

INTEGUMENTARY • WOUND CARE • NGN NCLEX 2026

Negative Pressure Wound Therapy

Wound VAC (Vacuum-Assisted Closure) — controlled sub-atmospheric pressure that accelerates healing of complex, chronic, and non-healing wounds.

Wound VAC

-125 mmHg

Q48–72h dressing

Sealed system

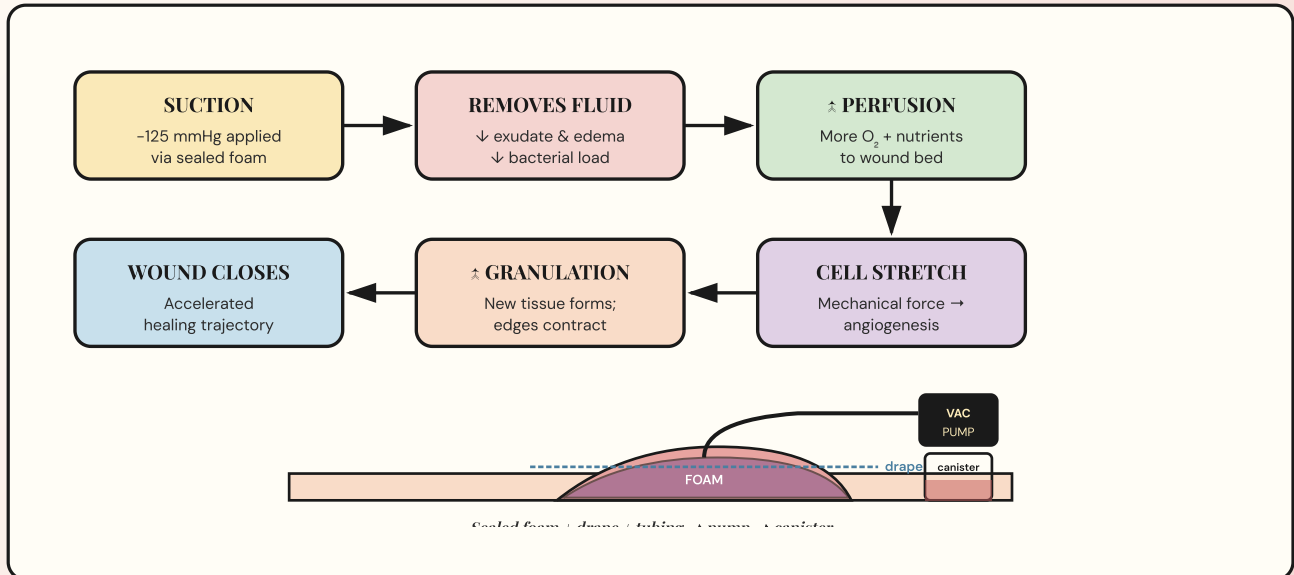
Granulation+

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Definition & Overview

- **Negative Pressure Wound Therapy (NPWT)** — also called **Wound VAC** (Vacuum-Assisted Closure) — applies controlled **sub-atmospheric pressure (suction)** to a wound via an airtight foam dressing and sealed tubing connected to a pump and canister.
- Typical pressure range: **-75 to -125 mmHg** (most common = **-125 mmHg continuous**); may be ordered intermittent.
- Indicated for **chronic, complex, non-healing, or high-exudate wounds**: Stage III/IV pressure injuries, diabetic foot ulcers, dehisced surgical wounds, traumatic wounds, skin grafts/flaps, and select burns.
- **Why it matters**: evidence-based therapy that *shortens healing time, reduces dressing-change frequency, and lowers infection risk* when used appropriately.

2 How It Works (Mechanism)



Bottom line: NPWT works by removing fluid, increasing blood flow, stimulating granulation tissue, reducing bacterial load, and physically contracting wound edges.

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Indications vs. Contraindications

✓ Indications (USE)

- Stage III & IV **pressure injuries**
- **Diabetic foot ulcers**
- **Dehisced surgical wounds**
- Traumatic / blunt-force wounds
- **Skin grafts & flaps** (bolster)
- Select partial-thickness burns
- Chronic wounds with **granulation tissue** present
- High-exudate wounds

⊘ Contraindications (DO NOT USE)

- **RED FLAG** Exposed organs, blood vessels, or nerves
- **RED FLAG** Untreated **osteomyelitis**
- **RED FLAG** **Active bleeding** in wound
- Necrotic tissue with **eschar** present (must debride *first*)
- **Malignancy** within the wound
- Unexplored / non-enteric **fistulas** to organs or cavities
- Allergy to dressing components

🚨 Complications & Red-Flag Findings

STOP THERAPY IMMEDIATELY and notify HCP for:

- **Frank/bright red bleeding** into canister or tubing
- Sudden severe pain
- Foul odor + **fever $\geq 100.4^{\circ}\text{F}$ (38°C)** → infection
- Increased erythema, purulent drainage, warmth at periwound
- Hemodynamic instability ($\uparrow$ HR, $\downarrow$ BP) suggesting hemorrhage

Early warning signs (assess closely): seal-loss alarm, decreased exudate suddenly, blockage in tubing, periwound maceration, skin irritation under adhesive drape.

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Priority Nursing Interventions

Assessment (BEFORE — DURING — AFTER)

- **Assess** wound bed, size, depth, tunneling/undermining, drainage color & amount, periwound skin q dressing change.
- **Monitor** pressure setting per HCP order (verify on every shift & every entry).
- **Monitor** for bleeding — inspect canister contents q1–2h initially, then per protocol.
- **Assess** pain level *before*, during, and after dressing changes — premedicate 30 min prior.
- **Monitor** nutrition labs (**albumin, prealbumin**) & intake — wound healing requires protein, vitamin C, zinc.
- **Check** seal integrity continuously — listen for hissing, watch for alarm.

Implementation (Action Verbs)

- **Maintain** an airtight seal — this is essential for therapy to work.
- **Empty** canister when **2/3 full** or per facility protocol; document output.
- **Change** dressing every **48–72 hours** (or per order; sooner if infected or seal-broken).
- **Use sterile technique** for dressing changes; cleanse wound with normal saline.
- **Cut foam** to fit the wound exactly — count and document number of pieces placed (must remove all at next change).
- **Do not** leave therapy off for more than **2 hours** — risk of anaerobic bacterial growth + loss of effect.
- **Position** patient so tubing isn't kinked or compressed.
- **Premedicate** for pain before dressing changes; consider topical lidocaine per order.

ABCs + Safety priority: If bleeding is observed in the canister or tubing — **STOP the therapy, apply direct pressure, notify HCP STAT.** Hemorrhage is the most life-threatening NPWT complication.

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Pharmacology Support

Drug / Class	Use in NPWT	Key Nursing Considerations
Opioids <i>morphine, oxycodone, hydromorphone</i>	Pre-medication for dressing changes	Give 30 min before change; monitor RR, sedation; have naloxone available
Topical lidocaine (2–4%)	Applied to foam/wound bed before removal	Allow 15–20 min to take effect; assess for allergy
Acetaminophen / NSAIDs	Adjunct pain control	Monitor liver/kidney function; watch for GI bleed on NSAIDs
Systemic antibiotics <i>(only if infected)</i>	Treat clinical infection — NOT prophylaxis	Obtain culture first; monitor for resistance; check trough levels (e.g., vancomycin)
Normal saline (0.9%)	Wound cleansing during dressing change	Room temperature; gentle irrigation only
Nutrition supplements <i>protein, vitamin C, zinc, arginine</i>	Optimize healing substrate	Tube feeds or oral; check albumin/prealbumin trends

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NCLEX Test Traps ⚠️

❌ WRONG

"Frank bleeding in canister — increase suction to clear it."

✅ RIGHT

STOP the therapy, apply direct pressure, notify HCP STAT. Bleeding is a hemorrhage emergency.

❌ WRONG

"Seal broken — leave it open until morning rounds."

✅ RIGHT

Reseal **within 2 hours** or remove dressing entirely. Loss of seal = no therapy + anaerobic growth risk.

❌ WRONG

"Wound is covered in black eschar — apply NPWT to debride it."

✅ RIGHT

NPWT is **contraindicated** on necrotic eschar. Eschar must be *debrided first*.

❌ WRONG

"Foam can touch the exposed artery — pressure will tamponade it."

✅ RIGHT

Foam must **never** contact exposed vessels, organs, or nerves — risk of erosion & hemorrhage.

❌ WRONG

"Empty canister only when shift ends."

✅ RIGHT

Empty when **2/3 full** (or per protocol). Document output as wound drainage on I&O.

❌ WRONG

"Patient going to imaging — leave VAC off for 4 hours."

✅ RIGHT

Therapy off > **2 hours** = remove dressing. Anaerobes thrive in occluded, unsuctioned foam.

Priority hierarchy reminder: Hemorrhage > Infection > Pain > Comfort. NCLEX answer: *"Stop the therapy"* is almost always correct when bleeding is described.

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Patient & Family Education



Home Care Basics

- Keep the pump **plugged in or charged** at all times
- **Don't kink** the tubing — check before sitting/sleeping
- Don't sleep on the tubing
- Empty canister when **2/3 full**; track output
- Bathing: **disconnect** per protocol — do not submerge device
- Carry the pump in a sling/bag when ambulating



Call HCP IMMEDIATELY if...

- **Bright red bleeding** in tubing/canister 🚨
- Fever $\geq 100.4^{\circ}\text{F}$ (38°C), chills
- Foul odor, pus, or increasing wound pain
- Increasing redness, warmth, or swelling around wound
- Device alarming and you can't reseal
- Therapy has been off > 2 hours



Nutrition for Healing

- **High protein** — eggs, fish, chicken, beans, dairy
- **Vitamin C** — citrus, peppers, strawberries (collagen!)
- **Zinc** — meat, nuts, seeds, whole grains
- Adequate **fluid intake** (unless restricted)
- Glycemic control if diabetic — high BG impairs healing



Activity & Skin Care

- **Reposition q2h** if pressure injury risk
- Avoid pressure on the wound site
- Don't smoke — nicotine constricts vessels & slows healing
- Keep periwound skin clean & dry
- Wash hands before touching dressing or device

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Memory Boosters & Mnemonics



"VAC" — What it does

V

— removes fluid & exudate

A

— granulation & angiogenesis

C

— contracts wound edges



"NO VAC" — Contraindications

N

ecrotic tissue / eschar

O

osteomyelitis (untreated)

V

essels / organs exposed

A

ctive bleeding

C

ancer in wound



"2-2-2" Rule

= empty canister

max therapy off

(48–72h) = change dressing



"STOP for RED"

top therapy

amponade with pressure

btain VS (HR, BP)

hone HCP STAT

Pattern recognition: "Patient reports bright red blood in canister" → think **HEMORRHAGE** → STOP.

"Patient reports alarm/hissing" → think **SEAL LOSS** → reseal within 2h.

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NCJMM Clinical Judgment Scenario

Scenario: A 68-year-old client is admitted with a **Stage IV sacral pressure injury**, $8 \times 6 \times 4$ cm with serosanguineous drainage and pink granulation tissue. NPWT was applied 3 days ago at -125 mmHg continuous. During morning assessment, the nurse notes the canister has approximately **200 mL of bright red fluid** that accumulated over the last 2 hours, the device is alarming intermittently, and the client reports new throbbing pain rated 8/10. Vital signs: BP 98/56, HR 118, RR 22, SpO₂ 95%, T 99.1°F.

STEP 1

Recognize Cues

- **Bright red drainage** 200 mL in 2 hours (concerning for hemorrhage, not normal serosanguineous)
- **Hypotension** (BP 98/56) with **tachycardia** (HR 118) → early shock pattern
- **Tachypnea** (RR 22)
- New, severe pain (8/10) — sudden pain change is a red-flag
- Intermittent device alarm — possible seal-loss or blockage

STEP 2

Analyze Cues

- Vital sign pattern + bright red bleeding suggests **active hemorrhage** from the wound bed
- NPWT can erode vessels if foam is in direct contact with vasculature
- Hemodynamic compensation has begun (↑ HR to maintain CO with falling BP)
- Pain spike is consistent with disrupted tissue + active bleeding

STEP 3

Prioritize Hypotheses

1. **HIGHEST PRIORITY:** Active hemorrhage from wound bed (life-threatening)
2. Hypovolemic shock — early/compensated stage
3. Loss of seal contributing to device malfunction
4. Possible wound infection (less likely with this acute presentation)

STEP 4

Generate Solutions

- **STOP the NPWT** immediately (turn off pump)
- Apply **direct pressure** to the wound with sterile gauze
- Notify **HCP STAT** — anticipate orders for type & crossmatch, CBC, surgical consult
- Establish/verify **large-bore IV access** (18 g if possible); begin **NS bolus** per order
- Place client **supine**; elevate legs if no contraindication
- Continuous VS monitoring & SpO₂; cardiac monitor
- Prepare for possible transfusion and OR for vessel ligation
- Do NOT restart NPWT until cleared by HCP

STEP 5

Take Action

- 1 Turn off VAC pump → 2 Apply firm direct pressure with sterile gauze → 3 Call rapid response/HCP → 4 Verify IV patency, start NS bolus → 5 Draw labs (CBC, T&C, coags) → 6 Continuous monitoring → 7 Reassure client, keep NPO pending surgical evaluation → 8 Document time, intervention, and response.

STEP 6

Evaluate Outcomes

- **Desired:** Bleeding controlled, BP returns to baseline ($\geq 110/70$), HR < 100, no further bright red drainage, Hgb stable, client reports pain $\leq 3/10$
- **If not improving:** Escalate to surgical intervention; prepare for OR & blood products
- **Long-term:** Reassess NPWT appropriateness; consider alternative dressing if vascular involvement confirmed
- Document client response, intervention timing, communication with HCP, and family notification

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Negative Pressure Wound Therapy (Wound VAC) • Content drawn from standard NGN NCLEX 2026 references

Always defer to facility policy & current HCP orders.