

INTEGUMENTARY · INFECTIOUS · NGN NCLEX 2026

Cellulitis

Acute bacterial infection of the dermis and subcutaneous tissue — high yield for prioritization, infection control, sepsis recognition, and antibiotic stewardship questions.

● Erythema · Warmth · Edema · Pain

● Strep pyogenes · Staph aureus / MRSA

● Cephalexin · Clindamycin · Vancomycin



Definition / Overview

What it is and why it matters on the NCLEX

📖 What is Cellulitis?

- An **acute, spreading bacterial infection** of the **dermis and subcutaneous tissue**.
- Most often caused by **Streptococcus pyogenes** (Group A Strep) and **Staphylococcus aureus**, including **MRSA**.
- Enters through a **break in skin integrity** — cut, insect bite, surgical wound, IV site, athlete's foot, ulcer.

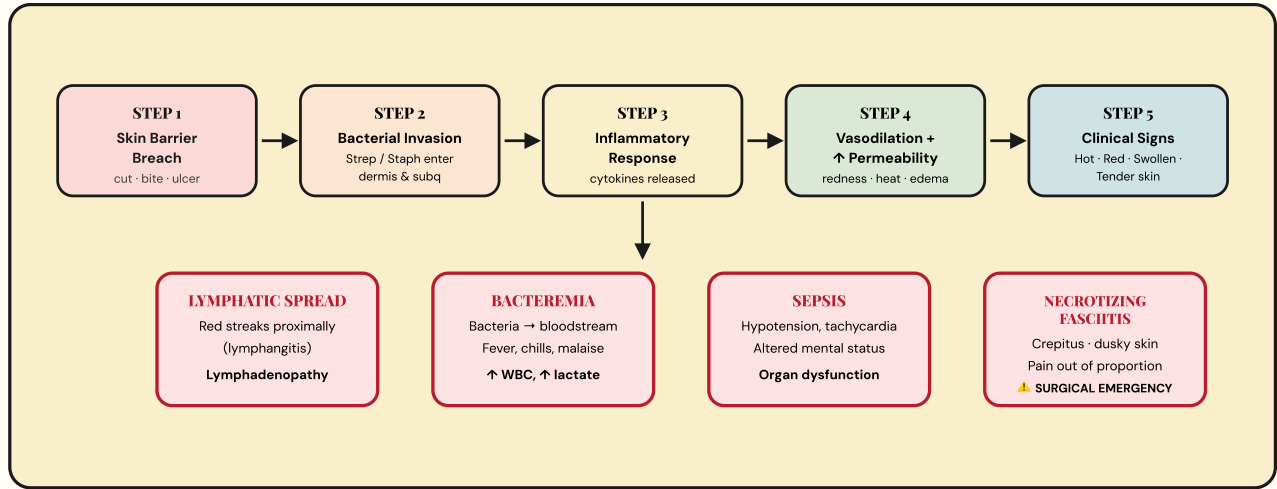
⚠️ Why It Matters

- Can **spread rapidly** via lymphatics → bacteremia → **sepsis**.
- High risk in **diabetics, immunocompromised, elderly, lymphedema, IV drug use, PVD**.
- Lower extremities are the **#1 site** in adults; face/periorbital in children.
- Must be distinguished from **necrotizing fasciitis** — a surgical emergency.

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Pathophysiology

From skin break to systemic infection — step by step



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Signs & Symptoms

Early vs. late presentation — outline borders to track progression

EARLY / LOCALIZED

Local Skin Findings

- **Erythema** — poorly demarcated borders (vs. erysipelas)
- **Warmth** to touch over affected area
- **Edema** — non-pitting, firm, "tense" skin
- **Tenderness / pain** on palpation
- "Peau d'orange" — orange-peel skin appearance
- Mild local lymphadenopathy

LATE / SYSTEMIC

Progressive / Spreading

- **Red streaks** tracking proximally (lymphangitis)
- **Fever, chills, malaise**
- Tachycardia, possible hypotension
- Vesicles, bullae, pustules, abscess
- Skin necrosis or ulceration
- Lymph node enlargement (regional)
- Elevated WBC, ↑ CRP, positive blood cultures

RED FLAGS — Escalate Immediately

- **Severe pain out of proportion to skin findings** → think necrotizing fasciitis
- **Crepitus (gas under skin)** → necrotizing fasciitis — surgical emergency
- **Dusky, purple, or black skin discoloration** → tissue necrosis
- **Rapidly spreading erythema (centimeters per hour) despite antibiotics**
- **Hypotension + altered mental status + fever** → septic shock
- **Periorbital cellulitis with vision changes / proptosis** → orbital cellulitis (loss of vision risk)

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Priority Nursing Interventions

ABCs · Safety · NCLEX prioritization — what to do, in order

ASSESS

Assessment Priorities

- **Mark / outline borders** with a skin marker → re-check q-shift for spread
- Measure circumference of affected limb
- VS q4h — watch for fever + tachycardia (sepsis cues)
- Assess pain (PQRST) — pain out of proportion = red flag
- Neurovascular checks distal to site (cap refill, pulses, sensation)
- Blood glucose in diabetics (hyperglycemia worsens infection)

INTERVENE

Direct Care Actions

- **Administer IV antibiotics** on time — first dose ASAP after cultures
- **Elevate affected extremity** above heart level → ↓ edema
- Apply **warm, moist compresses** 3–4×/day (↑ blood flow, comfort)
- Pain management — acetaminophen / NSAIDs (caution renal)
- Antipyretics for fever; cooling measures PRN
- Wound care if open lesion — clean technique unless ordered sterile

MONITOR

Labs & Safety

- Blood cultures **BEFORE** first antibiotic dose
- CBC w/ differential, CRP, lactate, BMP
- Wound culture if drainage present
- Strict I&O, watch for sepsis (qSOFA, MEWS)
- Contact precautions if MRSA suspected/confirmed
- Tetanus prophylaxis if entry wound

🎯 NCLEX Priority Order (if asked "what does the nurse do FIRST?")

1. **Assess** — VS, mark borders, identify red flags first
2. **Obtain cultures** — blood / wound BEFORE antibiotics
3. **Administer IV antibiotics** — time-sensitive, do not delay for non-urgent tasks
4. **Elevate & warm compress** — supportive comfort/edema control
5. **Educate** — adherence, recurrence prevention

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Pharmacology

Antibiotic choices by severity, allergy, and MRSA risk

Drug	Mechanism / Use	Key Side Effects	Nursing Considerations
Cephalexin (Keflex) 1ST-GEN CEPHALOSPORIN · PO	Inhibits cell wall synthesis. First-line outpatient for non-MRSA cellulitis.	GI upset, rash, C. diff, hypersensitivity	Cross-allergy w/ PCN (~1%); take with food if GI upset; full course even if improved
Dicloxacillin PENICILLINASE-RESISTANT PCN · PO	Cell wall inhibitor; covers Staph aureus (non-MRSA) & Strep.	GI, rash, anaphylaxis, hepatotoxicity	Take on empty stomach ; assess PCN allergy first; monitor LFTs in long courses
Clindamycin LINCOSAMIDE · PO / IV	Inhibits protein synthesis. PCN-allergy alternative; covers MRSA (community).	C. difficile colitis (boxed warning) , rash, GI	Stop & report severe diarrhea immediately; full glass of water; not crushed (bitter)
Vancomycin GLYCOPEPTIDE · IV	Severe cellulitis & MRSA coverage; inpatient gold standard.	Red-man syndrome , nephrotoxicity, ototoxicity	Infuse over ≥60 min ; monitor trough levels (10–20); BUN/creatinine; hearing baseline
Trimethoprim-Sulfamethoxazole (Bactrim) SULFONAMIDE COMBO · PO	Outpatient MRSA coverage; folate antagonist.	Rash (SJS), photosensitivity, hyperkalemia, ↓ folate, renal	Push fluids (crystalluria); avoid sun; check sulfa allergy; monitor K ⁺
Doxycycline TETRACYCLINE · PO	Outpatient MRSA alternative; protein synthesis inhibitor.	Photosensitivity, GI, tooth staining, esophagitis	No dairy / antacids / iron ; sit upright 30 min after; not in pregnancy or < 8 yrs
Linezolid OXAZOLIDINONE · PO / IV	Severe MRSA/VRE coverage; reserved for resistant cases.	Thrombocytopenia, serotonin syndrome, peripheral neuropathy	Avoid w/ SSRIs, MAOIs, tyramine foods; weekly CBC; monitor for vision changes

6 NCLEX Test Traps

Wrong-vs-right thinking — where students lose points

❌ WRONG THINKING

"The redness is just inflammation — I'll apply ice to bring down the swelling."



✅ RIGHT ACTION

Apply **warm** moist compresses; ice causes vasoconstriction and slows immune response & healing.

❌ WRONG THINKING

"The patient feels better after 2 days — they can stop the antibiotic."



✅ RIGHT ACTION

Teach to **finish the FULL course** (7–14 days) — stopping early = recurrence + resistance.

❌ WRONG THINKING

"Severe pain that doesn't match the skin appearance — give more analgesia."



✅ RIGHT ACTION

Pain out of proportion = **necrotizing fasciitis** red flag. **Notify provider immediately** — surgical emergency.

❌ WRONG THINKING

"I'll administer the IV antibiotic first, then send the blood cultures."



✅ RIGHT ACTION

Cultures BEFORE antibiotics (unless septic shock, where antibiotics ≤ 1 hr trumps culture timing).

❌ WRONG THINKING

"Just elevate the leg — no need to mark the redness."



✅ RIGHT ACTION

Outline borders with a marker & date/time — only reliable way to track spread or improvement.

⚠️ Don't Confuse These Three

Cellulitis

- Dermis + subq
- **Poorly** demarcated
- Flat, deeper
- Slower onset (days)
- Tx: PO/IV antibiotics

Erysipelas

- Upper dermis only
- **Sharp, raised** borders
- Bright, "fiery" red
- Rapid onset (hrs)
- Tx: PCN or cephalosporin

Necrotizing Fasciitis 🚑

- Fascia / muscle
- **Pain >> findings**
- Crepitus, dusky skin
- Fulminant (hours)
- Tx: **SURGICAL DEBRIDEMENT**

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Patient & Family Education

Discharge teaching · recurrence prevention · when to call back

- 1 **Take ALL antibiotics** as prescribed, even if you feel better — stopping early causes resistance and relapse.
- 2 **Elevate** the affected limb above heart level whenever resting — reduces swelling and pain.
- 3 Apply **warm, moist compresses** 3–4 times daily for 20 minutes.
- 4 **Wash hands** before and after touching the affected area; keep wounds clean and covered.
- 5 Treat **athlete's foot, eczema, dry/cracked skin** — these are common entry points for bacteria.
- 6 **Moisturize skin** daily; avoid scratching insect bites; wear shoes outdoors and gloves when gardening.
- 7 If diabetic: **inspect feet daily**, control blood glucose, see podiatrist for nail care.
- 8 **Mark the edge of redness** at home with a pen — if it spreads beyond the line in 24 hrs, call provider.
- ⚠️ **CALL 911 / RETURN immediately** for: severe pain, spreading red streaks, fever > 101°F, confusion, fast heart rate, blistering, or skin turning purple/black.
- 9 Recurrence is common — **10–30% recur within a year**, especially with lymphedema. Long-term skin care matters.

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Memory Boosters & Mnemonics

Quick recall tools for exam day

"PRIME" — Cellulitis Care

- P** Pain assess + manage
- R** Redness — mark the borders
- I** IV antibiotics on time
- M** Monitor for sepsis (VS, lactate)
- E** Elevate & educate

4 Cardinal Signs of Inflammation

- R** Rubor — Redness (erythema)
- C** Calor — Heat (warmth)
- T** Tumor — Swelling (edema)
- D** Dolor — Pain

+ *Functio laesa* — loss of function

Necrotizing Fasciitis = "PCS"

- P** Pain out of proportion
 - C** Crepitus (gas in tissue)
 - S** Skin necrosis / dusky color
-  **Any one = SURGICAL EMERGENCY**

Pattern Recognition

-  **Lower leg redness + diabetic + open wound** → cellulitis until proven otherwise
-  **Periorbital + vision change** → orbital cellulitis (urgent CT, IV abx)
-  **Sharp raised border + bright red** → erysipelas (not deep cellulitis)
-  **IV site + redness/streaking** → phlebitis vs early line-related cellulitis — d/c IV

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NCJMM Clinical Judgment Scenario

Next Generation Clinical Judgment Measurement Model — full 6-step walk-through

SCENARIO

A 58-year-old male with type 2 diabetes presents to the ED with a 3-day history of right lower leg redness and swelling that began after an insect bite. He reports increasing pain and feeling "feverish." **VS:** T 101.8°F (38.8°C), HR 112, BP 102/64, RR 22, SpO₂ 95% on room air. The right lower leg is erythematous from ankle to mid-calf with warmth, edema, and tenderness. Borders are poorly defined and faintly streaking proximally. Blood glucose 268 mg/dL. WBC 16,500. Lactate 2.4 mmol/L.

1

Recognize Cues

Relevant findings: Erythema, warmth, edema, tenderness, poorly defined borders, proximal red streaking, fever 101.8°F, tachycardia (HR 112), borderline hypotension (BP 102/64), tachypnea (RR 22), hyperglycemia (268), leukocytosis (WBC 16.5K), elevated lactate (2.4), diabetic, recent insect bite (skin breach).

2

Analyze Cues

Cues cluster into **infection + early sepsis**. Skin findings are classic cellulitis (likely Strep/Staph from insect bite portal). Red streaks = **lymphangitis** (spread). Fever + tachycardia + tachypnea + elevated lactate = **SIRS / sepsis criteria met (≥ 2)**. Diabetes & hyperglycemia impair immune response and worsen outcomes. Must **rule out necrotizing fasciitis** (assess for crepitus, pain out of proportion, dusky skin) and **DVT** (Homan's, calf tenderness, history).

3

Prioritize Hypotheses

#1 Cellulitis with early sepsis (highest probability, time-sensitive). **#2 Necrotizing fasciitis** (must r/o — life-threatening). **#3 DVT** (overlap of unilateral leg findings). **#4 Diabetic foot ulcer / osteomyelitis** if deep involvement. Priority = treat sepsis & cellulitis while ruling out necrotizing fasciitis.

4

Generate Solutions

Establish 2 large-bore IVs · obtain blood cultures × 2 + wound culture **before antibiotics** · initiate **sepsis bundle (Hour-1)**: broad-spectrum IV antibiotics (e.g., Vancomycin + Piperacillin-tazobactam for MRSA + gram-neg coverage) · 30 mL/kg IV crystalloid bolus for hypotension/lactate · serial lactate · acetaminophen for fever · elevate RLE on pillows · **mark redness borders with skin marker** & document time · pain assessment q1h · stat surgical consult if pain out of proportion or crepitus develops · insulin sliding scale for hyperglycemia · continuous monitoring.

5

Take Action

(1) Place 2 IVs & draw blood cultures + CBC, CMP, lactate, BMP. (2) Hang **NS 30 mL/kg bolus**. (3) Administer **Vancomycin 15 mg/kg IV over 60+ minutes** + Pip-Tazo IV. (4) **Outline erythema with marker**; photograph; document time. (5) Elevate leg. (6) Acetaminophen 650 mg PO for fever. (7) Continuous cardiac monitor; VS q15 min until stable. (8) Insulin per protocol. (9) Notify surgery if pain disproportion or crepitus. (10) Hourly reassessment of borders, pain, mental status.

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Evaluate Outcomes

Expected (effective): Borders not advancing beyond marked line, fever trending down to $\leq 99^{\circ}\text{F}$, HR < 100 , BP $> 110/70$, lactate < 2 , WBC trending down, pain decreasing, glucose < 180 , no crepitus or skin dusking, mental status clear, urine output $\geq 0.5 \text{ mL/kg/hr}$. **Unexpected (escalate):** Red border expanding past mark, lactate rising, BP dropping despite fluids, pain worsening out of proportion, new vesicles or skin necrosis, altered mental status — call rapid response / surgical team. Reassess plan, continue antibiotics 10–14 days total, transition PO when afebrile 48 hrs, plan diabetes optimization & recurrence-prevention teaching at discharge.

NGN NCLEX 2026 Visual Study Reference · Cellulitis

Compiled from Saunders, ATI, Lippincott & current NGN NCLEX 2026 test plan priorities.
For exam preparation use — always follow your facility's protocols in clinical practice.