thoughts or other mood changes; unusual bleeding or bruising; unusually weak or tired; vomiting; change in appetite; diarrhea; increased sweating; indigestion; nausea; tremors.

Drug Interactions:
- *MAOIs:* Extreme risk for serotonin syndrome. Allow 2-wk washout period post-MAOI prior to initiation.
- *TCAs:* Plasma levels may be increased by SSRIs, so add with caution in low doses.

- *ASA and NSAIDs:* Increased risk of bleeding.
- *CNS depressants:* May increase depressant effects.
- *SSRIs or SARIs:* May cause serotonin syndrome in combination with the following medications: tramadol, high-dose triptans, or the antibiotic linezolid.
- Use with caution in patients taking blood thinners (*Coumadin*), other antidepressants, antihistamines, lithium, TCAs, and certain antibiotics, such as erythromycin, clarithromycin, or azithromycin.
- Absolute contraindications include MAOIs, such as phenelzine (*Nardil*), tranylcypromine (*Parnate*), isocarboxazid (*Marplan*), and selegiline (*Eldepryl*).
- Avoid using with SNRI agents, triptans, and other SSRI agents.
- Caution with aspirin, NSAIDs (e.g., ibuprofen or naproxen), COX inhibitors, other antiinflammatory drugs, and St. John's wort.
- *Alert:* This list may not describe all possible interactions. Instruct patients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements used, and if they smoke, drink alcohol, or use illegal drugs.

Pharmacokinetics:

- Highly bound to plasma proteins and have a large volume of distribution.
- Readily absorbed in the GI tract, SSRIs are metabolized in the liver, and excreted in the urine. Dosages may be decreased in patients with liver or kidney disease.
- Caution advised in elderly clients.
- *Metabolism:* Metabolized in the liver by cytochrome P450 microsomal enzymes.
- *Peak plasma levels:* 2–10 hr.
- *Half-life:* Variable, but most SSRIs have half-lives of 20–24 hr. A notable exception is fluoxetine (*Prozac*), and its active metabolite, norfluoxetine, which have half-lives of 2–4 days and 8–9 days, respectively.
- They are highly bound to plasma proteins and have a large volume of distribution.
- Addition of serotonergic medications to a patient's regimen must not occur until 2–3 wk after discontinuation of an SSRI (some recommend a 5-week "washout" period for fluoxetine prior to initiation of an MAOI).
- *Metabolism:* Liver; CYP 2C19, 2D6, 3A4 substrate; 2D6 (weak), 3A4 (weak) inhibitor.
- *Excretion:* Urine 40–45% (none unchanged); feces 40–45% (12–14% unchanged).
- *Half-life:* 26 hr.

Precautions:

- May cause sedation and mental clouding.
- Use with caution in patients with liver, kidney, or cardiovascular disease.
- Adverse effects and side effects are commonly observed before therapeutic effects.
- Many side effects are dose dependent and may improve over time.
- Taper discontinuation to avoid withdrawal symptoms.
- *Elderly:* May require decreased dosage.
- See patients as often as necessary to ensure that the drug is working on the panic attacks, determine compliance, and review side effects.

- Make sure patients realize that they need to take prescribed doses even if they do not feel better right away. It can take several weeks before they feel the full effect of the drug.
- Instruct patients and families to watch for worsening depression or thoughts of suicide. Also, watch out for sudden or severe changes in feelings such as feeling anxious, agitated, panicky, irritated, hostile, aggressive, impulsive, severely restless, overly excited, hyperactive, or not being able to sleep. If this happens, especially at the beginning of antidepressant treatment or after a change in dose, patient should call the health care provider.
- Drowsiness or dizziness: Patients should not drive or use machinery or do anything that needs mental alertness until the effects of this medicine are known.
- Caution patients not to stand or sit up quickly, especially if older. This reduces the risk of dizzy or fainting spells. Alcohol may interfere with the effect of this medicine. Avoid alcoholic drinks.
- Caution patients not to treat themselves for coughs, colds, or allergies without asking a health care professional for advice. Some ingredients can increase possible side effects.
- For dry mouth, chewing sugarless gum or sucking hard candy and drinking plenty of water may help. Contact your health care provider if the problem persists or is severe.
- Caution should be exercised in the following:
  - Bipolar disorder or a family history of bipolar disorder.
  - Diabetes.
  - Heart disease.
  - Liver disease.
  - Electroconvulsive therapy.
  - Seizures (convulsions).
  - Suicidal thoughts, plans, or attempts by patients or a family member.
  - An unusual or allergic reaction to sertraline, other medicines, foods, dyes, or preservatives.
  - Pregnancy or trying to get pregnant.
  - Breastfeeding.

Patient and Family Education:

- Should be taken about the same time every day, morning or evening, and can be taken with or without food (with food if there is any stomach upset).
- May start with half of lowest effective dose for 3–7 days, then increase to lowest effective dose to diminish side effects.
- Administration time may be adjusted based on observed sedating or activating drug effects.
- May take up to 4–8 wk to show its maximum effect at this dose, but some may see symptoms of dysthymia improving in as little as 2 wk.
- If patient plans on becoming pregnant or is pregnant, discuss the benefits versus the risks of using this medicine while pregnant.
- Because this medicine is excreted in the breast milk, nursing mothers should not breastfeed while taking this medicine without prior consultation with a psychiatric nurse practitioner or psychiatrist. Newborns may develop symptoms including feeding or breathing difficulties, seizures, muscle stiffness, jitteriness, or constant crying.

- Do not stop taking this medication unless the health care provider directs. Report side effects or worsening symptoms to the health care provider promptly.
- The medication should be tapered gradually when changing or discontinuing therapy.
- Dosage should be adjusted to reach remission of symptoms and treatment should continue for at least 6–12 months following last reported dysthymic experience.
- Caution is advised when using this drug in the elderly because they may be more sensitive to the effects of the drug. Elderly patients should receive a lower starting dose.
- Keep these medications out of the reach of children and pets.
- Store at room temperature. Take any unused medication after the expiration date to the local pharmacy on drug give-back day. Avoid throwing the medication into the environment.
- Discuss any worsening anxiety, aggressiveness, impulsivity, or restlessness.
- Patients or families should report any severe, abrupt onset or changes in symptoms to health professionals. This may be reflective of increased risk of suicidal thinking.
- Caution for the concomitant use of NSAIDs, aspirin, warfarin, and any other drugs that alter platelets.

Special Populations:

- *Elderly:* Older individuals tend to be more sensitive to medication side effects, such as hypotension and anticholinergic effects. They often require adjustment of medication doses for hepatic or renal dysfunction. SSRIs with shorter half-lives or less P-450 inhibition may be more desirable (e.g., citalopram) for geriatric populations than SSRIs with longer half-lives (e.g., *fluo*xetine). SSRIs have been associated with increased risk of falls in nursing home residents and neurologic effects in patients with Parkinson's disease. Elderly patients are more prone to SSRI-induced hyponatremia.
- *Hepatic impairment:* Dose adjustment necessary.
- *Pregnancy:* Psychotherapy is the initial choice for most pregnant patients with DD. Most SSRIs are Category C drugs, due to adverse effects; risks are observed in animal studies. Sertraline has been found to have lower cord blood levels than other SSRIs, although the clinical significance is unknown. Thus, an individual risk-benefit analysis must be done to determine appropriate treatment in pregnant women with DD. If continued during pregnancy, SSRI dosage may need to be increased to maintain euthymia due to physiologic changes associated with pregnancy.
- *Lactation:* Adverse reactions have not been reported; however, long-term effects have not been studied, and the manufacturer recommends caution.
- *Children:* Initial SSRI dosing approved for use in children. 50% adult dosing. Increasing doses may require more gradual increments, and discontinuation may require a more gradual taper. Psychiatric consultation is recommended due to black box warning of children 12 years or older; however, monitoring for increased suicidal ideation using SSRI therapy in children is critical.

TEMAZEPAM (*Restoril*)

Classification: Benzodiazepine (BZD).

Indications: Treatment of insomnia.

Available Form: Capsule, 7.5, 15, and 30 mg.

Dosage: 15–30 mg/day PO immediately before patient is ready for sleep.

Administration:
- PO with a glass of water.
- Drowsiness and/or dizziness will be exacerbated with concomitant alcohol consumption; alcohol should be avoided while taking this medication.
- Caution clients not to stop taking drug abruptly if used long-term.

Side Effects:
- Hallucinations; behavior changes.
- *Side effects that usually do not require medical attention*: Nausea; daytime drowsiness; headache; vomiting; dizziness; diarrhea; dry mouth; nervousness.

Drug Interactions: This medicine may interact with the following medications: antifungals; CNS depressants (including alcohol); digoxin; macrolides; phenytoin.

Pharmacokinetics:
- BZD, hypnotic.
- Mechanism of action is thought to occur at the level of the GABA receptor complex.
- Highly bound to plasma proteins.
- Peak plasma levels are reached in 1.2–1.6 hr.
- Metabolized by CYP450 2B6, 2C19, 3A4.
- *Half-life:* Average is 20–40 hr.

Precautions:
- See patient as often as necessary if long-term use is indicated.
- Ensure that patient is aware he/she is not to exceed maximum dosage.
- Instruct patient to monitor for behavior changes.
- If patient is drowsy or dizzy, patient should not drive, use machinery, or attempt to accomplish any task that requires mental alertness.
- Avoid alcohol, as concomitant use may exacerbate symptoms.

Patient and Family Education:
- Store at room temperature between 20°C and 25°C (59°F–77°F).
- Discard unused medication after the expiration date.

Special Populations:
- *Elderly*: More sensitive to hypnotics. Use lowest effective dose, recommended 7.5 mg/day. Due to sedation and increased risk of falls, all BZDs are placed on Beers List of Potentially Inappropriate Medications for Geriatrics.

- *Hepatic impairment:* Modify dosage accordingly.
- *Pregnancy*: Category X.
- *Lactation*: No human studies have been performed. Not recommended in breastfeeding mothers. Drug is excreted in breast milk.
- *Children*: Not for use in children less than 18 years of age.

THIOPENTAL SODIUM (*Pentothal*)

Classification: Barbiturate.

Indications: Used as the sole anesthetic agents for brief (15 min) procedures, to provide hypnosis with other agents for analgesia or muscle relaxation, for control of convulsions, and for narcoanalysis and narcosynthesis in psychiatric disorders. In dissociative amnesia, it helps to desensitize patients with phobias and assist in the recall of painful repressed memories. Anesthetists or anesthesiologists would be best trained to use this medication for treatment of amnesia.

Available Forms: Liquid for IV infusion; diluent may be supplied in a separate container.

Dosage:
- There is no fixed dosage, and the drug is titrated against patient requirements as governed by age, sex, and body weight.
- Younger patients require relatively larger doses than middle-aged or elderly persons.
- Adult females require less than adult males.
- Obese patients require a larger dose.
- The dosage can range from 250 mg–25 g and the concentration can range from 2–2.5%.

Warning: The 2.5 g and larger sizes contain adequate medication for several patients.

Administration:
- Premedication with an anticholinergic agent may precede administration of thiopental sodium.
- *Pentothal* (thiopental sodium for injection, USP) is injected IV at a slow rate of 100 mg/mm (4 mL/min of a 2.5% solution) with the patient counting backward from 100. When the patient becomes confused, but before actual sleep is produced, the injection is discontinued.
- Alternatively, may be administered by rapid IV drip using a 0.2% concentration in 5% dextrose. At this concentration, the rate of administration should not exceed 50 mL/min.
- Allow the patient to return to a semidrowsy state where conversation is coherent.
- It is advisable to inject a small "test" dose of 25–75 mg (1–3 mL of a 2.5% solution) to assess tolerance or unusual sensitivity to drug and pause for at least 60 sec to see if respiratory depression occurs.
- Momentary apnea after each injection is typical.
- Extravascular infiltration should be avoided by ensuring that the needle is within the lumen of the vein prior to injection of pentothal.
- Avoid intra-arterial injection by palpating for the pulsing vessel prior to sticking the patient.
- Do not administer pentothal if the precipitate is not clear.
- Store at room temperature 15–30°C.
- Keep reconstituted solution in a cool place.

Side Effects: Respiratory depression, myocardial depression, cardiac arrhythmias, prolonged somnolence and recovery, laryngospasm, bronchospasm, immune hemolytic anemia with renal failure, radial nerve palsy, urticaria, shivering, sneezing, and coughing.

Drug Interactions: *Contraindicated with the following*: Probenecid (prolonged action of thiopental), diazoxide (hypotension), zimelidine (thiopental antagonism), opioid analgesics (decreased antinociceptive), aminophylline (thiopental antagonism), midazolam (synergistic reaction), azole antifungals (may decrease antifungal efficacy), etravirine (may decrease etravirine levels), pazopanib (may decrease pazopanib levels), protease inhibitors (may decrease protease inhibitor levels), ranolazine (may decrease ranolazine levels), and sodium oxybate (may increase risk of CNS and respiratory depression).

- Co-administration of pentoxifylline and thiopental causes death by acute pulmonary edema in rats due to increased pulmonary vascular permeability.
- Instruct individuals not to smoke, drink alcohol, or use illegal drugs as in combination with pentobarbital; these agents could cause serious consequences such as respiratory depression.
- Solutions of succinylcholine, tubocurarine, or other drugs with an acid pH should not be mixed with thiopental sodium solutions.
- *Alert:* This list may not describe all possible interactions. Instruct individuals to provide a list of all the medicines, herbs, nonprescription drugs, or dietary supplements they use so as to evaluate interactions.

Pharmacokinetics:

- Largely degraded in the liver and to a smaller extent in the kidney and brain.
- Hypnosis is produced within 30–40 sec of IV injection.
- Approximately 80% of the drug in the blood is bound to plasma protein.
- Products of thiopental are excreted in the urine.
- Acts on the GABA receptor in the brain and spinal cord and inhibits this receptor to decrease neuronal activity.
- *Half-life:* The elimination phase after a single IV dose is 3–11.5 hr, decreased in children, with an onset of action of 5–30 min.

Precautions:

- Keep resuscitative and endotracheal intubation equipment and oxygen readily available. Maintain patency of airway at all times.
- Avoid extravasation or intra-arterial injection.
- May be habit forming.
- Use within 24 hr after reconstitution. Discard unused portions.
- Administer only clear reconstituted solutions.

Patient and Family Education: Be sure to tell the health care provider of any of the following:

- Allergy to barbiturates.
- Porphyria (South African).
- Acute intermittent porphyria.
- Liver problems/disease.
- Kidney problems/disease.
- Pregnancy.

- Asthma.
- Myasthenia gravis.
- Endocrine disorders.
- Advanced cardiac disease.
- Hangover from administration of thiopental can last for up to 36 hr, so patient should not drive or operate heavy machinery or child should not ride bicycle for 36 hr after administration.

Special Populations:

- *Elderly*: Advanced cardiac disease, increased intracranial pressure, ophthalmoplegia, asthma, myasthenia gravis, endocrine insufficiency (pituitary, thyroid, adrenal, pancreas).
- *Renal impairment:* Caution should be used and renal function checked prior to beginning treatment, with dose adjustment as necessary.
- *Hepatic impairment:* Caution should be used and liver function checked prior to beginning treatment, with dose adjustment as necessary.
- *Pregnancy*: Category C (given only if needed).
- *Children*: Best results occurred with children over 12 years of age and over 50 kg in weight (30 mg/kg/PR). Maximum is 1 g dose.

THIORIDAZINE (*Mellaril*)

Classification: Antipsychotic drug, typical (first generation).

Indications: Treatment-resistant schizophrenia.

Available Forms: Tablet, 10, 15, 25, 50, 100, 150, and 200 mg; liquid, 30 mg/mL, 100 mg/mL; suspension, 5 mg/mL, 20 mg/mL.

Dosage: 200–800 mg in divided doses.

Administration:
- 50–100 mg 3 times a day; increase gradually; maximum 800 mg/day in divided doses.
- Start low and go slow as QTc prolongation is dose dependent.

Side Effects: Motor side effects due to blocking of D2 in the striatum; elevations in prolactin due to blocking of D2 in the pituitary; worsening of negative and cognitive symptoms; sedation, blurred vision, constipation, dry mouth; weight gain; dizziness, hypotension; increased incidence of diabetes or dyslipidemia; potentially dangerous QTc prolongation; neuroleptic malignant syndrome (rare); jaundice (rare); agranulocytosis; seizure (rare); ventricular arrhythmias and sudden death; increased risk of death and cerebrovascular events in elderly patients with dementia-related psychosis.

Drug Interactions:
- May decrease effects of levodopa and dopamine agonists.
- May increase effects of antihypertensive drugs.
- May enhance QTc prolongation interval of other drugs that do the same.
- Paroxetine, fluoxetine, duloxetine, bupropion, sertraline, citalopram, and other CYP450 2D6 agents can raise thioridazine to dangerous levels.
- Fluvoxamine, propranolol, and pindolol can inhibit metabolism and raise to dangerous levels.
- When used with a barbiturate, it may cause respiratory depression/arrest.
- Additive effects between thioridazine and CNS depressants.
- Increased risk of hypotension with alcohol and diuretics.
- Epinephrine may lower BP.
- Encephalopathic syndrome similar to neuroleptic malignant syndrome may develop when used with lithium.

Pharmacokinetics:
- CYP450 2D6 metabolizes thioridazine.
- *Half-life:* Approximately 10 hr.

Precautions:
- With signs of neuroleptic malignant syndrome, treatment must be discontinued immediately.
- *Do not augment* with other psychotropic agents.
- QTc prolongation may lead to torsades de pointes-type arrhythmia or sudden death.

- Use with caution in patients with respiratory disorders, glaucoma, or urinary problems.
- Antiemetic effect can mask overdose.
- Use with caution in alcohol withdrawal or convulsive disorders because it may lower seizure threshold.
- Do not use epinephrine in case of overdose, as it may lower BP.
- Use with caution with Parkinsonism or Lewy body dementia.
- Monitor for pigmentary retinopathy especially at higher doses.
- Use with caution in patients with bradycardia or those who are taking drugs that can induce bradycardia (beta-blockers, clonidine, digitalis).
- Use with caution in patients with hypokalemia and/or magnesemia (diuretic, stimulant laxatives, IV amphotericin B, glucocorticoids, tetracosactide).
- *Do not use* if patient suffers from the following conditions: coma, extremes of hypotension or hypertension, QTc interval greater than 450 msec or taking an agent that also prolongs QTc, cardiac arrhythmia, recent AMI, uncompensated heart failure, or taking drugs that inhibit thioridazine metabolism (CYP450 inhibitors).

Patient and Family Education:

- Take exactly as prescribed by the provider. Do not take in larger or smaller amounts or for longer than recommended.
- Can be taken with or without food.
- *Avoid becoming overheated or dehydrated during exercise and in hot weather*. You may be more prone to heat stroke.
- *Avoid getting up too fast from a sitting or lying position*. Get up slowly and steady yourself to prevent a fall.
- *Avoid drinking alcohol*.
- *Stop using this medication and call provider immediately* if you have very stiff (rigid) muscles, high fever, sweating, confusion, fast or uneven heartbeats, tremors; feel like you might pass out; have jerky muscle movements you cannot control, trouble swallowing, problems with speech; have blurred vision, eye pain, or see halos around lights; have increased thirst and urination, excessive hunger, fruity breath odor, weakness, nausea and vomiting; have fever, chills, body aches, flu symptoms; or have white patches or sores inside your mouth or on your lips.
- Do not stop taking drug suddenly without first talking to provider, even if you feel fine. You may have serious side effects if you stop taking the drug suddenly.
- Call provider if symptoms do not improve or get worse.
- Store at room temperature away from moisture and heat.
- Caution is needed in taking this medication if you have any of the following conditions: narrow-angle glaucoma, prostatic hypertrophy, or cardiovascular disease.
- Annual eye examinations are recommended.

Special Populations:

- *Elderly:* They may tolerate lower doses better, and are more sensitive to adverse effects. It is not approved for treatment of elderly patients with dementia-related psychosis, and such patients are at increased risk of cardiovascular events and death.

- *Renal impairment*: Use with caution.
- *Hepatic impairment*: Use with caution.
- *Cardiac impairment:* Avoid in patients with QTc prolongation, recent AMI, and uncompensated heart failure. *Risk/benefit ratio may not justify use* in cardiac impairment.
- *Pregnancy:* Category C. Some animal studies have demonstrated adverse effects; there are no controlled studies in humans. Infants whose mothers took a phenothiazine during pregnancy have exhibited EPS, jaundice, hyperreflexia, or hyporeflexia. Psychotic symptoms may worsen during pregnancy, necessitating some form of treatment. Atypical antipsychotics may be preferable.
- *Lactation:* It is not known whether it is secreted in human breast milk, but assumed so. Recommended to discontinue thioridazine or bottle feed.
- *Children and adolescents*: Safety and efficacy not established in children and adolescents but risk/benefit ratio may justify use. Start at initial dose of 0.5 mg/kg per day and increase gradually. Maximum dose: 3 mg/kg/day.

TRANYLCYPROMINE (*Parnate*)

Classification: Monoamine oxidase inhibitor (MAOI).

Indications: Major depressive disorder.

Available Forms: Tablet, 10 mg.

Dosage: Starting dose, 10 mg/day; maintenance dose, 10–60 mg/day in divided doses.

Administration: PO, bid-tid dosing.

Side Effects:
- Hypertensive crisis, secondary to excessive consumption of dietary tyramine (e.g., soft cheeses, aged fish, aged meat, and avocados).
- CNS stimulation.
- Orthostatic hypotension.
- Sexual dysfunction.

Drug Interactions:
- *SSRIs, SNRIs, and TCAs:* Risk for extreme hypertension.
- *Indirect-acting adrenergic agonists* (e.g., ephedrine): Increase MAOI effects.
- Antihypertensive drugs may dangerously lower blood pressure.

Pharmacokinetics:
- *Duration of action:* May last 2–3 wk following discontinuation.
- *Half-life:* 1–3 hr, but irreversible MAO inhibition prolongs effects.

Precautions:
- Adverse effects and side effects are commonly observed before therapeutic effects.
- Dietary restrictions require substantial patient adherence.

Patient and Family Education:
- Should be taken about the same time every day, with or without food.
- Substantial education required on dietary changes and importance of dietary adherence.
- Patient should advise all health care providers that he/she is on an MAOI prior to initiating new medications.
- Administration time may be adjusted based on observed sedating or activating drug effects.
- May take up to 4–8 wk to show its maximum effect, but some may see symptoms of depression improving in as little as 2 wk.
- Do not take if risk of pregnancy or pregnant.
- Because this medicine is excreted in the breast milk, nursing mothers should not breastfeed while taking this medicine. Newborns may develop symptoms including feeding or breathing difficulties, seizures, muscle stiffness, jitteriness, or constant crying.

- Report potential side effects to the health care provider promptly.
- Keep these medications out of the reach of children and pets.

Special Populations:

- *Elderly:* Requires lower drug dose in adult patients older than 65 years old. Due to common need for polypharmacy, it is not recommended.
- *Pregnancy:* Psychotherapy is the initial choice for most pregnant patients with MDD. Generally not recommended during pregnancy.
- *Children:* Not recommended for children less than 18 years of age.

TRAZODONE (*Desyrel*)

Classification: Serotonin-2 antagonist/reuptake inhibitor (SARI).

Indications: Used to treat major depressive disorders.

Available Forms: Tablet, 50, 100, 150 (*Luvox*), and 300 mg; extended-release tablet (scored), 150 and 300 mg.

Dosage: Starting dose 50 mg/day; maintenance dose 75–400 mg tid with increases of 50 mg/day every 3–4 days. Maximum dose 400 mg/day (outpatient) to 600 mg/day (inpatient).
Children: Start, 1.5–2 mg/kg/day PO divided tid; increase dose every 3–4 days. *12–18 years:* 50 mg PO bid or tid; starting dose 25 mg PO bid or tid with increases in dose every 3–4 days. Maximum dose 6 mg/kg/day or 400 mg/day (outpatient).

Administration: Orally; taking with food decreases some side effects. Scored extended relief tablets may be broken in half, but should not be crushed or chewed.

Side Effects: Sedation, hypotension, nausea; may aid patients experiencing SSRI/SNRI-induced insomnia. Rare occurrences of priapism have been reported. This should be discussed with male clients.

Drug Interactions: SSRIs may increase plasma concentrations. May inhibit full effect of antihypertensive medications. Patients taking MAOIs should not take this drug.

Side Effects: The most common reactions to this drug include somnolence, xerostomia, headache, sedation, dizziness, nausea/vomiting, blurred vision, fatigue, diarrhea, constipation, edema, abdominal discomfort, myalgia/arthralgia, nasal congestion, weight changes, confusion, ataxia, sexual dysfunction, syncope, tremor, ocular irritation, malaise, and hypertension.

Pharmacokinetics: Metabolized by CYP450 3A4 to an active metabolite in the liver and excreted in the urine 75% (less than 1% unchanged) and in the feces 20% of the time.
- *Half-life:* Parent drug, 7–8 hr; active metabolite.

Precautions:
- Do not use with MAOIs.
- Use with caution in patients with history of seizures.
- Use with caution in patients at risk for undiagnosed hyponatremia, bipolar disorder, priapism bleeding risk, volume depletion, alcohol use, cardiac disease, and QT prolongation.

Patient and Family Education: Notify the health care provider if feeling more depressed after initiation of therapy. Do not use alcohol while taking this drug. Do not stop taking this drug without talking to the health care provider.

Special Populations:

- *Elderly:* Older individuals tend to be more sensitive to medication side effects such as hypotension and anticholinergic effects. They often require adjustment of medication doses for hepatic or renal dysfunction. May be more sensitive to side effects and require a lower dosing regimen. Caution due to sedative effects.
- *Pregnancy:* Psychotherapy is the initial choice for most pregnant patients with mild to moderate MDD. Category C. Not advised during pregnancy, as there are no adequate studies (similar to nefazodone). Animal studies show adverse fetal effect(s), but no controlled human studies have been conducted.
- *Lactation:* There is limited information in animals and/or humans that demonstrates no risk/minimal risk of adverse effects to infant/breast milk production.
- *Children:* There is an increased risk of suicidality in children, adolescents, and young adults with major depressive or other psychiatric disorders especially during the first months of treatment with antidepressants versus placebo.
- Typically require a lower initial dosing and prolonged titration. Increased risk of suicidal ideation than in adults.
- *Renal impairment:* Renal dosing is not defined.
- *Hepatic impairment:* Caution is advised in hepatic impairment.

TRIAZOLAM (*Halcion*)

Classification: Benzodiazepine (BZD).

Indications: Treatment of insomnia.

Available Forms: Tablet, 0.125 and 0.25 mg.

Dosage: 0.125–0.5 mg PO immediately before patient is ready for sleep.

Administration:
- PO with a glass of water.
- Drowsiness and/or dizziness will be exacerbated with concomitant alcohol consumption; alcohol should be avoided while taking this medication.
- Caution clients not to stop taking drug abruptly if used long-term.

Side Effects:
- Hallucinations; behavior changes.
- *Side effects that usually do not require medical attention*: Nausea; daytime drowsiness; headache; vomiting; dizziness; diarrhea; dry mouth; nervousness.

Drug Interactions: This medicine may interact with the following medications: antifungals; CNS depressants (including alcohol); digoxin; macrolides; phenytoin.

Pharmacokinetics:
- BZD, hypnotic.
- Mechanism of action is thought to occur at the level of the GABA receptor complex.
- Highly bound to plasma proteins.
- Peak plasma levels are reached in 1–2 hr.
- Metabolized by CYP450 3A4.
- *Half-life:* Average is 1.5–5.5 hr.

Precautions:
- See patient as often as necessary if long-term use is indicated.
- Ensure that patient is aware he/she is not to exceed maximum dosage.
- Instruct patient to monitor for behavior changes.
- If patient is drowsy or dizzy, patient should not drive, use machinery, or attempt to accomplish any task that requires mental alertness.
- Avoid alcohol, as concomitant use may exacerbate symptoms.

Patient and Family Education:
- Store at room temperature between 20°C and 25°C (59°F–77°F).
- Throw away any unused medication after the expiration date.

Special Populations:
- *Elderly*: More sensitive to hypnotics. Use lowest effective dose, typically 0.125 mg. Due to sedation and increased risk of falls, all BZDs are placed on Beers List of Potentially Inappropriate Medications for Geriatrics.

- *Hepatic impairment:* Modify dosage accordingly.
- *Pregnancy*: Category X. Absolute contraindication.
- *Lactation*: No human studies have been performed. Not recommended in breastfeeding mothers. Drug is excreted in breast milk.
- *Children*: Not for use in children less than 18 years of age.

TRIFLUOPERAZINE (*Stelazine*)

Classification: Antipsychotic drug, typical; first generation.

Indications: Schizophrenia (PO, IM), nonpsychotic anxiety (short term, second line), other psychotic disorders, bipolar disorder.

Available Forms: Tablet, 1, 2, 5, and 10 mg; vial, 2 mg/mL; concentrate, 10 mg/mL.

Dosage: 15–20 mg/day for psychosis.

Administration:
- *Oral*: Typical starting dose is 2–5 mg bid. Most patients show optimum response on 15–20 mg daily.
- *IM injection* (for prompt control of severe symptoms): 1–2 mg (0.5–1 mL) every 4–6 hr, prn.
- *Concentrate*: Add to 60 mL (2 fl oz) or more of diluent prior to administration. Possible diluents are tomato or fruit juice, milk, simple syrup, orange syrup, carbonated beverages, coffee, tea, water. Semisolid foods such as soup and puddings may also be used.

Side Effects: Motor side effects from blockage of D2 in striatum; elevations in prolactin from blockage of D2 in the pituitary; worsening of negative and cognitive symptoms due to blockage of D2 receptors in the mesocortical and mesolimbic dopamine pathways; sedation, blurred vision, constipation, dry mouth; weight gain; dizziness; hypotension, possibility of increased incidence of diabetes or dyslipidemia with conventional antipsychotic is not known.

Drug Interactions:
- May increase effects of levodopa and dopamine agonists.
- Increased effects of antihypertensive agents except for guanethidine, which may be antagonized by trifluoperazine.
- Additive effects with CNS depressants.
- Increased risk of hypotension with alcohol and diuretics.
- Lowered BP with epinephrine.
- May reduce effects of anticoagulants.
- Neuroleptics and lithium may contribute to encephalopathic syndrome similar to neuroleptic malignant syndrome.
- Plasma levels of both drugs increased with propranolol.

Pharmacokinetics:
- *Half-life:* Approximately 12.5 hr.

Precautions:
- If neuroleptic malignant syndrome develops, trifluoperazine must be discontinued immediately.
- Use in patients with alcohol withdrawal or convulsive disorders lowers seizure threshold.
- Use with caution with respiratory disorders, glaucoma, or urinary retention.

- Avoid undue exposure to sunlight or extreme heat exposure.
- Signs of other disorders or overdose may be masked by antiemetic effect of trifluoperazine.
- May cause asphyxia through suppression of cough reflex.
- Use of epinephrine may lower BP.
- Use with caution in Parkinson's disease or Lewy body dementia.
- *Do not use* if patient is in a coma or has CNS depression.
- *Do not use* in the presence of blood dyscrasias, bone marrow depression, or liver disease.
- *Do not use* if there is a proven allergy to trifluoperazine or sensitivity to any phenothiazine.

Patient and Family Education:

- Take exactly as prescribed by the provider. Do not take in larger or smaller amounts or for longer than recommended.
- Can be taken with or without food.
- Do not use alcohol if taking this medication.
- Avoid undue exposure to sunlight or extreme heat exposure.
- Inform prescriber if you have a respiratory disorder, glaucoma, urinary retention, Parkinson's disease, bone marrow suppression, liver disease.
- Inform prescriber of all allergies to medications.

Special Populations:

- *Elderly:* Monitor closely and use lower doses. No antipsychotic agent has been approved for treatment of elderly patients with dementia-related psychosis despite their frequent use with the elderly for behavioral disturbances in dementia. Elderly patients treated with antipsychotics are at an increased risk of death and cerebrovascular events.
- *Renal impairment*: Use with caution.
- *Hepatic impairment*: Not recommended for use.
- *Cardiac impairment:* Dose should be lowered. Do not use parenteral administration unless necessary.
- *Pregnancy:* Category C. Some animal studies have demonstrated adverse effects; there are no controlled studies in humans. Infants whose mothers took a phenothiazine during pregnancy have exhibited EPS, jaundice, hyperreflexia, or hyporeflexia. Psychotic symptoms may worsen during pregnancy, necessitating some form of treatment. Atypical antipsychotics may be preferable.
- *Lactation:* Trifluoperazine is found in mother's breast milk. Recommend either to discontinue drug or to bottle feed.
- *Children and adolescents*: Generally consider as second line after trial of atypical antipsychotics. It is *not recommended for use in children* younger than 6 years of age. Children need to be closely monitored. Initial oral dose is 1 mg; increase gradually; maximum 15 mg/day except in older children with severe symptoms. IM, 1 mg once or twice a day.

VARENICLINE (*Chantix*)

Classification: Nicotinic receptor agonist.

Indications: Aid for smoking cessation.

Available Forms: Tablet, 0.5 and 1.0 mg.

Dosage: *Days 1–3:* 0.5 mg once daily; *Days 4–7:* 0.5 mg twice daily; then 1 mg twice daily, until end of treatment. Treatment is for 12 wk.

Administration:
- Patient should set a date to quit smoking. Dosing should begin 1 wk prior to that date.
- PO with a glass of water.
- Take after eating.
- Take at regular intervals.
- After 12 wk of initial treatment, patients who stop smoking may continue with an additional 12-wk course of treatment to increase long-term abstinence.
- If patient is unsuccessful after 12 wk of initial treatment, other psychosocial factors should be addressed to promote behavioral change. After addressing these factors, patient may again try a 12-wk regimen.

Side Effects: Diarrhea; nausea; insomnia; chest pain; flu-like symptoms; back pain; muscle cramps; disturbance in attention; dizziness; increased urination; nosebleeds; flushing. *Rare*: Serious skin reactions (Steven–Johnsons syndrome and erythema multiforme); accidental injury (traffic accidents, near-miss incidents in traffic).

Drug Interactions: None. Safety and efficacy of treatment combined with other smoking cessation treatments (bupropion and NRT) has not been established.

Pharmacokinetics:
- Absorption and distribution occurs within 3–4 hr after oral administrations.
- Oral bioavailability is unaffected by food or time-day dosing.
- *Metabolism:* 92% excreted in urine.
- *Half-life:* 24 hr.

Precautions:
- Serious neuropsychiatric events including, but not limited to, depression, suicidal ideation, suicide attempt, and completed suicide have been reported in patients taking this medication.
- Depression has occurred in patients who continued to smoke.
- All patients being treated should be observed for neuropsychiatric symptoms including changes in behavior, hostility, agitation, depressed mood, and suicide-related events, including ideation, behavior, and attempted suicide.
- These symptoms, as well as worsening of preexisting psychiatric illness and completed suicide, have been reported in some patients attempting to quit

smoking while taking *Chantix* in the postmarketing experience. Most occurred when symptoms were reported during treatment, but some were following discontinuation of therapy.
- Safety and efficacy in patients with serious psychiatric illness such as schizophrenia, bipolar disorder, and major depressive disorder have not been established.
- Resolution of symptoms after discontinuation was reported, although in some cases the symptoms persisted.
- Ongoing monitoring and supportive care should be provided until symptoms resolve.
- The risks should be weighed against the benefits of its use.
- Increases the likelihood of abstinence from smoking for as long as 1 year compared to treatment with placebo.

Patient and Family Education:
- Advise patients and caregivers that the patient should stop taking *Chantix* and contact a health care provider immediately if agitation, hostility, depressed mood, or changes in behavior or thinking that are not typical for the patient are observed, or if the patient develops suicidal ideation or suicidal behavior.
- Set a smoking-quit date and begin treatment 1 wk prior to date.
- May continue with treatment if smoking relapses occur.
- Nausea and insomnia are most often transient. However, if continual, a dosage reduction may be beneficial.
- Discontinue medication immediately and notify health care provider if experiencing a change in mood including depression, mania, psychosis, irritability, agitation, anxiety, or homicidal/suicidal ideations and at first sign of skin reaction or rash with lesions on mouth.
- May experience nicotine-withdrawal symptoms such as irritability and depressed mood.
- Exercise caution.
- Immediately discontinue medication and notify health care provider at first sign of skin reaction or rash with lesions on mouth.
- Caution when driving or operative machinery.
- May experience vivid, unusual, or strange dreams.

Special Populations:
- *Elderly:* No dosage adjustments are indicated; however, renal function should be monitored and doses adjusted when indicated.
- *Hepatic impairment:* No dosage adjustments are needed.
- *Renal impairment:* For patients with mild-to-moderate impairment, dosage adjustments are not necessary. For patients with severe renal impairments, the recommended starting dose is 0.5 mg once daily for 1 wk and then titrated to 0.5 mg twice daily. For patients with end-stage renal disease, the recommended dosage is 0.5 mg once daily.
- *Pregnancy:* Category C.
- *Lactation:* May be excreted in breast milk.
- *Children*: Safety and efficacy has not been established.

VENLAFAXINE (*Effexor*)

Classification: Serotonin/norepinephrine reuptake inhibitor (SNRI).

Indications: Used to treat MDD, GAD, PD, and social anxiety disorder.

Available Forms: Tablet, 25, 37.5, 50, 75, and 100 mg; extended-release capsule, 37.5, 50, 75, and 150 mg; extended-release tablet, 37.5, 75, 150, and 225 mg.

Note: Preference for XR formulation due to possibly increased potential for side effects, particularly withdrawal syndrome, of nonextended release formulation with short half-life.

Dosage: Starting dose, 37.5 mg/day; maintenance dose 75–225 mg/day, adjusted in 37.5–75 mg increments; maximum dose with dose increases every 4 days for a maximum of 375 mg/day may be used. *Effexor XR*: Starting dose, 37.5–75 mg for unresponsive MDD daily with increases 75 mg/day every 4–7 days for a maximum of 225 mg/day.

Administration:
- PO, with a glass of water or food.
- Extended-release tablets should not be crushed or chewed. Capsules; *Effexor XR* may be opened and sprinkled on applesauce.
- Take at regular intervals.

Side Effects:
- *Most common*: Somnolence; headache; asthenia; dizziness; sweating; dry mouth; tremor; anorexia; nervousness; anxiety; abnormal vision; change in appetite; change in sex drive or performance; diarrhea; constipation; indigestion; and nausea.
- *Less common*: Suicidality, worsening depression, serotonin syndrome, seizures, hyponatremia, extrapyramidal symptoms, priapism, and acute angle glaucoma *or elevated IOP.*
- Increased anxiety, nervousness; impaired platelet aggregation (easy bruising); CNS depression; hypertension; nausea, weight loss, or occasionally weight gain; headache, nausea; muscle weakness; insomnia; serotonin syndrome; withdrawal syndrome (including neonatal withdrawal syndrome); sexual dysfunction; hyponatremia (e.g., geriatric).

Drug Interactions:
- *ASA and NSAIDs:* Increased risk of bleeding.
- *CNS depressants:* May increase or decrease effects.
- MAOI: May cause serotonin syndrome. Allow 2-week washout period post-MAOI prior to initiating venlafaxine.
- *SSRIs or SARIs:* May cause serotonin syndrome.
- *TCAs:* Plasma levels may be increased by SNRIs.
- Alcohol may substantially increase potential for hepatotoxicity.
- Most of the interactions occur with OTC cough and cold preparations. This medicine may also interact with the following medications.
- Absolute contraindications include cisapride, phenothiazines, MAOIs such as phenelzine (*Nardil*), tranylcypromine (*Parnate*), isocarboxazid (*Marplan*), and selegiline (*Eldepryl*).

- Avoid using with other SSRIs due to serotonin effect; SNRI drugs such as desvenlafaxine (*Pristiq*) and venlafaxine (*Effexor*); drugs with sympathomimetic properties such as phenylpropanolamine, pseudoephedrine, St. John's wort, haloperidol; and diazepam (*Valium*), any other antidepressants.
- NSAIDs, and drugs used for analgesia with opioid properties.
- *Alert:* This list may not describe all possible interactions. Instruct patients to provide a list of all medicines, herbs, nonprescription drugs, or dietary supplements used, and if they smoke, drink alcohol, or use illegal drugs.

Pharmacokinetics:

- SNRI agents are potent inhibitors of neuronal serotonin and norepinephrine reuptake and weak inhibitors of dopamine reuptake.
- Demonstrate slightly higher efficacy than the SSRI class due to the dual effect.
- Relative to SSRIs, SNRI agents seem to be more effective in treating chronic pain issues that coexist with depression and may produce more stimulative effects, and side effects are commonly observed before therapeutic effects.
- Many side effects are dose dependent and may improve over time.
- They are highly bound to plasma proteins and have a large volume of distribution.
- *Metabolism:* Liver extensively; CYP450 2D6 substrate; 2D6 (weak) inhibitor; converted to active metabolite (O-desmethylvenlafaxine) leading to a prolonged duration of action.
- *Excretion:* Urine 87% (5% unchanged).
- *Half-life:* 5 hr (venlafaxine), 11 hr (O-desmethylvenlafaxine).
- Well absorbed and readily distributed throughout the body. Renal excretion accounts for nearly 90% of drug removal.
- *Half-life:* Nonenteric coated formulation, 2 hr; extended-release formulation, 6 hr.

Precautions:

- Not FDA approved for use in children.
- Monitor for BP elevations.
- *Seizure disorders:* Use with caution.
- *Hepatic impairment:* Reduce dosage.
- *Renal impairment:* Reduce dosage.
- Pharmacokinetic properties similar to SSRIs.
- See patients as often as necessary to ensure that the drug is working on the panic attacks, determine compliance, and review side effects.
- Make sure patients realize that they need to take prescribed doses even if they do not feel better right away. It can take several weeks before they feel the full effect of the drug.
- Instruct patients and families to watch for worsening depression or thoughts of suicide. Also, watch out for sudden or severe changes in feelings such as feeling anxious, agitated, panicky, irritated, hostile, aggressive, impulsive, severely restless, overly excited, hyperactive, or not being able to sleep. If this happens, especially at the beginning of antidepressant treatment or after a change in dose, patient should call the health care provider.
- Drowsiness or dizziness: Patients should not drive or use machinery or do anything that needs mental alertness until the effects of this medicine are known.
- Caution patients not to stand or sit up quickly, especially if older. This reduces the risk of dizzy or fainting spells. Alcohol may interfere with the effect of this medicine. Avoid alcoholic drinks.

- Caution patients not to treat themselves for coughs, colds, or allergies without asking health care professional for advice. Some ingredients can increase possible side effects.
- Dry mouth: Chewing sugarless gum, sucking hard candy, and drinking plenty of water may help. Contact health care provider if the problem persists or is severe.
- Caution should be exercised in the following:
  - Bipolar disorder or a family history of bipolar disorder.
  - Diabetes.
  - Heart disease.
  - Liver disease.
  - Seizures (convulsions).
  - Suicidal thoughts, plans, or attempts by patients or a family member.
  - An unusual or allergic reaction to venlafaxine, other medicines, foods, dyes, or preservatives.
  - Pregnancy or trying to get pregnant.
  - Breastfeeding.

Patient and Family Education:

- Should be taken about the same time every day, morning or evening, although typically it is started in the morning, and can be taken with or without food (with food if there is any stomach upset).
- May start with half of lowest effective dose for 3–7 days, then increase to lowest effective dose to diminish side effects.
- Administration time may be adjusted based on observed sedating or activating drug effects.
- May take up to 4–8 wk to reach its full effect at this dose, but some may see symptoms of depression improving in as little as 2 wk.
- If planning or are pregnant, discuss the benefits versus the risks of using this medicine while pregnant.
- Because this medicine is excreted in the breast milk, nursing mothers should not breastfeed while taking this medicine without prior consultation with a psychiatric nurse practitioner or psychiatrist. Newborns may develop symptoms including feeding or breathing difficulties, seizures, muscle stiffness, jitteriness, or constant crying.
- Do not stop taking this medication unless the health care provider directs. Report side effects or worsening symptoms to the health care provider promptly.
- The medication should be tapered gradually when changing therapy or discontinuing.
- Dosage should be adjusted to reach remission of symptoms and treatment should continue for at least 4–9 months following remission of symptoms.
- Caution is advised when using this drug in the elderly because they may be more sensitive to the effects of the drug. Elderly patients should receive a lower starting dose.
- Keep these medications out of the reach of children and pets.
- Store at room temperature. Take any unused medication after the expiration date to the local pharmacy on drug give-back day. Avoid throwing the medication into the environment.

- Try to take the medicine at the same time each day. Follow the directions on the prescription label.

Special Populations:

- *Elderly:* Older individuals tend to be more sensitive to medication side effects such as hypotension and anticholinergic effects. They often require adjustment of medication doses for hepatic or renal dysfunction. Elderly patients may tolerate lower doses better and there is a reduced risk of suicide. May assist in treatment of chronic or depression-related physical pain.
- *Pregnancy:* Psychotherapy is the initial choice for most pregnant patients with mild to moderate MDD. Category C drug, as there are no adequate studies during pregnancy. Particular caution with exposure (avoid if possible) during first trimester. An individual risk-benefit analysis must be done to determine appropriate treatment in pregnant women with MDD.
- *Pregnancy:* Category C; potential for persistent pulmonary HTN if greater than 20-wk gestation.
- *Lactation:* Excreted in human breast milk; caution should be taken.
- *Children:* Monitor closely, as risk of suicidal ideation is greatest in adolescents. Monitor for excessive activation effects or undiagnosed bipolar disorder. Obtain consultation with a pediatric psychiatric specialist.

ZALEPLON (*Sonata*)

Classification: Non-Benzodiazepine GABA receptor agonist.

Indications: Short-term (7–10 days) treatment for insomnia in the nondepressed patient.

Available form: Capsule.

Dosage: 5–10 mg PO immediately before patient is ready for sleep.

Administration:
- PO with a glass of water.
- Avoid taking within 2 hr of a fatty meal.
- Drowsiness and/or dizziness will be exacerbated with concomitant alcohol consumption; alcohol should be avoided while taking this medication.

Side Effects:
- Hallucinations; behavior changes; SSRI-treated patients taking zaleplon may experience impaired concentration, aggravated depression, and manic reaction; may cause amnesia. In most cases, memory problems can be avoided if zaleplon is taken only when the patient is able to get more than 4 hr of sleep before being active.
- *Side effects that usually do not require medical attention*: Nausea; daytime drowsiness; headache; vomiting; dizziness; diarrhea.

Drug Interactions: This medicine may interact with the following medications: antifungals; chlorpromazine; flumazenil; clarithromycin; rifamycin; ritonavir; SSRIs; CNS depressants (including alcohol); amiodarone; verapamil.

Pharmacokinetics: Non-BZDs hypnotic of the pyrazolopyrimidines class. Mechanism of action is thought to occur at the level of the GABA-BZ receptor complex.
- Peak plasma levels are reached in 1 hr.
- Bioavailability is 30%.
- *Half-life:* Average is 1 hr.

Precautions:
- Ensure that patient is aware he/she is not to exceed maximum dosage.
- Patient should not take this medication unless prepared to sleep for at least 4 hr.
- Instruct patient to monitor for behavior changes.
- If patient is drowsy or dizzy, patient should not drive, use machinery, or attempt to accomplish any task that requires mental alertness.
- Avoid alcohol, as concomitant use may exacerbate symptoms.

Patient and Family Education: Store at room temperature. Throw away any unused medication after the expiration date. An FDA-approved patient medication guide, which is available with the product information, must be dispensed with this medication.

Special Populations:

- *Elderly*: More sensitive to hypnotics. Use no more than 5 mg.
- *Hepatic impairment:* Modify dosage accordingly in patients with hepatic function impairment.
- *Pregnancy*: Category C.
- *Lactation*: No human studies have been performed. Not recommended in breastfeeding mothers.
- *Children*: Safety and efficacy have not been established.

ZIPRASIDONE (*Geodon*)

Classification: Second-generation (atypical) antipsychotic.

Indications: Schizophrenia, delaying relapse in schizophrenia, acute agitation in schizophrenia (IM), acute mania/mixed mania, other psychotic disorders, bipolar maintenance, bipolar depression, behavioral disturbances in dementia.

Available Forms: Capsule; powder for reconstitution. Tablet, 20, 40, 60, and 80 mg; injection, 20 mg/mL.

Dosage:
- 40–200 mg/day in divided doses, PO for schizophrenia.
- 80–160 mg/day in divided doses, PO for bipolar.
- *Acute agitation*: 10–20 mg IM (doses of 10 mg may be administered every 2 hr, doses of 20 mg may be administered every 4 hr; with MDD max: 40 mg). Not to be administered for more than 3 consecutive days.

Administration:
- Take this medication with a meal.
- Dosing at 20–40 mg twice a day is too low and activating, perhaps due to potent 5HT2C antagonist properties. Reduce activation by increasing the dose to 60–80 mg twice a day.
- Best efficacy in schizophrenia and bipolar disorder is at doses greater than 120 mg/day.
- BMI monthly for 3 months, then quarterly.
- Monitor fasting triglycerides monthly for several months in patients at high risk for metabolic complications.
- BP, fasting plasma glucose, fasting lipids within 3 months and then annually, but earlier and more frequently for patients with diabetes or who have gained more than 5% of initial weight.

Side Effects:
- Dizziness, sedation, and hypotension especially at high doses.
- Motor side effects (rare).
- Possible increased incidence of diabetes or dyslipidemia is unknown.

Drug Interactions:
- May enhance the effects of antihypertensive drugs.
- May antagonize levodopa with dronedarone, artemether, lumefantrine, metoclopramide, nilotinib, primozide, quinine, thioridazine, tetrabenazine, and dopamine agonists.
- May enhance QTc prolongation of other drugs capable of prolonging QTc interval agents.

Pharmacokinetics:
- *Protein binding:* Greater than 99%.
- *Metabolism:* Metabolized by CYP450 3A4. Hepatic via aldehyde oxidase, less than 1/3 is via cytochrome P450 system.
- *Absorption:* Must be given orally with food to obtain 60% bioavailability.

- *Onset:* PO, 6–8 hr.
- *Duration:* 2 hr for injectable.
- *Half-life:* 6.6 hr.

Precautions:
- Prolongs QTc interval more than some other antipsychotics.
- Use with caution in patients with conditions that predispose to hypotension (dehydration, overheating).
- Priapism has been reported.
- Dysphagia has been associated with antipsychotic use and should be used cautiously in patients at risk for aspiration pneumonia.
- Do not use if patient is taking agents capable of prolonging QTc interval (pimozide, thioridazine, selected antiarrhythmics, moxifloxacin, sparfoxacin).
- Do not use if there is a history of QTc prolongatin, cardiac arrhythmia, recent AMI, prolonged QT congenital.
- Long QT syndrome, recent MI, uncompensated heart failure, or other QTc prolonging arrhythmias.
- Do not use if there is a proven allergy to ziprasidone.
- EPS, NMS, temperature regulation, dementia, electrolyte imbalance.
- Use IM formulation with caution in patients with renal impairment due to accumulation of cyclodextrin.
- Seizures, excessive sedation.

Patient and Family Education:
- Take oral formulation with *a meal* of a few hundred calories (e.g., turkey sandwich and a piece of fruit) to enhance the absorption.
- Avoid *becoming overheated or dehydrated during exercise and in hot weather*. You may be more prone to heat stroke.
- *Avoid getting up too fast from a sitting or lying position*. Get up slowly and steady yourself to prevent a fall.
- *Avoid drinking alcohol*.
- *Stop using this medication and call provider immediately* if you have very stiff (rigid) muscles, high fever, sweating, confusion, fast or uneven heartbeats, tremors; feel like you might pass out; have jerky muscle movements you cannot control, trouble swallowing, problems with speech; have blurred vision, eye pain, or see halos around lights; have increased thirst and urination, excessive hunger, fruity breath odor, weakness, nausea and vomiting; have fever, chills, body aches, flu symptoms; or have white patches or sores inside your mouth or on your lips.
- *Do not stop tak*ing the drug suddenly without first talking to provider, even if you feel fine. You may have serious side effects if you stop taking the drug suddenly.
- Call provider if symptoms do not improve or get worse.
- Store at room temperature away from moisture and heat.

Special Populations:
- *Elderly:* Some patients may tolerate lower doses better. Elderly patients with dementia-related psychosis treated with atypical antipsychotics are at an increased risk of death compared to placebo.

- *Renal impairment*: No dose adjustment is necessary.
- *Hepatic impairment*: No dose adjustment is necessary.
- *Cardiac impairment:* Contraindicated in patients with a known history of QTc prolongation, recent AMI, and uncompensated heart failure.
- *Pregnancy:* Category C. Some animal studies show adverse effects. There are no controlled studies in humans.
- *Lactation:* It is not known whether it is secreted in human excretion in breast milk. Recommend either to discontinue drug or bottle feed.
- *Children and adolescents*: Early data suggest that it may be safe and effective for behavioral disturbances in children and adolescents.

ZOLPIDEM (*Ambien*)

Classification: Non-benzodiazepine GABA receptor agonist.

Indications: Treatment of insomnia in the nondepressed patient.

Available form: Tablet.

Dosage: 5–10 mg PO immediately before patient is ready for sleep. May use 12.5 mg *Ambien ER* in patients who have difficulty staying asleep.

Administration:
- PO with a glass of water.
- Take at least 2 hr after a meal.
- Drowsiness and/or dizziness will be exacerbated with concomitant alcohol consumption; alcohol should be avoided while taking this medication.
- Caution clients not to stop taking drug abruptly if used longterm.

Side Effects:
- Hallucinations, sedation; behavior changes; SSRI-treated patients taking zolpidem may experience impaired concentration, aggravated depression, and manic reaction.
- *Side effects that usually do not require medical attention:* Nausea; daytime drowsiness; headache; vomiting; dizziness; diarrhea.

Drug Interactions: This medicine may interact with the following medications: antifungals; chlorpromazine; flumazenil; imipramine; rifamycin; ritonavir; SSRIs; CNS depressants (including alcohol).

Pharmacokinetics:
- Non-BZDs hypnotic of the imidazopyridine class. Mechanism of action is thought to occur at the level of the GABA receptor complex.
- Highly bound to plasma proteins.
- Peak plasma levels are reached in 1.6 hr.
- Bioavailability is 100%.
- *Half-life:* Average is 2.6 hr.

Precautions:
- See patient as often as necessary if long-term use is indicated.
- Ensure that patient is aware he/she is not to exceed maximum dosage.
- Instruct patient to monitor for behavior changes.
- If patient is drowsy or dizzy, patient should not drive, use machinery, or attempt to accomplish any task that requires mental alertness.
- Avoid alcohol, as concomitant use may exacerbate symptoms.

Patient and Family Education:
- Store at room temperature between 20°C and 25°C (59°F–77°F).
- Discard unused medication after the expiration date.
- An FDA-approved patient medication guide, which is available with the product information, must be dispensed with this medication.

Special Populations:

- *Elderly*: More sensitive to hypnotics. Use no more than 5 mg.
- *Hepatic impairment:* Modify dosage accordingly.
- *Pregnancy*: Category C.
- *Lactation*: No human studies have been performed. Not recommended in breastfeeding mothers.
- *Children*: Safety and efficacy have not been established.

ZONISAMIDE (*Zonegran*)

Classification: Mood-stabilizing anticonvulsant.

Available Forms: Capsule, 25, 50, and 100 mg.

Dosage: *Children: 2–16 years:* Not recommended for children younger than 16 years of age.

Adults: Initially 100 mg once daily initially; then increase to 200 mg once daily after 2 wk. Further increases to 300 mg once daily and 400 mg once daily can be made with a minimum of 2 wk between adjustments. Maximum dose: 600 mg once daily.

Elderly: Initially 100 mg once daily; then increase to 200 mg once daily initially after 2 wk. Further increases to 300 mg once daily and 400 mg once daily can be made with a minimum of 2 wk between adjustments.

Administration:
- May give with or without food.
- Do not crush or break capsules. Swallow capsules whole.
- Do not give to patients allergic to sulfonamides.

Side Effects: Drowsiness; dizziness; fatigue; confusion; irritability; impaired memory/concentration; diplopia; insomnia; speech difficulties; dyspepsia; diarrhea.

Drug Interactions:
- Alcohol and CNS depressants may increase sedative effect.
- Carbamazepine, phenobarbital, phenytoin, and valproic acid may increase metabolism and decrease effect of drug.
- May increase BUN and serum creatinine.

Pharmacokinetics:
- *Onset:* 4 days.
- *Peak:* 2 hr.
- *Metabolism:* Metabolized in the liver into metabolites, *N*-acetyl zonisamide, and 2-sulfamoylacetyl phenol. The CYP enzyme responsible for the metabolism of zonisamide is CYP3A4.
- *Excretion:* Primarily excreted in the urine.
- *Half-life:* 21 hr.
- *Precautions:* Contraindications: Allergy to sulfonamides.
- *Cautions:* Renal and hepatic impairment.

Patient and Family Education:
- Avoid tasks that require alertness and motor skills until response to drug is established.
- Avoid alcohol.
- Instruct patient to report if rash, back/abdominal pain, blood in urine, fever, sore throat, ulcers in mouth, or if easy bruising occur.

Special Populations:

- *Elderly*: No age-related precautions, but lower doses recommended.
- *Pregnancy:* Category C.
- *Lactation:* Not known if distributed in breast milk. Not recommended for breastfeeding patients.
- *Children*: Safety and efficacy of this drug not established in children younger than 16 years of age.