

Protocol 22 · NPWT dressing change and troubleshooting: for nurses

Scope: **General** · Source: NPWT Evidence Library, www.wondsorg.co.za/NPWT.html, content as at 2026-10-04

General. The bedside page. Its skeleton is the only formal analysis of how NPWT care fails: thirteen failure modes across prescription, application, monitoring and removal, with bleeding ranked first.

Before you start

- Read the prescription: indication, pressure, mode, interface, interval, endpoint, review date. A missing item is a stop; an absent or inadequate prescription is the first failure mode.
- Check the chart: anticoagulation; pacemaker or ICD (pump at least 15 cm from the generator, away from the chest); fall risk; level of consciousness; adhesive allergy.
- Analgesia given and working before removal. Foam hurts more than gauze at removal (6.5 versus 4.15 on a 10-point scale); in a blinded trial 65 percent nitrous oxide cut pain at removal from a median 6.3 to 3. Pain at changes is the commonest reason patients ask to stop.
- Lay out the new dressing before opening the old one; have a saline syringe ready to soak a stuck foam.

Removal

- Pump off, disconnect. Look at the canister and tubing for blood first.
- Lift the drape gently, supporting the skin; adhesive remover on fragile skin. Soak an adherent foam with saline and wait; never pull a stuck foam.
- Count every piece out and reconcile against the count in; record the number. A piece that does not come out is a retained foreign body with no radio-opaque marker; it presents weeks to years later as a wound that will not heal.
- Inspect: bleeding; the wound edge (dusky or black over a poorly perfused limb); surrounding skin (blistering, maceration); exposed structures; odour; slough. Measure length, width and depth; photograph with the date; record exudate.

Application

- Debridement is the surgeon's: do not re-dress over dead tissue or undrained infection; call. If infection is suspected, the specimen is a tissue biopsy at debridement, not a swab or the foam; for a chronic wound add fungal culture and histology.
- Protect any exposed vessel, tendon, bone or hardware with the prescribed non-adherent layer.
- Cut foam to the wound, not larger; fewest pieces; count in and record. Never cut foam over the wound.
- Skin protectant on intact skin; hydrocolloid strips around a difficult margin and drape onto them; no iodine cleaning of the skin before draping (the residue stops the film sticking). Seal 2 to 3 cm beyond the margin; bridge tubing away from bony prominences and, under compression, out above the bandage.
- Connect, set the prescribed pressure and mode, watch the dressing draw down and stay down. Record pressure, mode, pieces in, time, and who did it.

The seal, the commonest problem

- On a device: a leak alarm that does not clear in minutes is a change, not a wait. Find the leak by feel and by listening; patch with drape strips; skin folds, the natal cleft, pins and tubing exits are the usual sites.
- On wall suction: clamp the tube and watch the manometer; no excursion means no leak, and the excursion measures it. A working gauze dressing visibly shrinks. Read the manometer every shift: wall suction delivers about 7 percent above the dial.
- A seal that cannot be restored within two hours leaves the wound under an unventilated wet dressing: change it. A Redon bottle or bulb drain is not NPWT; its vacuum decays to nothing within minutes.

Bleeding

Fresh blood in the tubing or canister, a sudden change in output, an unexplained haemoglobin fall, or a lost seal over a vascular repair: pump off, direct pressure, call the surgeon. Do not wait for the canister to fill; one tibial-artery erosion cost six units with only 600 mL ever visible in the canister. Bleeding over a repair is late (median day 18) and usually on a background of infection: a wound that becomes infected under NPWT over a graft is a bleeding risk, not only an infection.

Other problems, and what each means

Pain rising between changes

Ischaemia, infection, foam on a nerve, pressure too high: inspect now, do not wait for the scheduled change.

Skin blistering at the edge	Drape tension, shear, adhesive: reapply without tension, skin protectant, document (the best-corroborated harm, RR 3.55).
Maceration	Leak, exudate not clearing, instillation leaking: restore the seal, check the canister, reduce dwell or volume.
Foul smell, fever, spreading redness	Infection under the dressing: change and inspect the same day, culture, call.
Wound worse with negative cultures	Consider pyoderma gangrenosum: stop NPWT and call; pathergy makes it worse.
Paced heart rate has changed	Pump magnet over the generator: move the pump away from the chest now; tell the doctor.
Canister filling fast	Bleeding or a lymph leak: look for blood, measure, call if blood.
Alarm at night, patient anxious	Seal, canister, battery: fix the cause, reassure (anxiety is expected early and settles), record.
Power failure of two hours or more	An FDA-listed failure mode: change the dressing if suction cannot be restored.
Instillation not filling or clearing	Line clamped, wrong foam, leak: run a test cycle at the bedside before leaving the patient.

Intervals, and what to write

Foam every 48 to 72 hours (24 to 48 if infected); gauze on wall suction daily; a first change at a mean of 2.9 days was safe even in contaminated wounds; a graft bolster undisturbed 4 to 5 days; instillation at 48 to 72 hours with the planned re-look. Every time: pressure, mode, pieces in and out, seal check, canister volume and character, pain score, measurements and photograph, wound edge, surrounding skin, coping, next change date. A wound that has not progressed for four weeks is a stop, not a reason to extend.

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