NGN NCLEX 2026 · PHARMACOLOGY · TOPICAL ANALGESIC

Capsaicin
the chili-pepper analgesic

A topical TRPV1 agonist that "burns to numb" — depleting Substance P to relieve neuropathic and musculoskeletal pain. Looks deceptively simple; the NCLEX loves the patient-education and safety traps.

SYSTEM · INTEGUMENTARY/NEURO | CATEGORY · TOPICAL ANALGESIC | CLASS · TRPV1 AGONIST | HIGH-YIELD PATIENT EDUCATION

SOURCE TRANSPARENCY: Capsaicin is not covered in the uploaded reference flashcards for this library. Content compiled from standard NCLEX 2026 references — *Saunders Comprehensive Review for the NCLEX-RN* (Silvestri), *ATI RN Pharmacology Made Easy*, *Lippincott Illustrated Reviews: Pharmacology*, FDA prescribing information for Qutenza® (capsaicin 8% patch), and current AAN/AAFP neuropathic-pain guidelines.

1 Definition & Overview

WHAT IT IS · WHY IT MATTERS

WHAT IT IS

Naturally derived alkaloid from chili peppers (*Capsicum annuum*). Available as **topical cream, gel, lotion, and patch** — never PO or injectable.

WHY WE USE IT

Selective **desensitization of nociceptive (pain) nerve fibers**. Used when systemic analgesics are limited by side effects or contraindications.

INDICATIONS

- Post-herpetic neuralgia (shingles pain)
- Diabetic peripheral neuropathy
- Osteoarthritis & RA joint pain
- Musculoskeletal/back pain
- HIV-associated neuropathy (8% patch)

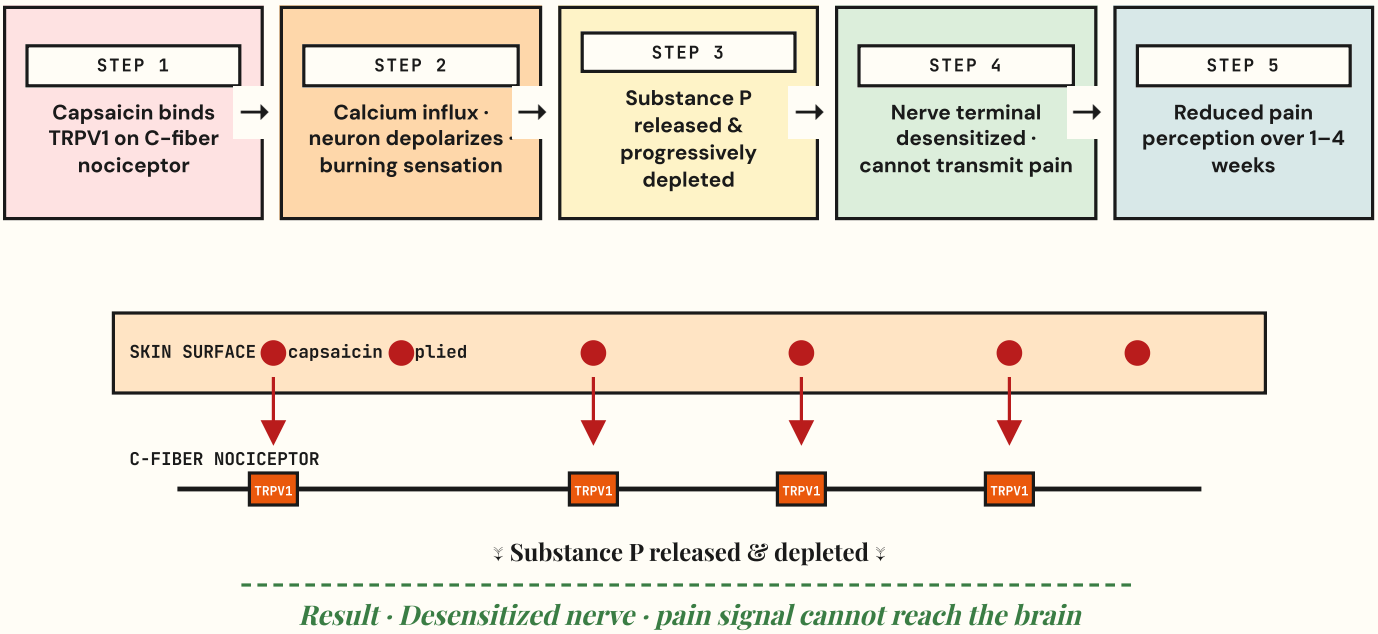
FORMULATIONS AT A GLANCE

FORM	STRENGTH	ACCESS	TYPICAL USE
Cream / lotion / gel	0.025% – 0.075%	OTC	Apply 3–4× daily; mild–moderate pain
Patch (Qutenza®)	8%	Prescription only · clinic-applied	Single 30–60 min application q3 months for refractory neuropathy

2 Pathophysiology / Mechanism

HOW IT "BURNS TO NUMB"

Capsaicin binds the **TRPV1 receptor** (Transient Receptor Potential Vanilloid type 1) on small-diameter C-fiber sensory neurons — the same channel activated by heat > 43°C. Repeated exposure **depletes Substance P**, the neurotransmitter that carries pain signals to the dorsal horn of the spinal cord.



3 Adverse Effects & Red Flags

EXPECTED VS. CONCERNING · WHAT TO TEACH THE PATIENT

EXPECTED (NORMAL · SUBSIDES)

- Burning
- Stinging
- Warmth
- Erythema
- Mild itching
- Dryness

Typically diminishes within 1–2 weeks of regular use. Full analgesic effect at 2–4 weeks.

RED FLAGS · REPORT / STOP USE

- Blistering
- Severe burning
- Spreading rash / hives
- Difficulty breathing
- Eye exposure pain
- HTN spike (8% patch)
- Persistent cough

Inhalation Reaction

If aerosolized — cough, sneezing, throat burning, bronchospasm in asthma patients. Avoid applying near face; do not heat after application.

Eye/Mucous Membrane Exposure

Intense burning. **Rinse with milk or vegetable oil first** — capsaicin is fat-soluble; water alone is ineffective. Then large-volume saline irrigation.

Qutenza® 8% Patch Specific

Transient **BP elevation** during & up to 1 hr after application — monitor BP, pre-medicate with topical lidocaine, treat application-site pain with PRN cold packs and oral analgesics.

4 Priority Nursing Interventions

ABC · SAFETY · NCLEX PRIORITIZATION

BEFORE APPLICATION — ASSESS

- **Skin integrity** — must be intact; no open wounds, abrasions, sunburn, or rash
- Baseline pain score (0–10) and quality of pain
- Allergy history — chili peppers, latex (patch backing)
- Concurrent topical heat/menthol products — discontinue
- Asthma history (inhalation risk)
- For 8% patch · baseline BP, ECG if cardiac history

DURING & AFTER APPLICATION

- **Wear gloves** (nitrile preferred) — capsaicin penetrates latex
- Apply **thin layer** to affected area; **do not bandage tightly** or occlude
- **Wash hands thoroughly with soap and water** after — even with gloves on
- Avoid contact with eyes, mouth, genitals, broken skin
- **NO heating pads, hot showers, or sun** on treated area — ↑ absorption and burning
- For 8% patch · monitor BP q15 min × 1 hr

⚡ ABC PRIORITY · IF INHALATION OR SEVERE REACTION

Airway — remove patient from area, position upright · **B**reathing — assess for wheeze/bronchospasm, prepare for bronchodilator · **C**irculation — monitor BP/HR (especially 8% patch) · then remove capsaicin from skin with mineral oil, soap and water, notify provider.

5 Pharmacology Snapshot

DRUG · MECHANISM · CONSIDERATIONS

PROPERTY	CAPSAICIN 0.025–0.075% (OTC)	CAPSAICIN 8% PATCH · QUTENZA® (RX)
Class	Topical analgesic · TRPV1 agonist · Substance P depleter	
Onset	1–2 weeks for relief · peak at 2–4 weeks	Single application; relief weeks 2–12
Dosing	Apply thin layer 3–4× daily	Up to 4 patches × 30 min (feet) or 60 min (other), q3 months
Key SE	Local burning, erythema, stinging, cough if inhaled	Application-site pain (severe), BP elevation, erythema lasting days
Contraindications	Broken skin · known hypersensitivity · < 18 yrs (most products) · pregnancy/lactation use only if benefit > risk	
Interactions	ACE inhibitors — may worsen ACE-I induced cough · concurrent topical heat/menthol — ↑ irritation	
Nursing Pearls	Reinforce **daily use** for 2–4 wk; missed doses delay relief	Always clinician-applied; pre-treat with topical lidocaine 60 min before

6 NCLEX Test Traps

WRONG CHOICE · RIGHT CHOICE · WHY

WRONG ANSWER	RIGHT ANSWER
"Stop the medication immediately if you feel burning at the application site."	"Burning, stinging, and warmth are **expected** and decrease with continued use over 1–2 weeks. Continue regular use unless blistering or severe pain occurs."
"Apply the cream with bare hands and then wash with cold water afterward."	**Wear gloves** (nitrile, not latex) during application; **wash hands thoroughly with soap and warm water** after. Cold water spreads oil-based capsaicin.
"Take a hot shower or apply a heating pad after the cream to improve absorption."	**Avoid heat** — heating pads, hot showers, direct sun, vigorous exercise on the treated area. Heat dramatically increases burning and risk of skin injury.
"I'll know it's working within 24 hours of starting."	"Pain relief is gradual — **1–2 weeks for noticeable improvement, 2–4 weeks for full effect**. Skipping doses delays results."
"If I get cream in my eye, I'll rinse it out with water right away."	Capsaicin is **fat-soluble** — water alone is ineffective. Rinse with **milk or vegetable oil first**, then large-volume saline irrigation, and seek care.

7 Patient & Family Education

CRITICAL TEACHING FOR SAFETY & ADHERENCE

DAILY USE · ADHERENCE

- Apply **3–4 times per day** as prescribed — consistency is essential
- Effect builds gradually — **do not stop because of initial burning**
- Set phone reminders to support routine
- Expect 1–2 wk for relief, 2–4 wk for full benefit

SAFE APPLICATION

- Wash & dry the area before applying
- **Wear nitrile gloves** or use a finger cot / cotton swab
- Apply only to **intact skin** — never on wounds, sunburn, or rash
- **Wash hands thoroughly** with soap & warm water after — even if you wore gloves
- Do not bandage or occlude tightly

THINGS TO AVOID

- **No heat** — heating pads, hot showers, saunas, sun, or vigorous exercise on the area
- Do not apply near eyes, mouth, nose, or genitals
- Avoid breathing in fumes — do not use on the face
- Avoid combining with other topical analgesics (menthol, lidocaine) unless prescribed
- Keep away from children & pets

WHEN TO CALL THE PROVIDER

- Blistering, breaks in the skin, or severe burning
- Rash, hives, or facial/lip swelling
- Coughing, wheezing, or shortness of breath
- No improvement after **4 weeks** of consistent use
- Accidental eye exposure with persistent pain

8 Memory Boosters & Mnemonics

QUICK-RECALL PATTERNS FOR THE TEST

"BURN to NUMB"

The drug works by first **burning** the nerve, which then **depletes Substance P**, leaving the nerve unable to signal pain. Burning at first = drug is working, not failing.

"OIL beats WATER"

For eye or mucous exposure — **milk or vegetable oil** first (capsaicin is fat-soluble), THEN water/saline. Water alone just spreads the burn.

"3-4 × 3-4"

Apply **3–4 times** per day for **3–4 weeks** to reach full effect. Easy memorization for dosing and onset.

"NO HEAT, NO WRAP, NO BARE HANDS"

The three "NO" rules. Heat ↑ absorption & burning · occlusive wraps trap heat · bare hands transfer capsaicin to eyes/face.

"P-A-I-N"

Prepare skin (intact, clean) · **A**pply with gloves · **I**solate from heat/eyes · **N**otify if blistering, hives, or breathing problems.

"TRPV1 = Tiny Red Pepper, Very Hot"

Helps recall that capsaicin is a **TRPV1 agonist** — the same channel activated by physical heat above 43°C. Both produce "hot" sensation.

9 NCJMM Clinical Judgment Scenario

NEXT-GEN NCLEX · SIX-STEP MODEL

CASE SNAPSHOT

A **62-year-old female with type 2 diabetes** presents to the outpatient clinic for follow-up of **painful diabetic peripheral neuropathy** in both feet. HCP prescribes **capsaicin 0.075% cream** to be applied to the feet four times daily. The patient states, *"I just want to feel better — I'll start it tonight after my hot foot soak."* She also takes lisinopril, metformin, and atorvastatin. BP 138/82, HR 76, BG 142.

STEP 1 Recognize Cues

Relevant cues · painful diabetic neuropathy , capsaicin 0.075% QID prescribed , plans hot foot soak before application , concurrent lisinopril (ACE-I) , intact skin not yet verified, BP slightly elevated.

STEP 2 Analyze Cues

The patient's hot foot soak directly precedes capsaicin application — heat dramatically increases absorption and burning. Diabetic patients are at increased risk for foot skin breakdown ; capsaicin requires intact skin. Lisinopril may produce a baseline cough that capsaicin could worsen. Misunderstanding about onset (expecting fast relief) is likely.

STEP 3 Prioritize Hypotheses

Top priority · safety risk from heat-augmented capsaicin absorption + diabetic foot skin integrity . Secondary · knowledge deficit regarding onset, application technique, eye/hand contamination, and adherence .

STEP 4 Generate Solutions

Anticipated outcomes — patient will (1) inspect feet for skin breakdown before each dose, (2) avoid heat for ≥ 2 hours before and after application , (3) apply with gloves and wash hands afterward, (4) verbalize realistic onset (1–2 wk for relief, 2–4 wk for full effect), (5) report blistering, severe burning, or worsening cough.

STEP 5 Take Action

- **Hold the hot foot soak plan** — teach to avoid heat on treated area
- Perform diabetic foot inspection — verify intact skin before initiation
- Demonstrate technique · nitrile gloves, thin layer to soles & tops of feet, hand washing
- Educate on expected burning & gradual onset (1–4 wk)
- Counsel to report worsening cough (ACE-I + capsaicin interaction)
- Reinforce daily blood glucose monitoring (pain control may affect activity/intake)

STEP 6 Evaluate Outcomes

At 2-week follow-up · patient reports mild burning that has decreased , denies blistering/rash, demonstrates correct gloved application, no heat exposure, no worsening cough, pain score reduced from 7/10 to 4/10. Plan continued therapy and re-evaluate at 4 weeks for full analgesic effect.

Capsaicin · The Chili-Pepper Analgesic

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