OPIOID AGONISTS

Class: Narcotic Analgesics (Mu-Receptor Agonists)

System: Central Nervous System — Pain Management

Prototype: Morphine Sulfate

🧠 CNS Depressant

⚠️ HIGH-ALERT MEDICATION

JUMP TO SECTION

1 🟨 Drug Overview

- **Moderate to severe pain** — post-op, cancer, trauma, MI, sickle cell crisis, kidney stones
- **Acute pulmonary edema** → morphine reduces preload, anxiety, and cardiac workload
- **Pre-op sedation** and anesthesia adjunct (fentanyl)
- **Labor/obstetric pain** (caution: neonatal respiratory depression)
- **Antitussive** → codeine (suppresses cough reflex)
- **Antidiarrheal** → loperamide (does NOT cross blood–brain barrier)
- **MAT (Medication-Assisted Treatment)** → methadone, buprenorphine for opioid use disorder

💡 Pain = "whatever the patient says it is, existing whenever they say it does" (McCaffery). Always believe the patient's self-report.

2 🟥 Mechanism of Action

Opioid binds **Mu receptors** in CNS (brain, spinal cord) → **↓ Substance P** release → Blocks ascending pain pathways → Alters pain perception in the limbic system → **↓ Pain + ↑ Pain tolerance + Euphoria**

Receptor effects:

- **Mu (μ)** → analgesia, respiratory depression, miosis, constipation, euphoria, dependence
- **Kappa (κ)** → spinal analgesia, sedation, dysphoria
- **Delta (δ)** → analgesia, mood modulation

🧠 Key concept: Opioids do NOT "fix" the pain source — they change how the brain perceives pain.

3 🟧 Therapeutic Effects

- **Pain score ↓** — reassess 15–30 min after IV, 60 min after PO
- **Pt. appears comfortable** — relaxed facial expression, ↓ grimacing, able to rest
- **VS stabilize** — HR and BP normalize from pain-induced elevations
- **Pulmonary edema:** ↓ dyspnea, ↓ anxiety, ↓ preload, improved breathing
- **Cough suppression** (codeine)
- **Sedation** (desired pre-op, NOT desired during monitoring)

✅ **Effectiveness is based on the patient's self-reported pain score — NOT on VS, behavior, or whether they're sleeping.**

4 🟩 Side Effects & Adverse Reactions

✅ COMMON (EXPECTED)

- **Constipation** (NO tolerance — always prescribe bowel regimen)
- Nausea & vomiting
- Sedation / drowsiness
- **Pruritus** (morphine → histamine release)
- Urinary retention
- Orthostatic hypotension
- Dry mouth
- **Miosis** (pinpoint pupils)

🚨 SERIOUS / LIFE-THREATENING

- **RESPIRATORY DEPRESSION** ← #1 killer
- **Apnea / respiratory arrest**
- Severe hypotension, bradycardia
- Paralytic ileus
- **Seizures** (meperidine, tramadol)
- **Serotonin syndrome** (tramadol, meperidine, fentanyl + SSRIs/MAOIs)
- Dependence, tolerance, addiction, withdrawal
- **QT prolongation** (methadone)

☠️ **OPIOID OVERDOSE TRIAD:** (1) Respiratory depression (2) Pinpoint pupils (3) Coma/↓ LOC

5 🟪 Priority Nursing Considerations

- → **ASSESS** pain (0–10), RR, BP, HR, LOC, sedation scale (Pasero/POSS) *BEFORE* administration
- → **MONITOR** RR q15 min × 1 hr after IV, then q1–2 hr; continuous SpO_2 / capnography for high-risk pts
- → **HOLD** if RR < 12, SpO_2 < 90%, sedation level ↑, or systolic BP < 90
- → **NOTIFY** provider for persistent hypotension, unrousable sedation, or RR < 10
- → **HAVE** naloxone (Narcan) readily available at bedside
- → **PREVENT** constipation: stool softener + stimulant laxative with every opioid order
- → **REASSESS** pain after peak effect (IV: 15–30 min, PO: 60 min)
- → **AVOID** in severe respiratory compromise, paralytic ileus, head injury (↑ ICP risk)

⛔ HOLD PARAMETERS

- RR < 12/min (some sources < 10)
- Oversedation (unrousable)
- SpO_2 < 90%
- SBP < 90 mmHg
- No return of bowel function (post-op)

🚫 CONTRAINDICATIONS / CAUTIONS

- Severe asthma, COPD exacerbation
- Paralytic ileus
- ↑ ICP, head trauma
- MAOI use within 14 days (esp. meperidine)
- Pregnancy (neonatal withdrawal)
- Severe renal/hepatic impairment

⚠️ **BOXED WARNING:** Opioid + benzodiazepine (or alcohol, other CNS depressants) = profound sedation, respiratory depression, coma, death.

6 🟫 Labs & Diagnostics

- **LFTs (AST, ALT)** — especially for combo products with acetaminophen (max 3–4 g/day)
- **BUN / Creatinine / GFR** — meperidine → toxic normeperidine accumulates in renal impairment
- **CBC** — baseline for chronic use
- **EKG / QT interval** — for methadone (↑ QT → torsades)
- **Urine drug screen** — compliance, diversion screening
- **End-tidal CO_2 (capnography)** — earliest indicator of respiratory depression (before SpO_2 drops)

📊 Opioids have **no specific therapeutic drug level — dose is titrated to clinical effect and tolerability.**

7 🟥 Administration & Safety

- **Routes:** PO, IV, IM, SubQ, transdermal, epidural, intrathecal, PCA, intranasal, rectal, buccal
- **IV push:** give **SLOWLY** over 4–5 min (morphine) — rapid push → hypotension, chest wall rigidity (fentanyl)
- **Fentanyl patch:** 72-hr duration, 12–24 hr onset, DO NOT cut, avoid heat sources (heating pad, fever, sauna → ↑ absorption → overdose)
- **PCA (Patient-Controlled Analgesia):** ONLY the patient presses the button — *NEVER* PCA-by-proxy (no family/staff)
- **Extended-release tablets:** DO NOT crush, chew, or split (dose-dumping → fatal overdose)
- **High-alert medication** — requires independent double-check per facility policy
- **Controlled substance** — count, document waste with witness
- **Naloxone available** at bedside for high-risk patients

⚠️ **Fentanyl patches on elderly or cachectic patients → ↓ subcutaneous fat → unpredictable absorption → high overdose risk.**

8 🟦 Patient Education

- **Do NOT drive** or operate heavy machinery
- **Avoid alcohol** and other CNS depressants (benzodiazepines, sleep aids, antihistamines)
- **Rise slowly** from sitting/lying (orthostatic hypotension)
- **Prevent constipation:** ↑ fluids, ↑ fiber, stool softener, ambulate
- **Do NOT crush or chew** extended-release formulations
- **Store securely** — lock up to prevent diversion or accidental pediatric ingestion
- **Do NOT share** medication — opioids are individualized and can be fatal to others
- **Taper gradually** under provider guidance — do not stop abruptly (withdrawal)
- **Have naloxone** at home for high-risk patients; teach household how to use
- **Dispose safely** — DEA take-back programs, never flush or share

🚨 **SEEK HELP IMMEDIATELY** if: extreme drowsiness, unable to wake, slow/shallow breathing, blue lips/fingernails, pinpoint pupils.

9 🟨 NCLEX Test Traps ⚠️

- **TRAP:** "Pt is sleeping, skip the pain med." **REAL:** Sleep ≠ pain-free. Assess sedation scale and RR first — don't automatically withhold.
- **TRAP:** Believing BP/HR more than pain rating. **REAL:** Pain is what the patient says it is. Normal VS do NOT rule out pain.
- **TRAP:** Worrying about addiction in acute pain. **REAL:** Undertreated pain is a bigger NCLEX error than dependence risk.
- **TRAP:** Naloxone fixes it for good. **REAL:** Naloxone's half-life is **shorter** than most opioids → re-sedation likely → repeat doses needed.
- **TRAP:** "Demerol is a safe opioid." **REAL:** Meperidine → normeperidine metabolite → seizures. Avoid in elderly, renal pts, >48 hrs.
- **TRAP:** Fentanyl patch during fever/heating pad. **REAL:** Heat ↑ absorption → overdose.
- **TRAP:** Constipation resolves with time. **REAL:** NO tolerance develops to constipation — lifelong bowel regimen needed.
- **TRAP:** Opioid withdrawal is deadly. **REAL:** Uncomfortable (flu-like), but NOT life-threatening (unlike alcohol/benzo withdrawal).
- **TRAP:** Giving tramadol with sertraline. **REAL:** Serotonin syndrome + lowered seizure threshold.
- **TRAP:** Methadone "just treats addiction." **REAL:** Long half-life, unpredictable QT prolongation → cardiac monitoring required.
- **PRIORITY:** *RR* is the first vital sign to assess — always — before/during/after opioids.

10 🟩 Memory Boosters

🧠 "MORPHINE" — Side Effects

- **M** Miosis (pinpoint pupils)
- **O** Out of it (sedation, euphoria)
- **R** Respiratory depression
- **P** Pneumonia risk (aspiration, ↓ cough)
- **H** Hypotension
- **I** Infrequent urination (retention) + Ileus
- **N** Nausea
- **E** Emesis / Euphoria

☠️ OVERDOSE TRIAD (3 C's / "PPR")

- **P** Pinpoint pupils
- **P** Poor (depressed) respirations
- **R** Reduced LOC (coma)

💉 ANTIDOTE: NALOXONE (Narcan)

- Dose: 0.4–2 mg IV / IM / IN / SubQ
- Give if RR < 10–12 or unrousable
- Repeat q2–3 min PRN (short half-life)
- Can precipitate **acute withdrawal** in opioid-dependent pts
- Continue monitoring — re-sedation possible

🔑 "PAIN" — Assessment Flow

P Provoking / Palliative factors

A Area / radiation

I Intensity (0–10)

N Nature (quality) + Notify if uncontrolled

🧠 Clinical Judgment Snapshot

#1 PRIORITY RISK

☠️ **RESPIRATORY DEPRESSION → Respiratory arrest → Death**

WHAT HARMS THE PATIENT FIRST?

Hypoventilation → hypoxia → ↓ LOC → apnea (often before hypotension or bradycardia).

FIRST NURSING ACTION (SUSPECTED OVERDOSE)

1️⃣ ASSESS airway & RR → 2️⃣ STIMULATE patient, call for help → 3️⃣ OXYGEN + bag-mask ventilation if RR < 10 → 4️⃣ NALOXONE per protocol → 5️⃣ NOTIFY provider & monitor for re-sedation.

BEFORE EVERY OPIOID DOSE

✓ Pain score ✓ Respiratory rate ✓ Sedation level (Pasero) ✓ BP ✓ Last dose timing

NGN PRIORITY CUE (RECOGNIZE-ANALYZE)

Pinpoint pupils + RR < 10 + ↓ LOC = opioid toxicity until proven otherwise. Do NOT wait for labs — act.

Most Tested Drugs in This Class

DRUG	KEY USE	POTENCY VS MORPHINE	NCLEX HIGH-YIELD
Morphine	Severe pain, MI, pulmonary edema	1× (prototype)	Histamine release → pruritus, hypotension. Avoid in biliary colic.
Fentanyl (Duragesic, Sublimaze)	Severe chronic pain, anesthesia, procedural sedation	~100× morphine	Patch: 72 hr, NO heat, NO cutting. Rapid IV push → chest wall rigidity.
Hydromorphone (Dilaudid)	Severe pain (opioid-tolerant)	~7× morphine	Look-alike/sound-alike with morphine → lethal dosing errors. Double-check!
Oxycodone (OxyContin, Percocet)	Moderate–severe pain (PO)	~1.5× morphine	ER tabs: NEVER crush. Combo w/ APAP → watch hepatotoxicity (max 3–4 g/day).
Hydrocodone (Vicodin, Norco)	Moderate pain	~1× morphine	Usually combined with acetaminophen → LFT & APAP limit monitoring.
Meperidine (Demerol) ⚠️	Limited — shivering, rigors	~0.1× morphine	**AVOID: elderly, renal pts, >48 hrs → normeperidine → SEIZURES. Contraindicated w/ MAOIs (14-day washout).**
Methadone (Dolophine)	Chronic pain, MAT for OUD	Variable (long half-life)	Long, unpredictable half-life. QT prolongation → torsades. EKG baseline.
Codeine	Mild pain, antitussive	~0.1× morphine	Prodrug (CYP2D6). Ultra-rapid metabolizers → overdose. Contraindicated in kids <12 post-tonsillectomy.
Tramadol (Ultram) ⚠️	Mild–moderate pain	~0.1× morphine	**Lowers seizure threshold. Serotonin syndrome with SSRIs/SNRIs/MAOIs.**
Remifentanil / Sufentanil	Anesthesia (ultra-short/potent)	~100–1000× morphine	OR/ICU use only. Extreme respiratory depression risk.

▶ 🔍 Quick Differentiators (Click to expand)