

Negative Pressure Wound Therapy

Protocols by Indication

www.wondsorg.co.za/NPWT.html

Compiled from the NPWT Evidence Library at that address (668 sources)

Content as at 2026-10-04

This booklet explains. It does not prescribe. The treating surgeon's instructions for the patient in front of you take precedence over anything printed here.

How to use this booklet

Each protocol is two pages and stands on its own. It follows the same order every time: what the indication means, why NPWT is used, who is suitable, who is not, what can go wrong, the settings and steps, when to stop, what to measure, what to write down, one point worth knowing, the South African funding codes, and the references.

The settings are the ones this library records. Where this library records a deliberate departure from a published series (for example starting at minus 50 mmHg over a vascular graft), the protocol says so and gives the reason. A protocol that hides its reasoning cannot be questioned, and one that cannot be questioned should not be trusted.

Negative results are included on purpose. Where a good trial found no benefit, the protocol says so. A reader who knows where a treatment has failed understands it better than one who has only been told where it works, and a funding request that names the negative trial before the scheme does is harder to refuse.

Numbers are given with their source. A risk ratio, odds ratio or number needed to treat is explained in the glossary at the back. If a number has no reference beside it, that is an error and should be reported.

Every reference is appraised in the NPWT Evidence Library at www.wondsorg.co.za/NPWT.html, where the full critical appraisal of that source can be read.

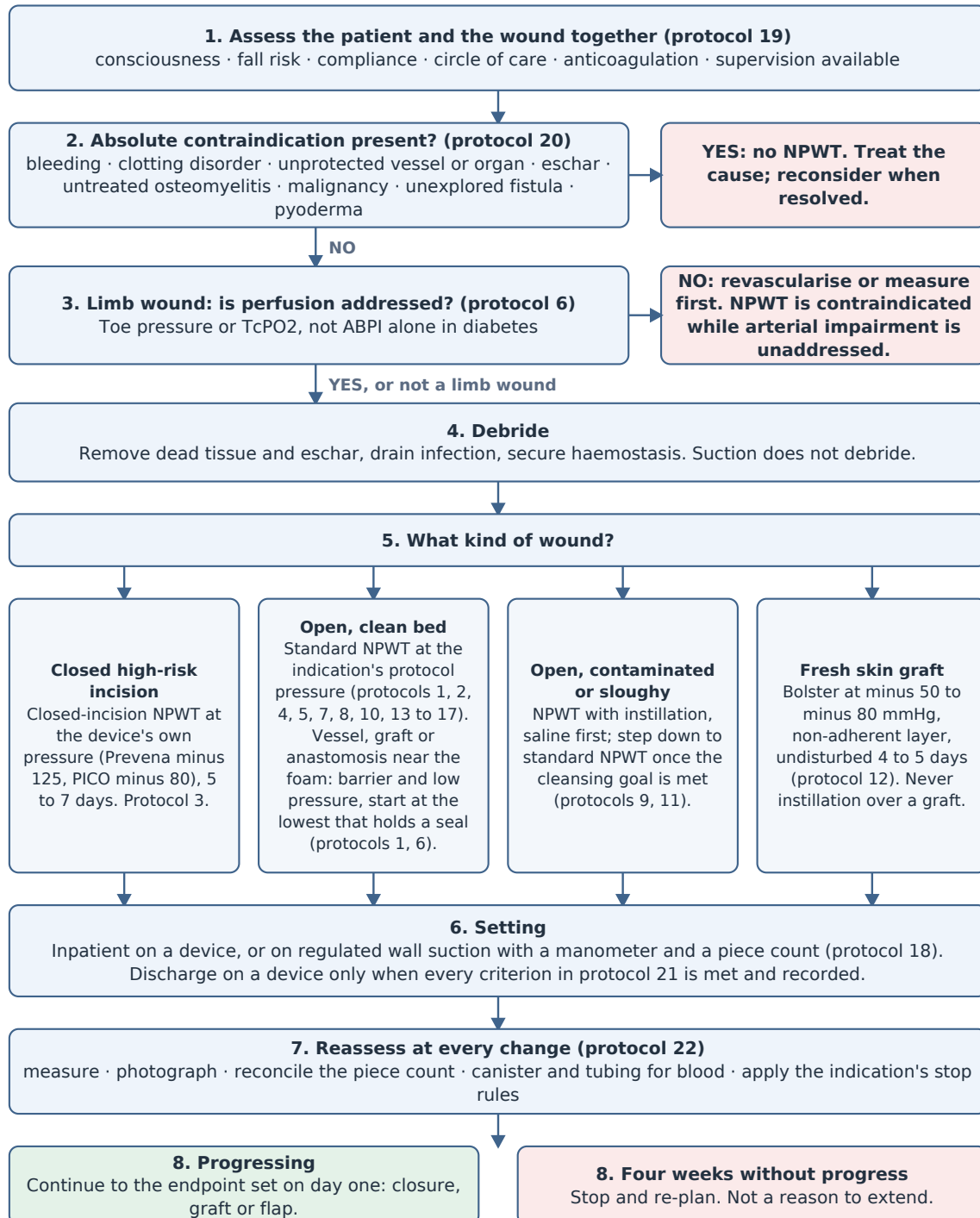
The general contraindications, risks, stop rules and documentation list are the same in every protocol, so that each protocol can be printed and used alone. The indication-specific items come first in each section.

The five rules that apply to every NPWT dressing

- Stop the bleeding first. NPWT is not a way to control bleeding.
- Never put foam directly on a vessel, a graft, a join between vessels, bowel, the heart or a nerve. Put a barrier between.
- Count every piece of foam in, and count every piece out. Write the number down.
- Use the lowest pressure that holds a seal and clears the fluid, and go lower still over poor blood supply.
- Look at the wound at every change, measure it, photograph it, and write down what you saw and what you decided.

NPWT decision algorithm

Routing by wound type, with two gates first: the absolute contraindications and the perfusion red line. Library page: **protocols/decision-algorithm**. The algorithm routes to a protocol and stops; pressure, mode, interface and interval are the indication's own.



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The **evidence position** on each protocol is this library's reading of the current international evidence, decided by the appraisal alone and not by any guideline, society or national position. Only direct evidence counts: a GRADE High or Moderate source counts for an indication only if the patients studied had that wound type (High counts twice, Moderate once). **Moderate**: direct evidence for NPWT outweighs direct evidence against it. **Not supported**: direct High or Moderate evidence against NPWT outweighs the evidence for it. **Guarded**: everything else, including indications with no direct High or Moderate evidence either way. It is not a guideline and not a GRADE rating. Protocols 19 and 20 apply above every indication.

Protocol 1 · Infected or exposed prosthetic vascular graft

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

Indication

Infected or exposed prosthetic vascular graft.

Evidence position: Guarded. No high- or moderate-certainty trial tests NPWT in an infected graft; the graft-preservation figures come from uncontrolled series.

What this means

A prosthetic vascular graft is an artificial tube (usually Dacron or PTFE) sewn in to bypass or replace a diseased artery. When the wound over it breaks down, the graft becomes exposed and infected. This is limb-threatening and life-threatening, because the usual answer is to remove the graft, which can cost the leg. NPWT is used to keep the graft in place and covered while the wound is cleaned and the infection controlled, so that the graft can be saved.

Why NPWT is used here

Published series report the graft being saved in 82 to 91 percent of cases when NPWT is used with surgical cleaning and antibiotics. NPWT is the wound-care part of the plan; it does not cure the infection on its own. No high- or moderate-certainty trial tests it in an infected graft, so the evidence position is Guarded.

Patient selection

- A prosthetic graft that is fully exposed and/or infected in the groin, thigh or elsewhere.
- The patient has had surgical debridement (removal of dead and infected tissue) and is on appropriate antibiotics.
- The vascular surgeon has decided the graft is worth trying to save, and the join between graft and artery (the anastomosis) can be protected.
- Not for a bleeding anastomosis or one that cannot be covered.

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

- An exposed anastomosis with no barrier over it. The barrier is what makes this safe.
- Active bleeding after debridement.
- Foam placed directly on a bare artery or on the anastomosis: 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

- Erosion of a vessel wall by foam under suction. In one reported case foam lay on a bare artery at 125 mmHg in a patient on enoxaparin; it eroded on day 16 and cost six units of blood. Only 600 mL was ever seen in the canister, so watch the haemoglobin, not the canister.
- A barrier reduces this risk but does not remove it: two patients bled with polyvinyl alcohol foam correctly placed.
- 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 50 to minus 100 mmHg, continuous. Start with the lowest possible pressure that allows a seal and increase the pressure gradually, only as far as needed to hold the seal and clear exudate. Minus 100 is a ceiling, not a target. Record the reason for each step up.
Mode	Continuous. Avoid intermittent mode over a vessel: cycling pressure shears the tissue.

Interface	A barrier over the anastomosis and any bare vessel: a muscle flap, polyvinyl alcohol (white) foam, or paraffin gauze. Black foam only over the mid-body of the graft, never on the join.
Change interval	Every 48 to 72 hours, with a deliberate look for bleeding at every change.
Duration	Time-limited: about one month at most. Plan definitive cover (a muscle flap or graft) as soon as the bed allows.

Step by step

1. Confirm haemostasis in theatre after debridement. If it is oozing, pack and wait; do not apply suction to a bleeding bed.
2. Place the barrier layer over the anastomosis and any exposed vessel. Prefer a firmer barrier over a soft one where the anatomy allows: a soft paraffin layer alone did not protect in the animal study.
3. Cut black foam to fit over the graft mid-body only. Count and record the pieces.
4. Seal, connect, and start at the lowest pressure that gives a seal (at or near minus 50 mmHg, continuous). Confirm draw-down; step up gradually only if the seal or exudate demands it.
5. Check haemoglobin daily for the first days and at every change. A falling haemoglobin with a clean canister is still a bleed.
6. At each change: photograph, measure, look at the vessel, record. Move to definitive cover when granulation covers the graft.

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

- Graft preserved (not removed) at 30 days and at discharge.
- Wound closed or covered by flap or graft, and the date this was achieved.
- Any bleeding episode, with volume and action taken.
- Haemoglobin trend during therapy.
- Re-infection or need for graft removal at follow-up.

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 series that report graft salvage used 50 to 125 mmHg, and none compared one pressure with another. South African measurements show that tissue pressure under the dressing rises and blood flow falls as the vacuum increases. Over a marginally perfused limb the thing being minimised is a harm. If a setting is too low the wound granulates more slowly, which is recoverable; if it is too high the anastomosis can bleed, which may not be. That asymmetry is why the protocol starts at the lowest pressure that allows a seal and increases gradually.

Funding note (South Africa)

ICD-10: T82.7 (lead); pair with I70.21 or I73.9. **PMB:** 900E (T82.7, complication of a major vascular procedure) and 915E; 48-hour decision.

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Protocol 2 · Groin wound breakdown or lymph leak after femoral artery surgery

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

Indication

Groin wound breakdown or lymph leak after femoral artery surgery.

What this means

The groin is the commonest place vascular surgeons open the femoral artery. The incision runs through lymph channels and sits in a moist skin fold, so groin wounds after arterial surgery become infected often: 21 percent in two cohorts that examined every wound at a visit, 8.6 percent in the largest cohort (1,337 groins), which counted only infections its units had recorded and whose authors say the true figure is higher; in South African series 7 to 21 percent by the same logic, with 17 percent after infra-inguinal bypass when a blinded observer graded every wound. The wound may open (dehiscence), become infected, or leak clear lymph fluid (lymphorrhoea). There are two quite different uses of NPWT here: open-wound NPWT for an established defect, and closed-incision NPWT applied over the sutured wound to prevent trouble (see protocol 3).

Why NPWT is used here

For an open groin wound, NPWT prepares the bed and manages fluid without disturbing the vessel repair beneath. Lymph leaks after femoral exposure stopped in a mean of 14 days with NPWT in one series after tying off the leak had failed. For prevention, ten randomised trials in 1,449 patients show closed-incision NPWT roughly halves infection (10.8 versus 20.9 percent), but only in groins already at high risk.

Patient selection

- Open-wound NPWT: a dehiscent, infected or leaking groin wound after endarterectomy, bypass inflow or arterial access, once any dead tissue has been removed.
- The femoral vessels or graft beneath must be either covered by tissue or protected by a barrier layer.
- Prevention (closed-incision): a high-risk groin only. Published risk factors: obesity (BMI 25 or more), diabetes, re-operation, a cut-down or patch closure rather than clean fascial closure, prolonged surgery. Trials in unselected low-risk groins were negative.

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

- Exposed femoral vessels or anastomosis with no barrier.
- Untreated arterial inflow disease: the wound will not heal whatever the dressing.
- A lymphatic fistula that needs ligation: suction is not a substitute for tying it off.

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

- Bleeding from the femoral repair beneath the wound. The regulator specifically lists groin wounds and leg grafts among the bleeding deaths.
- For closed-incision devices: blistering (risk ratio 3.55) and device-related adverse events (about 1 in 11 patients).
- 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

Open wound: pressure

Minus 50 to minus 100 mmHg continuous. Start with the lowest possible pressure that allows a seal and increase gradually; minus 100 is a ceiling.

Open wound: interface	Barrier over any exposed vessel (PVA foam or paraffin gauze); black foam elsewhere.
Open wound: change	Every 48 to 72 hours; look for bleeding at every change.
Closed incision: device	A single-use closed-incision device over the sutured line, applied in theatre at closure.
Closed incision: pressure	Fixed by the device: minus 125 mmHg with the foam-based canister device (Prevena), minus 80 mmHg with the canister-free single-use device (PICO). Neither is chosen by the surgeon. Name the device in any letter.
Closed incision: duration	Five to seven days, then remove. Both manufacturers specify seven days.

Step by step

1. Decide which mode applies: an open defect needs open-wound NPWT; an intact suture line at high risk needs a closed-incision device. They are not interchangeable.
2. Open wound: debride, confirm haemostasis, protect the vessel, apply foam, seal, set the lowest pressure that works.
3. Closed incision: apply the device in theatre over the closed line before the patient leaves, and leave it undisturbed for five to seven days unless it fails.
4. Record the device name and its own pressure.
5. Review the groin daily for bleeding, and at each change for lymph volume, redness and separation.

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

- Surgical site infection at 30 days, using a stated definition (CDC), and noting that 30 days captures only about half of all groin complications and a fifth of the major ones.
- Wound revision or return to theatre.
- Lymph leak volume per day and the date it stopped.
- Depth of any infection: superficial, deep, or involving the graft (Szilagyi grade). Prevention is proven only for the superficial layer.
- Length of stay and readmission within 30 days.

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

This library's position changed in August 2026 after two randomised trials in the same journal disagreed: a five-centre trial in unselected groins was negative on every endpoint, while a single-centre trial restricted to high-risk groins was positive. The benefit of closed-incision NPWT scales with the baseline risk of the groin being dressed. It is justified for a defined high-risk group and is not supported as a routine dressing for every groin. Selecting patients is what makes the evidence apply.

Funding note (South Africa)

ICD-10: T81.3 or T81.4 (lead); I89.8 for lymph leak; pair with the arterial diagnosis. **PMB:** Via the underlying arterial disease (915E where gangrene or PVD is coded); 5-day or 48-hour decision depending on graft proximity.

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Protocol 3 · Closed-incision NPWT to prevent infection over a high-risk sutured wound

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

Indication

Closed-incision NPWT to prevent infection over a high-risk sutured wound.

What this means

Closed-incision NPWT (ciNPWT) is a small single-use suction dressing placed over a wound that has already been sutured closed. It is prevention, not treatment: the aim is to stop the incision from opening, collecting fluid (seroma) or becoming infected. It works only on the skin, the fat and the fascia. It cannot reach an anastomosis or an organ, so it does not prevent deep organ-space infection or a leaking bowel join.

Why NPWT is used here

The Cochrane review of 62 randomised trials (13,340 patients) found infection fell from 11.75 to 8.7 percent (risk ratio 0.73, moderate certainty). The largest synthesis, 85 trials and 16,980 patients, found the same (risk ratio 0.64). In the vascular groin the effect is larger: infection 10.8 versus 20.9 percent. But in a large abdominal pooling the benefit was absent when the control infection rate was below 20 percent and present only above it. The device works where the risk is high.

Patient selection

- A closed incision with a high risk of infection: the vascular groin, an obese sternotomy, re-operation through scar, a contaminated or emergency field, prolonged surgery, immunosuppression.
- Know what the baseline means: the vascular groin becomes infected in about 21 percent of cases when every wound is examined at a visit, but in 8.6 percent (3.8 percent deep) in the largest cohort, which counted only what its units had recorded. Quote the figure with its method; the device is justified where the examined risk is high, not for every groin.
- Best-supported sub-groups: BMI 25 or more (risk ratio 0.43, number needed to treat about 5) and diabetes (risk ratio 0.47, number needed to treat about 6). Both rest on only three trials.
- Emergency laparotomy: 15 studies show superficial and deep infection both cut by about 60 percent. Not for a low-risk wound: trials in lower-limb fractures, simple mastectomy and unselected groins were negative.

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

- Any bleeding from the incision: stop it first.
- Skin that is already damaged or blistered at the site.
- A wound that is not fully closed: an open defect needs open-wound NPWT, not this device.

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

- Blistering of the surrounding skin: risk ratio 3.55 (Cochrane) and 4.51 (the 85-trial synthesis). Roughly one extra patient blisters for every 18 treated.
- Device-related problems (seal failure, alarms, skin reaction): about one in 11 patients.
- Cochrane finds it probably does not reduce dehiscence (risk ratio 0.97). Do not promise that. In 2,035 caesareans the ordinary dressing was cheaper with no quality-of-life difference: cost-effectiveness depends on the risk of the wound.
- 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

Device	a foam-based canister device (Prevena, KCI/3M) or a canister-free single-use device (PICO, Smith and Nephew), applied in theatre at closure.
Pressure	Fixed by the device and not adjustable: minus 125 mmHg with the foam-based canister device (Prevena), minus 80 mmHg with the canister-free single-use device (PICO). Both are correct for their own device.
Mode	Continuous, set by the device.
Duration	Five to seven days, then remove. Do not re-apply routinely.
Pacemaker or defibrillator	pump of the canister-free single-use device (PICO) contains a magnet: keep it 10 to 15 cm from the device, secure it away from the chest, record where it sits.

Step by step

1. Confirm the wound is at high risk using stated criteria, not impression. Write the risk factors in the notes.
2. Do the cheap things first: antibiotics on time, skin preparation with drying time, careful closure. With all four basic measures done, one caesarean patient in five still had a complication: that residual risk is the target.
3. Apply the device in theatre over the closed incision with intact dry skin either side. Confirm it draws down before leaving theatre.
4. Leave for five to seven days. Check daily that the seal holds and the skin edge is not blistering.
5. Remove gently. Document the wound and any blister.

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

- Surgical site infection at 30 days, superficial and deep recorded separately, with the definition used.
- Skin blistering (yes or no, size).
- Seroma needing drainage, dehiscence, return to theatre.
- Days of wear achieved and reason for early removal, if any.
- Readmission within 30 days.

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 one 11-trial comparison after caesarean section, the six trials at minus 80 mmHg improved infection outcomes and the five at minus 125 mmHg did not. The evidence does not favour the higher pressure. Because the pressure is a property of the device, the practical decision is which device to use, not which number to set.

Funding note (South Africa)

ICD-10: Code the disease being operated on (for example I70.20 or E11.5), not the dressing. **PMB:** Via the underlying disease; usually an elective (21-day) request.

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Protocol 4 · Diabetic foot wounds after surgery, and chronic diabetic foot ulcers

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

Indication

Diabetic foot wounds after surgery, and chronic diabetic foot ulcers.

What this means

A diabetic foot wound is an ulcer or a surgical wound (after debridement or a partial foot amputation) in a patient with diabetes. Nerve damage removes the warning of pain, high glucose impairs healing, and narrowed arteries may starve the foot of blood. NPWT is used to build healthy granulation tissue and prepare the wound for closure or a skin graft. It is one of the best-supported NPWT indications, provided the foot has enough blood supply.

Why NPWT is used here

In the Lancet trial after partial foot amputation, 56 percent healed with NPWT versus 39 percent with standard care. In a 342-patient trial, closure was 43 versus 29 percent with fewer second amputations. Cochrane puts the amputation risk ratio at 0.33 (low certainty). International guidelines suggest NPWT for ulcers that have not progressed after four to eight weeks of good standard care, once ischaemia is excluded.

Patient selection

- A post-debridement or post-amputation wound (University of Texas grade A2 or A3), or a chronic ulcer not progressing after four weeks of standard care.
- Perfusion documented against the thresholds in protocol 6. ABPI is unreliable in diabetes because of calcified arteries: obtain a toe pressure or TcPO₂ and say why.
- Infection controlled and off-loading in place first. The guideline grades that prerequisite (1B) higher than NPWT itself (2B).
- Larger ulcers benefit more: in one trial the advantage appeared only above about 5 square centimetres.

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

- Untreated ischaemia: a red contraindication. Critical limb ischaemia (no pulses, TcPO₂ below 30 mmHg) must be revascularised first.
- Untreated osteomyelitis or undrained deep infection.
- Dry gangrene: leave it dry; do not apply suction.

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

- Deepening ischaemia if suction is too high over a poorly perfused foot: tissue pressure under the dressing rises with the vacuum.
- Realistic expectations: in advanced ulcers only about one in five closed completely with NPWT alone; most went on to a graft or secondary closure. NPWT prepares the bed more reliably than it closes the wound.
- Disclose the largest trial: in 686 open surgical wounds, 80 percent in diabetic patients, NPWT did not speed healing (high certainty) and was not cost-effective in the UK. Ask for a bounded bed-preparation period with a stated endpoint, not for faster healing.
- 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 for a well-perfused foot. Minus 50 to minus 80 mmHg where perfusion is borderline (see protocol 6).
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 if bacterial load is a concern. PVA foam over exposed tendon.
Change interval	Every 48 to 72 hours; every 24 to 48 hours if infected.
Duration and review	Reassess at every change. Stop and re-plan if no progress at four weeks. State the endpoint: closure, graft or flap.

Step by step

1. Before starting: document glucose control, perfusion grade, infection status and off-loading. If any is not addressed, address it first.
2. Debride to a clean bed. Confirm no active bleeding.
3. Cut foam to the wound shape, protecting any exposed tendon or bone with PVA foam. Count and record pieces.
4. Seal carefully around the toes and contours; a leaking seal on a foot is common and defeats the therapy.
5. Set the pressure for the perfusion grade. Confirm draw-down.
6. At each change measure the wound and photograph it. Progress in wound-bed preparation, not just size, is the aim. Plan the graft when the bed is ready.

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

- Wound area and depth at each change, and the percentage reduction at four weeks.
- Time to a graftable bed and time to complete closure.
- Whether any amputation, or a higher amputation, was needed.
- Infection events and antibiotic days.
- Days of therapy and length of stay.

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

Germany's statutory assessment body reviewed 21 randomised trials to 2010 and concluded that superiority over conventional treatment was not proven, because most trials were small and at high risk of bias. Later trials and reviews are more positive, but the fair summary is that NPWT reliably prepares the wound bed for a planned surgical endpoint, and that is how it should be requested and measured.

Funding note (South Africa)

ICD-10: E11.5 / E10.5 / E14.5 (lead); pair with L97 or the gangrene code. **PMB:** 915E where gangrene is coded; diabetes-with-complications pathway.

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Protocol 5 · Wounds in peripheral arterial disease, after revascularisation

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

Indication

Wounds in peripheral arterial disease, after revascularisation.

Evidence position: Not supported. Not supported for faster healing: SWHSI-2 (GRADE High) found that open post-operative wounds, mostly in PAD and diabetes, healed no faster. Use it for exudate control and as a bridge, once perfusion is corrected.

What this means

Peripheral arterial disease (PAD) is narrowing of the leg arteries. A wound in a leg with PAD will not heal until blood flow is restored, usually by angioplasty or bypass. This protocol covers wounds in PAD patients after revascularisation, or where perfusion has been measured and found adequate. Where the blood supply has not been dealt with, NPWT is contraindicated (see protocol 6).

Why NPWT is used here

A 342-patient matched cohort found NPWT patients 2.6 times more likely to heal, with the effect strongest when NPWT started within three months. A systematic review of 14 trials found the most consistent signal in vascular lower-leg and diabetic-foot wounds. Two recent independent trials in this exact population were negative on their primary endpoint, so the claim is modest: NPWT helps once perfusion is restored, and it is not a substitute for restoring it.

Patient selection

- A post-operative or chronic lower-limb wound in a patient with PAD after successful revascularisation, or with documented adequate perfusion (see thresholds in protocol 6).
- The wound has been debrided and is free of dry gangrene.
- The patient can attend for changes or has home nursing that can manage the device.

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

- Unaddressed arterial impairment: do not use.
- Acute limb ischaemia.
- Dry stable gangrene awaiting demarcation.

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

- Deepening ischaemia at the wound edge if the vacuum is too high for the blood supply. Use the lowest effective pressure.
- A negative trial should be disclosed: the canister-free single-use device (PICO) at minus 80 mmHg after revascularisation did not change 30-day wound occurrence (37.9 versus 44.8 percent), though seroma fell.
- A UK study in a mainly vascular population found no healing advantage and less than a 30 percent chance of being cost-effective; nursing costs differ in South Africa, so this may not transfer.
- 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 50 to minus 100 mmHg continuous over compromised perfusion; standard minus 80 to minus 125 mmHg once perfusion is restored and confirmed. 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.
Interface	Black foam; PVA foam over tendon, bone or vessel.
Change interval	Every 48 to 72 hours.
Review	Perfusion re-checked if the wound edge darkens. Stop and re-plan at four weeks without progress.

Step by step

1. Confirm and record the revascularisation and the current perfusion measurement (toe pressure or TcPO₂, not ABPI alone).
2. Debride. Confirm haemostasis.
3. Apply foam, protect any exposed structure, seal, and start at the lower end of the pressure range.
4. Inspect the wound edge at every change for dusky change or new necrosis: that is the signal to lower the pressure or stop.
5. Photograph and measure. Set a defined endpoint and review date.

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

- Wound area change at four weeks and time to closure or graft.
- Wound-edge necrosis during therapy (a harm signal specific to this group).
- Limb salvage: any amputation and its level.
- Perfusion measurement before and, if repeated, during therapy.

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

Under suction the tissue pressure beneath the dressing rises rather than falls, and radioisotope measurements show perfusion decreases in proportion to the vacuum. In a limb that is already short of blood, a higher vacuum can deepen the ischaemia. That is why this indication uses the lowest effective pressure and why it needs the perfusion problem solved first.

Funding note (South Africa)

ICD-10: I70.21 (with gangrene) or I70.20 (lead); pair with the wound code. **PMB:** 915E (gangrene, severe atherosclerosis, diabetic PVD).

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Protocol 6 · Ischaemic or borderline-perfusion wounds: low-pressure NPWT, and when not to use NPWT at all

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

Indication

Ischaemic or borderline-perfusion wounds: low-pressure NPWT, and when not to use NPWT at all.

What this means

An ischaemic wound is one in tissue that is not getting enough blood. NPWT on an ischaemic wound can make it worse, because suction raises the pressure inside the tissue and reduces blood flow further. This protocol therefore has two halves: the red line (when NPWT must not be used), and the narrow case in which low-pressure NPWT can be used after the blood supply has been addressed or measured.

Why NPWT is used here

Three non-revascularisable critical-ischaemia foot wounds (skin perfusion pressure 20 to 30 mmHg) healed at 50 mmHg with no wound-edge necrosis. That is proof of concept for the lowest-effective-pressure approach, not a licence to skip revascularisation. A 24-member expert panel recommends avoiding higher pressures in wounds with reduced vascularity.

Patient selection

- First, grade perfusion. Grade 1 (no PAD): palpable pulses, ABPI 0.9 to 1.3, toe pressure 55 mmHg or more, TcPO₂ above 40 mmHg. Grade 2 (PAD without critical ischaemia): ABPI below 0.9 with ankle pressure above 50 mmHg, toe pressure above 30 mmHg, TcPO₂ 30 to 60 mmHg. Grade 3 (critical limb ischaemia): no palpable pulses, TcPO₂ below 30 mmHg.
- Grade 3: refer for revascularisation. NPWT is not indicated until that has been done or formally declined.
- Grade 2 after revascularisation, or grade 2 where a vascular surgeon has documented that the wound is healable: low-pressure NPWT may be used with close monitoring.
- Use the healability triage: healable (adequate supply, correctable cause), maintenance, or non-healable. NPWT belongs in the healable group.

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

- Unaddressed arterial impairment: restore perfusion first.
- Acute limb ischaemia.
- ABPI below 0.5 (general) or below 0.6 for a venous ulcer.

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

- Wound-edge necrosis and extension of the ischaemic area. This is the harm to watch for at every change.
- Masking: a wound under a dressing can deteriorate unseen. Do not extend the change interval in this group.
- 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 50 mmHg continuous to start. Minus 80 mmHg is the usual ceiling here; some consensus documents allow minus 60 to minus 80 for occlusive lesions.
Mode	Continuous only.
Interface	Black foam with PVA foam over any exposed structure. Avoid circumferential (all-round-the-limb) dressings: they produce the highest tissue pressures.
Change interval	Every 48 hours; do not extend.
Review	Perfusion and wound edge inspected at every change. Stop at the first sign of edge necrosis.

Step by step

1. Measure perfusion with a toe pressure or TcPO₂ and record the grade. Do not rely on ABPI alone in a diabetic patient.
2. Ask whether revascularisation is possible. If it is, do it first.
3. If proceeding: debride, protect exposed structures, apply foam without wrapping the limb, and set minus 50 mmHg continuous.
4. At every 48-hour change inspect the wound edge for dusky or black change. If present, stop NPWT and review perfusion.
5. Record the perfusion grade, the reasoning, and the review date in the notes and in any funding letter.

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

- Wound-edge necrosis: present or absent at each change.
- Perfusion measurement before therapy and again if the wound deteriorates.
- Wound area change and time to closure or graft.
- Limb salvage.

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

Handled openly, this indication strengthens every other vascular NPWT request: it shows that the clinician knows where the limit is. Documenting the perfusion grade against these thresholds turns an assertion into a finding.

Funding note (South Africa)

ICD-10: I70.21 or I73.9 (lead). **PMB:** 915E via the underlying arterial disease; the letter must show perfusion was assessed.

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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.

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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.

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Protocol 9 · Necrotising soft-tissue infection and Fournier's gangrene, after debridement

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

Indication

Necrotising soft-tissue infection and Fournier's gangrene, after debridement.

What this means

Necrotising fasciitis and Fournier's gangrene (the same disease in the perineum and genitals) are rapidly spreading infections that kill tissue along the fascial planes. The life-saving treatment is urgent radical surgical removal of all dead tissue, repeated as often as needed, with intravenous antibiotics. NPWT, usually with instillation, is the wound-management step that follows: it manages the large raw area left behind, removes fluid and helps prepare it for reconstruction.

Why NPWT is used here

A series of contaminated wounds including necrotising infection reached 92 percent durable closure. A systematic review of 28 Fournier's studies, however, found benefit over conventional dressing unproven. The plain position: NPWT makes a very large wound manageable; it has not been shown to change survival.

Patient selection

- After the first radical debridement, once the surgeon is satisfied that no further dead tissue remains today.
- The patient is stable enough for a dressing that will be changed under sedation or in theatre.
- Repeat debridement is planned at 24 to 48 hours; NPWT does not replace the second look.
- In Fournier's, the anatomy (scrotum, perineum, near the anus) makes a seal difficult: plan the dressing with that in mind, and consider a diverting colostomy if faeces threaten the seal.

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

- Any remaining undrained necrosis: debride first. Suction over dead tissue does not remove it.
- An unexplored fistula, particularly into the rectum.
- Active bleeding after the debridement.

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

- Missing progression: the infection can spread under an intact-looking dressing. The dressing change is the second look; do not delay it for convenience.
- Seal failure over the perineum, leading to contamination with faeces.
- Pain at changes on very large raw areas: changes belong in theatre or under sedation early on.
- 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 of instillation therapy. 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 is the consensus first choice. Where there are clinical signs of infection, an antiseptic first (hypochlorous acid, or quarter-strength Dakin's 0.125 percent) stepping down to saline at 24 to 48 hours.
Dwell time	10 minutes (accepted range 1 to 20 minutes).
Suction phase per cycle	One to two hours where cleansing is the goal; two to three hours where granulation is the goal.
Interface	Instillation foam (polyurethane ester). Through-hole foam where the wound cannot be fully debrided surgically.
Change interval	Every 48 to 72 hours, timed with the planned re-look. Step down to standard NPWT once the bed is clean.

Step by step

1. Radical debridement and intravenous antibiotics come first and are the treatment.
2. Apply instillation NPWT in theatre after debridement, once haemostasis is secure. Run a test cycle and watch the fluid fill and clear before leaving the patient.
3. Change at 48 hours, in theatre, as the planned second look. Debride again if needed.
4. Once no further necrosis appears and the bed is granulating, step down to standard NPWT and plan reconstruction (graft or flap).
5. Involve the multidisciplinary team early: urology or colorectal for Fournier's, plastic surgery for reconstruction.

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

- Number of debridements before the bed was clean.
- Days from first debridement to reconstruction.
- Survival at 30 days (state that NPWT is not claimed to change this).
- Wound area at each change; time to closure.
- Length of ICU and hospital stay.

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 NPWT cleanses; it is an adjunct to repeated surgery and antibiotics, not a substitute. Complete bacterial clearance was achieved in fewer than one in four wounds in one study, and two of three meta-analyses found no reduction in the number of surgical debridements. A request should claim wound management and preparation for reconstruction, not fewer trips to theatre.

Funding note (South Africa)

ICD-10: M72.6x by site, or N49.8 (male) / N76.8 (female) for Fournier's; A48.0 for gas gangrene. **PMB:** 349J (necrotising infection) or 277S (gas gangrene); life-threatening, 48-hour decision.

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Protocol 10 · Open abdomen (laparostomy) and the dehisced abdominal wound

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

Indication

Open abdomen (laparostomy) and the dehisced abdominal wound.

What this means

An open abdomen is one that the surgeon has deliberately left unclosed after an emergency operation, because the swollen bowel cannot be closed without dangerous pressure inside the abdomen (abdominal compartment syndrome), or because a second look is planned. In vascular surgery it follows ruptured aneurysm and mesenteric ischaemia. NPWT is used as the temporary abdominal closure: a protective sheet lies over the bowel, foam sits above it, and suction removes fluid while keeping the abdominal wall under gentle traction so it can be closed later.

Why NPWT is used here

The World Society of the Abdominal Compartment Syndrome recommends NPWT as a temporary closure strategy with early fascial closure. No source here supports NPWT for the open abdomen at GRADE High or Moderate certainty, so the evidence position is Guarded. A meta-analysis of 1,225 patients found lower mortality with NPWT (28.5 versus 41.4 percent) and shorter ICU stay, and after aneurysm repair NPWT with mesh traction achieved primary fascial closure in 79 to 100 percent with no graft infection. The Cochrane review is the highest-quality synthesis and should be read before quoting any single series.

Patient selection

- An abdomen that cannot be closed safely after damage-control or emergency surgery, or that needs a planned re-look.
- A dehisced abdominal wound with an intact abdominal wall.
- The bowel can be protected by a visceral barrier layer and there is no unexplored fistula.
- The infected or septic open abdomen: instillation NPWT is an option, on observational evidence only.

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

- Foam placed directly on unprotected bowel: never. The visceral barrier layer is mandatory.
- An unexplored fistula, or a fistula that does not connect to the bowel.
- Uncontrolled bleeding in the abdomen.

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

- Enteroatmospheric fistula (bowel opening into the wound): the feared complication of any open abdomen. Two series at reduced pressure (45 patients) reported none, which is too few to give a rate but is reassuring.
- Loss of abdominal wall domain if closure is delayed: the longer the abdomen stays open, the harder it is to close.
- One cohort reported that more than seven dressing changes predicted death; those patients had NPWT for 58 days versus 12 and worse grades. The changes were a marker of severity, not the cause. Expect a funder to raise 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

System	A purpose-built open-abdomen NPWT kit with a fenestrated visceral protective layer, foam and drape.
Pressure	Minus 80 to minus 100 mmHg continuous over viscera (a South African trauma series used minus 80). Minus 125 mmHg is used in some kits; the lower setting is preferred over bowel.
Mode	Continuous.
Change interval	Every 48 to 72 hours, in theatre, each change being an attempt at fascial closure.
Duration	As short as possible. Aim for fascial closure within about a week; add mesh-mediated fascial traction where closure is delayed.

Step by step

1. In theatre: lay the visceral protective layer over the bowel, tucking it under the abdominal wall on all sides so no foam can touch bowel.
2. Place foam above the layer, between the fascial edges, without forcing it into the abdomen.
3. Seal, connect, set the pressure. Confirm draw-down and watch the canister for blood in the first hours.
4. At each 48 to 72 hour change in theatre: inspect the bowel, wash out, and attempt to bring the fascia closer. Record how far the edges are apart.
5. Close the fascia as soon as it can be done without tension. Record the day of 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

- Primary fascial closure: achieved or not, and on which day. State the denominator (all patients, or survivors).
- Enterotomospheric fistula: yes or no.
- Number of dressing changes and days open.
- In-hospital mortality, with the case mix stated.
- Incisional hernia at follow-up.

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

Reported mortality varies enormously with case selection: 4 percent in a selected series against 18.6 percent in an unselected one. Any number quoted must carry its patient group. A funding letter should present NPWT as the recommended temporary closure, not the only one: mesh closure is a documented alternative with its own results.

Funding note (South Africa)

ICD-10: T81.3 (lead); K65.9 for peritonitis; add the emergency condition code. **PMB:** Via the underlying abdominal emergency; 48-hour decision for the septic abdomen.

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

Evidence position: **Moderate** · Source: NPWT Evidence Library, www.wondsortg.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.

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Protocol 12 · Skin-graft bolster, and wound-bed preparation before grafting

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

Indication

Skin-graft bolster, and wound-bed preparation before grafting.

What this means

A split-thickness skin graft is a thin shaving of skin moved from a donor site to cover a wound. It survives only if it is held still and in close contact with a healthy bed, and if fluid does not collect under it. NPWT has two uses here: preparing the wound bed so it is ready to accept a graft, and acting as a bolster (a gentle even pressure dressing) over the fresh graft to hold it in place, especially on awkward, mobile or curved sites.

Why NPWT is used here

A pooled analysis of 16 randomised trials (812 patients) found graft take improved by 8.3 percent overall, and by 10.0 percent at minus 80 mmHg with no heterogeneity; graft loss was halved (odds ratio 0.44) and reoperation cut by two-thirds (odds ratio 0.31). Graft take exceeded 95 percent at every bolster pressure from 50 to 125 mmHg in one series, and an independent 2026 consensus reports that minus 125 mmHg does not give the same benefit as minus 80. The one trial that isolated the suction (the same foam bolster, tube left unconnected, assessors masked) found median graft area lost 0 versus 12.8 percent and a second procedure in 17 versus 40 percent. For bed preparation in the diabetic foot, one trial reached a graftable bed in 7.2 versus 13.6 days with graft survival 100 versus 76 percent.

Patient selection

- Bolster: a fresh split-thickness graft on a site where a tie-over dressing would be difficult (joint, contour, perineum, large area), or where fluid collection is likely.
- Bed preparation: a clean debrided wound that needs granulation before it can be grafted.
- For tendon or bone exposure, an artificial dermis under NPWT followed by a staged graft is recommended (level I).
- After cancer excision: only once complete resection has been confirmed on histology.

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

- Instillation NPWT over a graft: never; the fluid lifts the graft.
- A bed that is still infected, sloughy or bleeding: prepare it first.
- Cancer not yet confirmed as completely removed.

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

- Graft shear if the dressing is disturbed or pressure cycles: use continuous mode only over a graft.
- Graft loss on take-down if the foam has adhered: always use a non-adherent layer between graft and foam.
- Higher pressure and deeper foam both increase tissue contraction in bench studies; a graft needs apposition without deformation.
- 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

Bolster pressure	Minus 50 to minus 80 mmHg continuous. Minus 80 mmHg is the setting with a matching effect estimate; 50 mmHg has two independent sources. Do not exceed minus 125.
Bolster interface	A non-adherent contact layer (paraffin gauze or silicone) directly on the graft, then PVA (white) foam or a thin black foam over it.
Bolster duration	Leave undisturbed four to five days before the first take-down. Do not change earlier unless the seal fails or there is bleeding.
Bed preparation	Standard open-wound NPWT (minus 80 to minus 125 mmHg, changes every 48 to 72 hours) until the bed is red, flat and granulating.
Mode	Continuous only over a graft.

Step by step

1. Bed preparation: debride, apply standard NPWT, and review at each change until the bed is ready. Book the graft when it is.
2. In theatre: harvest and lay the graft, mesh if needed, and secure the edges.
3. Place the non-adherent layer directly over the graft, then the foam, extending slightly beyond the graft edges.
4. Seal and set minus 50 to minus 80 mmHg continuous. Confirm draw-down and that the graft has not shifted.
5. Leave four to five days. At take-down, remove slowly, soaking with saline. Record percentage take.

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

- Percentage graft take at first take-down (day four to five) and at two weeks.
- Graft loss needing re-grafting; return to theatre.
- For bed preparation: days from first NPWT to graft.
- Complications: haematoma or seroma under the graft, infection, shear.
- Donor site healing is recorded separately.

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

Lead a funding request with reoperation avoided, not with graft appearance: it is the outcome with no heterogeneity across trials and the one a funder can price. Do not claim healing time, scar quality, quality of life or cost: the pooled review states all four are absent from the literature.

Funding note (South Africa)

ICD-10: Code the underlying wound being grafted, not a graft-complication code. **PMB:** Via the underlying wound's pathway.

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Protocol 13 · Sternal wound infection and post-sternotomy mediastinitis

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

Indication

Sternal wound infection and post-sternotomy mediastinitis.

Evidence position: Guarded. No high- or moderate-certainty trial in sternal wounds; the two largest prophylaxis trials were null.

What this means

A sternotomy is the cut through the breastbone used for heart surgery. If it becomes deeply infected, the infection reaches the space around the heart (mediastinitis), which is life-threatening. NPWT is the method of choice for managing the open infected sternal wound after debridement, stabilising the chest, removing fluid and preparing the bed for closure with a muscle flap. A closed-incision device can also be used to prevent infection over a high-risk sternotomy closure, for example in an obese patient.

Why NPWT is used here

No high- or moderate-certainty trial has been done in sternal wounds, so the evidence position is Guarded. In 150 obese cardiac patients, a closed-incision device cut sternotomy infection from 16 to 4 percent. A South African case closed an infected post-valve sternal wound as an outpatient with NPWT plus mechanical skin creep. Where the bed is heavily contaminated, instillation before flap closure shortened time to closure and drain duration in a 30-patient comparison.

Patient selection

- Deep sternal wound infection or mediastinitis after cardiac surgery, after surgical debridement, in a patient who is haemodynamically stable.
- The heart, great vessels and any bypass grafts can be protected by a barrier layer; the surgeon has confirmed the sternum is stable or has been re-wired.
- Prevention: a closed-incision device over the sternotomy in a high-risk patient (obesity, diabetes, bilateral internal mammary artery harvest, re-operation).
- Post-flap: a closed-incision device over the closed flap incision.

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

- Haemodynamic instability.
- Exposed heart, great vessels or bypass grafts with no protection: the open sternum with exposed vulnerable structures is not an indication.
- Uncontrolled bleeding or a suspected bleeding vessel graft.

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

- Cardiac rupture under suction: the origin of the rule to always interpose a layer. In the animal study, rupture occurred at minus 120 mmHg over an unprotected heart and a soft paraffin layer alone did not protect; a rigid barrier did.
- Bleeding from a vessel graft against the foam. Two patients bled even with PVA foam correctly placed; the barrier reduces but does not remove the risk.
- A cardiac series claiming less mediastinitis but no change in superficial infection fails a mechanism test; do not quote it for effect.
- 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

Open sternal wound: pressure	Minus 75 to minus 100 mmHg continuous once the barrier is in place: the heart, great vessels and bypass grafts lie beneath, and this library's setting is minus 100 mmHg or less over vessels and grafts (reasons in protocol 1). Minus 100 is a ceiling.
Barrier	A rigid or semi-rigid protective layer over the heart and grafts (a fenestrated silicone sheet or purpose-made disc), preferred over a soft paraffin layer alone.
Interface	Black foam above the barrier, between the sternal edges. Count and record every piece.
Change interval	Every 48 to 72 hours, in theatre while the mediastinum is open.
Instillation; prevention	Heavily contaminated bed before flap: minus 125 mmHg, Dakin's or saline, 10 to 20 minute dwell, 2 hours suction (protocol 11). Prevention or post-flap: closed-incision device at its own pressure, six to seven days (protocol 3).

Step by step

1. Debride in theatre, culture, and confirm haemostasis. Involve cardiothoracic surgery for sternal stability.
2. Lay the protective barrier over the heart and grafts so no foam can reach them; check its edges are tucked under the sternal margins.
3. Place foam above the barrier. Seal. Set the pressure. Confirm draw-down and watch the canister for blood over the first hours.
4. Change in theatre every 48 to 72 hours; re-debride as needed. Watch the haemoglobin, not only the canister.
5. When the bed is clean and granulating, plan flap closure (pectoralis or omentum) with plastic or cardiothoracic surgery, and apply a closed-incision device over the flap incision.

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 debridement to definitive flap closure.
- Bleeding events with volume and action.
- Sternal stability and re-infection at 30 days and three months.
- Length of ICU and hospital stay.
- For prevention: deep sternal wound infection at 30 and 90 days, superficial infection recorded separately.

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

Manufacturer meta-analyses exist for the sternum and each sponsor's synthesis favours its own product. No device-superiority claim is supportable in either direction, and no dollar figure from them should be shown to a funder. Cite the independent guideline and trial evidence instead.

Funding note (South Africa)

ICD-10: T81.4 (lead) or T81.3. **PMB:** Via the cardiac-surgery emergency; life-threatening, 48-hour decision.

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Protocol 14 · Open fractures: NPWT as a bridge between debridement and soft-tissue cover

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

Indication

Open fractures: NPWT as a bridge between debridement and soft-tissue cover.

Evidence position: Not supported. The best trials are negative on healing, function and cost.

What this means

An open fracture is a broken bone with a wound that connects it to the outside. The bone is contaminated from the moment of injury, and the soft tissue over it may be crushed, stripped or missing. The treatment is urgent surgical cleaning (debridement), stabilisation of the bone, antibiotics, and early soft-tissue cover with a flap or graft, ideally within 72 hours. NPWT is used for one purpose: to dress the wound between the first debridement and definitive cover when the wound cannot be closed at the first operation. It is a temporary bridge, never the destination.

Why NPWT is used here

The best trials are negative on what matters most: WOLFF (460 severe open lower-limb fractures, now held in full) found no improvement in disability at 12 months (adjusted difference minus 3.9, 95% CI minus 8.9 to plus 1.2, which does not exclude a clinically important harm), infection (7.1 versus 8.1 percent) or quality of life; the Cochrane review (7 trials, 1,377 patients) found no difference in healing at six weeks (risk ratio 1.01, moderate certainty), an uncertain effect on infection (risk ratio 0.48, 95% CI 0.20 to 1.13, very low), and the trial's own economic evaluation found NPWT cost-effective with a probability never above 27 percent (the often-quoted 268,000 pounds per QALY is a ratio of two differences that both span zero). NPWT is a reasonable way to manage a wound that cannot be closed today; it has not been shown to change how the fracture heals or how the patient functions.

Patient selection

- Gustilo-Anderson grade IIIB (and some IIIA) fractures with substantial soft-tissue loss, contamination or swelling, where cover cannot be achieved at the first debridement.
- After the first debridement, with the bone stabilised (external fixator or definitive fixation) and antibiotics started.
- A named plan and date for definitive cover exist. NPWT must not delay the flap: cover within 72 hours is the target, and NPWT is what fills the gap up to it.
- Not for a wound that can be closed or covered at the first operation, and not as a substitute for a flap in a wound that needs one.

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

- Dead or devitalised tissue that has not been removed: debride first, and again as needed. Suction does not clean a wound.
- Uncontrolled ischaemia in the limb before revascularisation, and active bleeding.
- A wound where an airtight seal cannot be achieved (around external fixator pins, plan the drape carefully).
- Exposed vessel, nerve or fracture surface with no non-adherent layer between it and the foam.

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

- Delay. The commonest harm is a well-dressed wound that waits too long for its flap. Each week of delay raises infection and flap failure; the 3.5-day interval to cover in one trial went with far fewer infections than a 12.7-day interval in a comparison series.
- Foam adhering to exposed bone or tendon; desiccation of exposed bone if the seal leaks.
- Do not extend this protocol to the sutured wound after fixation: WHIST (1,548 patients) found no reduction in deep infection with a closed-incision device there. One improvised-VAC trial in open fractures does not reproduce statistically and must not be quoted.
- 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 setting used in six of seven trials. A randomised comparison of minus 75 against minus 125 found no difference in infection (risk ratio 1.04), so minus 75 to minus 100 is acceptable over fragile or marginally perfused tissue. 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 and whenever the bed is bleeding-prone or unstable; intermittent may follow once stable.
Interface	Black foam over the soft-tissue bed. A non-adherent contact layer over exposed bone, tendon, hardware and any vessel or nerve. Count every piece; a fracture wound has recesses that hide foam.
Change interval	At each planned debridement, typically every 48 to 72 hours in theatre, until definitive cover.
Duration; instillation	Days, not weeks: set the cover date at the first operation and escalate if it slips past a week. Instillation shortened closure in one acute-trauma trial (6.1 versus 10.0 days) but with more graft loss: only for a heavily contaminated bed, and change to standard NPWT before grafting.

Step by step

1. First debridement in theatre: remove all dead tissue and foreign material, irrigate, stabilise the bone, culture, start antibiotics. Decide today when and how the wound will be covered.
2. If it cannot be closed or covered now, protect exposed bone, tendon and hardware with a non-adherent layer, fill the soft-tissue defect with foam, seal around pins and contours, and set minus 125 mmHg continuous (lower over marginal tissue).
3. Record the piece count, the pressure and the planned cover date in the notes and on the ward board.
4. Return to theatre every 48 to 72 hours: remove all foam and reconcile the count, re-debride if needed, re-apply.
5. Cover (flap or graft) as early as the bed allows, ideally within 72 hours of injury. If cover slips past a week, review the plan with the orthopaedic and plastic teams the same day.

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 definitive soft-tissue cover: the measure that predicts infection.
- Deep infection or osteomyelitis at 30 days and at union, separately from superficial infection.
- Debridements before cover; flap or graft failure; union and time to union; any amputation.
- Function at 12 months (disability score) and length of stay.

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 largest trials show what NPWT does not do in open fractures: it does not improve function at a year, does not clearly reduce infection, and is not cost-effective. What it does is make a wound that cannot be closed manageable for a few days. A request that asks for a bounded bridge to a dated flap is supportable; one that promises better healing or fewer infections is contradicted by the evidence a reviewer will find first.

Funding note (South Africa)

ICD-10: The fracture code (S72 or S82 series) with the open-fracture fifth character, plus the open-wound code. **PMB:** 900H: open fracture/dislocation of bones and joints (S72.x1, S82.x1 listed).

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Protocol 15 · Pressure injuries (stage 3 and 4): NPWT until surgical closure

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

Indication

Pressure injuries (stage 3 and 4): NPWT until surgical closure.

Evidence position: Guarded. The 2025 Japanese guideline gives a weak recommendation for stage 3 and 4 injuries until surgical closure. The randomised evidence is very low certainty on every outcome, so the evidence position is Guarded.

What this means

A pressure injury is damage to skin and deeper tissue over a bony prominence (sacrum, ischium, heel, trochanter) from sustained pressure, with or without shear. Stage 3 is full-thickness skin loss; stage 4 exposes bone, tendon or muscle. The treatment is off-loading, nutrition, moisture and continence control, debridement and, for a deep ulcer, flap closure. NPWT has one narrow role: to manage exudate, reduce dead space and prepare the bed of a stage 3 or 4 ulcer until surgical closure, in a patient in whom closure is planned.

Why NPWT is used here

The Cochrane review (8 trials, 327 patients, median trial 37 patients) rates every outcome very low certainty; the only usable healing analysis had 12 patients and one healed. No trial reported time to healing, infection, quality of life or recurrence. One guideline nonetheless endorses a narrow use, for stage 3 and 4 until surgical closure: the 2025 Japanese guideline, weak with very weak certainty (7 of 7 votes), on a meta-analysis that is itself null. The plain position: NPWT makes a deep ulcer manageable while a flap is arranged. It has not been shown to heal pressure injuries.

Patient selection

- Stage 3 or 4 pressure injury after debridement, with a planned surgical closure: the endpoint both guidelines attach the therapy to.
- The causes are being addressed: support surface and turning regime, nutrition, continence and moisture control, glycaemic and spasm control. NPWT on an ulcer that is still being lain on is a dressing on a cause.
- The wound has a mechanical reason for NPWT (high exudate, cavity, undermining, an exposed structure) and the request says so, rather than borrowing the diabetic-foot evidence.
- Heel ulcers: perfusion documented first (protocol 6). Spinal cord injury is an FDA-listed risk factor (sympathetic stimulation): monitor.

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

- An ulcer still under load.
- Untreated osteomyelitis of the underlying bone: common in stage 4; image and biopsy first.
- Dry eschar not yet debrided; malignant change (Marjolin's) in a long-standing ulcer; unaddressed ischaemia at a heel.

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

- Seal failure from incontinence in the natal cleft, leading to contamination and maceration; a faecal management system or diversion may be needed to hold a seal.
- Retained foam in a deep sacral or ischial cavity: count every piece, use the fewest pieces.
- Continuing past the point of purpose: if closure is not going to happen, NPWT is not a maintenance dressing.

- 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. No held source gives a setting specific to this indication; the standard range is carried by default.
Mode	Continuous for 48 hours; intermittent may follow once the bed is stable.
Interface	Black foam filling the cavity without packing; PVA (white) foam over exposed bone or tendon. Count and record every piece.
Change interval	Every 48 to 72 hours; 24 to 48 hours if infected. Instillation (protocol 11) where the bed needs cleansing before flap.
Review	At four weeks against the surgical plan. State the flap date at the start.

Step by step

1. Confirm off-loading, nutrition and continence plans are in place and written down. Confirm the flap plan and date.
2. Debride in theatre or at the bedside; image and biopsy bone if stage 4 or if osteomyelitis is suspected.
3. Fill the cavity with foam, protect exposed bone, seal with attention to the natal cleft, connect, confirm draw-down.
4. At each change: reconcile the piece count, photograph, measure depth and undermining, and reassess against the flap date.
5. Hand over to the reconstructive team when the bed is clean and granulating.

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 first NPWT to flap closure (the endpoint), and whether closure happened.
- Wound volume and undermining at each change; osteomyelitis status.
- Seal failures and contamination events; retained foam reconciled at every change.
- Recurrence at the site after closure.

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

This library's own Cochrane page argued against creating this indication on present evidence, and it was created anyway because two guidelines endorse the narrow bridging use. That tension is stated on the page rather than hidden. A request for a bounded bed-preparation period before a dated flap is supportable; a request that claims healing is contradicted by the first review a scheme will read.

Funding note (South Africa)

ICD-10: L89.2 (stage 3) or L89.3 (stage 4), by site, plus the underlying condition. **PMB:** No pressure-injury code is recorded in this library; fund via the underlying condition and confirm before quoting.

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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.wondosrg.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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Protocol 17 · Venous leg ulcer: NPWT as bed preparation before grafting, under compression

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

Indication

Venous leg ulcer: NPWT as bed preparation before grafting, under compression.

Evidence position: Guarded. Not a primary treatment for venous ulcers (ESVS 2022; Cochrane). Consider it only where the ulcer has reduced by under 30 percent in 4 weeks of compression, and not below ABPI 0.6. One 60-patient trial, low certainty, so the evidence position is Guarded.

What this means

A venous leg ulcer is a chronic wound of the lower leg caused by high pressure in the leg veins. Compression is the treatment, together with treating the underlying veins. NPWT is an adjunct: it never displaces compression, and the vascular societies do not recommend it as routine primary therapy. Its one supported use is to prepare the ulcer bed for a skin graft in an ulcer that has failed to respond to properly applied compression, and then to hold the graft.

Why NPWT is used here

One randomised trial carries the indication: 60 hospitalised patients, NPWT before punch grafting. The bed was ready in 7 days versus 17, and complete healing came at 29 days versus 45. But recurrence at 12 months was 52 versus 42 percent (no different), and everyone healed eventually (proportion healed RR 1.00): NPWT changed the speed to a graftable bed, not whether the ulcer healed. Cochrane rates every outcome low certainty. Everything else is small series; in the one device trial the venous subgroup did not reach significance. No study shows any long-term benefit.

Patient selection

- An ulcer that has failed to shrink by 30 percent in four weeks of properly applied compression, with ABPI 0.8 to 1.2 documented (the usual prognostic threshold for compression failure).
- A defined surgical endpoint, punch or split-thickness grafting, with NPWT as the bed preparation and then the bolster.
- Superficial venous intervention considered first: long-term outcome depends on it, not on NPWT.
- The patient tolerates compression over the NPWT dressing and can attend for changes.

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

- ABPI below 0.6 (ESVS 2022: no sustained compression below ABPI 0.6, ankle pressure 60 mmHg or toe pressure 30 mmHg); mixed arterial-venous ulcer with unaddressed arterial disease (protocol 6).
- Compression over an extra-anatomic or superficially tunnelled arterial bypass at the site (ESVS 2022, Table 7).
- A long-standing ulcer not biopsied, or of uncertain cause (malignant change).
- Compression not yet optimised: NPWT is not the next step after inadequate compression.

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

- Pressure injury from tubing run under the compression bandage: bridge the tubing out above the wrap.
- In the one trial adverse events were 40 versus 23 percent (not significant), on 60 patients; the harm side is thinly measured.
- The numeric selection thresholds in circulation (over 40 square centimetres, over a year old, not below 12) carry no citation and must not be quoted to a scheme.
- 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 for bed preparation, or a single-use device at its fixed minus 80 mmHg.
Compression	Retained and applied over the NPWT dressing; tubing bridged out above the bandage. Target at least 40 mmHg at the ankle by multilayer or inelastic bandage or adjustable garment (ESVS 2022, Class I A); full compression from ABPI 0.8; no sustained compression if ankle pressure is below 60 mmHg, toe pressure below 30 mmHg or ABPI below 0.6.
Interface	Black foam on the ulcer bed; non-adherent layer over the graft with PVA foam as bolster at minus 50 to minus 80 mmHg (protocol 12).
Change interval	Every 48 to 72 hours during bed preparation; bolster undisturbed 4 to 5 days.
Review	At four weeks against the grafting plan; if no graft is planned, stop.

Step by step

1. Document ABPI, the compression history, and the 4-week area change that justifies escalation.
2. Debride, apply foam, seal, then reapply compression over the dressing with the tubing bridged out above it.
3. Change every 48 to 72 hours until the bed is graftable (7 days in the trial); book the graft.
4. Graft, bolster at minus 50 to minus 80 mmHg for 4 to 5 days, then return to compression as the ongoing treatment.
5. Record recurrence at 12 months: the trial's recurrence did not differ.

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 to a graftable bed; time to complete healing; graft take.
- Recurrence at 12 months (the outcome NPWT did not change).
- Pressure injury from tubing; seal failures under compression.
- Concordance with compression during and after therapy.

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

Long-term outcome in a venous ulcer depends on the venous intervention and concordance with compression, not on NPWT: the review says so itself. A request is supportable only as a bounded bed-preparation period before a dated graft, after compression has been shown to have failed by that threshold.

Funding note (South Africa)

ICD-10: I83.0 or I83.2 (varicose veins with ulcer) plus L97. **PMB:** Venous ulceration is not a PMB in its own right; fund via the underlying condition where one exists and confirm before quoting.

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Protocol 18 · NPWT from hospital wall suction, for inpatients, across all indications

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

Indication

NPWT from hospital wall suction, for inpatients, across all indications.

Evidence position: Practice guidance. A technique, not an indication. It applies on top of the wound's own protocol.

What this means

Negative pressure from the hospital's piped vacuum instead of a commercial pump: a wall regulator sets the pressure, a trap sits between wound and wall, and a tube runs to a foam or gauze dressing sealed under film. Inpatient only, because the patient is connected to the wall. It can serve any open-wound indication in protocols 1 to 17 while the patient stays on a ward. It is not a closed-incision device and it cannot go home.

Why NPWT is used here

The mechanism does not need a proprietary pump: the only low-bias trial in a 21-trial statutory review ran foam and a catheter on wall suction at 100 mmHg and reached 90 percent granulation in 18.8 versus 32.3 days. Three randomised trials against the commercial device found no difference over days (area falling 4.5 versus 4.9 percent per day; graft take 96.1 versus 96.2 percent; 9.6 versus 12.8 days to a graftable bed). It costs a fraction of a rented device (US\$4.22 versus US\$96.51 per day) but more than plain gauze (US\$360 versus US\$271 per case). The comparator decides the answer.

Patient selection

- Device status: a bedside-assembled circuit is not a registered medical device. Use it only for supervised inpatients, under the treating surgeon's responsibility and the hospital's own approval, with the patient's informed consent.
- An inpatient on a ward with piped vacuum, in a service that chose the technique deliberately, measures what it delivers, and counts the pieces it puts in.
- Any open-wound indication in protocols 1 to 17, applying that protocol's selection and contraindications in full. This page adds rules and relaxes none.
- A patient who will stay in hospital for the therapy. One who must leave the ward needs a portable device; this circuit is not a reason to refuse one.
- Untested in the vascular population: the head-to-head trials excluded severe arterial disease (ABPI below 0.6) and diabetes. Over an ischaemic or diabetic limb apply protocol 6 and prefer a device.

Plus, as for every protocol: a compliant, compos mentis patient with an included circle of care.

Contraindications

Specific to this indication

- No regulator, or no manometer to check it: an unregulated outlet can reach several hundred mmHg.
- A seal that cannot be made airtight: an unlimited-flow source draws air across the wound through any leak and dries the tissue to necrosis (the founding paper's warning).
- A patient who must be mobile, transferred, or off the ward on suction.
- A vessel, graft or anastomosis where the regulator cannot reliably hold minus 50 to minus 100 mmHg: use a device.

Plus every general contraindication and caution listed in protocols 1 to 14, unchanged.

Potential risks and side-effects

- The dial is not the dose: a South African series measured minus 93 to minus 143 mmHg (mean minus 121) against settings of minus 100 to 125, about 7 percent high. There is no alarm, so an over-pressure or lost seal is found at the next change.
- No piece count, marker or instructions: presume retained foam at least as likely as with a device. In one series 4 of 46 failed when hand-cut foam adhered in a cavity that closed over it. Non-medical foam has no biocompatibility data.
- Supply: in one trial 5 of 17 losses from the low-cost arm were because the hospital ran out of materials.
- No safety surveillance exists for improvised circuits; absence of reported harm is absence of reporting. One trial's improvised arm had two deaths from organ failure against none on the device (never a pre-specified outcome). A Redon-bottle circuit was stopped early because it was losing.

Plus the general risks of all NPWT (bleeding, blistering, pain, anxiety, retained foam, adhesive damage), as in protocols 1 to 14.

Treatment protocol

Source	Piped vacuum through a regulator, with a trap and antibacterial filter between wound and wall. Never a wound on an unregulated outlet.
Pressure	Set minus 100 where minus 125 is intended (delivery runs about 7 percent high); minus 70 to 80 where lower suction is wanted. Read the manometer every shift.
Mode	Continuous. No cycle for a wall circuit has ever been justified or compared.
Interface, drain, seal	Medical-grade foam, or saline-moistened gauze at minus 75 to 100. Non-adherent layer over tendon, bone or graft. A 16 to 18 Fr catheter between two interface layers; film 2 cm beyond the margin. Count every piece.

Seal check	Clamp the tube and watch the manometer: no excursion, no leak. A working gauze dressing visibly shrinks. Recheck every shift and after every move.
Change interval	Gauze daily; foam every 48 to 72 hours (24 to 48 if infected). Record delivered pressure and seal each time.

Step by step

1. Confirm the wound meets its own protocol and the patient will stay on the ward. Write down why wall suction was chosen.
2. Assemble regulator, filter, trap, tubing, drain, interface, film. Set the regulator and read the manometer before connecting.
3. Prepare the wound as its protocol requires; drain between two interface layers; seal; connect; watch it draw down; record the reading, the setting and the piece count.
4. Every shift: manometer, seal, canister, pain. Reconnect promptly after washing or mobilising (patients in the SA series disconnected two to three times a day, 33 minutes in all).
5. At each change reconcile the piece count first; then photograph, measure and apply the indication's stop rules.
6. Plan the exit: closure or graft, or conversion to a portable device (wall suction sufficed for 11 of 16 in the SA series; 5 needed a mobile device).

When to stop and call for help

The stop rules of the wound's own protocol apply. Add: a manometer reading above the setting, or a seal that cannot be restored within two hours, is a stop.

Outcome measures

- Delivered pressure each shift against the setting; seal failures per day and how they were found.
- Piece count reconciled at every change: yes or no.
- The indication's own outcome measures (protocols 1 to 17).
- Days on wall suction; conversion to a portable device and why; any day the circuit failed for lack of materials.

What to document at every change

Everything the wound's own protocol requires, plus: regulator setting, manometer reading, seal-check result, and the piece count in and out, every shift.

A point worth knowing

Two 1997 papers frame this technique. The founding clinical paper discouraged wall suction because an unlimited-flow source pulls air across the wound through any leak and dries it to necrosis; the companion animal paper measured blood flow peaking at 125 mmHg and falling below baseline above 400. Regulate the pressure, guarantee the seal. No improvised-circuit paper cites either: the objection has been skipped, not refuted.

Funding note (South Africa)

ICD-10: None for the apparatus. Code the wound (protocols 1 to 17). **PMB:** Not applicable. A scheme funds a therapy for a wound, never a bedside-assembled circuit; this is never the subject of a funding motivation.

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Protocol 19 · NPWT: Safety and Patient Selection

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

General. Applies above every indication.

Purpose

An indication answers whether this wound may have NPWT. This page answers whether this patient, in this setting, with this supervision, may have it. The two questions are separate, and the second is the one the harm literature is about.

The rule this page exists to state

The patients with the least supervision are at the greatest risk of complications. The regulator's cumulative series records 12 deaths and 174 injuries, bleeding attached to 9 of the 12 deaths, and most deaths occurred at home or in long-term care; in more than half of the injury reports naming a location the event occurred outside hospital. The one formal analysis of how NPWT care fails found inadequate clinical monitoring to be the root cause of its index bleed. The harms are ordinary: bleeding, retained foam, infection under an unchanged dressing, a lost seal that nobody noticed. Every one of them is a supervision failure before it is a device failure. The first question is not the wound; it is who will be watching.

Patient factors: assess and record before the first dressing

- Level of consciousness and cognition. The patient must be compos mentis: able to understand what the device does, why the seal matters, what an alarm means and what bleeding looks like in the canister. A drowsy, confused, delirious, sedated or demented patient cannot self-monitor and cannot report; NPWT is safe for such a patient only where a trained person is present and looking at the dressing on a stated schedule. Reduced consciousness is also the state in which a patient pulls at tubing, lies on the pump, or is found with the dressing detached.
- Fall risk. NPWT tethers the patient to a pump by a tube. A pump on a stand, a tube across a floor, a canister carried to the bathroom: each is a trip hazard, and a fall with a tethered dressing can avulse the dressing, tear the seal or disrupt the wound. Assess fall risk formally (mobility, gait aids, night toileting, sedatives, previous falls). In a high-risk patient prefer a body-worn portable device, keep the tubing short and routed away from the feet, and supervise mobilisation.
- Compliance. The patient will keep the seal, protect the tubing, not disconnect for long periods, and attend or accept dressing changes. In the South African wall-suction series patients disconnected two to three times a day for about 33 minutes in total and managed it: that is what compliant looks like.
- Circle of care. Family, carer, home-nursing service or ward team: whoever will actually be present when the seal fails at night. They are told what to watch for, what to do and whom to call, and the notes record who was told what and who is responsible for the device between visits.
- Anxiety. In the one trial that measured it, anxiety rose more with NPWT than without over the first ten days. Say so beforehand: worse early, better later.
- Nutrition. Screen nutritional risk and record intake before the first dressing, and involve a dietitian: the dressing removes protein-rich fluid and cannot supply what the patient lacks. The one NPWT-specific cohort is 42 patients and proves only the principle.

The physician's list: systemic optimisation before the first dressing

Perfusion and oxygenation (cardiac output, respiration, blood pressure, arterial inflow to the limb); glycaemia (HbA1c where not recent); haemoglobin, platelets, clotting and anticoagulant or antiplatelet drugs in the last seven days; venous thromboembolism risk stratified whenever mobility is reduced (prophylaxis is not a bar to NPWT); smoking cessation; nutrition; screening for immunosuppression where the history suggests it; antibiotics directed by tissue culture.

Palliative or maintenance NPWT

Some wounds will never close. NPWT can still contain exudate and odour, keep linen clean and stretch changes to 72 hours for a bed-bound patient with advanced dementia or a patient with end-stage cancer too unwell for surgery. Motivate it per case as symptom control with comfort and containment as the written endpoint, under the same safety rules; it is not an indication, because there is no effectiveness evidence to appraise.

The supervision gradient

Ward, on wall suction or a device	Highest supervision. Shift checks of seal, canister, alarms, pain; for wall suction, the rules in protocol 18.
Home with home-nursing visits	Moderate. A trained nurse sees the dressing on a stated schedule; the household knows the stop rules and the return route.
Home without nursing	Lowest, and where the deaths cluster. Only a compliant, compos mentis patient with an engaged circle of care; the device must have alarms; a return route must exist.
Long-term care facility	Assess as home. The regulator's deaths cluster here too.

Children

As at 2011 the regulator recorded that safety and effectiveness in newborns, infants and children had not been established and no NPWT system was cleared for those populations. Against that: a blinded randomised trial in 114 children with small burns found faster re-epithelialisation as an adjunct (moderate certainty); the Chinese consensus gives age-banded pressures, minus 50 to minus 75 mmHg under 2 years and minus 75 to minus 125 from 2 years; the Birmingham Children's Hospital consensus (2009) gives minus 25 to minus 75 mmHg for neonates and infants and minus

75 to minus 125 for children and adolescents, continuous, with the canister prefilled by age (neonate 275 mL, infant 250, child 200, adolescent 150 of a 300 mL canister) so a bleed shows early, and the pump never taken into the MRI suite. Warning: that document was funded by the manufacturer KCI, is written around its device, and its pressures are consensus opinion, not trial data; where the two consensus bands differ, use the lower pressure; and South African neonatal open-abdomen use exists (15 neonates, Red Cross Children's Hospital); a US claims dataset shows 3,184 insured children on NPWT between 2006 and 2014, half as outpatients, with a 2.4 percent coded complication rate at home (confounded by severity; not evidence that home is safer). Position: NPWT in a child is a specialist-unit decision under current device labelling, at the lower of the age-banded pressures, with the parents as the circle of care and inpatient supervision. It is not a ward default and not a home therapy.

Patients on anticoagulation or antiplatelet therapy

A caution, not a bar. The regulator places anticoagulants among its risk factors to consider, not its contraindications. The conditions: lowest effective pressure, a barrier over any vessel, inspection at every change, haemoglobin followed rather than canister volume, and the decision recorded. Two cases to teach from: a 61-year-old on oral anticoagulants with hypovolaemic shock at day 2 from a small artery ruptured by suction, root cause inadequate monitoring; and a tibial artery eroded on enoxaparin where only 600 mL ever reached the canister. The failure in both was the monitoring, not the anticoagulation.

Specific procedures: closed-incision selection

- Breast surgery: dehiscence reduced (RR 0.59 on the breast, 0.40 at the donor site; moderate certainty); infection not reduced (RR 0.72, CI 0.22 to 2.34). Select for dehiscence risk (reduction mammoplasty in obesity, DIEP donor site), not for infection.
- Caesarean section: in 876 obese women infection fell from 9.2 to 4.6 percent (RR 0.50, NNT 22). But the largest economic evaluation (2,035 women) found the standard dressing dominant, and once the four basic measures were delivered the only residual risk factor was unscheduled caesarean, not BMI. Select the unscheduled, obese caesarean where the basics are already done; do not claim cost-effectiveness.
- Perineal wound after abdominoperineal resection: pooled complications RR 0.79 (0.42 to 1.48), not significant, very low certainty; individual series positive. Reasonable in a selected irradiated perineum; not supportable as routine.

What to record

Level of consciousness; fall-risk assessment and mitigation; who the circle of care is and what they were told; anticoagulation and the bleeding mitigations; the setting and the supervision schedule; the alarm and the return route. If any of these cannot be written down, the patient has not been selected.

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Protocol 20 · NPWT: Contraindications

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

General. Applies to every indication.

How the list is organised

The structure follows the regulator's: contraindicated wound types (anatomical, absolute) are separated from patient risk factors to consider (relative). Each item carries its reason and its source.

Absolute: do not apply NPWT

Active bleeding beyond capillary ooze	NPWT is not a haemostatic dressing; all six deaths in the regulator's first series and nine of twelve overall were bleeds.
Uncorrected clotting disorder	As above.
Exposed vessel, anastomosis, graft, organ or nerve with no barrier	Erosion and rupture under suction. A barrier converts this into a controlled indication (protocol 1).
Necrotic tissue with eschar, not yet debrided	Suction does not debride; dead tissue stays dead under the foam.
Untreated osteomyelitis	Infection sealed under a dressing.
Malignancy in the wound bed	Mechanical stimulation of tumour. Exception: NPWT started only after histologically confirmed complete resection.
Non-enteric or unexplored fistula	Suction into an unknown tract.
Pyoderma gangrenosum, suspected or confirmed	Pathergy: debridement and negative pressure extend the disease. Trigger on the picture: pain out of proportion, violaceous undermined edge, negative cultures, deterioration after debridement or after starting NPWT.
Unaddressed arterial impairment in the limb	Tissue pressure rises and perfusion falls under suction; ischaemia deepens (protocol 6).
Unstable patient with an open sternum; exposed heart, great vessels or bypass grafts without protection	Rupture and bleeding (protocol 13).
Instillation over a skin graft, or where a seal cannot be held	Fluid lifts the graft.
Foam directly on unprotected bowel	Fistula (protocol 10).

Relative: proceed with caution, mitigate, and record the decision

Anticoagulant or antiplatelet therapy	Lowest effective pressure; barrier over any vessel; inspect every change; follow haemoglobin, not the canister; record.
High bleeding risk; friable or infected vessels	As above; prefer a device with an overflow alarm.
Sharp edges in the wound (bone fragments, hardware)	Protect with a contact layer; count pieces.
Pacemaker or implantable 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; record its position.
Spinal cord injury; use near the vagus nerve	Sympathetic stimulation; bradycardia. Monitor; lower pressure.
Circumferential dressing application	Avoid: highest tissue pressures.
MRI, hyperbaric chamber or defibrillation required	Device off for the chamber; plan the interruption.
Children	Specialist unit, current labelling, age-banded lower pressures, inpatient (protocol 19).
Reduced consciousness, confusion, sedation, dementia	Only with a trained person present on a stated schedule (protocol 19).
High fall risk	Body-worn device, short tubing, supervised mobilisation (protocol 19).
Fragile skin; adhesive allergy	Skin protectant, non-adhesive fixation, shorter wear.

Insufficient supervision for the setting	Do not discharge on NPWT until the circle of care is in place (protocol 19).
Improvised or wall-suction circuit	Regulator, manometer, filter, seal check every shift, piece count; inpatient only (protocol 18).
Instillation in an acutely ischaemic wound	Address perfusion first.

When a contraindication is found after NPWT has started

Stop the pump; leave the dressing in place unless it is the cause; apply pressure if bleeding; call the surgeon. If a wound is getting worse under NPWT and the cultures are negative, stopping is the safer test than escalating.

What is not a contraindication

Age alone; diabetes alone; obesity alone; a prosthetic graft that is protected; anticoagulation that is mitigated; a fistula that has been explored and is enteric and low-output with a plan. Each is a reason for a specific protocol, not a bar.

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Protocol 21 · NPWT at home and in outpatients: discharge criteria

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

General. Applies to every indication when the patient leaves the ward on a device.

Purpose

Protocol 19 sets the rule that the least-supervised patients are at the greatest risk. This page is the checklist that rule produces: what must be true before a patient leaves the ward on a pump, what the household and the visiting service must be able to do, and what brings the patient back.

The position

- Effectiveness at home is not established. The review commissioned to tell a payer whether to fund home NPWT found the evidence insufficient on every one of its five critical outcomes, and could confirm that patients were actually treated at home in only one of six comparative studies.
- Safety is what decides discharge. Most of the regulator's deaths occurred at home or in long-term care, with bleeding the mechanism; the regulator's own provider survey located the danger not in the device but in prescription, education, wound assessment and monitoring.
- The cost argument is directional only: a community day was costed at 38.50 pounds against 288 for a hospital day (very low certainty, UK). A patient sent home to save a bed and lost to a bleed has saved nothing.
- Patients describe losing control through poor discharge planning and regaining it through understanding the device; sleep is broken by alarms and, with instillation, by the cycle itself.
- The only outpatient denominator held is paediatric and American: 2.4 percent coded complications in 30 days among 1,563 insured children treated mainly at home, against 6 percent in the sicker inpatient group; a description of a selected, home-nursed population, not evidence that the setting is safer.
- Do not assume the visiting nurse is competent by default: in one national survey of certified wound-care nurses, 54 percent had never applied a vacuum dressing and 12 percent could do so independently.

Discharge criteria: all must be met and recorded

Patient	Compliant and compos mentis; consciousness normal; no delirium or impairing sedation. Fall risk assessed, body-worn device and short tubing where raised. Can state in their own words what the pump does, what an alarm means, what bleeding in the canister looks like, and whom to call. Pain controlled on oral analgesia; first dressing change done in hospital and tolerated.
Wound	Haemostasis secure at the last change; no bleeding in 48 hours. No exposed vessel, graft or anastomosis under the foam (such a wound stays in, or goes home only with a barrier, low pressure and daily nursing). Seal held 24 hours without intervention. Endpoint defined with a date and a four-week review point.
Device	Alarms for loss of seal, canister full and low battery, and the patient can hear and respond. Battery and charger supplied; a plan for a power failure of two hours or more. Consumables to the next visit; supplier helpline known. Pacemaker or ICD: pump position decided and recorded, at least 15 cm from the generator, away from the chest.
Household and circle of care	A named person at home shown the device, the stop rules and the return route, who has agreed to the role. Stop rules in writing, in the patient's language: fresh blood, new pain or fever, foul smell, a seal that cannot be restored in two hours, an alarm that will not clear.
Visiting service	A trained nurse or the practice sees the dressing on a stated schedule (every 48 to 72 hours for an open wound) and at the first sign of trouble; the schedule is on the discharge summary. The visiting nurse has applied this device before or is trained on it before the first home change. Each visit records seal, canister, pain, measurements and photograph, piece count in and out, and coping.
Return route	A phone number that is answered and a place the patient can be seen the same day. Any stop rule is a return, not a reassuring phone call.

What is documented at discharge

Who was told what and when; the named circle of care; the visit schedule; the stop rules given; device model, pressure and mode; the piece count at the last change; the endpoint and the four-week review date. If any line cannot be written, the patient is not ready.

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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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Glossary of terms

Plain-language meanings of the words used in the protocols.

NPWT	Negative pressure wound therapy. A sealed foam or gauze dressing connected to a pump that applies gentle suction to a wound. Also called VAC (vacuum-assisted closure) or TNP (topical negative pressure).
ciNPWT	Closed-incision NPWT. A small single-use suction dressing placed over a wound that has already been stitched closed, to prevent infection or breakdown.
NPWTi-d	NPWT with instillation and dwell. Fluid is dripped into the wound, left to soak, then suctioned away, in repeating cycles.
mmHg	Millimetres of mercury, the unit of pressure. Minus 125 mmHg means suction of 125 mmHg below atmospheric pressure.
Continuous versus intermittent	Continuous means the suction is on all the time. Intermittent cycles on and off. Continuous is used over vessels and grafts because cycling causes shear.
Interface	The material placed in the wound under the drape: black polyurethane foam, white polyvinyl alcohol (PVA) foam, or gauze.
Barrier or contact layer	A non-adherent layer placed between the wound (or a vessel, organ or graft) and the foam, so the foam does not stick to or erode it.
Bolster	A dressing that applies gentle even pressure over a skin graft to keep it still and in contact with the bed.
Debridement	Surgical removal of dead, damaged or infected tissue.
Dehiscence	A surgical wound that has come apart.
Granulation tissue	The red, bumpy new tissue that fills a healing wound and can accept a skin graft.
Exudate	Fluid that leaks from a wound.
Seroma / haematoma	A collection of clear fluid, or of blood, under a closed wound.
Anastomosis	The surgical join between two blood vessels, or between a vessel and a graft.
Prosthetic graft	An artificial tube (Dacron or PTFE) used to bypass or replace a diseased artery.
SSI	Surgical site infection. Superficial means skin and fat; deep means fascia and muscle; organ-space means inside a body cavity.
Szilagyi grade	Depth of a groin infection after vascular surgery: I skin, II subcutaneous tissue, III involving the graft or artery.
PAD	Peripheral arterial disease: narrowing of the leg arteries.
Revascularisation	Restoring blood flow to a limb, by angioplasty (balloon or stent) or bypass surgery.
ABPI	Ankle-brachial pressure index: ankle blood pressure divided by arm blood pressure. Unreliable in diabetes because calcified arteries give a falsely high reading.
Toe pressure and TcPO₂	Toe blood pressure, and transcutaneous oxygen pressure measured through the skin. Both are better than ABPI in a diabetic foot.
Critical limb ischaemia	Blood supply so poor that the limb is at risk: rest pain, ulcer or gangrene, TcPO ₂ below 30 mmHg.
Osteomyelitis	Infection of bone.
Fistula	An abnormal channel between two surfaces, for example between bowel and skin.
Mediastinitis	Infection of the space in the chest around the heart, usually after heart surgery.
Fascia	The tough fibrous layer beneath fat and above muscle. Fascial closure means stitching this layer closed.
ICD-10	The international coding system for diagnoses. Medical schemes require a code with every request.
PMB	Prescribed Minimum Benefit: a condition that a South African medical scheme is legally required to fund. The code in brackets (for example 915E) is the PMB category.
RCT	Randomised controlled trial: patients are allocated to treatments by chance, which is the fairest test of whether a treatment works.
Meta-analysis / systematic review	A study that collects and combines all the trials on a question.
Cochrane review	A systematic review produced under the Cochrane organisation's methods, generally the most rigorous kind.

Risk ratio (RR) and odds ratio (OR)	Ways of comparing an outcome between two groups. A value below 1 means the treated group did better; above 1, worse. The 95 percent confidence interval (CI) is the range within which the true value probably lies; if it includes 1, the difference may be chance.
Number needed to treat (NNT) and to harm (NNH)	How many patients must be treated for one to benefit (NNT) or for one to be harmed (NNH).
GRADE certainty	How confident we can be in a result: high, moderate, low or very low.
WHASA	Wound Healing Association of Southern Africa. Its 2021 recommendations are appraised in the evidence library like any other guideline; they do not set the evidence positions or the settings in this booklet.

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