

Incisional negative pressure wound therapy (iNPWT) for reducing the risk of surgical site infection: an up-to-date meta-analysis and trial sequential analysis

Groenen H, Jalalzadeh H, Buis DR, et al. *eClinicalMedicine* (part of *The Lancet* group). 2023;62:102105.

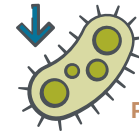
**Overview**

- Previously conducted meta-analysis and RCTs for negative pressure wound therapy (NPWT) prevention of SSI are contradictory
  - Implementation of NPWT is impaired due to inconsistent recommendations by international guidelines
- This study compared NPWT with standard dressings on closed incisional wounds in adult patients undergoing any type of surgery
  - Providing an up-to-date systematic review and meta-analysis



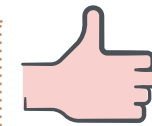
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**Results**



**Reduced risk of SSI using NPWT**

**33% reduced risk** compared to standard of care, RR 0.67



**Increased confidence in results**

Using trial sequential analysis, the authors concluded that the data was **robust**, while demonstrating that future RCTs are **very unlikely** to alter benefit of iNPWT overall in this scenario

**Industry involvement does not bias outcomes**



**No significant difference** found for SSI outcomes due to industry involvement and/or sponsorship

**No significant difference<sup>†</sup> between -80mmHg and -125mmHg NPWT devices**



-80mmHg: 10.1% of patients developed SSI (**RR 0.67**)  
 -125mmHg: 13.0% of patients developed SSI (**RR 0.69**)

<sup>†</sup>Marginal improvement using -80mmHg vs -125mmHg

**Methodology**



57 RCTs



13,744 patients



All surgical specialties\*

**Meta-analysis**



Combination of the results from previous studies. Meta-analysis pools the data and generates confidence intervals

**Trial sequential analysis**



Determine robustness of confidence intervals on treatment effect that are generated by meta-analysis

\*Abdominal, breast, cardiac, general, obstetric, orthopedic /trauma, plastic, vascular

**Conclusion**

This meta-analysis confidently showed that single use iNPWT reduces the risk of SSI irrespective of specific surgical specialties, while trial sequential analysis demonstrated the robustness of this evidence. Additionally, no significant differences were observed between -80mmHg and -125mmHg devices.

**Abbreviations:** iNPWT = incisional negative pressure wound therapy; NPWT = negative pressure wound therapy; RCT = randomized controlled trial; RR = relative risk; sNPWT = single use negative pressure wound therapy; SSI = surgical site infection.

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