NEGATIVE PRESSURE WOUND THERAPY WITH HARD TO HEAL WOUNDS
PRESENTED BY CAROLINE DOWSETT

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Learning objectives

1. To understand what a hard-to-heal wound is and the impact on the patient, clinician and health economy
2. Discuss factors that contribute to hard-to-heal wounds
3. To understand the role of NPWT and sNPWT in improving outcomes in patients with hard-to-heal wounds
What is a hard-to-heal wound?

- A hard-to-heal wound has been defined as one that fails to heal with standard therapy in an orderly and timely manner\(^1\)
Hard-to-heal wounds

• Have a significant impact on patients and their quality of life
• Place a significant burden on our healthcare systems globally
Hard-to-heal wounds

• 1.5-2 million people in Europe suffer from acute or chronic wounds\(^2\)
• Average duration is 9-12 months and 29% remain unhealed at 1 year\(^3\)
• 17.8% of patients have their wound for 1-5 years\(^4\)
Patients with hard-to-heal wounds: complexity of our patients

• 76% of patients with a chronic wound have three or more co-morbidities\textsuperscript{5}
• 46% have diabetes\textsuperscript{5}
• 52% of the adult population across Europe are overweight and 17% are obese\textsuperscript{6}
Challenge for our patients

- Pain
- Distress
- Loss of independence
- Prolonged social isolation
- Chronic long-term condition
Challenge for clinicians

- Healthcare professionals time to treat — 79% treated in the community
- Knowledge, skills and competencies
- Preventing and managing complications
- Timely referrals for advanced therapies
Challenge for the healthcare provider

- Increasing cost of care
- Multiple demands on limited resources
- Drive for efficiencies and reducing waste
- Improving outcomes for patients
• Delayed healing appears to be common
• It is frequently not recognised early enough
• Increases clinical workloads and cost
• More pro-active approach to early assessment and intervention for these patients
Assessment: factors that contribute to hard-to-heal wounds

- Patient-related factors
- Wound-related factors
- Clinical competency factors
- Resources and treatment-related factors
Management of hard-to-heal wounds

• Correct diagnosis of wound aetiology and treatment of the underlying cause
• Manage underlying co-morbidities and factors impact on wound healing
• Applying the principles of wound bed preparation
• Targeted use of advanced wound care products e.g. negative pressure wound therapy (NPWT)
• Ongoing reassessment and evaluation
Introduction to NPWT

• The controlled application of sub-atmospheric pressure to the local wound environment, using a sealed wound dressing which is connected to a vacuum pump.
Mechanism of action (MOA)

NPWT may work by multiple mechanisms of action:

- Promotes granulation tissue formation and epithelialisation
- Increases blood flow
- Reduces oedema
- Removes wound fluid and reduces the risk of maceration
- Protects from external contamination \textit{in vitro}

\textsuperscript{*}as demonstrated \textit{in vivo}
Study of sNPWT in hard-to-heal wounds

- Multi-centre and economic evaluation study: N = 52 patients
- Developed and implemented a pathway for use of sNPWT to ‘kick start hard-to-heal wounds’
- Evaluated the impact on clinical outcomes and cost

*Single use negative pressure wound therapy (sNPWT)
Study results

In a multi-centre clinical + economic evaluation based on a pathway for use of sNPWT over 12 weeks

- **Wound size**
  - Significant improvement in wound area reduction
  - Wound area reduced by 13.4% more than the pre-PICO rate (p=0.006)

- **Wound healing**
  - 94.1% of wounds <3 months duration healed or projected to heal within 12 weeks

- **Costs**
  - 33.1% total cost savings vs predicted standard care over 26 weeks (£50,000 over a 26 week period)

- **Time to care**
  - 119 days
  - Released over 26 weeks (143 days saved based on projected healing)

Intention-to-treat population (n=52)
Hard-to-heal wounds and sNPWT\textsuperscript{17}

Impact of a single-use negative pressure wound therapy system on healing

Dressing changes significantly reduced during and after sNPWT use (p<0.001 vs standard care)

Figure. Wound healing by duration of wound at baseline and predicted cost savings with use of PICO sNPWT

predicted savings with PICO sNPWT versus standard care

84.6% healing rate for wounds of <3 months in duration

84.6% of wounds <3 months in duration

40
33.3%

60
50
40
30
20
10
0
<3 months
3-6 months
6-12 months
>12 months

predicted savings with PICO sNPWT versus standard care

21–25% for total cost

59% for nursing cost resource

predicted savings with PICO sNPWT versus standard care

84.6% for 11 of 13 wounds

71.4% for 5 of 7 wounds

33.3% for 3 of 9 wounds

14.3% for 1 of 7 wounds

Saving estimates based on economic modelling (n=36)
In a multi-centre randomised, controlled study, use of sNPWT helped to significantly reduce wound area, depth and volume compared with tNPWT in patients with lower extremity wounds (venous leg ulcers and diabetic foot ulcers) over 12 weeks.
PICO sNPWT delivers NPWT across the dressing to surrounding tissue*

PICO sNPWT delivers compressive forces across and beyond the wound spanning the entire dressing (within 60mm of wound centre line)\textsuperscript{19}

24h post application

A benchtop model using metallic markers inserted into porcine tissue at 10mm intervals (total 150mm). Tissue displacement was analysed at the wound bed, edge of dressing and outside the dressing using computed tomography.\textsuperscript{19}

24h post application

24h post application

tNPWT delivers localised therapy to the wound itself (within 35mm of wound centre line)\textsuperscript{19}
Advances in sNPWT technology

- Pump duration of up to 14 days\textsuperscript{20}
- Designed for use on deeper wounds\textsuperscript{21}\textsuperscript{**}
- Enhanced pump to aid use in large wounds with less user intervention\textsuperscript{22}\textsuperscript{*}

Footnote: *Compared with previous versions; **19 case studies; wound depths 2-7cm
Technology and innovation: PICO 14

- 44-year-old patient
- Diabetes, MI
- Incision and drainage of an abscess
- No infection
- On referral 8cm X 2cm and 0.5cm deep
- tNPWT
- Dressing changed twice a week

Results will vary
Progress

- Week 1. 5cm X 1cm and superficial
- Week 2. 4.5cm X 1cm
- Week 4 Healed
- Reduction in dressing change – 1 a week
- Patient reported satisfaction score 10

Footnote: The PICO Dressing has a wear time of up to 7 days, depending on exudate levels
Early intervention

- 36-year old patient
- Body mass index (BMI) 40
- Hypertension
- Hyperlipidaemia
- Hernia repair
- Post-op infection
- Surgical dehiscence
- Dressings X 3 week

Results will vary
Progress

• Static wound
• 4cm X 1cm and 3cm deep
• High levels of exudate
• PICO◊ 14 applied
• Week 1. 2cm X 0.5cm and 0.5 deep
• Week 2. 1.5cm X 0.4cm and 0.3cm deep
• Healed at week 3
• Patient reported satisfaction score 10

Results will vary

*PICO◊ 14 is indicated for patients who would benefit from a suction device (NPWT) as it may promote wound healing via removal of low to moderate levels of exudate and infectious materials.
Conclusion

• Hard to heal wounds are challenging for patients, clinicians & the health economy
• Need to identify patients who are likely to be hard to heal early
• Use evidence based interventions to help reduce time to healing & improve patient outcomes
References

5. Dowsett et al. Reducing the burden of chronic wounds in the community with single-use NPWT. JCN supplement. 2015;29(2)


Hard to Heal Resources

Dowsett et al., 2017 Evidence in Focus

McCluskey et al., 2020 Evidence in Focus

Kirsner et al., 2019 Evidence in Focus

PICO 14 Hard to Heal eDetailer
For further information on PICO\(^0\) or the evidence presented please contact us by

Email: AskAboutPICO@smith-nephew.com

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