NSAIDs

Non-Steroidal Anti-Inflammatory Drugs · Analgesic / Anti-inflammatory / Antipyretic

Ibuprofen · Naproxen · Aspirin · Ketorolac · Celecoxib · Indomethacin · Diclofenac

System: Musculoskeletal · GI · Renal · Cardiovascular

1. DRUG OVERVIEW

- **Mild-to-moderate pain** (HA, dental, musculoskeletal)
- **Inflammation** — RA, OA, gout, bursitis, tendinitis
- **Fever** reduction (antipyretic)
- **Dysmenorrhea** (menstrual cramps)
- **Aspirin ONLY:** antiplatelet → MI & stroke prevention (81 mg low-dose)
- **Ketorolac (Toradol):** short-term moderate-severe pain, **MAX 5 DAYS**
- **Indomethacin:** closes PDA in neonates

2. MECHANISM OF ACTION

- Block **COX-1** & **COX-2** enzymes → ↓ **prostaglandins**
- ↓ Prostaglandins → ↓ pain · ↓ inflammation · ↓ fever
- **COX-1 block** → ↓ gastric mucosal protection → **GI ulcers/bleed**
- **COX-1 block** → ↓ platelet aggregation → **bleeding**
- **COX-1 block** → ↓ renal perfusion → **AKI**
- **COX-2 selective (celecoxib):** spares stomach BUT ↑ clot risk → **MI / stroke**
- **Aspirin** = IRREVERSIBLE COX inhibition (lasts platelet lifespan = 7–10 days)

3. THERAPEUTIC EFFECTS

- ↓ Pain rating (verbalized relief)
- ↓ Joint swelling, redness, warmth
- ↓ Temperature (afebrile)
- ↑ Mobility / ROM
- ↓ Menstrual pain & flow
- Aspirin: absence of new MI/CVA events

4. SIDE EFFECTS & ADVERSE REACTIONS

COMMON

- Dyspepsia, nausea, heartburn
- Dizziness, HA, drowsiness
- Fluid retention, mild edema, ↑ BP
- Photosensitivity

SERIOUS / LIFE-THREATENING

- **GI bleed / ulcer** — melena, hematemesis, ↓ H&H
- **Acute Kidney Injury** — ↑ BUN/Cr, ↓ UOP
- **MI / stroke** (esp. celecoxib, long-term use)
- **Bleeding** anywhere — bruising, epistaxis
- **Bronchospasm** — Samter's triad: asthma + nasal polyps + ASA sensitivity

- **Reye's syndrome** — ASA + child + viral illness
- **Salicylism/ASA toxicity** — tinnitus is earliest sign
- Stevens-Johnson syndrome (rare)
- Hyperkalemia

5. PRIORITY NURSING CONSIDERATIONS

- **Assess** pain, GI s/sx, bruising, skin, edema, UOP
- **Monitor** BP, H&H, BUN/Cr, K+, LFTs, stool for occult blood
- **HOLD if:** active GI bleed · Cr ↑ · platelets < 100k · pre-op (stop 5–7 days before surgery)
- **Contraindications:**
  - **3rd trimester pregnancy** (premature closure of ductus arteriosus)
  - Active PUD / GI bleed
  - Severe renal or hepatic impairment
  - ASA allergy, bleeding disorders
  - Children with viral illness (Reye's)
  - Post-CABG (celecoxib)
- ⚠ **Drug Interactions:**
  - Warfarin / heparin / DOACs → ↑ bleed
  - SSRIs → ↑ GI bleed
  - ACE-I / ARBs → ↓ antihypertensive + ↑ AKI
  - Lithium → ↑ lithium levels (toxicity)
  - Methotrexate → ↑ toxicity
  - Corticosteroids → ↑↑ GI bleed
  - Alcohol → ↑↑ GI bleed
- **Notify HCP:** black/tarry stool · coffee-ground emesis · ↓ UOP · tinnitus · SOB · chest pain

6. LABS & DIAGNOSTICS

- **H&H** — ↓ = bleeding (normal Hgb ♀12–16, ♂14–18)
- **BUN/Creatinine** — ↑ = AKI (Cr normal 0.6–1.2)
- **Potassium** — risk of hyperkalemia (>5.0)
- **LFTs** (AST/ALT) — hepatotoxicity
- **Platelets** — bleeding risk if < 100k
- **Stool guaiac** — occult GI bleed
- **Salicylate level (ASA)**: therapeutic 10–30 mg/dL · **toxic >30** · lethal >50
- **ABG (ASA toxicity):** early respiratory alkalosis → late metabolic acidosis

7. ADMINISTRATION & SAFETY

- **Routes:** PO, IV (ketorolac), IM, topical, rectal

8. PATIENT EDUCATION

- Take with food, milk, or full glass water

- **TAKE WITH FOOD** or full glass of water/milk
- Stay upright 30 min after dose
- Do **NOT** crush enteric-coated or ER tablets
- **Ketorolac: MAX 5 days** total (PO + IV combined)
- **Aspirin:** avoid in kids < 19 with fever/viral sx → Reye's
- Stop **5–7 days before** elective surgery
- Separate from other NSAIDs — never combine
- Don't use >10 days for pain or >3 days for fever without HCP

- Avoid alcohol & smoking (↑ GI bleed)
- Don't combine OTC NSAIDs (ibuprofen + aspirin + naproxen)
- **Report immediately:** black/tarry stools, vomiting blood, bruising, ringing ears, ↓ urine, swelling, weight gain, chest pain, SOB
- Tylenol (acetaminophen) is **safer** for stomach but **NOT** anti-inflammatory
- Avoid in pregnancy — **NEVER in 3rd trimester**
- Rise slowly (dizziness)
- Use sunscreen (photosensitivity)
- Tell all providers (dentist, surgeon) you take NSAIDs

9. NCLEX TEST TRAPS ⚠️

- **Aspirin ≠ acetaminophen.** Tylenol is NOT an NSAID (no anti-inflammatory, no bleed risk)
- **NEVER ASA for kids** with fever/flu/chickenpox → Reye's syndrome
- **Tinnitus = ASA toxicity**, not a harmless side effect — HOLD drug, notify HCP
- **NSAIDs cancel ACE-I / ARB** blood pressure effects + ↑ AKI (the "triple whammy": NSAID + ACE/ARB + diuretic = AKI)
- **Celecoxib is NOT "safer"** — still ↑ MI/stroke; only ↓ GI risk
- **Ketorolac max 5 days** — trap answer says "continue to day 7"
- **"Mild GI upset" is expected; black stools or coffee-ground emesis is an EMERGENCY**
- NSAIDs **mask fever** → may hide infection / sepsis in immunocompromised
- **Hold 5–7 days pre-op** — student misses "bleeding risk" for surgery Q
- **3rd trimester = NEVER.** Closes fetal ductus arteriosus
- ASA low-dose (81 mg) = antiplatelet; high-dose = anti-inflammatory — different purposes

10. MEMORY BOOSTERS

- **"NSAID" side effects:**
  - **N** – Nephrotoxicity (AKI)
  - **S** – Stomach ulcers / bleed
  - **A** – Asthma / bronchospasm
  - **I** – Increased BP / bleeding
  - **D** – Dyscrasias (blood) & Dilation issues (heart)
- **ASA Toxicity = "BRATS"**: Bleeding, Ringing ears, Acidosis/Alkalosis, Tachypnea/Temp↑, Sweating
- **3 A's of Aspirin:** Analgesic · Antipyretic · Antiplatelet (+ Anti-inflammatory at high dose)
- **"I BURN-profen"** — ibuprofen burns the stomach → take with food
- **Triple Whammy = AKI**: NSAID + ACE-I/ARB + Diuretic
- **"No ASA in kids with a virus"** = No Reye's
- **COX-1 = protects Gut & clots Better · COX-2 = inflammation (pain),** block it = more clots

🧠 CLINICAL JUDGMENT SNAPSHOT

#1 PRIORITY RISK	WHAT HARMS PATIENT FIRST?	FIRST NURSING ACTION IN SCENARIO

GI bleed — silent, rapid, can be fatal. Plus AKI & thrombotic events (MI/stroke) in chronic use.

Gastric ulceration & hemorrhage — may be painless until melena/hematemesis appear. Elderly + steroids + anticoagulants = highest risk.

HOLD the NSAID → **Assess** (VS, skin, abdomen, stool) → **Notify HCP**. For ASA toxicity / tinnitus: stop drug, check salicylate level, prepare for activated charcoal + sodium bicarb.

💊 MOST TESTED NSAIDs ON THE NCLEX

Drug (Generic / Brand)	Type	Key NCLEX Point
Aspirin (ASA)	Non-selective, IRREVERSIBLE	Antiplatelet (81 mg) · **Reye's in kids** · Tinnitus = toxicity · Hold 7 days pre-op
Ibuprofen (Motrin, Advil)	Non-selective	Most common OTC · Take with food · Max OTC 1200 mg/day · Avoid with ACE-I
Naproxen (Aleve, Naprosyn)	Non-selective, long-acting	BID dosing · Lowest CV risk of non-selectives · Same GI/renal cautions
Ketorolac (Toradol)	Non-selective, IV/IM/PO	**MAX 5 DAYS** · Potent — post-op pain · High GI/renal bleed risk · NOT for minor pain
Celecoxib (Celebrex)	COX-2 SELECTIVE	↓ GI bleed BUT ↑ **MI/stroke** · Sulfa allergy caution · Contraindicated post-CABG
Indomethacin (Indocin)	Non-selective, potent	Closes PDA in neonates · Gout flares · High CNS & GI side effects
Diclofenac (Voltaren)	Non-selective, topical or PO	Topical gel = low systemic effect · Highest hepatotoxicity of NSAIDs
Meloxicam (Mobic)	Preferential COX-2	Once-daily arthritis drug · Lower GI risk than ibuprofen