NCLEX-RN · PHARMACOLOGY · NGN READY

Benzodiazepines

RX

CNS depressants that potentiate GABA — used for anxiety, seizures, alcohol withdrawal, and procedural sedation. High-alert class due to respiratory depression risk.

CLASS	SYSTEM	SCHEDULE	ANTIDOTE
GABA-A agonists	Neurological / Psych	DEA Schedule IV	Flumazenil

01 DRUG OVERVIEW · WHY WE GIVE IT

- **Anxiety disorders** — GAD, panic disorder, acute anxiety (short-term)
- **Insomnia** — short-term only (≤ 2–4 weeks)
- **Seizures / Status epilepticus** — *lorazepam IV is first-line*
- **Alcohol withdrawal** — chlordiazepoxide, lorazepam, diazepam (prevents DTs & seizures)
- **Procedural / preoperative sedation** — midazolam (conscious sedation, intubation)
- **Muscle spasms** — diazepam
- **Amnesia induction** — for uncomfortable procedures

02 MECHANISM OF ACTION

Benzo binds GABA-A receptor → Enhances GABA binding affinity → ↑ Chloride (Cl^-) influx → Neuronal hyperpolarization → ↓ CNS neuron firing

RESULT: Sedation · Anxiolysis · Anticonvulsant · Muscle relaxation · Amnesia

Key distinction: Benzos *enhance* GABA — they do not open Cl^- channels directly (barbiturates do). This is why benzos have a **ceiling effect** and are safer in overdose than barbiturates.

03 THERAPEUTIC EFFECTS · WHAT "WORKING" LOOKS LIKE

- → **↓ Anxiety** — calmer affect, ↓ HR, ↓ BP
- → **Seizure cessation** — within 1–3 min IV (status epilepticus)
- → **Sleep induction** — ↓ sleep latency, maintained sleep
- → **Muscle relaxation** — ↓ spasticity
- → **Alcohol withdrawal control** — ↓ CIWA score, no DTs or seizures
- → **Anterograde amnesia** — no recall of procedure (midazolam)

04 SIDE EFFECTS & ADVERSE REACTIONS

COMMON

- Drowsiness, sedation, fatigue
- Dizziness, ataxia, unsteady gait
- Confusion, impaired memory
- Slurred speech
- Blurred vision
- Dry mouth, constipation
- **Paradoxical excitement** — agitation, rage (esp. elderly, children)
- **Tolerance & dependence** with long-term use

SERIOUS 🚨

- **Respiratory depression** (RR < 12) — esp. IV push, combo w/ opioids
- **Hypotension** & bradycardia
- **Profound CNS depression / coma**
- **Anaphylaxis / angioedema** (rare)
- **Withdrawal seizures** with abrupt discontinuation
- **Delirium tremens-like syndrome** on withdrawal
- **Falls & fractures** (elderly — Beers criteria)
- **Overdose → coma → death** (esp. polysubstance)

BLACK BOX **Concurrent use with opioids** can cause profound sedation, respiratory depression, coma, and death. Reserve combination for patients with no alternative and monitor continuously.

05 PRIORITY NURSING CONSIDERATIONS

ASSESS & MONITOR

- **Assess RR before each dose** — hold if RR < 12
- Monitor BP, HR, O_2 sat, LOC continuously with IV
- Assess for fall risk, especially elderly
- Monitor for paradoxical reactions (agitation)
- Assess for S/S of dependence / withdrawal
- CIWA-Ar scale for alcohol withdrawal

HOLD · CONTRAINDICATIONS

- **HOLD** if RR < 12 or oversedated
- Narrow-angle glaucoma
- Severe respiratory depression / sleep apnea
- Myasthenia gravis
- **Pregnancy (Cat D/X)** — teratogenic, cleft palate
- Hepatic failure (esp. diazepam — long half-life)
- **Notify HCP** for ↓ LOC, RR < 12, hypotension

🔑 **Drug interactions to memorize: Opioids** (fatal respiratory depression) · **Alcohol** (additive CNS depression) · **CYP3A4 inhibitors** — grapefruit juice, erythromycin, ketoconazole, cimetidine (↑ benzo levels) · **Other CNS depressants** — antihistamines, antipsychotics, TCAs.

06 LABS & DIAGNOSTICS

- **LFTs (ALT, AST, bilirubin)** — benzos are hepatically metabolized; dose-reduce in liver impairment
- **CBC** — baseline; rare blood dyscrasias (leukopenia, thrombocytopenia)
- **Serum creatinine / BUN** — renal function baseline
- **Pregnancy test (β-hCG)** before initiation — teratogenic
- **Urine drug screen** — for adherence / misuse monitoring
- **Continuous pulse ox ± capnography** — during IV administration

CRITICAL There is **no specific therapeutic serum level** to trend for benzos — clinical sedation scores (e.g., RASS, Ramsay) and respiratory rate guide dosing.

07 ADMINISTRATION & SAFETY

- **Routes:** PO, IM, IV, SL, rectal (diazepam gel for seizures at home)
- **IV push slowly** — diazepam over 2–5 min; lorazepam over 2 min; *rapid push = respiratory arrest*
- **Dilute** midazolam before IV push; never give undiluted rapidly
- Use large vein + flush line — phlebitis risk with diazepam (propylene glycol vehicle)
- **Continuous capnography + pulse ox** during procedural sedation
- Short-term use only for anxiety/insomnia — reassess at 2–4 weeks
- **Schedule IV controlled substance** — count, lock, document waste
- **High-alert in elderly** — on Beers Criteria; avoid if possible
- **Taper — never stop abruptly** (seizure risk after > 2 weeks use)

ANTIDOTE **Flumazenil (Romazicon)** — competitive GABA-A antagonist. Reverses sedation & respiratory depression. *Caution:* can precipitate **seizures in chronic users** and in mixed overdoses with TCAs.

08 PATIENT EDUCATION

- **DO NOT drink alcohol** — additive CNS depression, can be fatal
- **Avoid driving / operating machinery** until effects are known
- **Do not stop abruptly** — risk of rebound anxiety, insomnia, seizures; must taper
- **Avoid grapefruit juice** — ↑ drug levels (CYP3A4 inhibition)
- **Tell HCP about ALL meds** — especially opioids, sleep aids, antihistamines
- **Notify HCP if pregnant** or planning pregnancy — teratogenic
- Rise slowly from sitting/lying (orthostatic hypotension, fall risk)
- **Risk of dependence** — take only as prescribed, short-term
- **Store secured & out of reach** — abuse potential in household
- Report paradoxical agitation, worsening mood, or suicidal thoughts

09 NCLEX TEST TRAPS ⚠

- **Trap:** "Give the antidote first" — *Wrong.* FIRST action in overdose = **airway, breathing, O_2, support ventilation**. *Then* flumazenil.
- **Trap:** Flumazenil is always safe. *Wrong.* In chronic benzo users or mixed ODs (TCAs, cocaine), it can **precipitate seizures**.
- **Trap:** Confusing benzos with barbiturates. Benzos *enhance* GABA → ceiling effect, safer. Barbiturates *open channels directly* → no ceiling, often fatal.
- **Trap:** Assess HR before giving. *Wrong.* Assess **RESPIRATORY RATE** — hold if RR < 12.
- **Trap:** Stop abruptly if side effects. *Wrong.* Must **taper** to prevent withdrawal seizures.
- **Trap:** Rapid IV push for quick seizure control. *Wrong.* Rapid push = respiratory arrest. **Always push slowly.**
- **Trap:** "Elderly pt anxious → give lorazepam." *Wrong.* Benzos are on **Beers Criteria** — avoid in elderly (fall, delirium, paradoxical reactions).
- **Trap:** Combining with opioids for pain + anxiety. *Wrong.* **Black box warning** — fatal respiratory depression.
- **Trap:** "Midazolam is just for sleep." *Wrong.* Short-acting — used for **procedural sedation** with **continuous monitoring**.
- **Priority question:** Pt on lorazepam drip for ETOH withdrawal becomes lethargic, RR 10. **FIRST action = HOLD the drug, open airway, apply O_2, notify HCP.**

10 MEMORY BOOSTERS · MNEMONICS

-PAM / -LAM

Drug ends in **"-pam"** (diazePAM, lorazePAM, clonazePAM) or **"-lam"** (alprazoLAM, midazoLAM, triazoLAM) = **Benzodiazepine**.

PAMS

Panic/anxiety relief · **A**mnesia · **M**uscle relaxation · **S**edation & seizure control. The 4 things benzos do.

BENZO

Breathing suppression · **E**lderly avoid · **N**ever abrupt stop · **Z**ero alcohol · **O**verdose → flumazenil.

FLU-MAZ

Flumazenil **MAZ**es the benzo out of the receptor. *Antidote = competitive antagonist at GABA-A.*

"L" = LIFE

Lorazepam is **L**ife-saving for status epilepticus — **FIRST-LINE IV**. (Also works in liver failure — no active metabolites.)

RULE OF 12

Hold if RR < 12. One simple number to memorize for every benzo question.

+ MOST TESTED BENZODIAZEPINES · KEY DIFFERENCES

DRUG (BRAND)	ONSET / DURATION	#1 NCLEX USE	KEY DISTINCTION
Lorazepam *(Ativan)*	Intermediate	Status epilepticus (1st line IV) · Alcohol withdrawal · Anxiety	Safe in liver failure — no active metabolites. Preferred in elderly & hepatic impairment.
Diazepam *(Valium)*	Long-acting	Seizures · Muscle spasm · Alcohol withdrawal	Long half-life → accumulation risk. Avoid in liver disease/elderly. Rectal gel for home seizure rescue.
Midazolam *(Versed)*	Short, rapid	Procedural / conscious sedation · Pre-op · Intubation	Causes anterograde amnesia. **Requires continuous monitoring** (O_2, capnography). High respiratory depression risk.
Alprazolam *(Xanax)*	Short-acting	Panic disorder · Acute anxiety	**Highest abuse/dependence potential.** Severe withdrawal with abrupt stop. PO only.
Chlordiazepoxide *(Librium)*	Long-acting	Alcohol withdrawal (classic agent)	Long half-life gives smooth withdrawal taper. Often first-choice for CIWA protocol.
Clonazepam *(Klonopin)*	Long-acting	Seizure disorders · Panic disorder	Used for chronic maintenance seizure control (not acute). High dependence potential.
Temazepam *(Restoril)*	Intermediate	Insomnia (short-term)	Specifically used for sleep. Max 2–4 weeks to avoid dependence.

NCJMM · Clinical Judgment Snapshot

Think Like the NCLEX

#1 PRIORITY RISK	**Respiratory depression → respiratory arrest.** Risk is highest with IV administration, rapid push, combination with opioids or alcohol, and in elderly/opioid-naïve patients.
WHAT WILL HARM FIRST	**The airway.** A sedated patient cannot protect their airway → tongue obstruction, hypoventilation → hypoxia → bradycardia → cardiac arrest. CNS depression always threatens the ABCs before anything else.
FIRST NURSING ACTION	**1. Assess airway & breathing** — reposition head (jaw thrust), check RR & SpO_2. **2. Stop the drug / hold next dose.** **3. Apply supplemental O_2,** prepare bag-valve-mask. **4. Notify provider / call Rapid Response.** **5. Flumazenil** (reversal) only *after* airway is managed — and cautiously in chronic users.
SAFETY RULE FOR LIFE	If RR < 12, hold. If on opioids, flag black box. If pregnant, stop. If elderly, reassess. If chronic use, **never** abruptly discontinue.