

Protocol 16 · Burns: NPWT over the excised bed, as a graft bolster, and as an adjunct in small paediatric burns

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

Indication

Burns: NPWT over the excised bed, as a graft bolster, and as an adjunct in small paediatric burns.

Evidence position: Moderate. Not a substitute for grafting. The one moderate-certainty trial is a paediatric adjunct trial in small burns; the adult trial evidence is very low certainty, so the support is for children with small burns.

What this means

Burns are treated by early excision of dead tissue and skin grafting. NPWT has three separate uses that do not share an evidence base: over the excised burn bed while grafting is delayed or to hold a dermal substitute; as a bolster over a fresh graft, especially on a curved or mobile site; and, in children with small partial-thickness burns, as an adjunct over standard silver and silicone dressings to speed re-epithelialisation. NPWT is not a substitute for grafting.

Why NPWT is used here

The one well-run trial is in children: 114 with burns under 5 percent body surface area, prospectively registered, outcome assessed blind from photographs. Re-epithelialisation 8 versus 10 days (closure time reduced 22 percent, 95% CI 7 to 34), scar-management referral cut 60 percent, no difference in pain, itch or perfusion; 10 of 114 stopped early for treatment burden. Moderate certainty, and it does not transfer to adults or large burns. The adult meta-analysis (6 trials) prints high certainty beside an I-squared of 94 percent and two included studies with the same title: very low certainty here. The paediatric meta-analysis reports null outcomes as significant and pools improvised suction at pressures from 0.02 kPa: not citable.

Patient selection

- Excised deep partial- or full-thickness burn awaiting graft: NPWT as bed preparation when grafting is delayed, or to hold a dermal substitute.
- Fresh split-thickness graft on a burn, especially on a contoured or mobile site: bolster per protocol 12 at minus 50 to minus 80 mmHg, undisturbed 4 to 5 days.
- Small partial-thickness burn in a child under specialist paediatric burns care, as an adjunct to silver and silicone dressings.
- Burns patients are often sedated, in pain, or children: supervision decides (protocol 19).

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

- Unexcised eschar: debride first.
- Undrained burn wound sepsis.
- Circumferential application on a limb: tissue pressure rises most; escharotomy comes first.
- Instillation over a graft: never.

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

- The contradiction to state: the strongest evidence is in children, and the regulator's position is that no NPWT system was cleared for children as at 2011. Use in a child is a specialist-unit decision under current device labelling, not a ward default.
- Large burns on wall suction: one series ran wall suction at 20 kPa, which is 150 mmHg, the highest pressure in the series, with the authors' own warning that the meter and the delivered pressure may differ (protocol 18).
- Graft shear or loss if the bolster is disturbed early.
- 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

Bed preparation	Minus 80 to minus 125 mmHg continuous; black foam; change every 48 to 72 hours.
Graft bolster	Non-adherent contact layer on the graft, then PVA or thin black foam; minus 50 to minus 80 mmHg continuous; undisturbed 4 to 5 days (protocol 12).
Children	Minus 50 to minus 75 mmHg under 2 years; minus 75 to minus 125 mmHg from 2 years (Chinese consensus 2026). Birmingham Children's Hospital consensus 2009: minus 25 to minus 75 for neonates and infants (manufacturer-funded opinion: declare it). Use the lower pressure; specialist unit only, under current labelling.
Mode	Continuous over a graft; continuous for 48 hours on an open bed.
Change interval	48 to 72 hours on an open bed; do not disturb a bolster before day 4 unless the seal fails or there is bleeding.

Step by step

1. Excise to a viable bed in theatre; confirm haemostasis.
2. Bed preparation: apply foam, seal, set the pressure, change every 48 to 72 hours until the bed is graftable; book the graft.
3. Bolster: lay the graft, place the non-adherent layer, then foam, seal, set minus 50 to minus 80 mmHg, leave 4 to 5 days, take down slowly with saline.
4. Children: only within a paediatric burns service; use the age band; parents are the circle of care.
5. Record percentage graft take at first take-down.

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 injury to graft; percentage graft take at day 4 to 5 and at two weeks.
- Time to re-epithelialisation (paediatric adjunct use).
- Re-grafting; infection; treatment discontinuation for burden.
- Scar-management referral.

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

In the paediatric trial both arms received good standard dressings, so it answers whether NPWT adds anything to good care, not whether it beats a dressing. That is the right question and a narrow answer. A request for graft fixation or bed preparation with a dated graft is supportable; the adult evidence should be described as low certainty, because it is.

Funding note (South Africa)

ICD-10: Burn by site (T20 to T25) with depth, plus extent (T31.x). **PMB:** 900j: burns over 10% of body surface, or over 5% involving head, neck, hands or perineum.

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