# Psychopharmacology NCLEX Review

I. Antidepressant Drugs

Selective serotonin reuptake inhibitors (SSRIs) Examples: fluoxetine (Prozac); sertraline (Zoloft); paroxetine (Paxil); citalopram (Celexa); escitalopram (Lexapro) “PaxZolCeLexaPro”

- The SSRIs block the reuptake of serotonin and intensify the transmission at Serotonergic synapses - First-line treatment because of fewer sedating, anticholinergic, and cardiovascular side effects
- Several weeks before full therapeutic effect is seen; usually, the effect can be seen after 1 to 3 weeks

Side-effects:

?Insomnia – medication should be taken in the morning

?Diarrhea

?Nausea

?Sexual Dysfunction (decreased libido)

Nursing Responsibilities:

- The potential for medication interactions is high, and complete medication assessments must be obtained and evaluated; inquire about the use of herbal therapies, especially St. John’s worth
- Monitor vital signs because SSRIs can potentially lower or elevate blood pressure.
- If priapism (painful, prolonged penile erection) occurs, the medication is withheld and the physician is notified.
- Educate the client about the potential for discontinuation syndrome if medication is stopped abruptly rather than tapered; the syndrome is characterized by gastrointestinal distress, behavioral or perceptual oddities, movement problems, and sleep disturbances.
- Be aware of the potential for serotonin syndrome, characterized by elevated temperature, muscle rigidity, and elevated creatinine phosphokinase levels; this risk is greatly increased when SSRIs are given with monoamine oxidase inhibitors (MAOIs). This medication combination needs to be avoided.
- Instruct the client that over-the-counter (OTC) cold medicines can increase the likelihood of serotonin syndrome.
- Monitor white blood cell and neutrophil counts; the medication may be discontinued if levels decrease below normal.
- Monitor weight.

- Initiate safety precautions, particularly if dizziness occurs ??Instruct the client to avoid alcohol.
- Monitor the suicidal client, especially during improved mood and increased energy levels.

Tricyclic Antidepressants (TCAs)

Examples:

Amitriptyline (Elavil); Clomipramine (Anafranil); Desipramine (Norpramin); Doxepin (Sinequan); Imipramine (Tofranil); Nortriptyline (Aventyl HCl, Pamelor); Protriptyline (Vivactil); Trimipramine (Surmontil)

- Block the reuptake of norepinephrine (and serotonin) at the presynaptic neuron - Initial Mechanism: 1-3 weeks; maximum therapeutic response: 6-8 weeks
- May reduce effectiveness of antihypertensive agents
- Concurrent use with alcohol or antihistamines can cause CNS depression - Concurrent use with MAOIs can cause hypertensive crisis
- Cardiac toxicity can occur, and all clients should receive an electrocardiogram (ECG) before treatment and periodically thereafter
- Overdose is life-threatening, necessitating immediate treatment (tachycardia, intraventricular blocks, complete atrioventricular block, and ventricular fibrillation; hypothermia; flushing; dry mouth; dilation of the pupils; confusion, agitation, and hallucinations; and seizures followed by coma)

Actions to Take for a Tricyclic Antidepressant Overdose o Check airway and maintain a patent airway.

- Administer oxygen o Check vital signs
- Obtain an electrocardiogram
- Prepare for gastric lavage with activated charcoal
- Prepare to administer physostigmine (a cholinesterase inhibitor) and antidysrhythmic medications
- Document the event, actions taken, and the client’s response.

Side effects

- Anticholinergic effects: Dry mouth, difficulty voiding, dilated pupils and blurred vision, decreased gastrointestinal motility, constipation
- Photosensitivity
- Cardiovascular disturbances such as tachycardia or dysrhythmias, orthostatic hypotension ??Sedation
- Seizures (with bupropion) ??Weight gain
- Anxiety, restlessness, irritability
- Decreased or increased libido with ejaculatory and erection disturbances

Nursing Responsibilities:

- Monitor the suicidal client, especially during improved mood and increased energy levels. ??Assess for urinary retention
- Administer the entire daily oral dose at one time, preferably at bedtime.
- Instruct the client to avoid alcohol and nonprescription medications to prevent adverse medication interactions
- Instruct the client to avoid driving and other activities requiring alertness until the response is known; sedation is expected in early therapy and may subside with time.
- When the medication is discontinued by the physician, it should be tapered gradually. ??The potential for medication interactions with OTC cold medication exists.
- Caution the client about photosensitivity and to take measures to prevent exposure to sunlight ??Encourage oral hygiene and the use of hard candies and mouth rinses to relieve dry mouth.

MONOAMINE OXIDASE INHIBITORS (MAOIs)

Examples: Isocarboxazid (Marplan); Phenelzine (Nardil); Tranylcypromine (Parnate)

“PaNaMa”

- Inhibit the enzyme monoamine oxidase, which is present in the brain, blood platelets, liver, spleen, and kidneys
- Monoamine oxidase metabolizes amines, norepinephrine, and serotonin, so the concentration of these amines increases with MAOIs
- Clients who have depression and have not responded to other antidepressant therapies, including electroconvulsive therapy, are given MAOIs.
- Concurrent use with amphetamines, antidepressants, dopamine, epinephrine, guanethidine, levodopa, methyldopa, nasal decongestants, norepinephrine, reserpine, tyramine-containing foods, or vasoconstrictors may cause hypertensive crisis
- Concurrent use with opioid analgesics may cause hypertension or hypotension, coma, or seizures

Side effects

1. Orthostatic hypotension
2. Restlessness
3. Insomnia
4. Dizziness
5. Weakness, lethargy
6. Gastrointestinal upset
7. Dry mouth
8. Weight gain

9. Peripheral edema
10. Anticholinergic effects
11. CNS stimulation (anxiety, agitation, mania)
12. Delay in ejaculation

Nursing Responsibilities:

- Monitor blood pressure frequently for hypertension.
- Monitor for signs of hypertensive crisis.
- If palpitations or frequent headaches occur, withhold the medication and notify the physician.
- Administer with food if gastrointestinal distress occurs.
- Instruct the client that the medication effect may be noted during the first week of therapy, but maximum benefit may take 3 weeks.
- Instruct the client to report headache, neck stiffness, or neck soreness immediately.
- Instruct the client to change positions slowly to prevent orthostatic hypotension.
- Instruct the client to avoid caffeine or OTC preparations such as weight-reducing pills or medications for hay fever and colds.
- Monitor for client compliance with medication administration
- Instruct the client to carry a Medic-Alert card indicating that an MAOI medication is being taken ??Avoid administering the medication in the evening because insomnia may result.
- When the medication is discontinued by the physician, it should be discontinued gradually.
- Instruct the client to avoid foods that require bacteria or molds for their preparation or preservation and foods that contain tyramine

Tyramine-Rich foods to avoid when on MAOI:

- all cheeses except cream or cottage
- meats and fish: aged/cured
- fruits and vegetables: broad bean pods, tofu, soybean extracts
- alcohol: draft beer
- other: sauerkraut, soy sauce, yeast extracts, soups (especially miso)
- Avocados
- Bananas Beef or chicken liver
- Brewer’s yeast
- Broad beans
- Caffeine, such as in coffee, tea, or chocolate
- Figs
- Meat extracts and tenderizers
- Over-ripe fruit
- Papaya
- Pickled herring
- Raisins
- Red wine and sherry
- Sausage, bologna, pepperoni, salami Sour cream

- Yogurt

MOOD STABILIZERS

- Lithium
  - Drug of choice for controlling manic episodes in clients with bipolar disorder
  - Affect cellular transport mechanism and enhance serotonin or g-aminobutyric acid (GABA) function, or both, which are associated with mood
  - The therapeutic dose is only slightly less than the amount producing toxicity
  - Therapeutic range: 0.8 – 1.4, in book of Saunders: 0.6 to 1.2 mEq/L
  - Toxic level: 1.5 and greater
  - Anti-manic effects: 5 – 7 days after initial doses; Full effect: 2-3 weeks

Side-effect (therapeutic levels)

- Fine hand tremors
- Gastrointestinal upset
- Thirst
- Muscle weakness

Adverse Effect (Toxicity)

- Persistent GI upset
- Coarse hand tremor
- Confusion
- Hyperirritability of muscles
- ECG changes
- Sedation
- Incoordination

Nursing Responsibilities:

- Monitor the suicidal client, especially during improved mood and increased energy levels.
- Administer the medication with food to minimize gastrointestinal irritation
- Instruct the client to avoid excessive amounts of coffee, tea, or cola, which have a diuretic effect. ??Do not administer diuretics while the client is taking lithium.
- Instruct the client to avoid alcohol.
- Instruct the client to avoid OTC medications.
- Instruct the client that he or she may take a missed dose within 2 hours of the scheduled time; otherwise, the client should skip the missed dose and take the next

dose at the scheduled time.
- Instruct the client not to adjust the dosage without consulting the physician because lithium should be tapered and not discontinued abruptly
- Instruct the client about the signs and symptoms of lithium toxicity
- Instruct the client to notify the physician if polyuria, prolonged vomiting, diarrhea, or fever occurs
- Instruct the client that the therapeutic response to the medication is noted in 1 to 3 weeks
- Monitor the ECG, renal function tests, and thyroid tests (ensure that these tests are performed before the start of therapy).
- Instruct the client to take the medication with food or milk to decrease gastrointestinal upset
- Monitor weight.
- Instruct clients to maintain a constant sodium intake; sodium depletion will decrease renal excretion of lithium, which will cause the drug to accumulate and lead to lithium toxicity

Interventions for lithium toxicity

1. Withhold lithium and notify the physician.
2. Monitor vital signs and level of consciousness.
3. Monitor cardiac status.
4. Prepare to obtain samples monitoring lithium, electrolyte, blood urea nitrogen, and creatinine levels and complete blood cell count.
5. Monitor for suicidal tendencies and institute suicide precautions.

Carbamazepine (Tegretol) and valproic acid (Depakote)

? Anti-convulsants with mood-stabilizing properties

? Treat bipolar disorders; usually reserved for clients who cannot tolerate lithium or who haven't responded to lithium

? Risk for Agranulocytosis while taking these medications; Baseline and periodic laboratory testing also must also be done to monitor for suppression of white blood cells.

? Clients taking carbamazepine need to have drug serum levels checked regularly to monitor for toxicity and to determine if the drug has reached therapeutic levels, which are generally 4 to 12 mcg per ml;

? For Valproic acid, therapeutic levels are monitored periodically to remain at 50 to 125 mcg per ml, as are baseline and ongoing liver function tests including serum ammonia levels and platelet and bleeding time

Other Treatment:

Electroconvulsive therapy (ECT)

- involves application of electrodes to the head of the client to deliver an electrical impulse to the brain; this causes a seizure. It is believed that the shock stimulates brain chemistry to correct the chemical imbalance of depression.
- Treat depression in clients who do not respond to antidepressants or those who experience intolerable side-effects at therapeutic doses
- pregnant women can safely have ECT with no harm to the fetus
- Clients who are actively suicidal may be given ECT if there is concern for their safety while waiting weeks for the full effects of antidepressant medication
- series of 6 to 15 treatments scheduled 3 times a week
- minimum of 6 treatments is needed to see sustained improvement in depressive symptoms - Maximum benefit is achieved in 12 to 15 treatments

Client Preparations (Before Procedure)

- NPO after midnight, removes any fingernail polish, and voids just prior to the procedure
- IV is started for the administration of medication
- short-acting anesthetic is administered (i.e. Propofol) so client is not awake during the procedure
- muscle relaxant (i.e. succinylcholine), relaxes all muscles to reduce greatly the outward signs of the seizure (e.g., clonic-tonic muscle contractions) thus preventing injury
- The client receives oxygen and is assisted to breathe with an ambu bag

Client Preparations (After Procedure)

- Vital signs are monitored, and the client is assessed for the return of a gag reflex.
- the client may be mildly confused or disoriented briefly: initiate safety precaution and re-orient the client
- short-term memory loss may also be experienced – temporary;
- Headaches are treated symptomatically.

**II. Anxiolytics**

ANTIANXIETY OR ANXIOLYTIC MEDICATIONS

- Antianxiety medications depress the CNS, increasing the effects of GABA, which produces relaxation and may depress the limbic system.

a. Benzodiazepines

  - the most commonly used and most effective medications for treatment of the symptoms of anxiety - have anxiety-reducing (anxiolytic), sedative-hypnotic, muscle-relaxing, and anticonvulsant actions
  - are contraindicated in clients with acute narrow-angle glaucoma and should be used cautiously in children and older adults
  - interact with other CNS medications, producing an additive effect.
  - Abrupt withdrawal of benzodiazepines can be potentially life-threatening, and withdrawal should occur only under medical supervision.

Side effects:

- Daytime sedation
- Ataxia
- Dizziness
- Headaches
- Blurred or double vision
- Hypotension
- Tremor
- Amnesia
- Slurred speech
- Urinary incontinence
- Constipation
- Paradoxical CNS excitement
- Lethargy
- Behavioral change

Acute toxicity

- Somnolence
- Confusion
- Diminished reflexes and coma
  - Flumazenil (Romazicon), a benzodiazepine antagonist administered intravenously, reverses benzodiazepine intoxication in 5 minutes.
  - A client being treated for an overdose of a benzodiazepine may experience agitation, restlessness, discomfort, and anxiety.

Nursing Responsibilities (Benzodiazepine)

1. Monitor for motor responses such as agitation, trembling, and tension.
2. Monitor for autonomic responses such as cold clammy hands and sweating.
3. Monitor for paradoxical CNS excitement during early therapy, particularly in older adults and debilitated clients.
4. Monitor for visual disturbances because the medications can worsen glaucoma.
5. Monitor liver and renal function test results and complete blood cell counts.
6. Reduce the medication dose as prescribed for the older adult client and for the client with impaired liver function.
7. Initiate safety precautions because the older adult client is at risk for falling when taking the medication for sleep or anxiety.
8. Assist with ambulation if drowsiness or lightheadedness occurs.
9. Instruct the client that drowsiness usually disappears during continued therapy.
10. Instruct the client to avoid tasks that require alertness until the response to the medication is established.
11. Instruct the client to avoid alcohol.
12. Instruct the client not to take other medications without consulting the physician.
13. Instruct the client not to stop the medication abruptly (can result in seizure activity).

Withdrawal

1. To lessen withdrawal symptoms, the dosage of a benzodiazepine should be tapered gradually over 2 to 6 weeks.
2. Abrupt or too rapid withdrawal results in the following:

    - Restlessness
    - Irritability
    - Insomnia
    - Hand tremors
    - Abdominal or muscle cramps f. Sweating
    - Vomiting
    - Seizures

b. Non-benzodiazepine: Buspirone (Buspar) is a serotonin and dopamine antagonist used in the short-term treatment of anxiety

- Buspirone is well-absorbed orally
- It generally takes 2 to 3 weeks for the antianxiety effects to become apparent and 4 to 6 weeks or longer for the drug to become fully effective
- Side effects of buspirone rarely occur

Common side effects include dizziness, drowsiness, headache, nausea, nervousness, lightheadedness, and excitement

- Side effects generally decrease over time as the body adapts to the medication\
- not habit forming and does not potentiate the depressant effects of alcohol, barbiturates, and other central nervous system (CNS) depressants
- Due to its short half-life, buspirone must be administered three times daily
- Because buspirone does not induce an immediate calming effect it shouldn’t be used as a prn medication for anxiety
- Withdrawal symptoms do not occur when the drug is discontinued

c. Beta blockers: have a calming

- are effective in treatment of physical symptoms of anxiety, such as tremors and tachycardia

## III. Antipsychotics / Neuroleptics

- Improve the thought processes and the behavior of the client with psychotic symptoms, especially clients with schizophrenia
- Affect dopamine receptors in the brain, reducing the psychotic symptoms
- Typical antipsychotics are more effective for positive symptoms of schizophrenia, such as hallucinations, aggression, and delusions; typical antipsychotic medications also block the chemoreceptor trigger zone and vomiting center in the brain, producing an antiemetic effect.
- Atypical antipsychotics are more effective for the negative symptoms of schizophrenia, such as avolition, apathy, and alogia.
- The effects of antipsychotic medications are potentiated when given with other medications acting on the CNS.

Side Effects:

a. Anticholinergic Effects

- Dry mouth
- Increased heart rate
- Urinary retention
- Constipation
- Hypotension

b. Extrapyramidal Side Effects

a. Pseudo-parkinsonism or neuroleptic-induced parkinsonism - symptoms usually appear in the first few days after starting or increasing the dosage of an antipsychotic medication

- Tremors
- Mask-like faces
- Rigidity
- Shuffling gait
- Dysphagia
- Drooling

b. Dystonia - appear early in the course of treatment and are characterized by spasms in discrete muscle groups such as the neck muscles (torticollis) or eye muscles (oculogyric crisis)

- spasms also may be accompanied by protrusion of the tongue, dysphagia, and laryngeal/pharyngeal spasm that can compromise the client’s airway, causing a medical emergency
- Acute treatment consists of diphenhydramine (Benadryl) given either intramuscularly or intravenously, or benzotropine (Cogentin) given intramuscularly.

c. Akathisia - restless movement, pacing, inability to remain still, and the client’s report of inner restlessness

- usually develops when the antipsychotic is started or when the dose is increased
- Betablockers such as propranolol have been most effective in treating akathisia

d. Tardive Dyskinesia - irreversible once it has appeared, but decreasing or discontinuing the medication can arrest the progression

- Protrusion of the tongue
- Chewing motion
- lip smacking
- blinking and grimacing
- involuntary, choreiform movements of the limbs and feet

c. Neuroleptic Malignant Syndrome

- potentially fatal syndrome that may occur at any time during therapy with neuroleptic (antipsychotic) medications
- more commonly occurs at the initiation of therapy, after the client has changed from one medication to another, after a
- dosage increase, or when a combination of medications is used
- characterized by muscle rigidity, high fever, increased muscle enzymes (particularly CPK), and leukocytosis (increased leukocytes)
- Dyspnea or tachypnea; Tachycardia or irregular pulse rate; Fever; High or low blood pressure; Increased sweating; Loss of bladder control; Skeletal muscle rigidity; Pale skin; Excessive weakness or fatigue; Altered level of consciousness; Seizures

Interventions for Neuroleptic Malignant Syndrome

- Notify the physician.
- Monitor vital signs.
- initiate safety and seizure precautions.
- Prepare to discontinue the medication.
- Monitor level of consciousness.
- Administer antipyretics as prescribed.
- Use a cooling blanket to lower the body temperature.
- Monitor electrolyte levels and administer fluids intravenously as prescribed.

d. Agranulocytosis

- failure of the bone marrow to produce adequate white blood cells, potentially fatal side effect of Clozapine

- develops suddenly and is characterized by fever, malaise, ulcerative sore throat, and leukopenia - drug must be discontinued immediately

Note: Clients taking this antipsychotic must have weekly white blood cell counts. Currently, clozapine is dispensed every 7 days only, and evidence of the white cell count is required before a refill is furnished.

e. Other Side Effects

- Drowsiness
- Blood dyscrasias
- Pruritus
- Photosensitivity
- Elevated blood glucose level
- Increased weight
- Impaired body temperature regulation
- Gynecomastia
- Lactation

General Interventions for Antipsychotic Medications

1. Monitor vital signs.
2. Monitor for symptoms of neuroleptic malignant syndrome (can occur with antipsychotic medications).
3. Monitor urine output.
4. Monitor serum glucose level.
5. The client taking an antipsychotic medication may require long-term medication for parkinsonian symptoms.
6. Administer the medication with food or milk to decrease gastric irritation.
7. For oral use, the liquid form might be preferred because some clients hide tablets in their mouths to avoid taking them.
8. The absorption rate is faster with the liquid form of oral medication.
9. Avoid skin contact with the liquid concentrate to prevent contact dermatitis.
10. Protect the liquid concentrate from light.
11. Dilute the liquid concentrate with fruit juice.
12. Inform the client that a full therapeutic effect of the medication may not be evident for 3 to 6 weeks after initiation of therapy; however, an observable therapeutic response may be apparent after 7 to 10 days.
13. Inform the client that some medications may cause a harmless change in urine color to pinkish to red-brown.
14. Instruct the client to use sunscreen, hats, and protective clothing when outdoors.
15. Instruct the client to avoid alcohol or other CNS depressants.
16. Instruct the client to change positions slowly to avoid orthostatic hypotension.
17. Instruct the client to report signs of agranulocytosis, including sore throat, fever, and malaise.

18. Instruct the client to report signs of liver dysfunction, including jaundice, malaise, fever, and right upper abdominal pain.

**IV. Medications to Treat Attention-Deficit/ Hyperactivity Disorder**

A. Children with attention-deficit/hyperactivity disorder may require medication to reduce hyperactive behavior and lengthen attention span.

B. Medications that are most effective in controlling this disorder are CNS stimulants.

C. CNS stimulants, which increase agitation and activity in adults, have a calming effect on children with attention-deficit/hyperactivity disorder and increase alertness and sensitivity to stimuli.

D. Side and adverse effects

1. Tachycardia
2. Anorexia and weight loss
3. Elevated blood pressure
4. Dizziness
5. Agitation

Interventions

1. Monitor for CNS side and adverse effects.
2. Obtain a baseline ECG.
3. Monitor the blood pressure.
4. Instruct the child and parents that OTC medications need to be avoided.
5. Instruct the child and parents that the last dose of the day should be taken at least 6 hours before bedtime (14 hours for extended-release forms) to prevent insomnia.
6. Monitor height and weight (particularly in children)
7. Reinforce that several weeks of therapy may be necessary before the therapeutic effect is

noted.
8. Instruct the client and parents that a medication free period may be prescribed to allow growth of the child if the medication has caused growth retardation.

**V. Medications to Treat Alzheimer's Disease**

A. Acetylcholinesterase inhibitors may be used in clients with Alzheimer's disease to improve cognitive functions in the early stages.

B. Donepezil

1. An inhibitor of acetylcholinesterase used to treat mild to moderate dementia of Alzheimer's disease
2. Side and adverse effects include nausea and diarrhea.
3. Donepezil can slow the heart rate through its vagotonic effect.

C. Galantamine

1. An inhibitor of cholinesterase used to treat mild to moderate dementia of Alzheimer's disease
2. Side and adverse effects include nausea, vomiting, diarrhea, anorexia, and weight loss.
3. Galantamine can cause bronchoconstriction; it should be used with caution in clients with asthma and chronic obstructive pulmonary disease.

D. Memantine

1. N-Methyl-D-aspartate (NMDA) receptor antagonist indicated for treatment of moderate to severe dementia of Alzheimer's disease
2. Side and adverse effects include dizziness, headache, confusion, and gastrointestinal disturbances.
3. Memantine should not be used in combination with other NMDA receptor antagonists such as amantadine or ketamine; such combinations produce undesirable additive effects.
4. Sodium bicarbonate and other medications that alkalinize the urine can decrease renal excretion of memantine; accumulation to toxic levels can result.

E. Rivastigmine

1. Cholinesterase inhibitor used to treat mild to moderate dementia of Alzheimer's disease
2. Side and adverse effects include nausea, vomiting, diarrhea, abdominal pain, and anorexia.