NCLEX-RN · 2026 TEST PLAN | PHARMACOLOGY — CNS DEPRESSANTS | VOL. 01 / HIGH-YIELD

THE NCLEX-RN RAPID-REVIEW DOSSIER

Barbiturates

Old-school GABA potentiators with a narrow therapeutic index and a body count. Handle with precision.

CLASS · BARBITURATES | SYSTEM · CNS / NEURO | SCHEDULE · II – IV

- Phenobarbital Luminal
- Pentobarbital Nembutal
- Secobarbital Seconal
- Thiopental Pentothal
- Amobarbital Amytal

01 SECTION ONE Drug Overview

KEY INDICATIONS — WHY WE GIVE IT

- → **Seizure disorders** — especially tonic-clonic & status epilepticus (phenobarbital)
- → **Neonatal seizures** — phenobarbital is first-line
- → **Induction of anesthesia** — thiopental (ultra-short)
- → **Pentobarbital coma** — induced coma for refractory ↑ICP
- → **Severe insomnia** — rarely now; largely replaced by benzos/Z-drugs
- → **Pre-op sedation** — limited use

HIGH-YIELD CLINICAL PEARL

- → Largely obsolete for sleep — too dangerous. Modern use is **narrow: seizures & anesthesia**.

02 SECTION TWO Mechanism of Action

Bind GABA-A receptor → ↑ **DURATION** of Cl^- channel opening
→ ↑ Cl^- influx into neuron
→ Neuronal hyperpolarization
→ Global CNS depression
→ Sedation → Hypnosis → Anesthesia → **Coma** → **Death**

⚠ **MOA Contrast (tested constantly):**
Benzos → ↑ FREQUENCY of Cl^- channel opening *(ceiling effect → safer)*
Barbs → ↑ DURATION of Cl^- channel opening *(no ceiling → deadly)*

DOSE-DEPENDENT EFFECT

- → At high doses → direct GABA-mimetic action (no GABA required)
- → This is why **overdose is lethal** and benzos aren't

03 SECTION THREE — Therapeutic Effects

IS IT WORKING?

- → ↓ Seizure frequency & duration
- → Termination of status epilepticus
- → Sedation / controlled sleep
- → Smooth anesthesia induction
- → ↓ ICP (pentobarbital coma)
- → Therapeutic serum level achieved
- → Calm, rousable patient — **not** obtunded

04 SECTION FOUR — Side Effects & Adverse Reactions

COMMON

- → Drowsiness, sedation, "hangover"
- → Dizziness, ataxia
- → Nausea / vomiting
- → Mild hypotension, bradycardia
- → **Paradoxical excitement** — elderly & children
- → Cognitive slowing, confusion

SERIOUS / LIFE-THREATENING

- → **RESPIRATORY DEPRESSION / ARREST** — #1 killer
- → Coma, death (no ceiling effect)
- → Severe hypotension / cardiovascular collapse
- → Laryngospasm (IV push)
- → **Stevens-Johnson Syndrome** / TEN
- → Hepatotoxicity, agranulocytosis
- → Physical dependence → **fatal withdrawal**
- → **Porphyria crisis** (induces ALA synthetase)

05 SECTION FIVE
Priority Nursing Considerations

ASSESS & MONITOR

- → **Respiratory rate & depth** — cornerstone; continuous pulse ox with IV use
- → Blood pressure & HR (esp. during IV push)
- → Level of consciousness, pupil response
- → Therapeutic serum levels (phenobarbital 15–40 mcg/mL)
- → Suicide / abuse risk (high-alert in mental health)

HOLD & NOTIFY HCP IF…

- → RR < 12
- → SBP < 90 mmHg
- → Unable to rouse / excessive sedation
- → Rash (Stevens-Johnson warning)
- → Phenobarbital level > 40 mcg/mL
- → Jaundice or ↑ LFTs

CONTRAINDICATIONS

- **Porphyria** — ABSOLUTE
- Severe respiratory disease (COPD, sleep apnea)
- Severe hepatic impairment
- Pregnancy (Category D — teratogenic)
- Known substance abuse history
- Hypersensitivity

MAJOR DRUG INTERACTIONS

- → **Potent CYP450 inducer** — ↓ effectiveness of many drugs
- → ↓ **Warfarin** effect → INR falls → may need ↑ warfarin dose
- → ↓ **Oral contraceptives** → breakthrough pregnancy → use backup method
- → ↓ Corticosteroids, theophylline, doxycycline, TCAs
- → ↑↑ CNS depression with **alcohol, opioids, benzodiazepines, antihistamines** (fatal)

→ MAOIs ↑ barbiturate effect

06 SECTION SIX
Labs & Diagnostics

LAB	VALUE	MEANING
Phenobarbital level	**15–40 mcg/mL**	Therapeutic
Phenobarbital level	**> 40 mcg/mL**	Toxic → respiratory depression
Phenobarbital level	**> 80 mcg/mL**	Potentially lethal
LFTs (AST/ALT)	Baseline + periodic	Hepatotoxicity screen
CBC	Baseline + periodic	Agranulocytosis, thrombocytopenia
BUN / Creatinine	Baseline	Renal elimination (phenobarb)
Urine pH	**Alkalinized in OD**	↑ phenobarb elimination

07 SECTION SEVEN
Administration & Safety

ROUTES

→ PO, IM, IV, rectal (pediatric seizures)

IV ADMINISTRATION — HIGH ALERT

→ Push **SLOWLY** — rapid push → apnea, laryngospasm, hypotension

→ Max phenobarbital rate: **60 mg/min**

→ Have resuscitation equipment, O_2, intubation kit at bedside

→ Never mix with acidic solutions → precipitates

→ Extravasation → tissue necrosis, gangrene

→ Z-track IM to prevent tissue irritation

CONTROLLED SUBSTANCE SAFETY

→ Schedule II–IV (varies by drug)

→ Two-nurse count; secure storage

→ Narrow therapeutic index — always double-check dose

08 SECTION EIGHT Patient Education

THE PATIENT MUST KNOW

- → **NEVER stop abruptly** — withdrawal can be fatal (seizures, death)
- → Taper only under HCP supervision
- → No alcohol, opioids, sleep aids, or benzos — fatal combination
- → Use **backup contraception** — OCPs less effective
- → May take weeks for full seizure control
- → No driving or heavy machinery
- → Take at same time daily; don't double dose
- → Secure medication — high abuse potential

SEEK HELP IMMEDIATELY FOR

- → Rash of any kind (SJS warning)
- → Unusual bruising, bleeding, sore throat, fever
- → Yellow skin/eyes (jaundice)
- → Severe drowsiness, confusion, slow breathing
- → Suicidal thoughts

09 SECTION NINE NCLEX Test Traps ⚠

01 **MOA mix-up.** Benzos ↑ FREQUENCY, Barbs ↑ DURATION of Cl^- channel opening. Expect it on the test.

02 **Flumazenil does NOT reverse barbiturates** — only benzodiazepines. There is **no specific antidote**.

03 **Porphyria = absolute contraindication.** Induces ALA synthetase → precipitates crisis.

04 **Phenobarbital t½ = 2–7 days.** Steady state takes 2–3 weeks. Watch for accumulation.

05 **Warfarin drops, not rises.** Barbs INDUCE CYP450 → may need warfarin dose *increase*. Stopping the barbiturate → INR spikes → bleed risk.

06 **Withdrawal can kill.** Unlike most withdrawals, barbiturate withdrawal causes seizures and death. Never stop cold turkey.

07 **OCP failure = unplanned pregnancy.** Always teach backup contraception.

10 SECTION TEN

Memory Boosters

SUFFIX RECOGNITION

Drugs ending in "–barbital" are barbiturates.

Pheno -barbital · long-acting · seizures

Pento -barbital · short · coma for ↑ICP

Seco -barbital · short · insomnia

Thio -pental · ultra-short · anesthesia

SIDE-EFFECT MNEMONIC

*"**BARBS** really do **DEPRESS**."*

B reathing depression

A ddiction / Agranulocytosis

R ash (Stevens-Johnson)

B P drops (hypotension)

S edation / Stopped breathing

BENZOS VS BARBS

*"**B**enzos **F**lirt (Frequency).*
*Barbs **D**ate longer (Duration)."*

PORPHYRIA WARNING

*"**P**urple **P**orphyria + **B**arbs = **P**oison."*

FINAL SECTION · NCJMM CLINICAL JUDGMENT MODEL

Clinical *Judgment* Snapshot

#1 PRIORITY RISK

Respiratory depression & arrest.

Barbiturates have **no ceiling effect**. Unlike benzos, dose keeps going until the patient stops breathing. This is why they've largely been replaced.

WHAT HARMS FIRST?

Hypoxia from suppressed medullary respiratory drive.

Breathing slows → hypoxia → brain injury → cardiac arrest. **Hypotension & bradycardia** follow close behind, especially with rapid IV push.

FIRST NURSING ACTION (OD SCENARIO)

Airway. Breathing. Support.

01 Assess airway patency & respiratory effort
02 Administer supplemental O_2; prepare for intubation & mechanical ventilation
03 IV fluids + vasopressors for hypotension
04 Activated charcoal if recent ingestion (airway intact)
05 Urine alkalinization with sodium bicarb — ↑ phenobarb elimination
06 Hemodialysis for severe phenobarbital toxicity
07 **NO specific antidote** — supportive care is the care

BONUS · MOST-TESTED DRUGS IN THIS CLASS

Barbiturate Line-Up — Know the Differences

DRUG	DURATION	PRIMARY USE	NURSING PEARL
Phenobarbital LUMINAL	LONG T½ 2–7 DAYS	Tonic-clonic seizures, status epilepticus, neonatal seizures	Therapeutic 15–40 mcg/mL. Long half-life → accumulation risk. Potent CYP450 inducer.
Pentobarbital NEMBUTAL	SHORT	Induced coma for refractory ↑ICP, procedural sedation	Coma is the goal — don't confuse with toxicity. Continuous EEG monitoring.
Secobarbital SECONAL	SHORT	Severe insomnia (rare), pre-op sedation	High abuse potential — Schedule II. Rarely used today.
Thiopental PENTOTHAL	ULTRA-SHORT	Induction of general anesthesia	IV only. Fast on, fast off. Watch for laryngospasm & bronchospasm.
Amobarbital AMYTAL	INTERMEDIATE	Historic sedation; diagnostic Wada test	Largely phased out of routine practice.