

Protocol 7 · Amputation stump breakdown, infection or partial necrosis

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

Indication

Amputation stump breakdown, infection or partial necrosis.

What this means

After a below-knee, transmetatarsal or toe amputation the stump wound may open, become infected or develop patches of dead tissue. The concern is that the patient will need a second amputation at a higher level, which costs function. NPWT is used to save stump length: to clean the bed, control fluid and build granulation so the stump can be closed, grafted or covered with a flap without going higher.

Why NPWT is used here

In a series of 97 acute contaminated wounds including stumps, 92 percent achieved durable closure with no NPWT-related deaths. Over the fresh closed amputation wound, two small randomised trials found less infection: 16 versus 51 percent with ordinary ward foam at minus 80 mmHg, and 12 versus 36 percent (borderline significance) with prosthesis fitting 1.7 weeks sooner; a meta-analysis found complications reduced by about half (odds ratio 0.52). After partial diabetic foot amputation, 56 versus 39 percent of open wounds healed in the Lancet trial. The realistic timeline: in 29 diabetic patients after open bone resection, a quarter reached delayed closure at a mean of 58 days and the usual endpoint was a skin graft, not spontaneous closure.

Patient selection

- Stump breakdown after major or minor lower-limb amputation in a PAD or diabetic patient, where the perfusion above the wound supports healing.
- Dead tissue has been debrided and infection is being treated.
- The surgeon has decided the current level can be saved; NPWT is not a way to avoid a decision about level.
- Prevention: a closed-incision device over the fresh amputation wound in a high-risk patient.

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

- Inadequate perfusion at the stump: NPWT will not rescue a stump that has no blood supply, and suction may extend the necrosis.
- Undrained infection or untreated osteomyelitis of the bone end.
- Active bleeding from the bone end or vessels.

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

- Extension of necrosis if the vacuum is too high for the perfusion (see protocol 6).
- Delay: continuing NPWT on a stump that is not progressing delays the higher amputation the patient may need and prolongs the admission.
- The independent randomised trial that included amputation dehiscence did not meet its healing endpoint in 31 patients. State it.
- 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 80 to minus 125 mmHg continuous over a well-perfused stump; minus 50 to minus 100 mmHg where perfusion is marginal. 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 48 hours; intermittent may follow once the bed is stable.
Interface	Black foam; PVA foam over exposed bone or tendon. Do not wrap the whole stump circumferentially.
Change interval	Every 48 to 72 hours; 24 to 48 hours if infected.
Duration and review	Set a review point at four weeks with a named endpoint (closure, graft, flap). Re-evaluate the level if there is no progress.
Closed incision (prevention)	Over the sutured stump at closure, continuous, for four to six days: a single-use device at its own pressure, or a strip of ordinary ward foam over paraffin gauze at minus 80 mmHg, sealed with film, as in the 62-patient trial. Not over a stump with doubtful perfusion.

Step by step

1. Confirm perfusion at the stump level and record it.
2. Debride to healthy tissue; if bone is exposed, ask whether it needs shortening before NPWT.
3. Protect the bone end and any vessel with PVA foam or paraffin gauze. Apply black foam to the rest of the bed. Count the pieces.
4. Seal without wrapping around the limb. Set the pressure for the perfusion grade.
5. Review at each change for bleeding, edge necrosis and progress. Plan the graft or flap early rather than waiting for spontaneous closure.

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

- Stump preserved at the original level (yes or no) at discharge and at three months.
- Time to closure, graft or flap.
- Any revision to a higher level, with the reason.
- Wound area at each change; infection events.
- Time to prosthetic fitting where relevant.

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 useful thing to put in a funding request for a stump is a defined period, a stated review point and a named endpoint. A request that says four weeks of NPWT to prepare for a split-thickness graft is checkable and is far more likely to be approved than an open-ended one.

Funding note (South Africa)

ICD-10: T87.5 or T87.4 (lead); pair with the arterial or diabetic diagnosis. **PMB:** 915E; the stump complication inherits the PMB status of the amputation.

References

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