Potential budget impact of negative pressure wound therapy (NPWT) versus conventional wound treatment (CWT) in diabetic foot ulcers (DFU), surgical abdominal wounds with healing impairment (SAWHI) and traumatic wounds for Mexico

Diana M. Campos [1], Denisse Vega [2], Vanina Perez [3], Maria Palka-Santini [4], Valentyn Siabro [5]
[1] 3M Costa Rica S.A, Heredia, Costa Rica; [2] 3M Mexico SA de CV, CDMX, Mexico;
[3] 3M Argentina S.A.C.I.F.I.A., Pcia. de Buenos Aires, Argentina;
[4] 3M Deutschland GmbH, Neuss, Germany; [5] Digital Health Outcomes LLC, Kiev, Ukraine

EE133

Background and Aim

- Negative pressure wound Therapy (NPWT) is defined as the application of sub-atmospheric pressure to create an environment that promotes wound healing by secondary or tertiary (delayed primary) intention. NPWT facilitates the continuous removal of exudate and helps prepare the wound bed for closure.
- The objective of this study was to estimate the potential budget impact of NPWT vs conventional wound treatment (CWT) for -diabetic foot ulcers (DFU), surgical abdominal wounds with healing impairment (SAWHI) and traumatic wounds (TW) in hospital settings for Mexico.

Methods

- The health economic model calculated the potential budget impact based on costs attributed to length of therapy (LoT) and length of stay (LoS) from the perspective of public health care in Mexico.
- The model considered LoT (NPWT vs CWT) in the respective indications: 14.82 d vs 44.57 d for DFU,[1] 17.45 d vs 32.76 for TW[2] and 13.9 d vs 11.8* d (SAWHI),[3] also LoS (NPWT vs CWT): 15.86 d vs 29 d for DFU,[1] 13.55 d vs 20.67 d for TW[2] and 13.9 d vs 11.8 d for SAWHI.[3]
- Only patients receiving in-hospital care were assessed.
- Overall wound closure rate (NPWT vs CWT) was included in the model for SAWHI patients of 47.8% vs. 27.6%.[4]
- Local material costs were applied.
- All calculations were performed in local currency and converted to US dollars.

Results and Conclusions

- Total cost reduction for 100 patients with DFUs using NPWT vs CWT was $885,512 (44.9%) **(Figure 1).**
- Total cost reduction for 100 patients with traumatic wounds using NPWT vs CWT was $458,778 (32.6%) **(Figure 2).**
- The use of NPWT in DFU and traumatic wounds is likely to be cost saving for hospital budgets for Mexico.
- Based on LoT and LoS, extra cost for SAWHI using NPWT vs CWT was $164,046 (20.5%)* for 100 patients **(Figure 3)** as patients under treatment are discharged before wound healing and this current work focus on the inpatient care perspective. However, when overall wound closure rates are considered, total cost reduction per SAWHI patient with wound closure using NPWT was $8,802* (30.4%) **(Figure 4).**
- Based on LoT and LoS only, NPWT for DFU and trauma wounds are expected to be cost saving compared to CWT. For patients with SAWHI, additional investment should be balanced with clinical benefits obtained.
- The uncertainty of the model estimations were addressed via sensitivity analysis **(Figure 5, Figure 6, Figure 7).**

Figure. 1

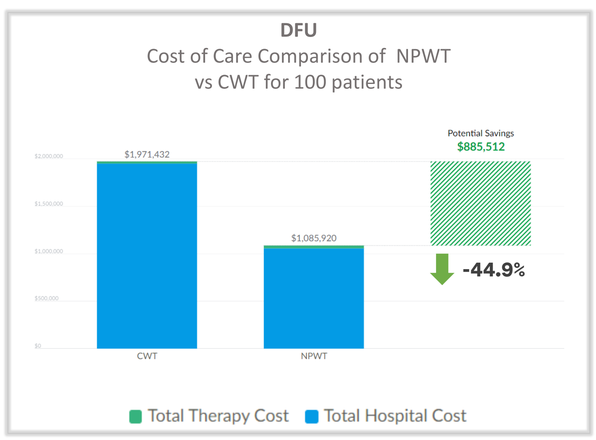


Figure. 2

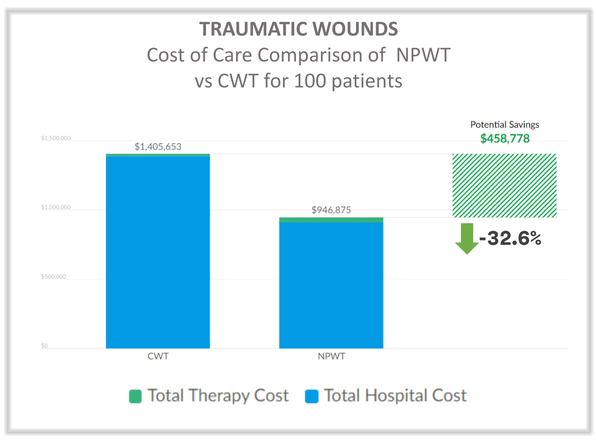


Figure. 3

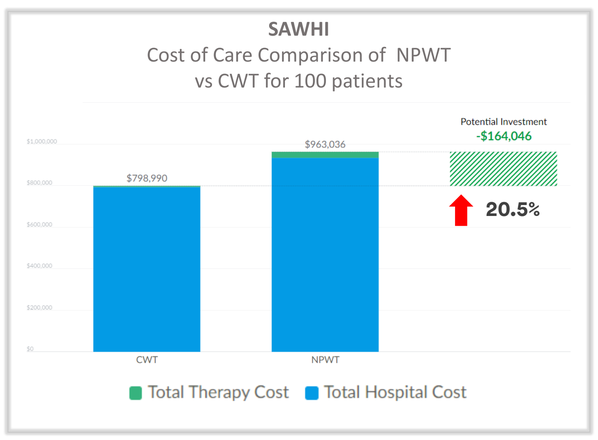


Figure. 4

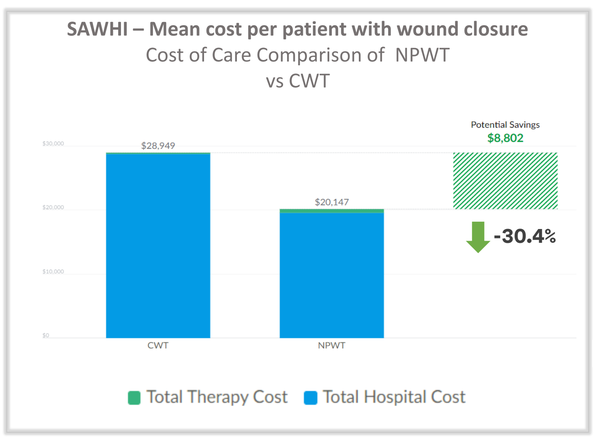


Figure. 5

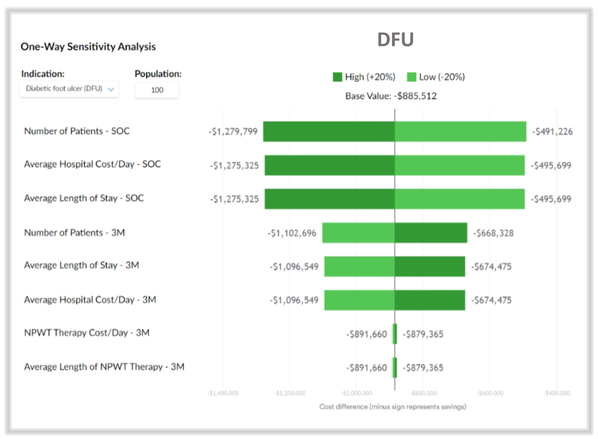


Figure. 6

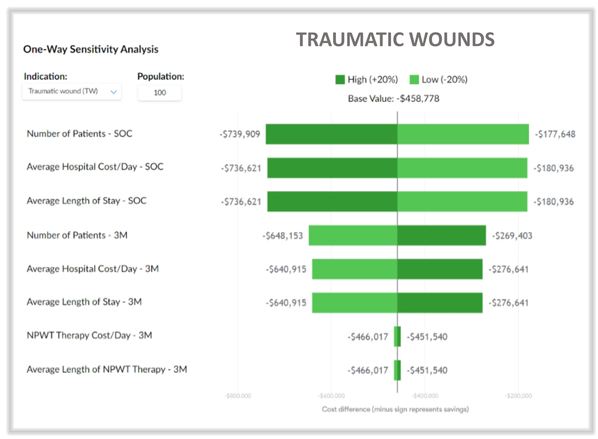
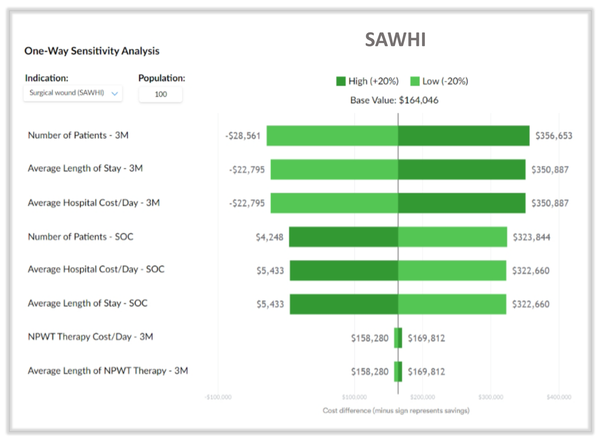


Figure. 7



*Corrected after abstract submission

Legend
- CWT = Conventional Wound Therapy
- NPWT = Negative Preassure Wound Therapy
- $ = cost translated in USD
- Bar charts show calculated potential cost for 100 wounds treated in hospital

References

1. Maranna H, Lal P, Mishra A, Bains L, Sawant G, Bhatia R, Kumar P, Beg MY. Negative pressure wound therapy in grade 1 and 2 diabetic foot ulcers: A randomized controlled study. *Diabetes Metab Syndr.* 2021 Jan-Feb;15(1):365-371. doi: 10.1016/j.dsx.2021.01.014. Epub 2021 Jan 23. PMID: 33524646.

2. Kumaar A, Shanthappa AH, Ethiraj P. A Comparative Study on Efficacy of Negative Pressure Wound Therapy Versus Standard Wound Therapy for Patients With Compound Fractures in a Tertiary Care Hospital. *Cureus.* 2022 Apr 1;14(4):e23727. doi: 10.7759/cureus.23727. PMID: 35509767; PMCID: PMC9060726

3. Seidel D, Lefering R. NPWT Resource Use Compared With Conventional Wound Treatment in Subcutaneous Abdominal Wounds With Healing Impairment After Surgery: SAWHI Randomized Clinical Trial Results. *Ann Surg.* 2022 Feb 1;275(2):e290-e298. doi: 10.1097/SLA.0000000000004960. PMID: 34117147; PMCID: PMC8746894.

4. Seidel D, Diedrich S, Herrle F, Thielemann H, Marusch F, Schirren R, Talaulicar R, Gehrig T, Lehwald-Tywuschik N, Glanemann M, Bunse J, Hüttemann M, Braumann C, Heizmann O, Miserez M, Krönert T, Gretschel S, Lefering R. Negative Pressure Wound Therapy vs Conventional Wound Treatment in Subcutaneous Abdominal Wound Healing Impairment: The SAWHI Randomized Clinical Trial. *JAMA Surg.* 2020 Jun 1;155(6):469-478. doi: 10.1001/jamasurg.2020.0414. PMID: 32293657; PMCID: PMC7160755.

Poster EE133
Presented at ISPOR 2023, Copenhagen, Denmark. Nov 12-15, 2023.