MAOI vs NDRI

NCLEX-RN Pharmacology Infographic | Mental Health / Antidepressants | 2026 NGN Standard

🧠 CLASS OVERVIEW AT A GLANCE

Feature	MAOI	NDRI
Full name	Monoamine Oxidase Inhibitor	Norepinephrine-Dopamine Reuptake Inhibitor
Prototype	Phenelzine (Nardil)	Bupropion (Wellbutrin / Zyban)
System	CNS / Mental Health	CNS / Mental Health
Line of therapy	LAST-line (atypical / resistant depression)	First-line alternative to SSRIs
#1 DEADLY RISK	Hypertensive crisis (tyramine)	Seizures (lowers threshold)

PART 1: MAOIs

Monoamine Oxidase Inhibitors • Phenelzine | Tranylcypromine | Isocarboxazid | Selegiline

1. DRUG OVERVIEW

- **Prototype drugs:** phenelzine (Nardil), tranylcypromine (Parnate), isocarboxazid (Marplan), selegiline (Emsam transdermal patch)
- **Class:** Antidepressant (non-selective MAO inhibitor)
- **Indications:**
  - Atypical depression (with hypersomnia, hyperphagia, mood reactivity)
  - Treatment-resistant depression (failed SSRIs, SNRIs, TCAs)
  - Social anxiety disorder, panic disorder, bulimia
  - Parkinson disease (selegiline — selective MAO-B at low dose)
- **High-yield use:** Last-line — reserved for patients who have failed multiple other antidepressants.

2. MECHANISM OF ACTION

Inhibits monoamine oxidase (MAO) → blocks breakdown of neurotransmitters → ↑ serotonin + ↑ norepinephrine + ↑ dopamine in synaptic cleft → elevated mood

- MAO-A: metabolizes serotonin, NE, tyramine
- MAO-B: metabolizes dopamine
- Non-selective MAOIs block both — maximum effect AND maximum risk
- **KEY CONCEPT:** By blocking MAO in the gut, MAOIs also prevent breakdown of dietary TYRAMINE → systemic tyramine surge → severe vasoconstriction → hypertensive crisis.

3. THERAPEUTIC EFFECTS

- Improved mood, motivation, and energy
- ↓ anxiety, ↓ panic symptoms
- Restored sleep and appetite patterns
- **Onset:** 2–4 weeks for full effect (teach patient not to stop early)
- **Effectiveness indicator:** ↑ SIGECAPS improvement (Sleep, Interest, Guilt, Energy, Concentration, Appetite, Psychomotor, Suicidality)

4. SIDE EFFECTS & ADVERSE REACTIONS

COMMON (expected)

- Orthostatic hypotension ← MOST COMMON
- Dizziness, headache, dry mouth
- Weight gain, sexual dysfunction
- Insomnia or sedation, anticholinergic effects

SERIOUS / LIFE-THREATENING

HYPERTENSIVE CRISIS (Tyramine Reaction)

Triggered by: tyramine-rich foods + MAOI → massive NE release → severe ↑ BP

SIGNS (memorize — NCLEX loves this):

- Severe occipital (back of head) headache ← hallmark
- Stiff/sore neck, nausea, vomiting
- Chest pain, palpitations, tachycardia
- Sweating, photophobia, dilated pupils
- BP >180/120 → risk of stroke / intracranial hemorrhage

FIRST ACTION: HOLD the drug, sit patient upright, notify provider STAT, prepare IV phentolamine (alpha-blocker) or nifedipine SL per protocol.

SEROTONIN SYNDROME

Triggered by: MAOI + SSRI/SNRI/TCA/triptan/meperidine/tramadol/St. John's wort/linezolid

SIGNS — remember 'HARMED':

- H yperthermia (temp >101.3°F / 38.5°C)
- A utonomic instability (↑BP, ↑HR, diaphoresis)
- R estlessness / agitation / confusion
- M yoclonus, tremor, hyperreflexia, rigidity
- E xcessive sweating
- D iarrhea

FIRST ACTION: STOP offending drug, notify provider, supportive care (cooling, IV fluids, benzos for agitation); cyproheptadine is the antidote.

- Suicidal ideation (black-box warning — especially <25 yrs)
- Hepatotoxicity (rare, with phenelzine)

5. PRIORITY NURSING CONSIDERATIONS

- → **ASSESS:** baseline BP, HR, mood, suicidality, liver function, current med list (critical for interactions)
- → **MONITOR:** BP every visit, orthostatics, weight, signs of hypertensive crisis or serotonin syndrome
- → **HOLD IF:** SBP > 140 or marked orthostatic drop; any headache + stiff neck; suspected serotonin syndrome

CONTRAINDICATIONS (Memorize)

- Concurrent SSRI/SNRI/TCA (wait 14-day washout; 5 weeks after fluoxetine)
- Meperidine (Demerol), tramadol, dextromethorphan, St. John's wort, linezolid, methylene blue
- Sympathomimetics — pseudoephedrine, phenylephrine, amphetamines, cocaine
- Uncontrolled HTN, pheochromocytoma, CHF, liver disease
- Within 14 days of another MAOI

6. LABS & DIAGNOSTICS

- **LFTs (AST, ALT):** baseline and periodic — watch for hepatotoxicity (phenelzine)
- **BP & HR:** at every visit; teach home monitoring
- **CBC:** baseline
- **No specific drug level —** monitor clinically

7. ADMINISTRATION & SAFETY

- **Route:** PO (phenelzine, tranylcypromine, isocarboxazid); transdermal (selegiline — Emsam)
- **Timing:** Give in AM to ↓ insomnia; last dose before 6 PM
- **Selegiline patch:** At 6 mg/24h dose, NO tyramine restriction; at ≥9 mg/24h, follow full MAOI diet
- **Rotate patch sites;** do not cut patch; apply to dry, intact skin
- **Washout:** 14 days before starting another antidepressant; 5 weeks after fluoxetine (long half-life)

8. PATIENT EDUCATION — TYRAMINE-FREE DIET

FOODS TO AVOID (High Tyramine)

- Aged cheeses (cheddar, Swiss, blue, parmesan, brie)
- Cured / smoked / processed meats (salami, pepperoni, bologna, pickled herring)
- Fermented soy (soy sauce, miso, tofu, tempeh)
- Tap/draft beer, red wine, vermouth, sherry
- Sauerkraut, kimchi, pickled vegetables
- Overripe or dried fruit (figs, raisins, bananas that are brown)
- Yeast extracts (Marmite, Vegemite), broad/fava beans
- Chocolate & caffeine in excess, aged/leftover meats

ADDITIONAL TEACHING

- Carry a medical alert card / bracelet listing 'MAOI'
- NO OTC cold meds, decongestants, diet pills, or St. John's wort without checking
- Rise slowly from sitting/lying (orthostatic hypotension)
- Report IMMEDIATELY: severe headache, stiff neck, chest pain, palpitations, sweating, vision changes
- Effects take 2–4 weeks — do NOT stop abruptly
- Maintain diet restrictions for 14 days AFTER discontinuation
- Avoid alcohol entirely

9. NCLEX TEST TRAPS ⚠

- **TRAP:** 'Patient took cold medicine' — sympathomimetics (pseudoephedrine/phenylephrine) + MAOI = hypertensive crisis. Even OTC is dangerous.
- **TRAP:** Severe occipital headache is the #1 warning sign of hypertensive crisis — NOT just 'a normal headache.'
- **TRAP:** Soy sauce & tap beer are tyramine-HIGH; bottled/pasteurized beer is lower risk — but safest answer = avoid all.
- **TRAP:** NCLEX asks 'safest food choice' → pick fresh chicken, rice, fresh produce (NOT aged cheese, cured meat).
- **TRAP:** Meperidine (Demerol) + MAOI = fatal serotonin syndrome. Morphine is preferred.
- **TRAP:** Washout for fluoxetine = 5 WEEKS, not 2. Other SSRIs = 2 weeks.
- **TRAP:** Emsam patch at LOWEST dose (6 mg) does NOT require tyramine restriction — at higher doses, it DOES.

10. MEMORY BOOSTERS

🧠 MNEMONICS

MAOI danger foods = 'AGED, CURED, FERMENTED, PICKLED'

"PANTS" — things MAOIs do:

- P otentiates tyramine
- A nti-depressant (atypical)
- N o cheese/wine/aged
- T ranylcypromine / phenelzine
- S erotonin syndrome risk

Hypertensive crisis triad = HEADache + High BP + Hot flushing

Selegiline = SELECTIVE (MAO-B) at low dose → Parkinson use

🧠 CLINICAL JUDGMENT SNAPSHOT — MAOI

❓ **#1 priority risk:** Hypertensive crisis from tyramine interaction

❓ **What harms the patient FIRST:** Severe ↑BP → stroke / intracranial bleed within minutes of tyramine ingestion

❓ **FIRST nursing action (crisis):** 1) HOLD drug → 2) Sit patient upright → 3) Vitals q5min → 4) Notify provider STAT → 5) Prepare IV phentolamine

❓ **FIRST teaching priority:** Tyramine-free diet + avoid OTC decongestants + carry medical alert

PART 2: NDRIs

Norepinephrine-Dopamine Reuptake Inhibitor • Bupropion (Wellbutrin / Zyban / Aplenzin)

1. DRUG OVERVIEW

- **Prototype:** BUPROPION — essentially the only NDRI on the NCLEX
- **Brand names (NCLEX loves these):**
  - Wellbutrin → depression
  - Zyban → smoking cessation
  - Aplenzin → depression (extended-release salt)
  - Forfivo XL → depression (once-daily)
- **Indications:**
  - Major depressive disorder
  - Seasonal Affective Disorder (SAD)
  - Smoking cessation (↓ nicotine cravings)
  - Adjunct for SSRI-induced sexual dysfunction
  - Off-label: ADHD
- **High-yield advantage:** No sexual side effects, no weight gain → preferred when SSRIs cause those issues.

2. MECHANISM OF ACTION

Blocks reuptake of norepinephrine + dopamine → ↑ NE + ↑ DA in synapse → elevated mood, ↓ nicotine craving, ↑ concentration

- Does NOT significantly affect serotonin → explains lack of sexual dysfunction
- Stimulant-like profile — activating rather than sedating
- **KEY CONCEPT:** ↑ dopamine activity = LOWER SEIZURE THRESHOLD → the defining safety concern.

3. THERAPEUTIC EFFECTS

- Improved mood, energy, motivation
- ↑ concentration, ↓ fatigue
- ↓ nicotine craving & withdrawal (start 1–2 weeks BEFORE quit date)
- Weight loss (not gain) — useful in overweight depressed patients
- **Onset:** 1–3 weeks for mood effect; full effect by 4–6 weeks

4. SIDE EFFECTS & ADVERSE REACTIONS

COMMON (activating profile)

- INSOMNIA ← very common (#1 reason for discontinuation)
- Headache, dry mouth
- Agitation, anxiety, tremor, restlessness
- Weight LOSS, ↓ appetite
- Tachycardia, mild ↑ BP
- Nausea, constipation
- NOTABLY ABSENT: sexual dysfunction, sedation, significant weight gain

SERIOUS / LIFE-THREATENING

SEIZURES (Black Box Warning)

Dose-dependent: risk ↑ sharply at doses >450 mg/day (IR) or >400 mg/day (SR)

Risk factors:

- Eating disorders (anorexia, bulimia) — electrolyte shifts
- Active alcohol or benzodiazepine withdrawal
- History of seizures or head trauma
- CNS tumor, concurrent drugs that lower seizure threshold
- Abrupt discontinuation of alcohol/sedatives

FIRST ACTION if seizure: Protect airway → turn patient to side → pad environment → HOLD drug → notify provider → document duration.

- Hypertension — especially when combined with nicotine patch
- Psychiatric: agitation, mania activation (bipolar switch), psychosis
- Suicidal ideation (black-box — patients <25 yrs)
- Serotonin syndrome IF combined with serotonergic drugs

5. PRIORITY NURSING CONSIDERATIONS

- → **ASSESS:** seizure history, eating disorder history, alcohol/benzo use, current medications, baseline BP, mood, suicidality
- → **MONITOR:** BP, HR, weight, sleep pattern, mood, seizure activity, mania symptoms
- → **HOLD IF:** seizure occurs, new mania, severe agitation, SBP >160
- → **NOTIFY provider:** any seizure, suicidal ideation, manic symptoms, rash

CONTRAINDICATIONS (Memorize — 'SAB HEaD')

- S eizure disorder (active or history)
- A norexia / bulimia (current or prior)
- B enzodiazepine / alcohol abrupt withdrawal
- H ead trauma / CNS tumor
- e MAOI concurrent use or within 14 days
- D ouble bupropion products (Wellbutrin + Zyban = overdose)

6. LABS & DIAGNOSTICS

- **Baseline BP & HR:** check at every visit
- **Electrolytes (esp. Na, K):** especially if eating disorder or hyperemesis — imbalance ↑ seizure risk
- **LFTs & renal function:** baseline; dose ↓ in hepatic/renal impairment
- **Weight:** at each visit (watch for unintended loss)
- **No therapeutic drug level needed**

7. ADMINISTRATION & SAFETY

- **Route:** PO only
- **Formulations:** IR (tid), SR (bid), XL (once daily)
- **Timing:** Morning + early afternoon (avoid bedtime → insomnia)

- **Space IR doses ≥ 6 hours apart;** space SR doses ≥ 8 hours to minimize seizure risk
- **Max daily dose:** 450 mg (IR), 400 mg (SR), 450 mg (XL) — NEVER exceed
- **DO NOT crush, chew, or split XL/SR tablets**
- **Can be taken with or without food**
- **Smoking cessation protocol:** Start 1–2 weeks BEFORE quit date; continue 7–12 weeks
- **Taper — do NOT stop abruptly**

8. PATIENT EDUCATION

- Take morning doses; skip (don't double) missed bedtime doses
- Avoid alcohol — greatly ↑ seizure risk
- Never take 2 bupropion products together (e.g., Wellbutrin + Zyban)
- Report immediately: seizure, confusion, rash, chest pain, suicidal thoughts, mania
- Full effect takes 4–6 weeks — don't stop early
- If smoking cessation: continue smoking 1–2 weeks into therapy until quit date
- Stand up slowly; use caution driving until you know response
- Weigh weekly — report unintended weight loss
- Do NOT stop abruptly — taper with provider

9. NCLEX TEST TRAPS ⚠

- **TRAP:** Patient with bulimia prescribed bupropion = CONTRAINDICATED. NCLEX puts this in subtle history clues ('purges after meals').
- **TRAP:** Wellbutrin + Zyban ordered together = same drug = OVERDOSE. Recognize BRAND names.
- **TRAP:** NCLEX mentions 'patient had gastric bypass' or 'alcohol withdrawal' → altered absorption + seizure risk → HOLD.
- **TRAP:** Patient complains of insomnia at bedtime dose — NOT an allergic reaction; switch to morning dosing.
- **TRAP:** Bupropion is NOT an SSRI — it does NOT cause sexual dysfunction. Patients are OFTEN switched FROM SSRIs TO bupropion for this reason.
- **TRAP:** Smoking cessation: patient must KEEP SMOKING for the first 1–2 weeks while drug builds up.
- **TRAP:** MAOI washout of 14 days is required BEFORE starting bupropion (and vice versa).

10. MEMORY BOOSTERS

🧠 MNEMONICS

'BUP' you up → BUPropion is activating, NOT sedating

Contraindications = 'SAB HEaD' (think: 'SAB-otaged HEAD')

- S eizures
- A norexia / bulimia
- B enzo/alcohol withdrawal
- H ead trauma
- e Ating disorder
- D ouble dose (two bupropion products)

Why preferred over SSRI? → 'No S-S-S'

- No Sexual dysfunction

- No Sedation
- No Significant weight gain

Seizure dose cutoff = 450 mg/day — 'Above 450 = Seize-some'

🧠 CLINICAL JUDGMENT SNAPSHOT — NDRI (Bupropion)

❓ **#1 priority risk:** SEIZURES (lowered threshold)

❓ **What harms the patient FIRST:** A tonic-clonic seizure from dose >450 mg, eating disorder, or abrupt sedative withdrawal

❓ **FIRST nursing action (seizure):** 1) Protect airway → 2) Turn to side → 3) Do NOT restrain → 4) HOLD drug → 5) Notify provider → 6) Document

❓ **FIRST admission assessment:** Ask about history of eating disorder, seizures, head injury, and current alcohol/benzo use BEFORE first dose.

PART 3: MAOI vs NDRI

Head-to-Head Comparison for Rapid NCLEX Review

⚖️ FULL COMPARISON TABLE

Category	MAOI (Phenelzine)	NDRI (Bupropion)
Neurotransmitter	↑ 5HT + NE + DA (blocks breakdown)	↑ NE + DA (blocks reuptake)
Line of therapy	LAST-line	First-line alternative
#1 DEADLY RISK	Hypertensive crisis (tyramine)	Seizures (>450 mg/day)
Food interaction	YES — tyramine-free diet required	None specific
Sexual dysfunction	Yes (common)	NO — actually treats SSRI-induced ED
Weight effect	GAIN	LOSS
Sedation?	Variable	Activating / insomnia
Best dosing time	Morning (before 6 PM)	Morning + early PM
Contraindicated in	HTN, pheo, SSRI use, sympathomimetics	Eating disorder, seizures, head trauma
Serotonin syndrome risk	HIGH with serotonergic drugs	Low (minimal 5HT effect)
Smoking cessation	No	YES (Zyban)
Washout before switching	14 days (5 wks after fluoxetine)	14 days before/after MAOI
Key teaching	AVOID tyramine, decongestants, meperidine	Take AM; avoid alcohol; no double dosing
Mnemonic	'PANTS' — Potentiates tyramine	'SAB HEaD' contraindications

🔗 COMMON GROUND (Both Drug Classes)

- Both = antidepressants → black-box warning for suicidal ideation (esp. <25 years old)
- Both require 14-day washout between them → NEVER combine (lethal)
- Both → full therapeutic effect takes 2–6 weeks
- Both → do NOT stop abruptly; taper
- Both → monitor mood, suicidality, BP at every visit
- Both → avoid alcohol

🚨 FINAL NCLEX PEARL — IF YOU REMEMBER ONLY TWO THINGS

1. MAOI + TYRAMINE = HYPERTENSIVE CRISIS

→ First sign: severe occipital headache → First action: HOLD drug + notify provider + phentolamine

2. BUPROPION + EATING DISORDER / HIGH DOSE = SEIZURE

→ Never exceed 450 mg/day → Contraindicated in anorexia, bulimia, seizure hx, head trauma

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