

## RENASYS<sup>◇</sup> Negative Pressure Wound Therapy System (tNPWT) versus V.A.C.<sup>™</sup> NPWT: results of head-to-head studies

### + Plus points

In four studies comparing use of RENASYS tNPWT with V.A.C.<sup>™</sup> NPWT in patients with wounds of mixed aetiology:<sup>1-4</sup>



No differences reported in **clinical outcomes** and **mean treatment time**<sup>1,2</sup>



Significantly less pain at **dressing change** with RENASYS tNPWT plus gauze (p=0.046)<sup>3</sup>



~12% reduction in **average total cost** with RENASYS tNPWT<sup>2</sup>



61% **relative difference in depth of scar tissue** with RENASYS tNPWT plus gauze<sup>4</sup>

### What is the background?

- Negative pressure wound therapy (NPWT) is an established wound care method with a substantial body of evidence supporting its use in a range of wound types.<sup>5</sup>
- Several studies have evaluated the effects of different treatment variables on clinical outcomes (eg, pressure level, vacuum source, type of filler and continuous versus intermittent therapy) using individual systems.<sup>5</sup>
  - However, few studies have directly compared clinical outcomes using different NPWT systems.

### What was done?

- A systematic literature review of all studies directly comparing RENASYS tNPWT (Smith+Nephew, Hull, UK) with V.A.C.<sup>™</sup> Therapy (Acelity, San Antonio, Texas, USA), two widely used NPWT systems, was therefore conducted to determine any differences in clinical outcomes.<sup>6</sup>
- In total, 344 studies were identified; only four studies with a minimum of 10 patients and that had results available in English were included.<sup>6</sup>

### Which studies were included?

- The first study was a large retrospective analysis of real-world NPWT use in Canada.<sup>1</sup>
- The second study, conducted in Germany, although quite small, was a randomised controlled trial comparing prospectively defined clinical endpoints.<sup>2</sup>
- The aim of the other two studies, both conducted in Italy, was to compare outcomes with the choice of filler, using RENASYS tNPWT to assess outcomes with gauze and V.A.C.<sup>™</sup> NPWT for foam filler.<sup>3,4</sup>

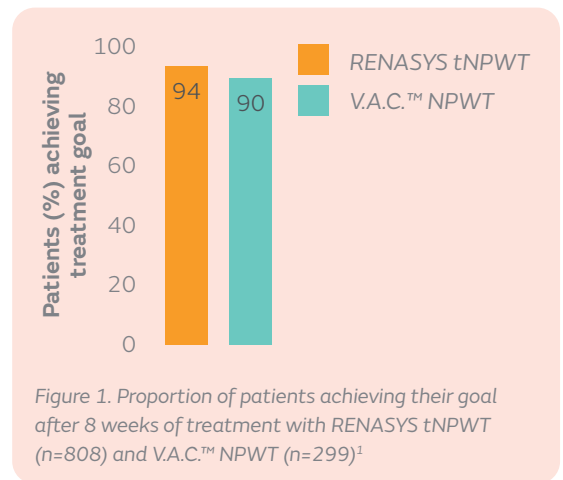
**What were the key findings?**

**Similar clinical outcomes**

In this retrospective study by Hurd T, et al., in patients with wounds of mixed aetiology, choice of NPWT system and filler was determined by the healthcare professional.<sup>1</sup>

- There were **no significant differences in key outcome measures** for RENASYS<sup>®</sup> tNPWT (n=808) and V.A.C.<sup>™</sup> NPWT (n=299), including:<sup>1</sup>
  - Proportion of patients achieving treatment goal at 8 weeks (Figure 1)
  - Median time to achieve treatment goal (8 weeks for both groups)
  - Total reduction in wound area (~65% in both groups)
  - Weekly reduction in wound area (~9.5% in both groups)

*“The results of this study demonstrate that there are **no clinically significant differences in outcomes** that can be observed between the two different commercial NPWT systems. **The choice** of which system to use is then no longer dependent on clinical efficacy or the size of the body of evidence but can **become dependent on other factors such as cost, availability, and personal choice.**”<sup>1</sup>*

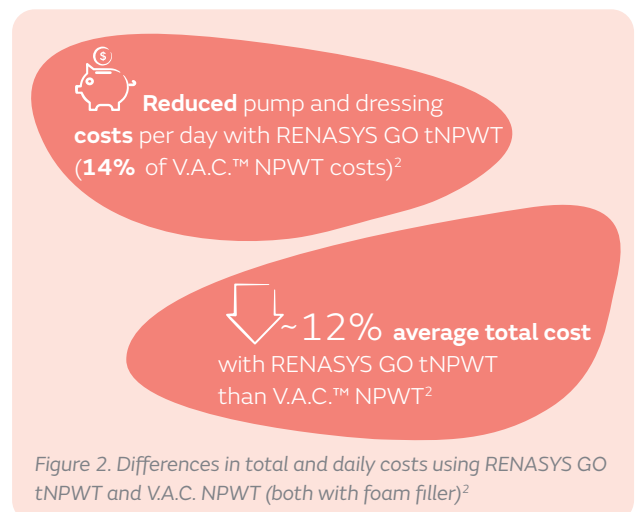


**Impact on cost**

The randomised controlled trial conducted by Rahmanian-Schwarz A, et al., evaluated use of RENASYS GO NPWT (n=20) and V.A.C.<sup>™</sup> NPWT (n=22), using foam filler for both systems, in patients with acute or chronic wounds.<sup>2</sup>

- **No significant differences in clinical outcomes** (median values) were noted between respective systems and there were no reported complications with either treatment:<sup>2</sup>
  - Healing time (35.2 vs 37.2 days)
  - Duration of NPWT application (15.0 vs 13.5 days)
  - Number of total and partial dressing changes (3.0 vs 4.2)
- **Average total cost, and cost per day, were both reduced** with RENASYS GO tNPWT compared with V.A.C.<sup>™</sup> NPWT (Figure 2).<sup>2</sup>

*“Since there are **no significant differences** in our results for the V.A.C.<sup>™</sup> system and RENASYS GO system we believe that the **cost factor should be one of the determining criteria** for the selection of a foam-based NPWT system.”<sup>2</sup>*



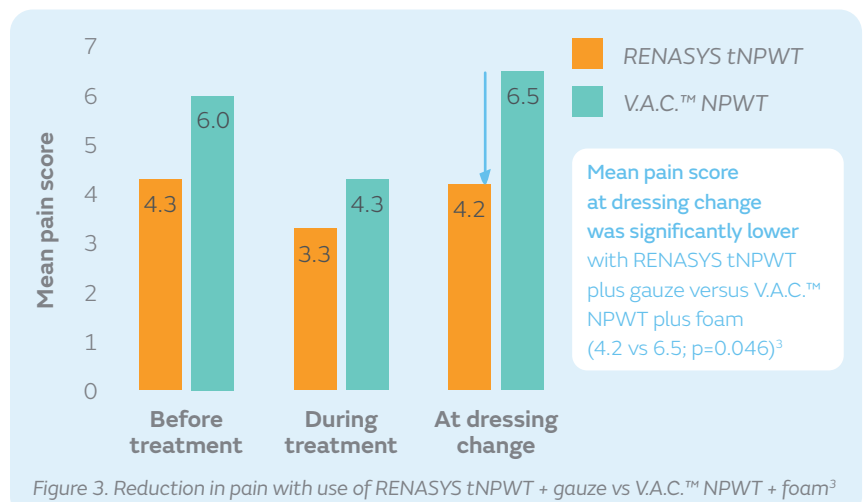
For RENASYS tNPWT: Foam should be changed every 48–72hr, but ≥3 times per week.<sup>7</sup> Gauze should be changed 48hr after initial application, then 2–3 times per week.<sup>7</sup>  
 For V.A.C.<sup>™</sup> NPWT: Dressings should be changed every 48–72hr, but ≥3 times per week. Dressings of infected wounds may need to be changed more frequently.<sup>8</sup>

**Differences in pain**

The Italian researchers compared pain levels with different fillers in patients with post-trauma wounds using RENASYS tNPWT with gauze (n=13) and V.A.C.<sup>™</sup> NPWT with foam (n=18).

The prospective comparative study by Fracalvieri M, et al., showed a **statistically significant reduction in pain levels at dressing change** in the group receiving gauze filler with RENASYS tNPWT compared with foam and V.A.C.<sup>™</sup> NPWT (Figure 3).<sup>3</sup>

*“The finding of this study suggest that the patients treated with NPWT with gauze have **less pain at dressing change** compared with the patients treated with NPWT with foam.”<sup>3</sup>*



**What were the key findings? (cont)**

**Effects on scarring**

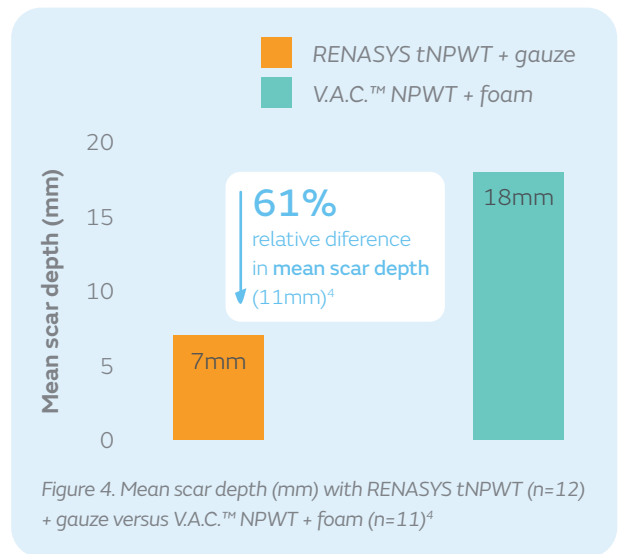
The same group conducted another study evaluating the effects of gauze and foam fillers using RENASYS<sup>®</sup> tNPWT (n=13) and V.A.C.<sup>™</sup> NPWT (n=16), respectively, on granulation and scar tissue in patients with post-trauma wounds.<sup>4</sup>

After 20–25 days of treatment, biopsies of granulation tissue were taken from a subgroup of patients.<sup>4</sup> The scars of patients treated with gauze filler using RENASYS tNPWT prior to skin grafting were not as deep as those treated using foam filler with V.A.C.<sup>™</sup> NPWT (Figure 4).

Using gauze with RENASYS tNPWT compared with foam and V.A.C.<sup>™</sup> NPWT, wound healing markers increased:

- Vascular endothelial growth factor (mean levels: 2.0 vs 0.8; p=0.0165)
- Matrix metalloproteases (mean levels: 2.5 vs 0.7)
- Formation of new blood vessels (neovascularisation)

*“The presence of less scar tissue after NPWT with gauze is accompanied by an increased formation of new mini-vessels. The presence of this blood supply leads to the restoration of the physiological condition.”<sup>4</sup>*



**Summary**

This systematic literature review identified four studies that compare patients treated with RENASYS tNPWT and V.A.C.<sup>™</sup> NPWT using gauze and foam fillers. The results show no differences in clinical outcomes and treatment time between the two systems,<sup>1,2</sup> and highlight potential benefits for RENASYS tNPWT versus V.A.C.<sup>™</sup> NPWT:

- Lower average total and daily costs of treatment using foam filler<sup>2</sup>
- Less pain at dressing changes using gauze filler<sup>3</sup>
- Reduced mean scar depth using gauze filler<sup>4</sup>

For detailed product information, including indications for use, contraindications, precautions and warnings, please consult the product’s applicable Instructions for Use (IFU) prior to use.

**References**

1. Hurd T, Rossington A, Trueman P, Smith J. A retrospective comparison of the performance of two negative pressure wound therapy systems in the management of wounds of mixed etiology. *Adv Wound Care*. 2017;6(1):33-37. 2. Rahmanian-Schwarz A, Willkomm LM, Gonser P, Hirt B, Schaller HE. A novel option in negative pressure wound therapy (NPWT) for chronic and acute wound care. *Burns*. 2012;38(4):573-577. 3. Fracalvieri M, Ruka E, Bocchiotti MA, Zingarelli E, Bruschi S. Patient’s pain feedback using negative pressure wound therapy with foam and gauze. *Int Wound J*. 2011;8(5):492-499. 4. Fracalvieri M, Zingarelli E, Ruka E, Antoniotti U, Coda R, Sarno A, Bocchiotti MA, Bruschi S. Negative pressure wound therapy using gauze and foam: histological, immunohistochemical and ultrasonography morphological analysis of granulation and scar tissues. Second phase of a clinical study. *Eur J Plast Surg*. 2014;37:411-416. 5. Apelqvist J, Willy C, Fagerdahl AM, et al. Negative Pressure Wound Therapy – overview, challenges and perspectives. *J Wound Care*. 2017;26(Suppl 3):S1-S113. 6. Ebohon S. A systematic literature review to identify comparative studies comparing RENASYS vs VAC. Evidence Outcomes report. EO/AWM/RENASYS004/v2. 10 Sep 2019. 7. RENASYS GO Negative Pressure Wound Therapy User Clinician Manual. Ref 66801244, 66801496. July 2015. 8. Acelyty. VAC<sup>™</sup> Therapy system safety information (2017). Available at: <https://www.acelity.com/-/media/Project/Acelity/Acelity-Base-Sites/shared/PDF/v-a-c--granufoam-application-ifu.pdf/#EN>. Accessed 26 November 2019.