

Statement from the Regional HTA Centre of Region Västra Götaland, Sweden

Negative pressure wound therapy

Question at issue:

Is negative pressure wound therapy better than standard wound dressing with regard to wound closure, rate of wound healing, reduction of wound surface area, take of split-thickness skin graft, length of hospitalization and mortality?

PICO (Patient, Intervention, Comparison, Outcome)

- P= Patients with pathological wounds or wounds after surgical intervention (patients with decubitus ulcers or with diabetic ulcers, in which debridement was the only surgical intervention, are excluded)
- I= Negative pressure wound therapy (NPWT; or VAC = vacuum assisted closure)
- C= Standard wound dressing
- O= Complete wound healing, rate of wound healing, change of wound surface area, infections, length of hospitalization, pain, and mortality.

Summary of the health technology assessment:

Method and patient categories:

Negative pressure wound therapy has been introduced as a method of treatment in patients with pathological or surgical wounds when primary wound closure is inappropriate or practically impossible. In this report the effects of NPWT have been evaluated in the following ten types of wounds or patient categories:

1. Surgical wound treated with a partial-thickness skin graft
2. Pathological wound treated with a partial-thickness skin graft
3. Wound after orthopedic trauma
4. Mediastinitis after sternotomy
5. Wound after distal foot amputation in diabetic patients
6. Patients who require temporary abdominal closure after surgery
7. Necrotizing fasciitis
8. Fournier's gangrene
9. Fasciotomy wound after a compartment syndrome
10. Large tissue defects after resection of musculoskeletal tumor

Level of evidence

- ❑ In patients treated with a partial-thickness skin graft of a pathological wound NPWT improved healing, and shortened the length of hospitalization. The level of evidence is low (GRADE ⊕⊕).
- ❑ In patients with orthopedic trauma and an open fracture NPWT reduced the incidence of wound infections and the overall rate of complications. The level of evidence is low (GRADE ⊕⊕)..
- ❑ In patients with poststernotomy mediastinitis NPWT improved healing, reduced the length of hospitalization, and reduced in-hospital mortality. The level of evidence is low (GRADE ⊕⊕).

- In diabetic patients with a wound after a distal foot amputation NPWT improved healing. The level of evidence is low (GRADE ⊕⊕).
- The level of evidence of the effects of NPWT is very low (Grade ⊕) in patients
 - with partial-thickness skin graft of a surgical wound
 - who require temporary abdominal closure after surgery
 - with necrotizing fasciitis
 - with Fournier's gangrene
 - with fasciotomy wound
 - with tissue defects after resection of a musculoskeletal tumor

Ethical aspects

If NPWT is not allowed an ethical dilemma will arise if the medical personnel, who are responsible for the patient care, feel that the patient is being withheld a beneficial and safe treatment, with few dressing changes, and with less unpleasant odors. One must also question whether a new treatment modality is justified for routine care of several different types of wounds when it is not documented to perform better than standard treatment.

Economic aspects

The cost of NPWT is similar to the cost of standard wound dressing. As a consequence, NPWT will be cost-effective in patient categories that benefit with shorter lengths of hospitalization, and decreased mortality. For other type of patients the cost-effectiveness is currently unknown.

Summary and conclusion

In patients with a pathological wound treated with partial-thickness skin graft, an orthopedic trauma with an open fracture, a poststernotomy mediastinitis, or a wound after a distal foot amputation due to diabetes mellitus negative pressure wound therapy has beneficial effects with improved healing, shorter lengths of hospital stay and reduced mortality (in patients with mediastinitis). The level of evidence of these beneficial effects is low (GRADE ⊕⊕). For other patient categories the level of evidence is very low (GRADE ⊕).

On behalf of the Regional HTA Centre of Region Västra Götaland, Sweden
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