

SESSION ONE: TREATING HARD-TO-HEAL WOUNDS



PRESENTED BY: Dr Caroline Dowsett & Jacqui Hughes

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Treating hard-to-heal wounds

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Learning objectives

- Understand what defines a wound as hard to heal.
- What factors influence a wound to become hard to heal
- What physiological changes occur in wound healing
- To understand the role of single-use negative pressure wound therapy (sNPWT) in improving outcomes in patients with hard-to-heal wounds.

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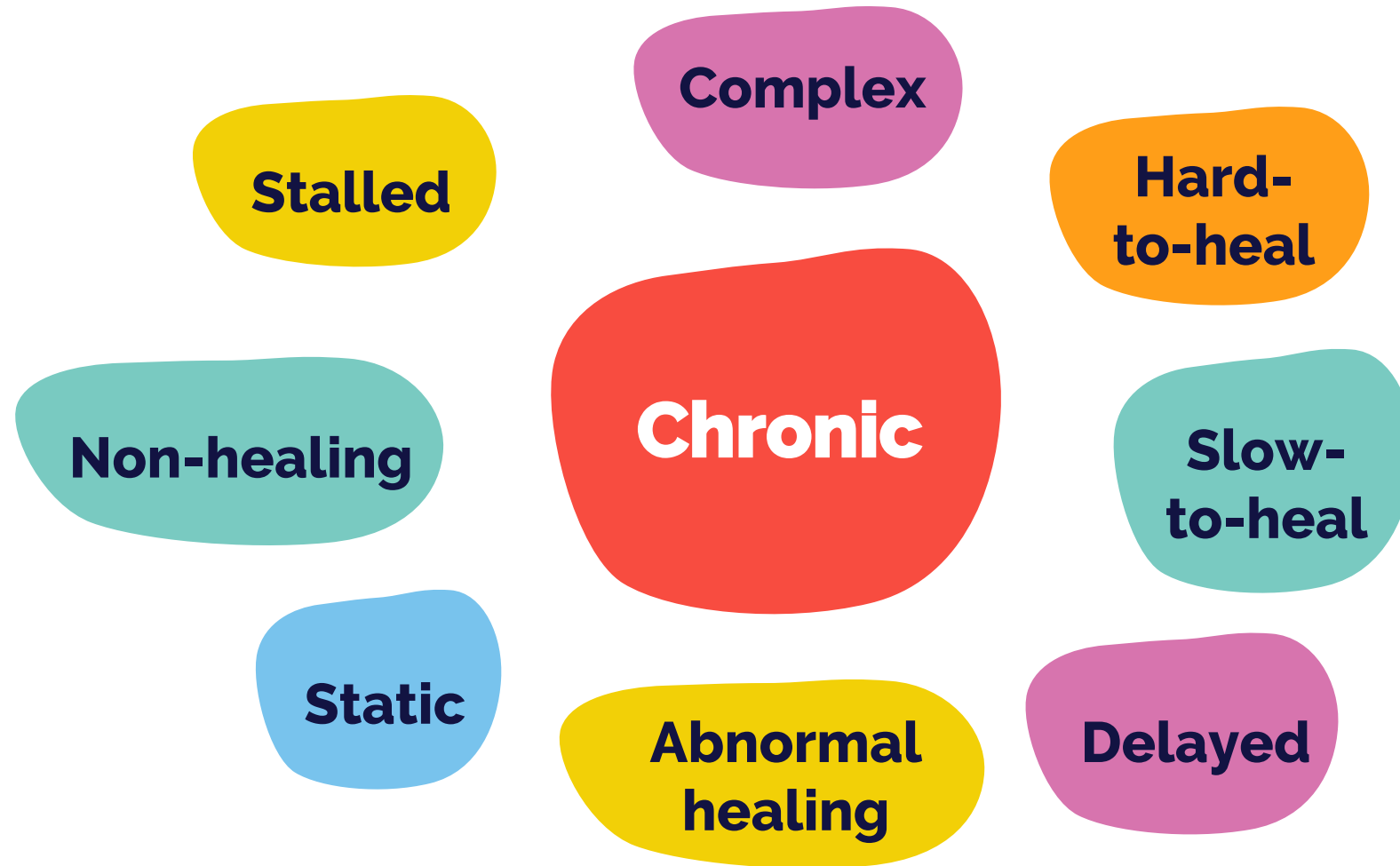
Definition of a hard-to-heal wound



A hard-to-heal wound has been defined as one that fails to heal with standard therapy in an orderly and timely manner.¹

This definition applies equally to both acute and chronic wounds and is independent of the wound type and aetiology.²

Common terminology



Burden of hard-to-heal wounds

2.2 million patients with a wound annually^{3,4}

48% chronic wounds

40% acute wounds

12% unspecified wounds

The annual NHS cost of managing these wounds and associated comorbidities was **£5.3 billion**. This is **comparable to that of managing obesity (£5.0 billion)**.⁴

66% of the total annual NHS cost was incurred in the community

Acute wounds: **48% of the cost was in community care**

Chronic wounds: **78% of the cost was in community care**

Wounds that healed: cost **£2.1 billion**

Wounds that remained unhealed: cost **£3.2 billion**

The annual prevalence of all wounds is predicted to grow at a rate of **11%**⁴

Impact of a chronic wound⁵



- Quality of life
- Physical, mental and social + spiritual wellbeing
- Pain
- Depression, anxiety + social isolation
- Impaired mobility
- Poor nutritional status.

Factors affecting wound healing⁶

Patient related

- Patient age
- Comorbidities

Wound related

- Wound aetiology,
- Wound size and depth, location of the wound
- Wound duration
- Heavy bioburden

Clinical competency factors

- Skills and knowledge

Resources and treatment factors

- Available and appropriate resources

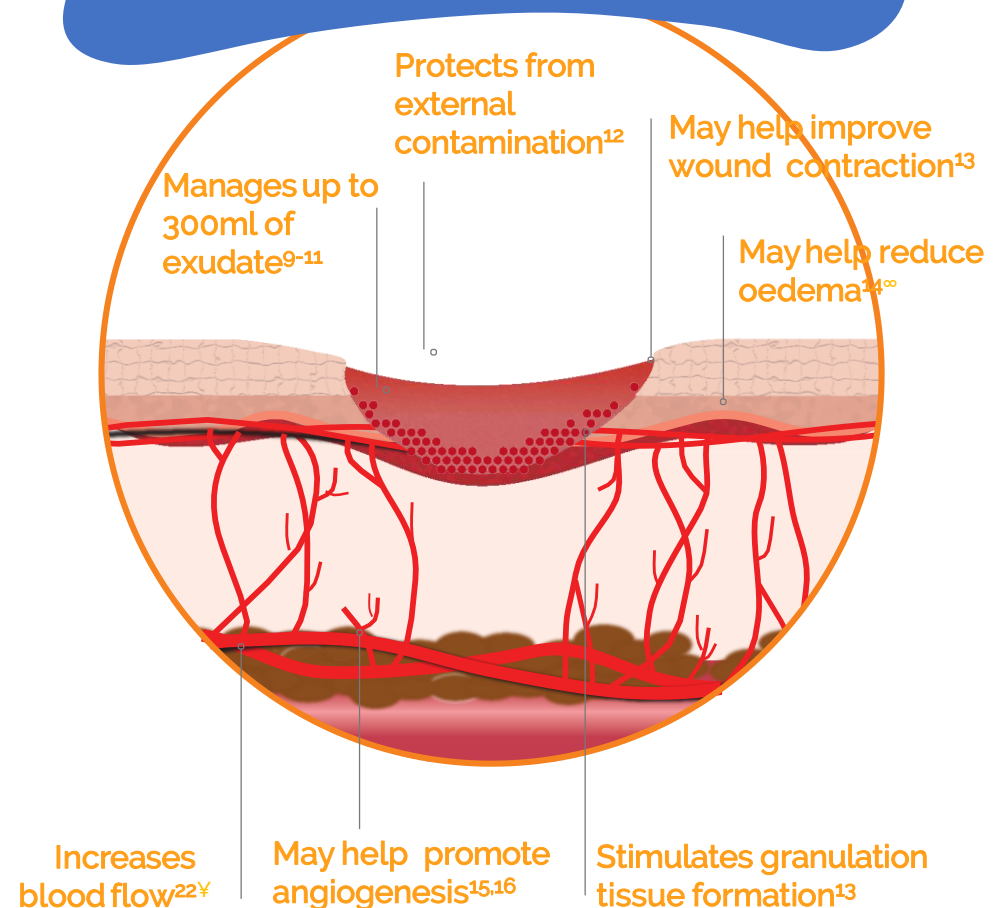
Management of hard-to-heal wounds

- Correct diagnosis of wound aetiology and treatment of the underlying cause
- Manage underlying co-morbidities and factors impacting 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 PICO™ single use NPWT for hard-to-heal wounds

- NPWT has multiple mechanisms of action that improve the speed, strength and quality of wound healing⁷
- NPWT can lead to fewer dressing changes and faster healing of chronic wounds^{7,8*}
- NPWT can reduce patient discomfort, increase patient mobility and improve quality of life⁷.

PICO™ sNPWT mechanisms of action



*Compared to standard care; ¥As demonstrated in vivo; ∞As demonstrated in vitro

Study of sNPWT in hard-to-heal wounds^{17*}

Products & technology

Use of PICO™ to improve clinical and economic outcomes in hard-to-heal wounds



Wounds impose a substantial economic burden on healthcare systems^{1,2} and have a significant impact on patients' quality of life. Vital to reducing the costs associated with wound care is identification and treatment of hard-to-heal wounds. Failure to recognise when a wound is not progressing to healing increases the cost of treatment and risk of complications, is more challenging for clinicians and significantly impacts patient quality of life. A recent evaluation of the impact of PICO™ using a defined pathway showed the importance of early intervention in hard-to-heal wounds and the role of advanced therapies in progressing a wound towards healing. Implementing the PICO pathway resulted in statistically significant improvements in the healing trajectory of stalled wounds, both during and after use. It resulted in a 33.1% (£50,000) cost reduction and released 119 days of nursing time over 26 weeks in the treatment of 52 patients.

Authors:
Caroline Dewart, Jane Hampton,
Dave Myers & Tim Spyche

Globally, a significant proportion of healthcare budget is spent on treatment of wounds. For example, the cost of wound care and comorbidities in the UK in 2012/13 was estimated at between £4.5bn and £5.1bn³. Healing time, frequency of dressing change and incidence of complications are the three main cost drivers⁴ that impact the overall health economy. Some £3.2bn is spent on treating hard-to-heal wounds, which account for 39% of the total number of wounds^{5,6}. Wound management is a predominantly nurse-led activity^{7,8}, with the majority of care delivered in the community. Some 80% of hard-to-heal wounds are treated in the community⁹; consequently, it is the community that bears most (66%) of the costs of treating these wounds⁶. Early discharge targets are putting greater pressure on community care, moving treatment and other associated costs from one setting to another. It can often result in increased re-admissions which, in turn, push up total system costs and can result in poor patient outcomes and experience.

Impact on patients
Hard-to-heal wounds represent a complex clinical problem that can take weeks or months to resolve, and are costly for both the patient and the health economy¹⁰. This cycle is often exacerbated by delays in assessment, failure to treat underlying cause or seek timely advice. Balancing costs and effective care requires good communication between all stakeholders, and implementing available technologies that are easy to use, promote faster healing, improve patient satisfaction and free up clinical time.

The negative impact on patient quality of life and wellbeing of chronic wounds is comparable to that of other major chronic diseases. It is important that a comprehensive, chronic disease management approach is adopted in order to deliver patient-centred, multidisciplinary care aimed at achieving positive outcomes in both clinical and quality of life terms¹¹.

Hard-to-heal wounds
Breaking the cycle of hard-to-heal wounds has never been more important. To do so requires clinicians to take a proactive approach to recognising those wounds that are not healing at 4 weeks despite best practice interventions. Inappropriate or delayed treatment has a detrimental effect on the healing trajectory, as well as impacting patient quality of life¹².

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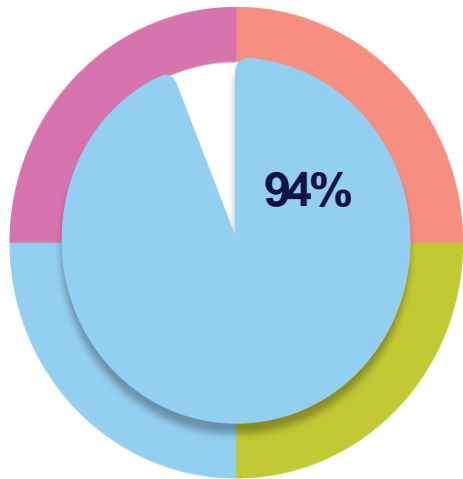
- Multi-centre and economic evaluation study: N = 52 patients
- Developed and implemented a pathway for use of sNPWT to 'kick-start hard-to-heal wounds'
- Evaluated the impact on clinical outcomes and cost.

*Single use negative pressure wound therapy (sNPWT)

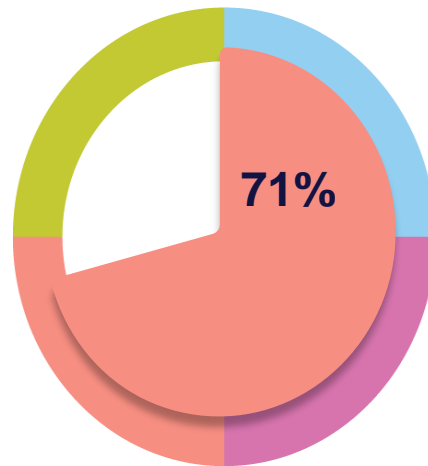
Early intervention¹⁷

Healed/healing rates by wound duration:

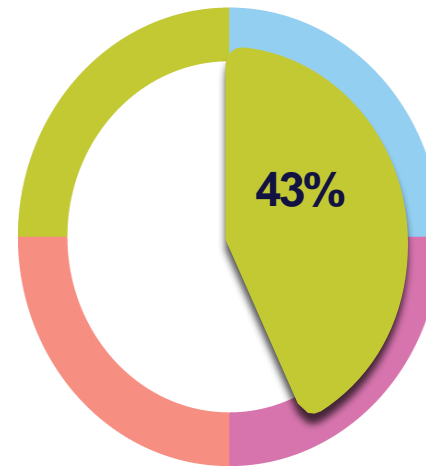
**Less than
3 months**



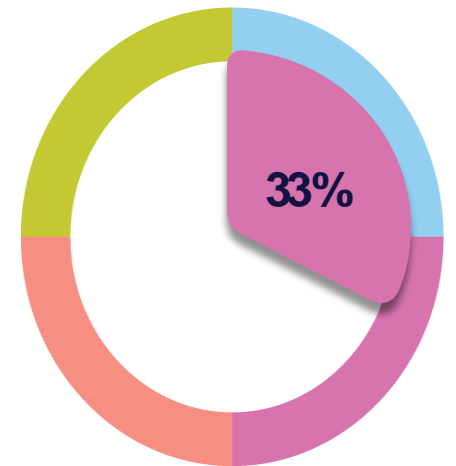
**3-6
months**



**6-12
months**



**Over 1
year**



Hard-to-heal wounds and sNPWT¹⁸

WOUND CARE

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

Pat McCluskey, Kerry Brennan, Jennifer Mullan, Mary Costello, Denise McDonagh, Helen Meagher, Gillian McLoughlin, Helen Moloney, Tim Styche, Julie Murdoch

Hard-to-heal wounds are challenging to manage and incur a cost burden to healthcare systems through extended treatment periods, resource use and patient quality of life. The aim of the service evaluation presented here was to determine the wound healing and health economic impact of using PICO[®] Single Use Negative Pressure Wound Therapy (sNPWT) on hard-to-heal wounds at seven centres across Northern Ireland and the Republic of Ireland. Patients with clinically defined hard-to-heal wounds received PICO sNPWT, as per a clinician-endorsed PICO sNPWT hard-to-heal pathway (Dowsett et al, 2017). Wounds were assessed for their healing trajectory over a 12-week period. Of wounds included (n=36), 20 (55.6%) healed within the 12-week routine follow-up period. Wounds of <3 months' duration reported a significantly higher healing rate compared to wounds with a duration of >3 months (p=0.0125). Dressing-change frequency significantly reduced during PICO sNPWT treatment compared to the standard dressing regime before the evaluation (p<0.001). Furthermore, dressing change frequency remained significantly reduced after PICO sNPWT treatment was introduced, when compared to the pre-pathway standard dressing regimen (p<0.001). Health economic modelling suggested a cost-saving of 21% (€12,001) for the Republic of Ireland, and 25% (€15,467) in Northern Ireland, by using the PICO sNPWT hard-to-heal pathway compared to standard wound management.

KEYWORDS:
Hard-to-heal wounds ■ Service evaluation ■ NPWT ■ Cost reductions

A hard-to-heal wound is defined as a wound that fails to heal with standard therapy in an orderly and timely manner (Troder et al, 2006). Hard-to-heal wounds can also be referred to as stalled, static, chronic, non-healing and challenging. This current definition can apply to chronic and acute wounds and is independent of the type and aetiology (Voviden, 2011).

A hard-to-heal wound occurs when it stalls within the inflammatory stage of healing. At a molecular level, all hard-to-heal wounds have similarities, which include: excessive levels of pro-inflammatory cytokines, proteases, reactive oxygen species (ROS) and senescent cells, as well as persistent infection (Frykberg and Banks, 2015).

A wound defined as hard to heal is, therefore, challenging to manage and incurs a cost burden to healthcare systems through extended treatment periods, resource use and patient quality of life (if a patient's quality of life is low, this could incur additional nurse visits, GP appointments and social care). The time taken to heal a wound is a key driver in determining resource use, with longer durations increasing both nursing and dressing costs (Lindholm and Searle, 2016). Management of these wounds is most commonly community nurse led (Guest et al, 2015; 2017). A study by Drew et al (2007) reported that approximately 80% of hard-to-heal wounds are treated within a community setting; as such, 66% of the associated costs of treatment is borne by community budgets (Guest et al, 2017). An economic analysis of wound care by Guest et al (2017) has shown that hard-to-heal wounds account for €3.2 billion of UK NHS wound management spend, which accounts for 39% of the total number of wounds that require treatment (Guest et al, 2015; 2017).

Negative pressure wound therapy (NPWT) has been shown to be a cost-effective treatment for hard-to-heal wounds (Hampton, 2015). A cohort case series by Hampton (2015) demonstrated that nine wounds, which previously exhibited non-progression to full healing, achieved a 21% average weekly reduction while receiving treatment with the PICO[®] Single Use Negative Pressure Wound Therapy (sNPWT) device. Following on from this initial work by Hampton and in response to the challenges associated with treating and managing hard-to-heal wounds,



84.6%

healing rate for wounds of <3 months in duration (n=20)



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

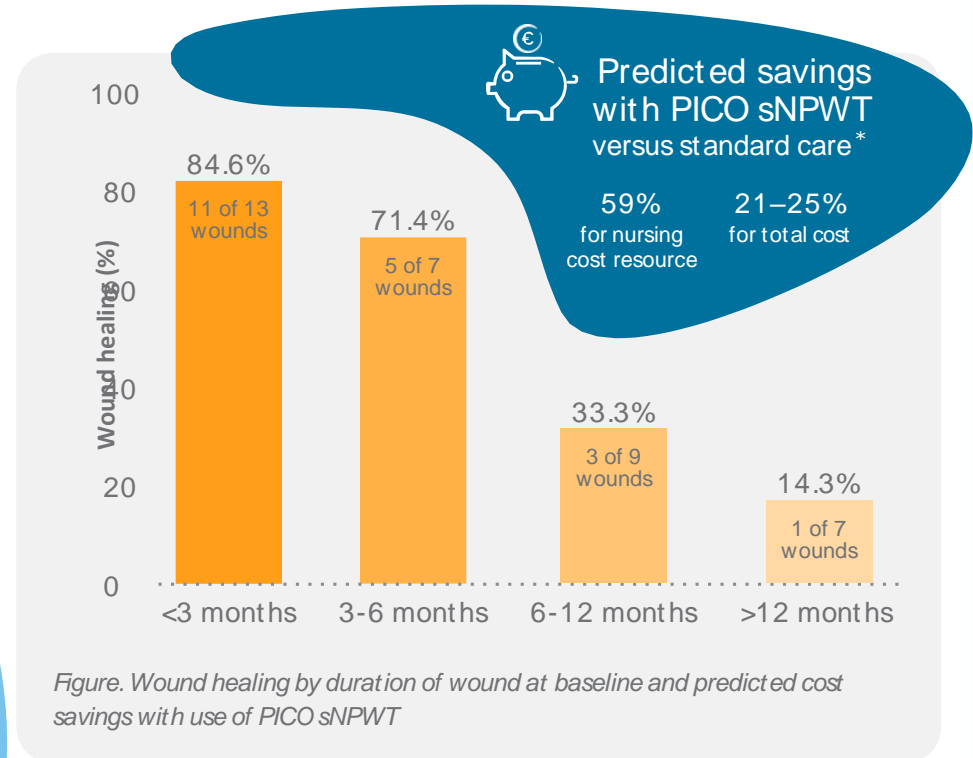


Figure. Wound healing by duration of wound at baseline and predicted cost savings with use of PICO sNPWT

*Cost savings based on economic modelling

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Treating hard-to-heal wounds

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PICO^o sNPWT hard-to-heal project¹⁹

A UKINOR service evaluation building on the published work of Dowsett and Hampton¹⁷

14% of wounds were **less than 6 weeks in duration**

86% were **above 6 weeks in duration** and all were classed as non-healing

163 non-healing wounds

32 wounds had been clinically assessed as **delayed**

65 wounds were **static**

21 were judged to be **deteriorating**

Hard-to-heal wound results using PICO[◇] sNPWT¹⁹



Wound duration

The highest proportion of wounds were >12 months (28.0%)



Estimated cost reduction calculation*

-£59,760 cost saving across 163 wounds
-2,032 nursing hours reduction



Healing rate[¥]

88 wounds healed
66 had area reduction



Dressing change frequency

4.62 times a week pre PICO sNPWT intervention
3.30 times a week post PICO sNPWT intervention

The use of PICO 14^o sNPWT on a pre-tibial traumatic wound

- 64-year-old male — pre-tibial traumatic wound to R leg
- Type 1 diabetic and chronic hepatitis — comorbidities that could impact on wound healing
- Split thickness skin graft failure
- Multiple treatments prior to using PICO 14 including antimicrobials and light compression
- Concerns around patient well-being.



15% light but adherent slough

7.5cms (L) x 4.5cms (W) X 1cm (D)

The use of PICO 14[◇] sNPWT on a pre-tibial traumatic wound

Wound response — after 14 days PICO[◇] 14



Minimal slough

7cms (L) X 4cms (W) X 0.5cms (D) = overall wound reduction of 21%

Wound response — after 28 days PICO[◇] 14



Evidence of epithelialisation

6.5cms (L) x 3.5cms (W)

Case study conclusion

- Management of this wound was complex
- This was due to the previous wound infection and loss of SSG
- The patient had diabetes, which may have contributed to delayed healing
- The use of PICO 14 sNPWT helped to kick-start the stalled wound and to reduce dressing changes compared to those required during earlier treatment protocols.

PICO[◇] 14 sNPWT — post excision basal cell carcinoma wound

- 54-year-old man patient who was 11 weeks post excision of a BCC to the right scapula
- The patient was usually fit and well and had no significant past medical history
- Wound had dehisced following surgery due to a wound infection. The wound had already been treated with antimicrobial dressings and the patient had received oral antibiotics. The wound was being treated in clinic on a daily basis
- This device allows for less user intervention, due to the pump duration of up to 14 days^{20,21*}.

*Compared with previous versions

On assessment



PICO[◇] sNPWT in situ

9.5cms (L) x 5.5cms
(W) x 1cm (D)

PICO[◇] 14 sNPWT — post excision basal cell carcinoma wound

After 14 days of PICO[◇] 14



6.7cm (L) x 4.2cm (W) x 0.3cm (D)

Wound granulating and evidence of epithelialisation

After 28 days of PICO[◇] 14



4cm (L) x 1.8cm (W) with no depth overall wound surface reduction 75%

Conventional wound dressing applied

Case study conclusion

- A treatment was needed that would stay in place but would also be comfortable and cost-effective
- The use of PICO[◇] sNPWT for this patient had an impact on his daily life. While being treated, he was unable to be at work full time, which was having an impact financially and also mentally
- The wound infection had caused the wound to dehisce, and the location of the wound on the scapula made dressing applications difficult.

In summary...

Hard-to-heal wounds can be referred to under a **number of different names**

Hard-to-heal wounds are **challenging for patients**, clinicians and the health economy

Hard-to-heal wounds

Need to identify patients who are likely to be hard to heal early

Use **evidence-based interventions** to help reduce time to healing and improve patient outcomes

Contact us...

For further information on PICO[®] sNPWT or the evidence presented please contact us by:

Email: AskAboutPICO@smith-nephew.com

Visit: www.smith-nephew.com/PICO



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