

Cost-effective Alternative for Negative-pressure Wound Therapy

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Background: Current predominantly used equipments for negative-pressure wound therapy (NPWT) are expensive. In current healthcare climate continually emphasizing cost containment, importance in developing more cost-effective alternatives cannot be understated. Previously, therapeutically equivalent methods of providing NPWT was demonstrated using just low-cost, universally available supplies, coined Gauze-SUCtion (GSUC). Here, we examine long-term potential financial savings of utilizing GSUC over commercialized products.

Methods: A retrospective cost analysis was performed at the University of Chicago Medical Center between 1999 and 2014. All NPWT was provided via either GSUC or commercialized vacuum-assisted closure (VAC, KCI) device. Sum of all material component costs were reviewed to determine theoretical average daily cost. For the VAC group, recorded institutional spend to KCI was also reviewed to determine actual daily cost. In the GSUC group, this figure was extrapolated using similar ratios. Labor costs for each method were determined using analysis from prior study. Patient demographics, etiology, wound location, and treatment length were also reviewed.

Results: Total of 35,871 days of NPWT was provided during the 15-year span. Theoretical average cost of VAC was \$94.01/d versus \$3.61/d for GSUC, whereas actual average was \$111.18/d versus \$4.26/d. Average labor cost was \$20.11/dressing change versus \$12.32. Combined, total cost of VAC therapy was estimated at \$119,224 per every 1,000 days of therapy versus \$9,188 for the GSUC.

Conclusions: There is clear and significant cost savings from utilization of GSUC method of NPWT. Furthermore, the added advantage of being able to provide NPWT from universally accessible materials cannot be overstated. (*Plast Reconstr Surg Glob Open* 2017;5:e1211; doi: 10.1097/GOX.0000000000001211; Published online 6 February 2017.)

Wound care is a common medical problem that poses a significant financial burden to our health-care system. In 2012, US health care spending reached \$2.8 trillion, with hospital care spending reaching up to \$882.3 billion. Wound care management accounts for almost 4% of that total health system cost from current estimates, with total global wound management market projected to be worth over \$18.5 billion by 2021.¹

The increasing cost of medical technology is a significant contributor to higher health care spending. The implementation of new medical technology across the board accounts for between 38% and 65% of health care spending increases.^{2,3} The wound care market is no exception. Although various segments of its market have been reported to grow at widely variable rates, highest sales growth has been in biological growth factors and therapies integrating new and evolving technology.¹⁻³

Negative-pressure wound therapy (NPWT) is an example of evolving integration of technology for wound management.⁴⁻⁷ The application of a suction pump device for the treatment of suppurative wounds was first described in the 1980s by several authors from the former Soviet Union in a series of articles now known as the “Kremlin papers.”^{6,8-11} In the early 1990s, Western European surgeons adopted negative-pressure (more accurately, sub-atmospheric) wound therapy for the treatment of open

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wounds,^{12,13} and by 1997, the technique was introduced in the United States and commercialized as the vacuum-assisted closure device (VAC; KCI, San Antonio, Tex.).^{14,15} Efficacy of NPWT leading to reduction in wound size and promotion of wound healing is well documented in literature.^{7,16–18} In the inpatient setting, NPWT can reduce the need and complexity of surgical therapy in some situations and improve the clinical outcome of operations in others.^{17,19–23} It can also help expedite patients' transition to outpatient settings more quickly as many types of chronic and acute wounds can be managed at home with NPWT.^{24–26} Overall, patients benefit from quality of life improvement from decreased need for painful dressing changes, faster healing time, and an earlier return to normal function.

In 2013, the global NPWT device market was valued at 1.5 billion dollars with steady continued expected growth.^{2,3} This has led to an expansion of commercially available NPWT devices trying to capture this market in recent years. However, with that said, these commercialized equipments typically used for NPWT continues to be costly, at times, prohibitively so. This financial burden can limit the use of NPWT in settings and situations where budgets are constrained, particularly in public hospitals and for patients who are underinsured or uninsured (not to mention in developing countries globally). From health care providers' stand point, our interest to come up with more cost-effective alternatives is obvious; such efforts can ultimately translate to increased availability/accessibility of therapies for patient in various settings. Furthermore, for such issues as prevalent as wound care management, they can also have significant financial impact on hospitals and the health care system as a whole.

In the previous studies, we have looked at an alternative method of providing NPWT using low-cost, universally available medical supplies called Gauze-SUCtion (GSUC) therapy and demonstrated therapeutically equal or greater efficacy to commercialized product as the VAC.^{16,18,19,27–29} In this study, we review strictly from a financial stand point a 15-year experience and present the potential cost impact at an institutional level when comparing the use of GSUC against commercialized system like the VAC.

METHODS

A retrospective chart review approved by the University of Chicago Medical Center (UCMC) Institutional Review Board was performed on all patients treated with NPWT between July 1, 1999, and June 30, 2014 at the UCMC. All patients were treated with either the vacuum-assisted closure device (VAC; KCI) or wall suction applied to a sealed gauze dressing (GSUC) therapy. Of note, the use of GSUC was first initiated on July 1, 2006, whereas the use of VAC was discontinued all together after June 30, 2011. During the span of this 15-year review, the primary authors maintained a database of number of days of each therapy utilized across all patients receiving NPWT.

Objectives

The primary objective was to compare daily average cost of VAC and GSUC therapy and total incurred insti-

tutional cost annually. Cost of each therapy was broken down into cost of equipment/materials and cost of labor for dressing application. Cost of equipment/materials was analyzed by both the average sum of all component costs and average daily cost calculated from actual recorded annual institutional spend on these materials.

Secondary objective was to analyze basic demographic information and wound characteristics, including age, sex, wound etiology, and wound location.

Calculating Costs

Equipment/Materials

For the VAC group, equipment/material cost consisted of (1) portable vacuum machine rental per day, (2) cost of suction canister, and (3) cost of sponge/adhesive dressing packages that came in 3 different sizes (depending on the size of the wound).

For the GSUC, equipment/material cost consisted of (1) wall suction canister, (2) Kerlix gauzes, (3) red rubber catheters, and (4) Ioban/occlusive tapes.

Average cost of each component was reviewed through hospital billing records. For the VAC group, all available records of institutional payment to KCI between 1999 and 2011 were also reviewed.

Labor

Labor costs for both therapies were determined by average time required for dressing application/changes in minutes, prorated to average physical therapist's hourly salary between 1999 and 2014.

For both therapies, dressing changes were performed on average of every 2 to 3 days, as recommended by VAC therapy guidelines. Methods entailing specifics of statistical comparison including the use of Wilcoxon rank-sum test for average time/dressing change have been described in our previous prospective study by our group. All dressings were performed by a single wound care physical therapist. The study was performed on 45 patients for the GSUC arm and 42 patients for the VAC arm and time of dressing changes were rounded to the nearest 5-minute intervals.¹⁸ No new analyses regarding per dressing change labor cost have been performed for this study. Annual total labor cost for each therapy was extrapolated using per dressing change cost multiplied by the total number of days of therapy provided (divided by 2.5) each year.

RESULTS

Primary Outcomes

Vacuum-assisted closure device (VAC, KCI) was utilized in 2,132 patients for a total of 20,363 days for average of 9.55 days/patient (range, 2–40 days) and GSUC was utilized in 1,895 patients for a total of 15,508 days for average of 8.18 days/patient (range, 2–39 days; Table 1).

The theoretical average daily material cost calculated from the sum of component costs was estimated to be \$94.01/d for of VAC group and \$3.61/d for GSUC group (Table 2).

Table 1. NPWT Provided, Annually

	VAC			GSUC		
	No. Patients	No. Days Used	Days per Patient	No. Patients	No. Days Used	Days per Patient
July 1999–June 2000	169	1,648	9.75			
July 2000–June 2001	164	1,655	10.09			
July 2001–June 2002	269	2,828	10.51			
July 2002–June 2003	262	2,650	10.11			
July 2003–June 2004	283	2,809	9.93			
July 2004–June 2005	287	2,955	10.30			
July 2005–June 2006	314	3,009	9.58			
July 2006–June 2007	255	1,937	7.60	19	131	6.89
July 2007–June 2008	99	720	7.27	28	182	6.50
July 2008–June 2009	1	2	2.00	286	1,592	5.57
July 2009–June 2010	12	64	5.33	302	2,546	8.43
July 2010–June 2011	17	86	5.06	322	2,534	7.87
July 2011–June 2012				292	2,750	9.42
July 2012–June 2013				293	2,692	9.19
July 2013–June 2014				353	3,081	8.73
Total	2,132	20,363	9.55	1,895	15,508	8.18

Table 2. Theoretical Average Daily Material Costs, by Sum of Components

	VAC		GSUC
Suction rental per day	\$66.37	Kerlex Gauze/2–3 d	\$1.36
Sponge dressing/2–3 d	\$38.99	Ioban/2–3 d	\$6.70
Cannister	\$30.10	Red Rubber Catheter/2–3 d	\$0.53
Average days of use	9.55	Wall Cannister	\$1.41
		Average days of use	8.18
Average daily cost	\$94.01	Average daily cost	\$3.61

Recorded total institutional material cost for VAC therapy between 1999 and 2011 (use of VAC discontinued completely after July 2011) was ~\$2.2 million. Table 3 shows annual total material cost, number of patients treated, and total days of NPWT provided through VAC and also shows actual daily material cost of therapy and per patient cost calculated for each year. Because of missing dressing cost between July 1999 and June 2001 and limited the use of VAC between July 2007 and June 2011, only data between July 2001 and June 2007 were used to calculate the annual averages. During this 6-year span, average actual daily material of therapy was estimated to be \$111.18. This represents 118.26% of the theoretical daily material cost calculated from the sum of components mentioned earlier (\$94.01).

Because GSUC therapy utilized materials all available from routine hospital supply, there is no available annual or otherwise cumulative documented cost specific to GSUC. But by using the same theoretical-to-actual cost ratio determined from VAC group (assuming same rate of waste/efficiency), we extrapolated average actual daily material cost of GSUC therapy to be \$4.26.

By using this figure, total extrapolated institutional material cost of GSUC therapy between 2006 and 2014 was ~\$66,000. Table 4 shows total number of patients treated, total days of therapy, and extrapolated total material cost of GSUC annually. Because of the limited use of GSUC in the initial years (July 2006 to June 2008), only data between July 2008 and June 2014 were used to calculate the annual averages. During this 6-year span, extrapolated av-

erage annual cost of GSUC therapy to the institution was \$10,788.45, with average of ~2532.5 days of therapy provided.

In terms of labor cost per dressing change, analysis from previous study was used demonstrating average time spent on dressing to be 31 minutes for cost of \$20.11 per dressing change for VAC group and 19 minutes for cost of \$12.32 per dressing change for GSUC group (Table 5).¹⁸

By using the total number of days of therapy provided (divided by 2.5, since dressings were changed every 2–3 days on average) by each method per year, we extrapolated average annual labor cost of applying each system to be \$19,598.20 for the VAC and \$12,480.16 for the GSUC (Table 6).

Secondary Outcomes

Negative-pressure therapy was performed for 35,871 days on 4,027 patients (2,058 men, 1,616 women, and 353 children younger than 18 years) between July 1999 and June 2014. Total mean age was 51.66 years (range, 4 month to 93 years). Mean age of patients treated with VAC was 49.98 years and 53.37 for GSUC, *P* = 0.62 (Table 7). Etiologies and locations of wounds for each method are summarized in Tables 8 and 9.

DISCUSSION

The significance of placing emphasis on technological advancement in medicine in expanding the range of more effective treatment options can be seldom overstated. However, in the current health care climate with continually increasing emphasis on cost containment, it is also important to be mindful that sometimes these advancements can place undue pressure in foregoing lower cost options for perhaps more sophisticated, yet more costly products and services, even without good evidence for increased benefit. They can also overshadow and hinder motivations for developing alternative and innovative applications of already available technology and equipments that may be more cost-effective.

Treatment of both acute and chronic wounds is a good example of difficult and costly management driving con-

Table 3. Total Recorded Institutional Material Cost for VAC per Fiscal Year

	Total Annual	Total Rental	Total Dressing	Total No. Patients	Total No. Days	Days per Patient	Average Cost per Day	Average Cost per Patient
July 1999–June 2000	\$146,339.20	\$146,339.20	??	169	1,648	9.75	\$88.80	\$865.91
July 2000–June 2001	\$125,612.20	\$125,612.20	??	164	1,655	10.09	\$75.90	\$765.93
July 2001–June 2002	\$269,340.20	\$165,092.20	\$104,248.00	269	2,828	10.51	\$95.24	\$1,001.26
July 2002–June 2003	\$330,990.25	\$159,630.80	\$171,359.45	262	2,650	10.11	\$124.90	\$1,263.32
July 2003–June 2004	\$262,096.20	\$163,484.75	\$98,611.45	283	2,809	9.93	\$93.31	\$926.13
July 2004–June 2005	\$293,887.30	\$180,834.70	\$113,052.60	287	2,955	10.30	\$99.45	\$1,024.00
July 2005–June 2006	\$371,226.94	\$168,555.20	\$202,671.74	314	3,009	9.58	\$123.37	\$1,182.25
July 2006–June 2007	\$272,195.20	\$169,830.00	\$102,365.20	255	1,937	7.60	\$140.52	\$1,067.43
July 2007–June 2008	\$108,157.98	\$48,262.50	\$59,895.48	99	720	7.27	\$150.22	\$1,092.50
July 2008–June 2009	\$14,362.50	\$9,664.00	\$4,698.50	1	2	2.00	\$7,181.25	\$14,362.50
July 2009–June 2010	\$5,271.94	\$2,063.36	\$3,208.58	12	64	5.33	\$82.37	\$439.33
July 2010–June 2011	\$11,687.60	\$4,259.84	\$7,427.76	17	86	5.06	\$135.90	\$687.51
Total	\$2,211,167.51	\$1,343,628.75	\$867,538.76	2132	20,363	9.55	\$108.59	\$1,037.13
Average 2001–2007	\$299,956.02	\$167,904.61	\$132,051.41	278.33	2,698	9.69341	\$111.18	\$1,077.69

Table 4. Extrapolated Institutional Material Cost for GSUC per Fiscal Year

	Total No. Patients	Total No. Days	Extrapolated Annual Total Using Estimated Actual Cost (\$4.26/d)
July 2006–June 2007	19	131	\$558.06
July 2007–June 2008	28	182	\$775.32
July 2008–June 2009	286	1,592	\$6,781.92
July 2009–June 2010	302	2,546	\$10,845.96
July 2010–June 2011	322	2,534	\$10,794.84
July 2011–June 2012	292	2,750	\$11,715.00
July 2012–June 2013	293	2,692	\$11,467.92
July 2013–June 2014	353	3,081	\$13,125.06
Total	1,895	15,508	\$66,064.08
Average 2008–2014	308	2,532.5	\$10,788.45

Table 5. Average Labor Cost per Dressing Change

	VAC	GSUC
Average time spent/dressing change	31 min	19 min
Average cost/dressing change	\$20.11	\$12.32

continued development and utilization of advanced technology. The efficacy and the many benefits of NPWT in wound management are well documented, yet current costs of utilizing commercialized products like the VAC can be prohibitive to universal access. An alternative method of providing NPWT using just simple, sealed gauze dressings was developed at the UCMC – coined GSUC therapy – and has been utilized since 2006. GSUC was initially developed to provide temporary replacement therapy when VAC supplies were not readily available around the hospital. Given the ease and convenience of application from the use of virtually universally available supplies in any health care facilities, its use expanded naturally at our institution. Eventually, several prospective and randomized studies were performed to formally compare the efficacy of this method to the VAC system, which demonstrated therapeutic equivalence.^{18,19,27} In a prospective randomized trial of 87 patients from 2006 to 2008, Dorafshar et al (July 2012) demonstrated therapeutically equal efficacy of GSUC dressings when compared to that of commercialized VAC. Outcomes were primarily compared in respect to changes

in wound surface area and volume over time. They also demonstrated improved ease of application and while only self-reported, suggested less painful dressing changes for the patient with decreased amounts of analgesics required during dressing changes. Study comprised patients with acute wounds resulting from trauma, dehiscence, or surgery.¹⁸ In a supplemental analysis, Dorafshar et al²⁷ also demonstrates similar analysis for equivalent efficacy of treating infected wounds in selected acute settings as well. Furthermore, Nguyen et al in Wounds 2013 compared the efficacy of use of GSUC against VAC in securing split thickness skin graft with NPWT in prospective randomized controlled trial in 157 wounds. STSG take was evaluated on postoperative day 4 or 5, and size of skin graft and any non-adherent areas were measured and recorded. Comparative results were demonstrated with 96.12% in the GSUC group and 96.21% in the VAC arm.¹⁹ Given the simple, inexpensive component materials used for the method, these studies also demonstrated great potential for cost savings even just on a per diem, per therapy basis. With that, the next natural progression was to review the long-term cost savings at an institutional level, as we have done here.

Before June 2006, UCMC strictly utilized the commercialized vacuum-assisted closure device (VAC, KCI) for all patients being treated with NPWT. GSUC was developed around 2006 with limited utilization between July 2006 and June 2008. Its use subsequently continued to expand, largely replacing the VAC system by 2008, with limited continued use of VAC in the next subsequent years only as a part of comparative studies. By July 2011, with our studies demonstrating equal or better efficacy with cost saving implications, VAC use was completely discontinued in the institution.

Cost Analysis

Two approaches were used in analyzing the material cost of VAC therapy. First, *theoretical* per daily cost was calculated from the sum of all its average component costs, which was determined to be \$94.01. Significant portion of that cost—\$66.37 (77.9%)—was accounted by the daily rental cost of the portable suction unit. In the second approach, *actual* per daily cost was calculated using recorded annual hospital spending to KCI for all VAC-related materials, divided by the number of days of VAC therapy provided

Table 6. Extrapolated Total Institutional Labor Cost for Each Therapy per Fiscal Year

	VAC		GSUC	
	No. Days Used	Total Cost	No. Days Used	Total Cost
July 1999–June 2000	1,648	\$13,256.51		
July 2000–June 2001	1,655	\$13,312.82		
July 2001–June 2002	2,828	\$22,748.43		
July 2002–June 2003	2,650	\$21,316.60		
July 2003–June 2004	2,809	\$22,595.60		
July 2004–June 2005	2,955	\$23,770.02		
July 2005–June 2006	3,009	\$24,204.40		
July 2006–June 2007	1,937	\$15,581.23	131	\$645.57
July 2007–June 2008	720	\$5,791.68	182	\$896.90
July 2008–June 2009	2	\$16.09	1,592	\$7,845.38
July 2009–June 2010	64	\$514.82	2,546	\$12,546.69
July 2010–June 2011	86	\$691.78	2,534	\$12,487.55
July 2011–June 2012			2,750	\$13,552.00
July 2012–June 2013			2,692	\$13,266.18
July 2013–June 2014			3,081	\$15,183.17
Total	20,363	163,799.972	15,508	76,423.424
Average During Peak Years	2,436.375	\$19,598.20	2,532.50	12,480.16

Table 7. Patient Demographics

	VAC	GSUC	P
Average Age, y	49.98 (19–82)	53.37 (23–80)	0.62
Sex			
Female	1,068 (55.74%)	990 (56.77%)	0.55
Male	848 (44.26%)	754 (43.23%)	

Table 8. Wound Etiologies

	VAC, n (%)	GSUC, n (%)
Chronic wounds	217 (10.18)	136 (7.18)
STSG/allofdraft/flap	305 (14.31)	390 (20.58)
Surgery	695 (32.60)	575 (30.34)
I&D	450 (21.11)	295 (15.57)
Sternal	135 (6.33)	105 (5.54)
Fasciotomy	87 (4.08)	94 (4.96)
Trauma	55 (2.58)	33 (1.74)
Necrotizing fasciitis	50 (2.35)	63 (3.32)
Amputations	45 (2.11)	37 (1.95)
Fistulas	35 (1.64)	33 (1.74)
Decubitis	30 (1.41)	14 (0.74)
Abdominal compartment syndrome	15 (0.70)	5 (0.26)
VAD drive line	3 (0.14)	11 (0.58)
Drains	10 (0.47)	4 (0.21)
Surgical incisions	0 (0.00)	80 (4.22)

Table 9. Wound Locations

	VAC, n (%)	GSUC, n (%)
Head/neck	13 (1.36)	18 (0.96)
Upper extremity	38 (3.96)	56 (2.99)
Lower extremity	354 (36.91)	290 (15.50)
Abdomen	432 (45.05)	380 (20.31)
Chest/sternum	75 (7.82)	71 (3.79)
Back	1 (0.10)	17 (0.91)
Buttocks/hip	23 (2.40)	33 (1.76)
Perineum/groin	20 (2.09)	25 (1.34)
Other	3 (0.31)	22 (1.18)

at the institution that year. Of note, only data from 2001 to 2007 were used, as years 1999 and 2000 had incomplete cost records, whereas data after year 2007 were decided not to be used as the low-volume use of VAC at our institution after 2007 would likely skew the average daily cost higher than seen during high-volume years. The average actual

per daily cost between 2001 and 2007 was calculated to be \$111.18, which represents 118.26% of the theoretical per daily cost from above. The difference is likely explained by wastes and other expected and reasonable inefficiencies (eg, from error in application or unused dressing supplies paid for in bulks) seen in real practice. Average annual material cost of VAC therapy to the institution during this time span was estimated to be \$299,956.02, with average of 2,698 days of therapy provided each year.

For the GSUC therapy, material costs were similarly analyzed. Theoretical per daily cost was likewise calculated using sum of all its average component costs, which was determined to be \$3.61. However, in terms of calculating actual per daily cost, no records of actual hospital spending specifically on GSUC therapy were available (as all supplies were taken from standard supply stocks). Thus, instead we assumed similar waste/inefficiency rate as with the VAC and extrapolated an actual per daily cost of GSUC to be \$4.26 (using the same theoretical-to-actual ratio of 118.26% with the VAC). By using this extrapolated actual per daily cost, we further extrapolated an average actual annual material cost of GSUC therapy to the institution to be \$10,788.45, with average of 2,532.5 days of therapy provided each year. This represents almost 30-fold decrease in cost compare to the VAC system.

In terms of labor cost, analysis was directly taken from our previous study. All dressings were performed by a single wound care physical therapist. The study was performed on 45 patients for the GSUC arm and 42 patients for the VAC arm, and time of dressing changes was rounded to the nearest 5-minute intervals. There were no statistical difference between average initial wound surface area and volume between the 2 groups, as well as basic demographics and anatomic distributions of the wounds. The analysis demonstrated statistically significant average time difference for dressing application for the 2 therapies, 31 minutes for the VAC versus 19 minutes for GSUC.¹⁸

This resulted in calculated labor cost per dressing of \$20.11 for the VAC versus \$12.32 for GSUC, using \$38.91/hr as the average hourly salary of the physical therapist.

By using total number of days of NPWT provided by each method each year, we were able to extrapolate average annual labor cost of each system to be \$19,598.20 for the VAC and \$12,480.16 for the GSUC. The difference in application time in previous study was largely attributed to the longer time it took to cut the sponge into the correct shape and orientation in oddly shaped wounds for the VAC, compared to merely unrolling layers of rolled gauze into the area. Certainly, there is a learning curve to applying the GSUC dressings, but no assumed difference from learning curve in applying VAC dressings.

Limitations

Retrospective nature of the study and limited actual spending data on GSUC are the major limitations of this review. Furthermore, calculated and extrapolated figures are all estimates at best, including question of whether GSUC dressing application truly does take less time than the VAC, not to mention differences in learning curve that would be required to proficiently and efficiently perform GSUC versus VAC dressings. However, regardless of whatever minute inaccuracies in the details of our figures, there may be are of almost moot significance given the overall magnitude of cost difference. Near 30-fold decrease in just the *material cost alone* makes our overall conclusion undeniable.

Between 1999 and 2007, the peak years of VAC use in this study, the UCMC as an institution spent anywhere between \$200,000 and \$370,000 annually on material cost of VAC system alone, totaling over \$2.2 million dollars in the 8 years. Meanwhile during the latter half of the study, during peak GSUC use (2007–2014), the institution is likely to have incurred at the most, an estimate of extra \$8,000–\$15,000 annually for a total of ~\$66,000 on routine supplies in the 8 years. Combined with differences in labor cost, we estimate savings of about ~\$110,000 for every 1,000 days of therapy provided (Table 10).

However, with all this said, the main limitation to GSUC therapy is portability. In an outpatient/home setting where supplies and equipments need to be packaged and delivered in a very portable way, VAC and other commercial services/devices that can provide NPWT in such a way still makes sense. However, our results and message of this study was specifically regarding providing NPWT in a facility/hospital setting with at least minimal infrastructure such as wall suction and basic dressing supplies readily available. In such settings, these authors believe that significantly greater cost of commercialized devices—as demonstrated in this study—without increased therapeutic efficacy is not well justified.

CONCLUSIONS

NPWT is an integral part of current wound care management. Although innovation and progress of technology is paramount to continued development and advancement of medical therapies, it is also important to be mindful of developing more cost-effective approaches to currently utilized therapies. This 15-year review of NPWT use at a single institution demonstrates clear and significant cost savings from utilization of our gauze suction method over

Table 10. Summary Estimate of Total Cost of Each Therapy per 1,000 Days

	VAC	GSUC
Material/equipment	\$8,044.00	\$4,928.00
Labor	\$111,180.00	\$4,260.00
Total	\$119,224.00	\$9,188.00

commercialized products like the VAC (KCI). We estimate about \$110,000 in institutional saving for every 1,000 days of therapy provided. Furthermore, being able to provide NPWT just from using easily accessible and almost universally available medical supplies is an added advantage of GSUC that cannot be overstated. Combined with our previous studies demonstrating equal or greater therapeutic efficacy compared to commercial products like the VAC, we advocate for wider spread investigation and utilization of similar methods at other institutions.

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