

Protocol 11 · NPWT with instillation and dwell (NPWTi-d) for wounds that need cleansing

Evidence position: **Moderate** · Source: NPWT Evidence Library, www.wondso.org.co.za/NPWT.html, content as at 2026-10-04

Indication

NPWT with instillation and dwell (NPWTi-d) for wounds that need cleansing.

Evidence position: Moderate. One moderate-certainty trial supports it against standard NPWT: wounds closed 3.9 days sooner, but more grafts were lost (20.5 percent against 4.9 percent). Step down to standard NPWT before grafting.

What this means

Instillation NPWT adds a cycle to standard NPWT: a measured volume of fluid (usually saline) is dripped into the wound, left to soak (dwell) for about ten minutes, then suction resumes for one to three hours, and the cycle repeats. It is used for wounds that need cleansing: infection, foreign material, thick slough, or a bed that needs a lot of granulation. It is a cross-cutting technique used within several of the other protocols, not a diagnosis in its own right.

Why NPWT is used here

In a pooled analysis of 13 studies (871 patients, control was standard NPWT in 12), complete wound closure was twice as likely (odds ratio 2.0) and complications were fewer (odds ratio 0.42). Adding instillation raised before-discharge closure from 62 to 94 percent in one infected-wound series. What it does not do: the randomised-only meta-analysis found no difference in healing, closure or length of stay, and two of three meta-analyses found no reduction in debridements.

Patient selection

- A wound needing cleansing after debridement: infected, containing foreign material, heavily sloughy, or with a large complex surface that cannot be fully debrided surgically.
- A seal can be held: instillation defeats itself if fluid leaks.
- Start it early where it is indicated rather than trying standard NPWT first: early instillation shortened therapy (7.0 versus 11.4 days) and stay in a matched cohort.
- Step down to standard NPWT once the cleansing goal is met.

For all NPWT

- The patient must be compliant and compos mentis: able to understand what the device does, keep the seal, protect the tubing and pump, report bleeding, pain or alarms, and attend or receive dressing changes.
- The patient's circle of care must be included: family, carers, home-nursing service or ward team, whoever will be present when the seal fails at night. Document who was told what and who is responsible for the device between visits.

Contraindications

Specific to this indication

- Over a skin graft or dermal substitute: the fluid lifts the graft. Use standard NPWT as a bolster instead.
- Where a seal cannot be kept.
- An acutely ischaemic wound: address perfusion first.
- Solutions not approved for the instillation disposables; 0.04 percent polyhexanide should not be dripped directly onto exposed structures.

For all NPWT: do not apply if

- Active bleeding beyond capillary ooze. Stop it first; NPWT does not control bleeding.
- An uncorrected clotting disorder.
- An exposed vessel, graft, anastomosis, organ or nerve with no barrier between it and the foam.
- Dead tissue not yet debrided, untreated bone infection, or cancer in the wound bed.

Proceed with caution and record the decision

- Blood thinners: a caution, not a bar. Lowest effective pressure, barrier over any vessel, inspect at every change, record the decision.
- Pacemaker or defibrillator: the pump of the canister-free single-use device (PICO) holds a magnet. Keep it 10 to 15 cm from the device, away from the chest, and record where it sits.
- Fragile surrounding skin or adhesive allergy. Children: no NPWT system was cleared for them as at 2011; treat as a hard limit unless current labelling says otherwise.

Potential risks and side-effects

- Leakage and maceration of the surrounding skin if the seal fails during the dwell.
- More graft loss after instillation: in the largest randomised trial (132 acute traumatic wounds) instillation closed wounds sooner than standard NPWT (6.1 versus 10.0 days) but grafts were lost more often (20.5 versus 4.9 percent). Step down to standard NPWT before grafting.
- The bioburden premise is contested: the only quantitative test in the diabetic foot found no reduction in bacterial load with or without instillation. A request may claim closure; it may not claim lower infection risk.
- Complete bacterial clearance in under a quarter of wounds; slough clears less reliably (57 percent) than black eschar (86 percent). No cost-effectiveness evidence exists.
- Bleeding: the serious harm. All six deaths in the regulator's first two-year series, and nine of twelve overall, were bleeds in patients whose bleeding risk had been missed (12 deaths, 174 injuries).
- Skin blistering: about 3.5 times more likely than with an ordinary dressing (risk ratio 3.55, 95% CI 1.43 to 8.77).
- Pain at changes (pre-medicate; soak a stuck sponge with saline) and anxiety in the first days, which settles. Say so beforehand.

- Retained foam, the regulator's commonest injury: count every piece in and out, and never cut foam over the wound. Adhesive damage to skin.

Treatment protocol

Pressure	Minus 125 mmHg during the suction phase (surveyed range minus 75 to minus 175). Where a vessel, arterial repair or vascular graft lies in the wound bed, exposed or under a barrier: minus 100 mmHg or less (this library's setting; reasons and technique in protocol 1).
Solution	Normal saline first choice. Antiseptic (hypochlorous acid, quarter-strength Dakin's, acetic acid 0.25 to 1 percent, or PHMB/betaine) where there are clinical signs of infection, stepping down to saline at 24 to 48 hours.
Dwell	10 minutes default; 1 to 20 minutes accepted. Within 6 to 30 minutes the exact dwell does not appear to change outcome.
Suction phase	30 minutes to 3.5 hours per cycle: shorter (1 to 2 hours) for cleansing, longer (2 to 3 hours) for granulation.
Interface, volume, interval	Instillation foam (polyurethane ester); through-hole foam for large unbridable wounds. Volume enough to fill the cavity; run a test cycle. Change every 48 to 72 hours.

Step by step

1. Debride and confirm haemostasis. Instillation does not replace surgery.
2. Choose the solution: saline unless there is a stated reason for an antiseptic. Saline closed wounds faster than an antiseptic in a 100-patient trial, so it is not a compromise.
3. Apply the instillation foam, seal with particular care, and connect both lines.
4. Run a test cycle at the bedside and confirm the fluid fills, dwells and clears without leaking before leaving the patient.
5. At each change, judge whether the cleansing goal has been met. When it has, change to standard NPWT.

When to stop and call for help

- Fresh bleeding into the canister or dressing: pump off, pressure on, call the surgeon.
- New or rising pain, spreading redness, fever or a foul smell: review the same day.
- A seal that cannot be held for more than two hours.
- No progress at four weeks: stop and re-plan.

Outcome measures

- Complete wound closure and the date (the endpoint with the strongest support).
- Days of instillation therapy before step-down to standard NPWT.
- Number of surgical debridements (record it, but do not promise a reduction).
- Complications: leakage, maceration, infection events.
- Length of stay and readmission.

What to document at every change

- Indication; which contraindications were checked and excluded.
- Pressure, mode, interface, and the number of foam pieces placed and removed.
- Wound length, width and depth, a dated photograph, exudate, any bleeding, and the pain score.
- The planned review date and the endpoint (closure, graft or flap).

A point worth knowing

Instillation requires a different foam from standard NPWT: the hydrophilic polyurethane ester foam, not the hydrophobic ether foam used for granulation. Specify the foam, the solution, the dwell and the cycle in the notes and in any funding request; reviews repeatedly note that trials failed to report these.

Funding note (South Africa)

ICD-10: Code the underlying infected condition (for example T81.4 or M72.6x). **PMB:** Via the underlying infected condition.

References

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