



V.A.C.[®] Therapy

Scientific and Clinical Outcomes Overview

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Executive Summary

Wound healing progression involves removal of barriers to wound healing (such as exudate), adequate perfusion to the wound bed and production of granulation tissue. Successful healing involves addressing wounds that may be stalled in the inflammatory and proliferative phases of wound healing. Many passive and active therapies have been developed to address those barriers of wound healing. This includes Negative Pressure Wound Therapy (NPWT). NPWT is utilized across the continuum of care and has substantial amounts of clinical outcome data to demonstrate efficacy to create an environment that promotes healing in a wide variety of wounds.

For over 35 years, KCI has led the way in the development of new technologies and therapies designed to make wound healing more manageable for caregivers and more comfortable for patients around the world. The first commercial NPWT system was available in 1995 with the introduction of the V.A.C.® Therapy System. The V.A.C.® Therapy System (V.A.C.® Therapy) is indicated for patients with chronic, acute, traumatic, sub-acute and dehisced wounds, partial-thickness burns, ulcers (such as diabetic, pressure or venous insufficiency), flaps and grafts.

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 to prepare the wound bed for closure.

To help promote healing, V.A.C.® Therapy provides mechanical forces at the tissue level to create macrostrain and microstrain. Macrostrain causes the V.A.C.® GranuFoam™ Dressing to contract under a controlled negative pressure setting,¹ drawing the wound edges together, reducing the overall wound area and allowing for granulation tissue to fill in. Microstrain is the transduction of pressure to tissue surfaces, resulting in cell surface deformation as the tissue is being pulled up into the pores (tissue stretch) and the compression of tissue at the struts.¹ Macrostrain and microstrain increase granulation tissue formation. These actions by the application of the V.A.C.® Therapy System are responsible for promoting changes in gene expression, proliferation and protein synthesis, all of which contribute toward the promotion of granulation tissue.²

The abundance of clinical evidence for the V.A.C.® Therapy System demonstrates an active, integrated wound healing system designed and clinically proven to create an environment that promotes wound healing at the cellular level by preparing the wound bed for closure, reducing edema, promoting granulation tissue formation, promoting perfusion and removing exudate and infectious material. Functions and outcomes of V.A.C.® Therapy are critically linked to the interaction of its component parts. To date (7/15), there have been 1087 publications that have discussed the use of commercial NPWT systems, with 94% (1026/1087) coming from the use of the KCI V.A.C.® Therapy System. Because other devices use different wound interface materials and do not provide controlled, self-adjusting pressure technology (SensaT.R.A.C.™ Technology), it cannot be presumed the data from those devices can be pooled and evaluated with V.A.C.® Therapy data, nor can their evidence be construed to represent the same outcomes as V.A.C.® Therapy.

There are numerous studies which have evaluated the Cost Effectiveness of V.A.C.® Therapy in a variety of settings and wound types. These studies have shown that V.A.C.® Therapy has been associated with fewer hospitalizations³, fewer complications^{4,5}, fewer amputations^{6,7}, fewer dressing changes^{8,9}, faster time to wound healing¹⁰, shorter hospitalization^{6,7}, and reduced treatment times¹¹⁻¹³. By minimizing the factors that contribute to direct and indirect wound care costs, V.A.C.® Therapy has emerged as a cost-effective option for wound healing.

This overview document provides both clinical and economic summary of the current peer-reviewed published literature on V.A.C.® Therapy on a wide variety of acute and chronic wound types.

Background

Negative pressure wound therapy (NPWT) has been used for almost 20 years across the continuum of care. Its application on a variety of acute and chronic wounds speaks to the versatility of NPWT in wound care. V.A.C.® Therapy was introduced commercially in 1995¹⁴; since then, the number of competitor products has increased substantially. However, KCI V.A.C.® Therapy has shown its prevalence in the medical community, being the most published of all the commercial systems with 94% of all NPWT publications utilizing V.A.C.® Therapy.

Wound type, size, and severity, as well as treatment cost and patient mobility, have become important considerations when choosing an NPWT system to improve patient's wound healing outcomes. The V.A.C.® Therapy System is an integrated wound management system for use in acute, long-term care and home care settings. It is intended to create an environment that promotes wound healing by secondary or tertiary (delayed primary) intention by preparing the wound bed for closure, reducing edema, promoting granulation tissue formation and perfusion, and by removing exudate and infectious material. The integrated system includes a pump to provide continuous negative pressure monitored by SensaT.R.A.C.™ Technology, a separate collection canister, and dressings.

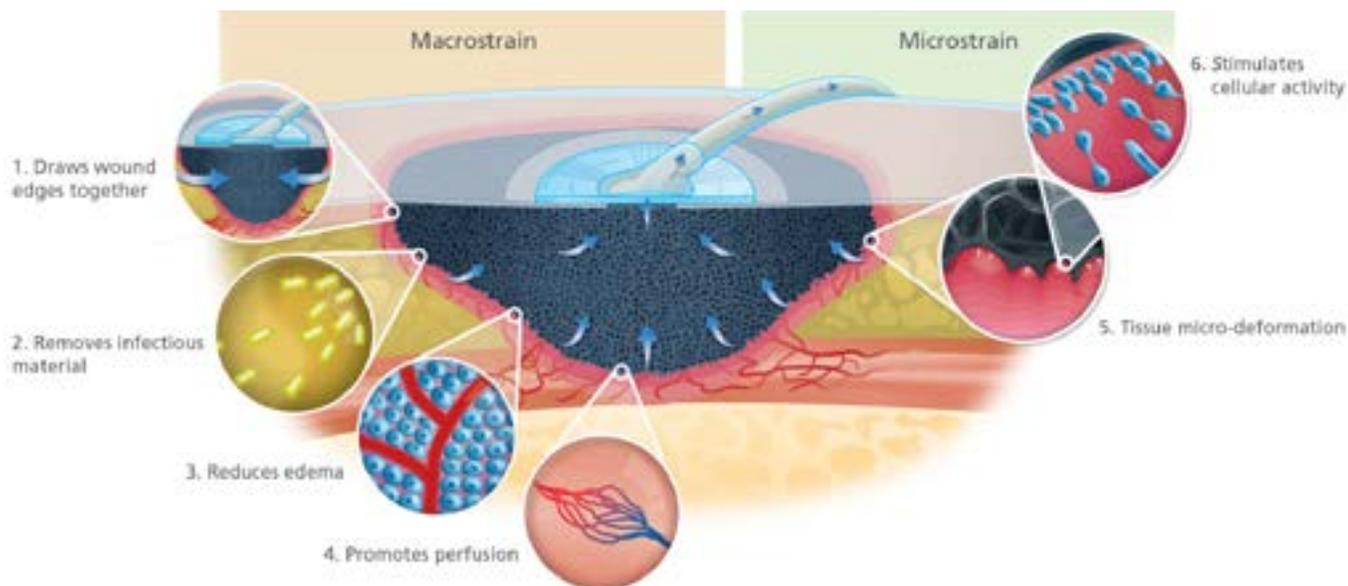
Optimal wound healing occurs when there is:^{15,16}

- Effective removal of barriers to wound healing, including exudates, inflammatory mediators (eg, cytokines, proteases) and infectious materials
- Adequate perfusion to the wound bed
- Presence of metabolically active cells to produce granulation tissue
- Protection of the peri-wound tissue

V.A.C.® Therapy Mechanism of Action

The integrated V.A.C.® Therapy System has a unique mechanism of action whereby the delivery of negative pressure using the proprietary V.A.C.® GranuFoam™ Dressing not only maintains a wound environment that promotes healing, but also stimulates physiologic responses important to wound healing. These responses are observed at the tissue and cellular levels. Macrostrain approximates the tissue edges, minimizing the tissue defect size.¹⁷⁻¹⁹ Microstrain stimulates increased cellular proliferation, leading to angiogenesis and granulation tissue formation.²⁰⁻²² These effects, as predicated by the adequate delivery of negative pressure to the wound site, are translated into clinical outcomes such as improved tissue perfusion²³, reduced tissue edema²⁴ and increased granulation tissue formation.²⁵ (Figure 1) The scientific foundation for V.A.C.® Therapy forms the basis for the improved patient outcomes observed in the published clinical literature and supports its use for temporizing wounds and protecting them from external contamination during long-term care.

Figure 1: Mechanisms of Action



Material Matters

Both reticulated open-cell foam (V.A.C.® GranuFoam™ Dressing) and gauze are currently used with NPWT for the treatment of wounds. Both dressings promote wound healing by providing a moist wound environment and by removal of exudates. However, due to the differences in dressing interactions, gauze may not offer the same level of granulation tissue formation that is affected through macrostrain and microstrain with V.A.C.® GranuFoam™ Dressings.^{17,26-28}

Three bench studies have been published specifically comparing the effect of microstrain on cell proliferation, migration and gene expression. In 2007, McNulty et al developed a three-dimensional fibrin matrix to study the effects of negative pressure on fibroblast viability, chemotactic signaling, and proliferation. They found that NPWT utilizing gauze had significant cell death and stimulated less migration and proliferation than V.A.C.® Therapy with V.A.C.® GranuFoam™ Dressing treated cells ($p < 0.05$).²² In 2009, Derrick et al reported that gene expression profiles for V.A.C.® Therapy with V.A.C.® GranuFoam™ Dressing (5072 genes) were > 1.6 -fold than moist wound dressings (3601 genes) and NPWT gauze (3952 genes).² In 2009, McNulty et al published their finding on the effect of V.A.C.® Therapy with V.A.C.® GranuFoam™ Dressing and NPWT gauze on cellular energetics. They found that levels of cytochrome c oxidase, energy charge, and adenosine triphosphate/adenosine diphosphate were significantly increased following the application of V.A.C.® Therapy compare to NPWT gauze ($p < 0.05$).²¹

Depending on your goal of therapy such as fluid management and/or fluid management versus granulation tissue formation, KCI provides you with both options of gauze or V.A.C.® GranuFoam™ Dressing without having to switch between therapy units.

Not All NPWTs Are the Same

KCI V.A.C.® Therapy Systems are the only NPWT systems that provide patented SensaT.R.A.C.™ Technology, a real-time pressure feedback system. This technology continuously monitors, measures, and maintains the set negative pressure at the wound site and adjusts pump output, compensating for wound distance, anatomical wound position, exudates characteristics, and patient movement. The SensaT.R.A.C.™ Pad (Figure 2) efficiently draws exudates away from the wound through the large inner lumen and independently monitors target pressure at the wound through outer sensing lumens (Figure 3). The SensaT.R.A.C.™ Pad distributes negative pressure to individual sensing lumens and helps reduce tubing blockages and false alarms.

Figure 2: SensaT.R.A.C.™ Pad

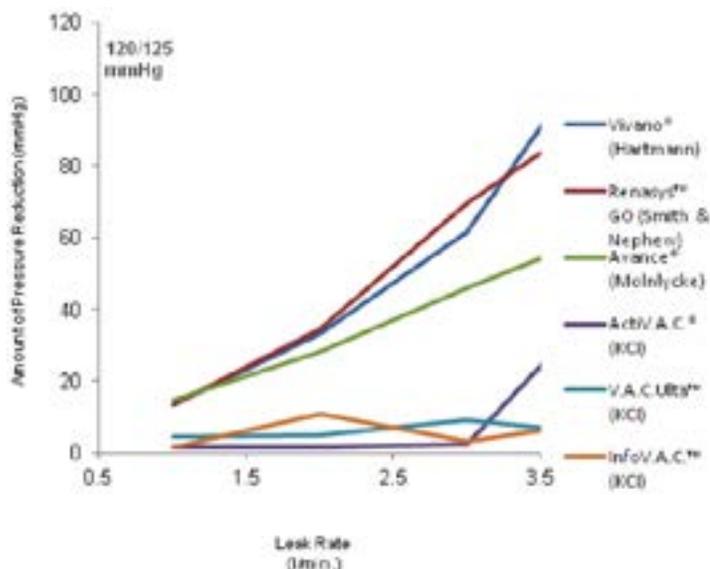


Figure 3: V.A.C.® Therapy Tubing Cross



Although the vast majority of NPWT literature is reported using V.A.C.® Therapy, the number of alternative NPWT systems has increased over the years. Therefore, it is important to understand the differences that may exist among the different NPWT systems. A bench top NPWT study²⁹, of four cohorts with two units each, compared KCI ActiV.A.C.® Negative Pressure Wound Therapy Unit integrated with SensaT.R.A.C.™ Technology with the Renasys™ Go Wound Therapy Unit (Smith & Nephew). Therapy units were placed 92cm above dressed simulated wounds with inline canisters for fluid collection 48cm above the simulated wounds. Simulated wound fluid at 30cP viscosity was injected into the dressings, therapy units were started, and wound pressure and fluid volume were measured over 24 hours. Three therapy units per group were tested 3 times each. Under similar test conditions, ActiV.A.C.® Therapy maintained a target pressure at the simulated wound site, while Renasys™ GO was unable to maintain the target negative pressure at the wound site. In addition, it took Renasys™ Go 24 hours to remove the volume of fluid removed in 15 minutes by ActiV.A.C.® Therapy.²⁹ Correlation of bench results in humans has not been established in specific clinical studies. However, similar findings from other bench top studies comparing V.A.C.® Therapy Units with other competitor products have also been reported (Figure 3).³⁰⁻³³ These data demonstrated that the performance of all NPWT systems is not necessarily similar.

Figure 3: Side By Side Comparative Bench Test: Tolerance of Small-Sized Air Leakage



Clinical Evidence

Of all the commercialized NPWT products, KCI V.A.C.® Therapy has the largest body of evidence to date, including over 1000 peer-reviewed articles, 44 of which are randomized controlled trials (RCT) (Figure 4 and Table 1a-c). These studies have demonstrated several benefits of NPWT, as well as the effectiveness of V.A.C.® Therapy in helping to manage diabetic foot wounds, chronic wounds (eg, pressure ulcers and lower extremity ulcers), and a variety of acute wounds. Table 2 lists a number of key references by wound type.

Suissa, Danimo and Andreas published a meta-analysis of randomized trials of NPWT vs standard wound care. Their results suggest that NPWT appears to be an effective treatment for chronic wounds.³⁴

Figure 4: V.A.C.® Therapy Publication Numbers

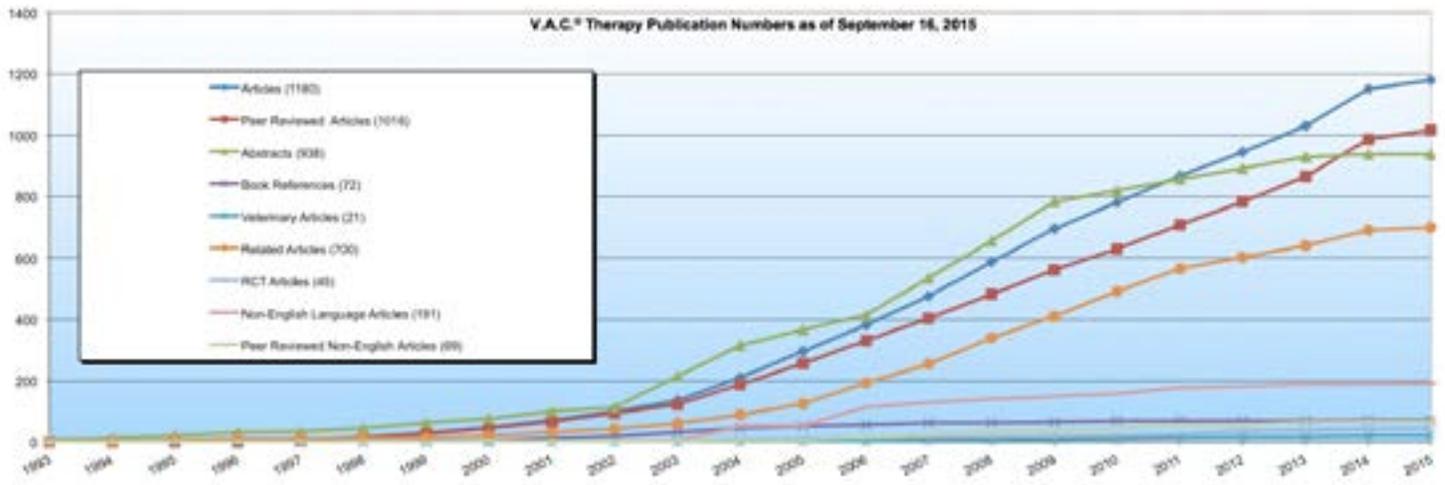


Table 1a: V.A.C.® Therapy vs. Other NPWT Evidence Numbers by Evidence Type

Type of Study	KCI V.A.C.® Therapy	Other NPWT Manufacturers
RCT	42	3
PCT	-	-
PC	75	19
CRS	48	-
RS	192	3
CST	265	23
CSE	242	15

Study Type: CRS=Comparative Retrospective Study; CSE= Case Series; CST=Case Study; PC=Prospective Cohort; PCT=Prospective Controlled Trial; RCT=Randomized Controlled Trial; RS=Retrospective Study

Data based on results of a search of KCI internal publication database. (Data as of 08/2015)

Clinical Evidence (cont.)

Table 1b: V.A.C.® Therapy vs. S&N NPWT by Evidence Type

Type of Study	KCI V.A.C.® Therapy	Smith & Nephew NPWT
RCT	42	1
PCT	-	-
PC	75	3
CRS	48	-
RS	192	2
CST	265	14
CSE	242	7

Study Type: CRS=Comparative Retrospective Study; CSE= Case Series; CST=Case Study; PC=Prospective Cohort; PCT=Prospective Controlled Trial; RCT=Randomized Controlled Trial; RS=Retrospective Study

Data based on results of a search of KCI internal publication database. (Data as of 08/2015)

Table 1c: V.A.C.® Therapy vs. Other NPWT Evidence Numbers by Wound Type

Type of Study	KCI V.A.C.® Therapy	Smith & Nephew NPWT	Other NPWT Manufacturers
Acute Wounds			
Surgical Wounds	449	1	1
General Trauma	112	1	1
Grafts	101	-	0
Chronic Wounds			
Pressure Ulcers	44	-	0
Diabetic Foot	52	5	5
Chronic Leg	18	1	1

Data based on results of a search for Levels 1-4 evidence of the appropriate wound types in a KCI internal publication database. (Data as of 08/2015)

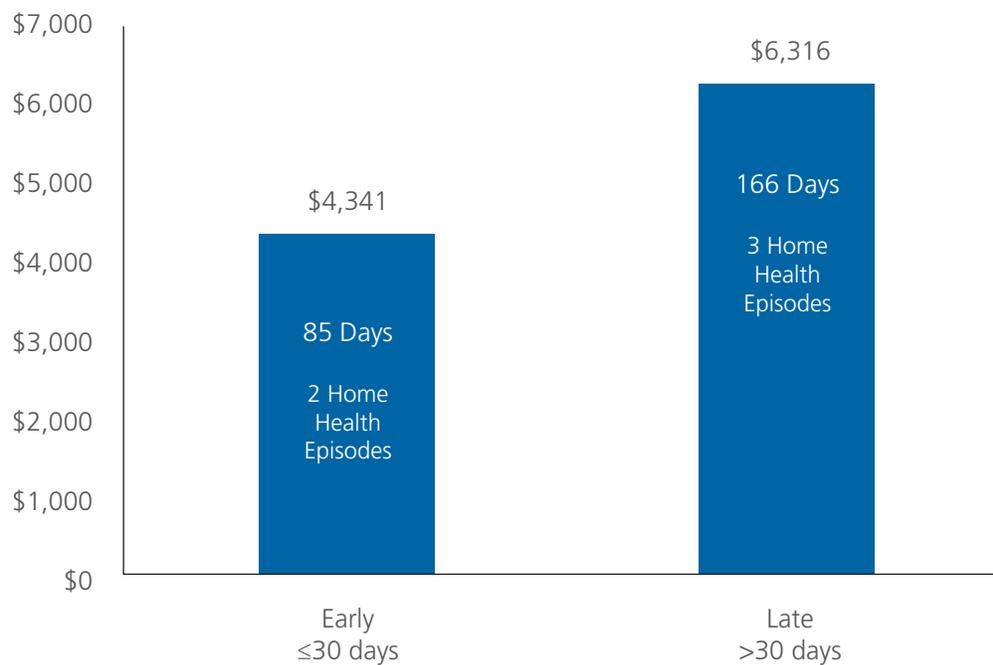
Clinical Evidence (cont.)

Wound Type	Number of Articles	Key References
Acute Wounds		
Surgical Wounds	333	³⁵ Biter et al 2014 (RCT; Level 1) ³⁶ Long et al 2014 (PCT; Level 2)long ⁴ Falagas et al 2013 (CRS, Level 3) ³⁷ Sziklavari et al 2011 (PCT; Level 3) ³⁸ Zannis et al 2009 (PCT; Level 3) ³⁹ Siegel et al 2007 (CRS; Level 3) ⁴⁰ De Feo et al 2011 (CRS; Level 3) ⁴¹ Fuchs et al 2005 (CRS; Level 3) ⁴² Song et al 2003 (CRS; Level 3) ⁴³ Bickels et al 2005 (CRS; Level 3) ⁴⁴ de Leon et al 2009 (CRS; Level 3) ⁴⁵ Yang et al 2006 (CRS; Level 3)
General Trauma	28	⁴⁶ Milcheski et al 2014 (PCT; Level 2) ⁴⁷ Babiak et al 2012 (PCT; Level 2) ⁴⁸ Stannard et al 2006 (RCT; Level 1) ⁴⁹ Machen et al 2007 (CSE; Level 4) ⁵⁰ Labler et al 2007 (CST; Level 4)
Grafts	99	⁵¹ Blume et al 2010 (CRS; Level 3) ⁵² Vidrine et al 2005 (CRS; Level 3) ⁵³ Stone et al 2004 (CRS; Level 3) ⁵⁴ Moisis et al 2004 (RCT; Level 1) ⁵ Scherer et al 2002 (CSE; Level 3) ⁵⁵ Jeschke et al 2004 (RCT; Level 1) ⁵⁶ Eisenhardt et al 2012 (RCT; Level 1)
Diabetic Foot Amputations	15	⁵⁷ Lavery et al 2008 (CRS; Level 3) ⁷ Armstrong and Lavery 2005 (RCT; Level 1) ¹³ Dalla Paola 2010 (RCT; Level 1) ⁵⁸ Eginton et al 2003 (RCT; Level 1)
Chronic Wounds		
Pressure Ulcers	44	⁵⁹ Wanner et al 2003 (RCT) ⁶⁰ Ford et al 2002 (RCT) ⁶¹ Joseph et al 2000 (RCT) ⁶² Wild et al 2008 (RCT) ⁶³ Ashby et al 2012 (RCT)
Diabetic Foot Ulcers	49	³⁴ Suissa et al 2011 (Meta Analysis) ⁶⁴ Blume et al 2008 (RCT)
Venous Insufficiency Ulcers	16	⁶⁵ Egemen et al 2012 (PCT; Level 2) ⁶⁶ Vuerstaek et al 2006 (RCT) ⁶⁷ Dini et al 2010 (RCT)

Early vs Late

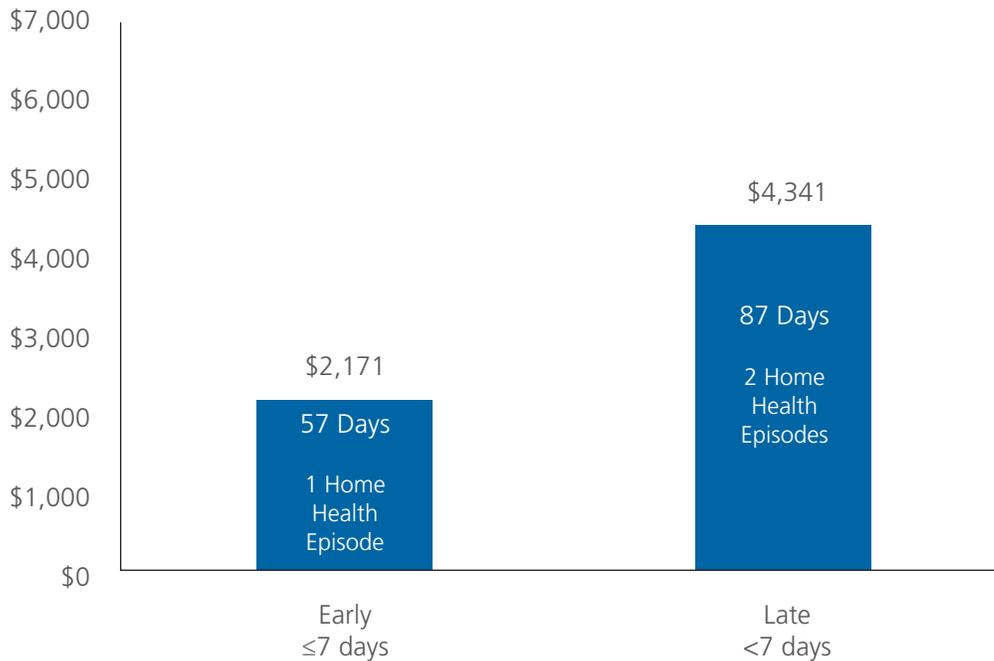
The cost savings associated with the use of V.A.C.[®] Therapy support early initiation of NPWT. A study by Baharestani et al evaluated how early versus late initiation of NPWT affected the length of stay (LOS) in home healthcare with Stage III or IV pressure ulcers or surgical wounds.⁶⁸ The results indicated that early application of NPWT was related to a reduced overall length of home care services (Figures 5 and 6). Additionally, higher costs for wound care treatment could result because for each day that NPWT application was delayed, nearly 1 day was added to total LOS.⁶⁸ Kaplan et al further demonstrated the success of early initiation of NPWT for the treatment of traumatic wounds.⁶⁹ Records of trauma patients were retrospectively analyzed and divided into two groups: early (Day 1 or 2 of hospital stay) or late group (Day 3 or later). Results showed the early use of NPWT was associated with reduced hospital stays (10.4 vs 20.6 days, $p < 0.0001$), ICU stays (5.3 vs 12.4 days, $p < 0.0001$), and treatment days, translating into lower total and variable costs. In a third study, de Leon et al and Driver retrospectively investigated the effects of early use of NPWT on LOS in a long-term acute care setting. Records of patients who received NPWT within 14 days of admission (early) or after 15 days of admission (late) were analyzed. Findings from this study favored early initiation of NPWT with a reduction in mean LOS (35.4 vs 56.4 days, $p < 0.0001$) and mean time to wound closure (22 vs 34 days, $p = 0.0154$) in these patients compared to the late NPWT patients.

Figure 5: Home Health Comparison of Early vs. Late NPWT on Home Patients with Pressure Ulcers



Early vs Late (cont.)

Figure 6: Home Health Cost Comparison of Early vs. Late NPWT on Home Patients with Surgical Wounds

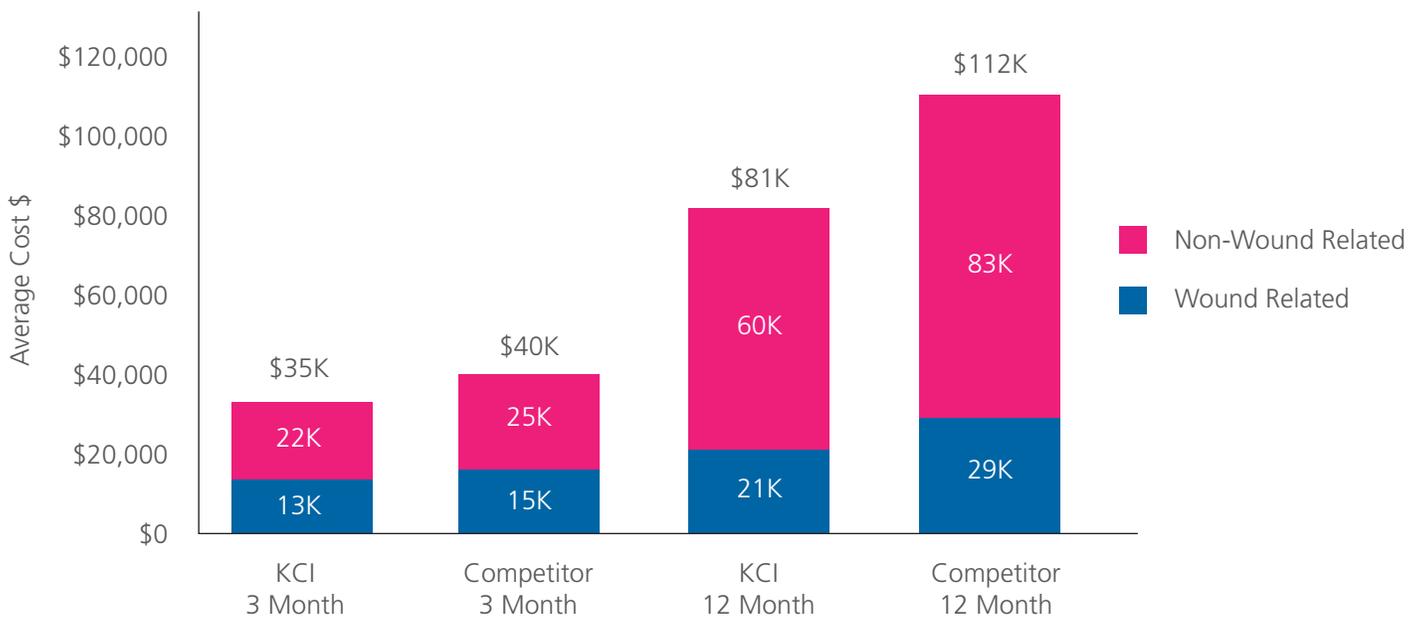


Yao et al (2014) published their findings on their evaluation on the efficacy of negative pressure wound therapy (NPWT) compared to standard of care on wound healing in high-risk patients with multiple significant comorbidities and chronic lower extremity ulcers (LEUs) across the continuum of care setting. This was a retrospective cohort study of 'real-world' high-risk patients conducted using the review of the Boston University Medical Center electronic medical records, along with chart abstraction to capture detailed medical history, comorbidities, healing outcomes and ulcer characteristics. A total of 342 patients, 171 NPWT patients with LEUs were matched with 171 non-NPWT patients with respect to age and gender, were included in this cohort from 2002 to 2010. The hazard ratios (HRs) were estimated by COX proportional hazard models after adjusting for potential confounders. The results found that NPWT patients were 2.63 times (95% CI = 1.87-3.70) more likely to achieve wound closure compared to non-NPWT patients. Incidence of wound closure in NPWT patients were increased in diabetic ulcers (HR = 3.26, 95% CI = 2.21-4.83), arterial ulcers (HR = 2.27, CI = 1.56-3.78) and venous ulcers (HR = 6.31, 95% CI = 1.49-26.6) compared to non-NPWT patients. Wound healing appeared to be positively affected by the timing of NPWT application. Compared with later NPWT users (1 year or later after ulcer onset), early NPWT users (within 3 months after ulcer onset) and intermediate NPWT users (4-12 months after ulcer onset) were 3.38 and 2.18 times more likely to achieve wound healing. The authors concluded that despite greater significant comorbidities, patients receiving NPWT healed faster, and that early use of NPWT demonstrated better healing. They also determined that the longer the interval before intervention with NPWT, the higher the correlation was to with poor wound healing outcome.⁷⁰

Health Economics

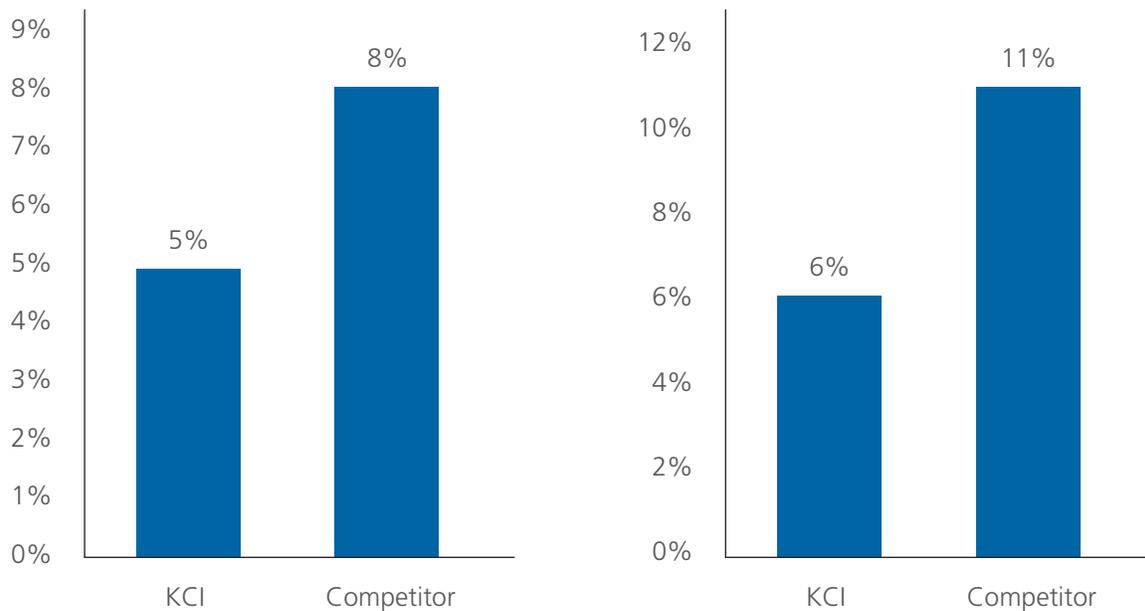
Because not all NPWT systems may be the same and cost differences exist among NPWT systems, it is important to understand the comparative effectiveness of different NPWT systems because certain NPWT systems may be associated with potential overall cost savings. Law et al⁷¹ (2015) analyzed de-identified insurance claim data from a major US insurance company (Optum Life Sciences, Eden Prairie, MN) for patients with chronic wounds who received any type of NPWT model. Total and wound-related costs (ie, hospital readmission rates) were calculated for V.A.C.[®] Therapy and all other Competitor NPWT (unknown to researchers) during the time following the initial claim in an outpatient setting. Patient data were included only if there were ≥ 1 NPWT diagnosis claims. Mean total healthcare costs were assessed at 3 and 12 months; wound-related hospital admission rates were assessed at 3 and 6 months. Results (Figure 7) showed that at 3 months, total costs trended lower for V.A.C.[®] Therapy treated patients (n=12,843) compared to Competitor NPWT patients (n=713) (\$35,498 vs \$39,722, respectively; p=0.08). However, at 12 months (Figure 7), total costs were significantly lower for V.A.C.[®] Therapy patients (n=7,860) compared to Competitor NPWT patients (n=378) (\$80,768 vs \$111,212, respectively; p=0.03). Wound-related readmission rates (Figure 8) were significantly lower for V.A.C.[®] Therapy compared to Competitor NPWT at 3 months (5% vs 8%, respectively; p \leq 0.01) and 6 months (6% vs 11%, respectively; p \leq 0.01). The authors concluded that further comparative studies are necessary to understand how to manage outcomes and costs for patients with chronic wounds.

Figure 7: Mean Total Health Care Costs for 3 and 12 Months



Health Economics (cont.)

Figure 8: Wound Related Re-Admission Rates



A similar analysis was reported by Law and Beach (2014), who performed a retrospective observational database analysis, conducted by Premier Research Services (Charlotte, NC), that identified and followed to discharge hospitalization visits where NPWT was provided to patients.⁷² The objective of this study was to assess hospital charges and readmission rates for patients who were treated with V.A.C.[®] Therapy versus other NPWT systems. De-identified hospital database records of patients treated between 01-Jul-2011 and 30-Jun-2013 with at least one NPWT claim were retrospectively analyzed. The analysis included 18,385 V.A.C.[®] Therapy discharges and 3,253 other NPWT discharges from 144 and 24 hospitals, respectively. Results showed V.A.C.[®] Therapy patients had 10% shorter LOS (13.0 vs. 14.5 days, respectively; $p < 0.0001$). V.A.C.[®] Therapy patients also had lower all-cause 30-day readmission rates of 16.1% vs 17.9% ($p = 0.0145$). Average hospital charges were 11% lower (\$14,512) for V.A.C.[®] Therapy patients versus other NPWT patients (\$112,759 vs \$127,272, $p < 0.0001$). Estimated length of therapy was lower for V.A.C.[®] Therapy patients versus other NPWT patients (7.1 vs. 7.5, respectively; $p < 0.0032$), and V.A.C.[®] Therapy patients received NPWT earlier in their stay than patients in facilities using other NPWT (4.6 vs. 5.5 days, respectively; $p < 0.0001$). Percentage of NPWT patients who required an ER visit within 30 and 60 days post discharge was lower for V.A.C.[®] Therapy patients versus other NPWT patients (16.6% vs 18.1%, respectively, at 30 days, $p = 0.0456$; 23.4% vs 26.2%, respectively, at 60 days, $p = 0.0012$). Based on this analysis, patients treated with V.A.C.[®] Therapy had shorter lengths of stay and lower hospital readmission rates than patients treated with other NPWT.

In 2008, Apelqvist et al published their findings on resource utilization and direct economic cost of care for patients treated with V.A.C.[®] Therapy compared standard moist wound therapy (MWT).⁷³ The analyses were based on the published RCT by Armstrong and Lavery.⁶ Apelqvist et al found that more surgical procedures, including debridement, were required for the MWT group (120 vs 43 V.A.C.[®] Therapy, $P < .001$). The dressing change average performed per patient was 118 (range 12-226) for MWT versus 41 (6-140) for V.A.C.[®] Therapy ($p = 0.0001$). Outpatient treatment visits were 11 (range 0-106) for the MWT group versus 4 (range 0-47) in the NPWT group ($p < 0.05$). The average direct cost per patient treated for 8 weeks or longer (independent of clinical outcome) was \$27,270 (V.A.C.[®] Therapy) and \$36,096 (MWT). The average total cost to achieve healing was \$25,954 for V.A.C.[®] Therapy ($n = 43$) compared to \$38,806 for MWT group ($n = 33$). The authors concluded that V.A.C.[®] Therapy treated diabetic patients with post amputation wounds resulted in lower resource utilization and a greater number of patients obtaining wound healing at a lower overall cost of care compared to MWT.⁷³

Health Economics (cont.)

Recently (2014), Driver and Blume⁷⁴ published their findings on a post-hoc retrospective analysis of patients enrolled in a randomized controlled trial (Blume et al, 2008)⁶ to evaluate overall costs of V.A.C.[®] Therapy (n=169) versus advanced moist wound therapy (AMWT; n=166) in treating grade 2 and 3 diabetic foot wounds during a 12-week therapy course. A total of 324 patient records (NPWT = 162; AMWT = 162) were analyzed. There was a median wound area reduction of 85.0% from baseline V.A.C.[®] Therapy treated patients to 61.8% reduction in those treated with AMWT. Total cost for all patients, regardless of closure, was \$1,941,472.07 for V.A.C.[®] Therapy group compared to \$2,196,315.86 for AMWT group. For patients achieving complete wound closure, the mean cost per patient for V.A.C.[®] Therapy group was \$10,172 compared to \$9,505 for the AMWT group. The median cost per 1 cm² of closure was \$1,227 for V.A.C.[®] Therapy and \$1,695 for AMWT. In patients not achieving complete wound closure, the mean total wound care cost per patient was \$13,262 for V.A.C.[®] Therapy group, compared to \$15,069 for AMWT group. The median cost to close 1cm² in non-healing wounds for V.A.C.[®] Therapy was \$1,633, compared to \$2,927 for AMWT. They concluded that the results showed a greater cost effectiveness for V.A.C.[®] Therapy versus AMWT.⁷⁴

In 2008, Flack et al reported on the cost-effectiveness of V.A.C.[®] Therapy compared to advanced wound dressings, for the treatment of diabetic foot ulcers in the US.⁷⁵ They used a Markov model designed to estimate the cost per amputation avoided and the cost per quality-adjusted life year (QALY) of V.A.C.[®] Therapy, compared with both traditional and advanced dressings. The Markov model simulated 1000 patients over a one-year period using transition probabilities obtained from the literature. The model analyzed health states such as: uninfected ulcer; infected ulcer; infected ulcer post-amputation; healed; healed post-amputation; amputation; and death. Simulated patients initially treated with V.A.C.[®] Therapy switched to the advanced dressing after three months of treatment if their wound remained unhealed. Simulated patients treated with traditional or advanced dressings were assumed to continue with their treatment for the full 12 months if they remained unhealed. The model results demonstrated improved healing rates (61% versus 59%), more QALYs (0.54 versus 0.53) and an overall lower cost of care (\$52,830 versus \$61,757 per person) for V.A.C.[®] Therapy simulated patients compared with advanced dressings. V.A.C.[®] Therapy was reported to be the dominant intervention when compared with traditional dressings. The model results indicated that V.A.C.[®] Therapy was less costly and more effective than both traditional and advanced dressings. The results were reported to be robust to changes in key parameters, including the transition probabilities, the cost of V.A.C.[®] Therapy and the utility weights applied to health states.⁷⁵

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