Cost Analysis of Two Skin Substitutes for Treatment of Large Diabetic Foot Ulcers with Exposed Bone or Tendon

Objectives:
Diabetic foot ulcers (DFUs) with exposed bone or tendon can be difficult to heal. These recalcitrant wounds can create an economic burden because they often require multiple treatment applications. New research is needed to identify cost effective solutions. Both D-ADM® and vCHPM® have shown success in treating bone-exposed ulcers. This health economics analysis compared the cost of each skin substitute using CMS cost schedules.

Methods:
DFU healing rates and the number of applications needed to achieve healing were retrospectively obtained from two similar studies.¹,² The cost of healing one DFU in a hospital outpatient department (HOPD) was calculated using [(# of Applications)×(Bundled HOPD payment + Physician Payment)]. The cost of healing one DFU in a physician’s office was calculated using [(# of Applications)×(Product Cost per Application + Physician Payment)]. Treatment costs for HOPD were extracted from Quarter 3 2018 CMS Addendum B OPPS Payment using CPT code 15275. Skin substitute cost was calculated using October 2018 Medicare Average Selling Price for vCHPM and invoice cost for D-ADM.³ The smallest graft size needed to cover a 5 cm² wound was used for calculating cost.

Results:
The ulcer areas were comparable, with 13.7 cm² and 14.6 cm² for D-ADM (n=22) and vCHPM (n=27), respectively. At 16 weeks, D-ADM had a healing rate of 59.1% with a mean 1.0 application needed to achieve healing. vCHPM had a healing rate of 59.3% with a mean 9.0 applications needed for healing. The average cost of healing a single DFU in a HOPD was $1,667 for D-ADM compared to $15,007 for vCHPM. The mean cost of healing a single DFU in a physician’s office was $1,811 for D-ADM compared to $31,129 for vCHPM. Despite the equivalent healing rates, vCHPM cost 9-17 times more on average to heal complex DFUs compared to D-ADM.

*Dermacell® (LifeNet Health, Virginia Beach, VA)
^GraftixCORE® (Osiris Therapeutics, Inc, Columbia, MD)

References

Evaluation of Efficacy of Negative Pressure Wound Therapy for the Treatment of Bone or Tendon-Exposed Diabetic Foot Ulcers
Objectives:

Negative pressure wound therapy (NPWT) is generally accepted as an important adjunctive therapy in deep wound treatment. However, clinicians may not be able to prescribe NPWT due to geographical or insurance constraints, which could delay healing. The availability of NPWT is a particular concern in public hospitals and developing nations. Delayed healing of bone- or tendon-exposed diabetic foot ulcers (DFUs) is especially problematic, as these ulcers are more vulnerable to infection and subsequent amputation. This study evaluated the efficacy of NPWT for healing extremely large and deep DFUs.

Methods:

This sub-analysis evaluated 47 participants with a Wagner grade 3 or 4 DFU. Participants were part of a prospective trial that evaluated the efficacy of D-ADM* at two sites. NPWT was not prescribed at one study site because home health support was not available in this rural area. The effect of NPWT on granulation and healing was assessed. All statistical analyses were calculated using Stata (StataCorp, College Station, TX). Statistical significance was analyzed using Student’s t-test or Fisher’s exact test with a two-sided alpha of 0.05.

Results:

The baseline ulcer areas were comparable, with 25.6 cm$^2$ and 30.5 cm$^2$ for the non-NPWT and NPWT sites, respectively (p=0.5425). Both sites exhibited 100% granulation and did not significantly differ in time to achieve granulation (p=0.4130). The non-NPWT site demonstrated a significantly greater healing rate over the site that used NPWT (70.0% vs. 21.6%; p=0.007). It should be cautioned that the sample size for the non-NPWT site had 10 participants versus 37 for the NPWT site. While the disparity in sample size precludes generalization, these results provide evidence that satisfactory healing of complex diabetic foot ulcers can still occur in areas where access to NPWT may not be available.

*Dermacell® (LifeNet Health, Virginia Beach, VA)

References