

Protocol 8 · Acute contaminated or dehiscent surgical wound

Evidence position: **Not supported** · Source: NPWT Evidence Library, www.woundsorg.co.za/NPWT.html, content as at 2026-10-04

Indication

Acute contaminated or dehiscent surgical wound.

Evidence position: Not supported. Not supported for faster healing of the open wound: SWHSI-2 (GRADE High) found no benefit and no cost-effectiveness. Use it after debridement to prepare the bed and control exudate.

What this means

A surgical wound that has opened (dehiscent), or that was contaminated at operation (for example after bowel perforation or trauma) and is being left open to be cleaned. NPWT is used for wound-bed preparation: removing fluid, reducing swelling, and building granulation tissue over seven to ten days so the wound can be closed, grafted or covered. It is a bridge to a planned closure, not a healing therapy in its own right.

Why NPWT is used here

In the largest series of its kind, 86 patients with 97 heavily contaminated wounds (91 percent septic) reached durable closure in 92 percent with no NPWT-related deaths, and a first dressing change at a mean of 2.9 days was safe. Germany's 2019 statutory assessment of open wounds found an indication of benefit for closure and length of stay, but the largest trial, 686 surgical wounds healing by secondary intention, found no faster healing (high certainty). For open traumatic fractures, however, Cochrane found no healing benefit and no cost-effectiveness: this indication is about contaminated surgical wounds, not trauma.

Patient selection

- An acute post-operative wound that has dehiscent or was left open because of contamination, after debridement.
- The wound has a clean, debrided bed with no dead tissue and no active bleeding.
- A planned endpoint exists: delayed primary closure, a graft, or a flap.
- Start early: within one to two days of admission where possible.

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

- Infection that has not been surgically drained: debride first.
- Dry eschar (hard dead crust): remove it before NPWT.
- Cancer in the wound bed.
- Exposed unprotected bowel, vessels or organs; an abdominal wound with a fistula that has not been explored.

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

- A retrospective pooling of emergency laparotomy studies found higher follow-up mortality with NPWT in the observational studies only, most likely because sicker patients received it. It is not a proven harm, but it exists in the literature and should be known.
- Do not claim faster healing: the largest trial in open surgical wounds found none, and NPWT was not cost-effective there. Ask for a bounded period to a stated endpoint.
- Wound-area reduction is not closure: in one case the wound halved in 30 days and then still needed a graft. Plan for the graft rather than waiting.
- 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 continuous is the conventional setting; minus 80 to minus 125 mmHg is the usual working range. 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).
Mode	Continuous for the first 48 hours; intermittent may be used once the bed is stable and not bleeding.
Interface	Black polyurethane foam; silver foam where bacterial load is a concern; PVA foam over any exposed structure.
Change interval	First change at about three days (mean 2.9 days was safe even in contaminated wounds); then every 48 to 72 hours, or 24 to 48 hours if infected.
Duration	Typically seven to ten days of bed preparation before definitive closure. Escalate to instillation (protocol 11) if the bed needs cleansing rather than just draining.

Step by step

1. Debride in theatre or at the bedside until the bed is clean. Confirm haemostasis.
2. Protect any exposed structure. Fill the cavity with foam without packing it tightly. Count and record the pieces.
3. Seal, connect, set the pressure, confirm draw-down.
4. First change at about three days; then every 48 to 72 hours. Photograph and measure each time.
5. When the bed is granulating and clean, book the closure or graft. Do not let the therapy drift past its purpose.

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

- Days from admission to first NPWT application.
- Time to a closable or graftable bed, and the date of definitive closure.
- Wound area at each change.
- Infection events and antibiotic days; length of stay.
- Any bleeding or retained foam.

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

The most citable document against NPWT that a funder can find in one search is the 2011 German assessment, which found superiority unproven in open wounds on the trials available to 2010. Name it, and answer it on scope and date: it predates most current trials, and this request is for a bounded period of bed preparation with a stated surgical endpoint, which is what the evidence supports.

Funding note (South Africa)

ICD-10: T81.4 (infection) or T81.3 (dehiscence) as lead; pair with the operative condition. **PMB:** Via the underlying operative condition or emergency.

References

1. Shweiki E, Gallagher KE. Negative pressure wound therapy in acute, contaminated wounds: documenting its safety and efficacy to support current global practice. *Int Wound J* 2013;10(1):13-43. doi:10.1111/j.1742-481X.2012.00940.x
2. Shweiki E, Gallagher KE. Assessing a Safe Interval for Subsequent Negative Pressure Wound Therapy Change After Initial Placement in Acute, Contaminated Wounds. *WOUNDS* 2013;25(9):263-271.
3. Menegat ALRS, Menegat BLRS, Bravin S, Lin J, Wiederkehr H. Effect of Prophylactic Incisional Negative Pressure Wound Therapy on Surgical Site Infection After Emergency Laparotomy: An Updated Meta-Analysis With Trial Sequential Analysis. *World J Surg* 2026;—(—):—. doi:10.1002/wjs.70526
4. Zhou F, Zhang Y, Yu P, Feng X, Yang Y, Ding L, et al. Protective Effect of Prophylactic Negative-Pressure Wound Therapy on Surgical-Site Infection in High-Risk Open Abdominal Surgery: A Retrospective Cohort Study and Nomogram Development. *Int Wound J* 2026;23(—):e71007. doi:10.1111/iwj.71007
5. Iheozor-Ejiofor Z, Newton K, Dumville JC, Costa ML, Norman G, Bruce J. Negative pressure wound therapy for open traumatic wounds. *Cochrane Database Syst Rev* 2018;7(7). doi:10.1002/14651858.CD012522.pub2
6. Peinemann F, Sauerland S. Negative-pressure wound therapy: systematic review of randomized controlled trials. *Dtsch Arztebl Int* 2011;108(22):381-9. doi:10.3238/arztebl.2011.0381
7. Restaino S, Farne E, Nonino B, Silvestri I, Caputo G, D'Asta M, et al. Staged Management of Extensive Suprapubic Wound Necrosis After Hysterectomy Using Negative Pressure Wound Therapy and Delayed Skin Grafting. *Int Wound J* 2026;23(—):e71021. doi:10.1111/iwj.71021
8. Arundel C, Mandefield L, Fairhurst C, Baird K, Gkekas A, Saramago P, et al. Negative pressure wound therapy versus usual care in patients with surgical wound healing by secondary intention in the UK (SWHSI-2): an open-label, multicentre, parallel-group, randomised controlled trial. *Lancet* 2025;405:1689-99. doi:10.1016/S0140-6736(25)00143-6
9. Institute for Quality and Efficiency in Health Care. Negative pressure wound therapy for wounds healing by secondary intention. Extract of final report N17-01A. IQWiG Reports, Commission No. N17-01A 2019.