

Flexitouch® Advanced Pneumatic Compression Device Reduces Phlebolymphe­dema Healthcare Costs Compared to Other Treatment Modalities

Original Article: Health and Economic Benefits of Advanced Pneumatic Compression Devices in Patients with Phlebolymphe­dema
 Journal: *Journal of Vascular Surgery*
 Publication Date: June 2018 (e-published)
 Authors: Michelle Lerman¹; Julia A. Gaebler, PhD¹; Sunday Hoy, Esq²; Jessica Izhakoff¹; Laura Gullett¹; Timothy Niecko, MS³; Pinar Karaca-Mandic, PhD⁴; Thomas O’Donnell, MD^{2,5}; Stanley G. Rockson, MD^{6*}

OBJECTIVE

To evaluate the impact of the Flexitouch (FLX) advanced pneumatic compression device (APCD) on phlebolymphe­dema-related medical resource utilization (MRU) and cost compared to other pneumatic compression modalities and to conservative therapy (CONS) in a representative U.S. phlebolymphe­dema patient population.

METHODS

- Investigators conducted a longitudinal matched case-control analysis of de-identified private insurance claims in a dataset of 165 million people to identify patients meeting the following criteria:
 - Diagnosis of lymphedema (primary or secondary)
 - Primary or secondary diagnosis for chronic venous insufficiency (CVI)
 - Continuous health plan enrollment for at least 18 months, with mean follow up by group varying from 1.62 years to 1.9 years
 - At least one claim for (CONS)
- Prior to case matching 1,065 patients met these criteria. 860 (80.8%) received CONS alone. All other groups

received CONS in addition to the PCD treatment modality.

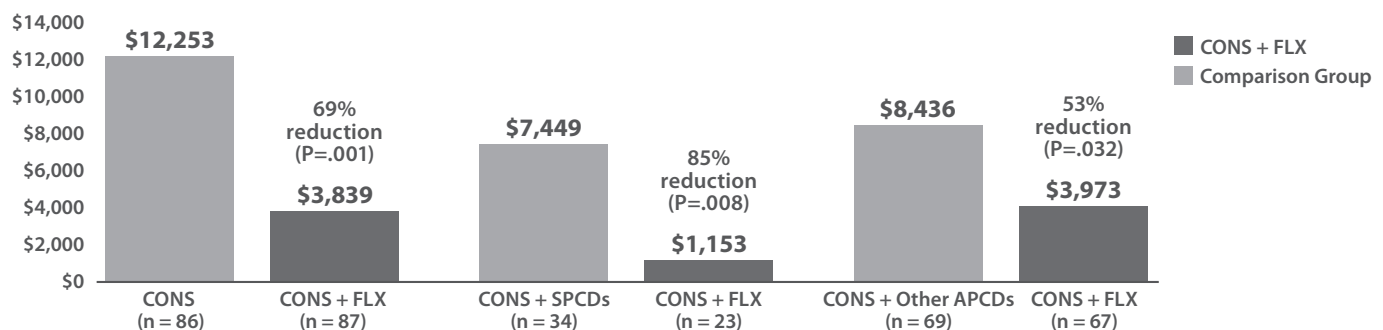
- After case-matching, the study compared these groups: 86 patients CONS (87 on FLX), 34 on Simple Pneumatic Compression Devices (SPCDs) (23 on FLX), and 69 on other APCDs (67 on FLX).
- Direct phlebolymphe­dema- and sequelae-related MRU and healthcare costs were analyzed.

RESULTS

Flexitouch use was associated with statistically significant reductions in phlebolymphe­dema- and sequelae-related medical resource utilization (MRU) and costs compared to CONS, SPCDs, and other APCDs.

- FLX demonstrated a 69% reduction vs. CONS alone in per patient per year (PPPY) total costs, driven by 82% reduction in inpatient hospital costs and 55% reduction in outpatient hospital costs.
- FLX demonstrated a 85% reduction vs. SPCDs in PPPY total costs, driven by 93% reduction in inpatient hospital costs and 84% reduction in outpatient hospital costs.

Figure.1: Total Phlebolymphe­dema- and Sequelae-Related Costs (PPPY)



RESULTS *continued*

- FLX demonstrated a 53% reduction vs. other APCDs in PPPY total costs, driven by 57% reduction in outpatient hospital costs and 58% reduction in other outpatient-related costs.
 - Notably, FLX demonstrated a 50% lower rate of cellulitis vs. other APCDs (22.4% vs 44.9%, p=.02).

DISCUSSION

Though the direct costs of phlebolymphe­dema are not well documented^{7,8,9} the disease is understood to be common and expensive. This study demonstrates that FLX use reduced PPPY costs by 69% versus CONS alone, 85% versus SPCDs and 53% versus other APCDs.

Earlier diagnosis and more effective phlebolymphe­dema treatment is urgently needed to improve patient quality of life and reduce healthcare costs.

KEY POINTS

- Venous hypertension and subsequent lymphatic overload are the causes of phlebolymphe­dema.
- Early and effective treatment of phlebolymphe­dema is necessary to prevent complications and reduce overall cost of care.

- Conservative therapy plus Flexitouch use was associated with major, statically significant reductions in per-patient per-year costs compared to use of conservative therapy alone (69%), conservative therapy plus simple pneumatic compression devices (85%) and conservative therapy plus other advanced pneumatic compression devices (53%).
- Flexitouch-related cost reductions were driven by reductions in outpatient and inpatient hospital costs, and other outpatient related costs.
- The data strongly support Flexitouch use with conservative treatment in patients with phlebolymphe­dema compared with conservative therapy alone or simple or other advanced pneumatic compression devices.

CONCLUSION

Phlebolymphe­dema is a widespread, chronic and underdiagnosed disease associated with high MRU and cost. Flexitouch system use significantly reduces phlebolymphe­dema- and sequelae-related costs in comparison to CONS, SPCDs, and other APCDs.

To view the full text of this article visit: [https://www.jvascsurg.org/article/S0741-5214\(18\)30983-2/pdf](https://www.jvascsurg.org/article/S0741-5214(18)30983-2/pdf)

Table 1: Differences in Phlebolymphe­dema- and Sequelae-related MRU and Costs

	Comparison Group #1 CONS + FLX vs. CONS			Comparison Group #2 CONS + FLX vs. CONS + SPCDS			Comparison Group #3 CONS + FLX vs. CONS + Other APCDS		
	CONS + FLX (n = 87)	CONS (n = 86)	P-value	CONS + FLX (n = 23)	CONS + SPCDS (n = 34)	P-value	CONS + FLX (n = 67)	CONS + Other APCDs (n = 69)	P-value
Total Costs (PPPY)	\$3,839	\$12,253	0.001	\$1,153	\$7,449	0.008	\$3,973	\$8,436	0.032
Inpatient Hospital Costs	\$1,560	\$8,715	0.003	\$297	\$4,215	0.002	\$1,468	\$4,186	0.287
Outpatient Hospital Costs	\$1,129	\$2,534	0.027	\$368	\$2,347	0.02	\$1,320	\$3,062	0.041
Other Outpatient Related Costs	\$1,090	\$2,453	0.029	\$353	\$2,313	0.023	\$1,283	\$3,026	0.038

Costs reported as per patient per year phlebolymphe­dema- and sequelae related costs, excluding all PCD device and accessory costs.

About the Authors

¹ Health Advances LLC, Weston, MA

² Tactile Medical, Minneapolis, MN

³ Niecko Health Economics, LLC, Tierra Verde, FL

⁴ Department of Finance, University of Minnesota, Carlson School of Management, Minneapolis, MN

⁵ Cardiovascular Center, Tufts Medical Center, Department of Surgery, Tufts University School of Medicine, Boston, MA

⁶ Division of Cardiovascular Medicine, Stanford University School of Medicine, Falk Cardiovascular Research Center, Stanford, CA

References

⁷ Bunke N, Brown K, Bergan J. Phlebolymphe­dema usually unrecognized, often poorly treated. *Perspect Vasc Surg Endovasc Ther.* 2009;21(2):65-68.

⁸ Farrow W. Phlebolymphe­dema—a common underdiagnosed and undertreated problem in the wound care clinic. *The Journal of the American College of Certified Wound Specialists.* 2010;2(1):14-23.

⁹ Rockson SG. Addressing the unmet needs in lymphedema risk management. *Lymphatic research and biology.* 2006;4(1):42-46.

¹⁰ Simka M, Majewski E. The social and economic burden of venous leg ulcers. *American journal of clinical dermatology.* 2003;4(8):573-581.

¹¹ McGuckin M, Kerstein MD. Venous leg ulcers and the family physician. *Advances in Skin & Wound Care.* 1998;11(7):344-346.

¹² Rasmussen JC, Aldrich MB, Tan I-C, et al. Lymphatic transport in patients with chronic venous insufficiency and venous leg ulcers following sequential pneumatic compression. *Journal of Vascular Surgery: Venous and Lymphatic Disorders.* 2016;4(1):9-17.

¹³ Karaca-Mandic P, Hirsch AT, Rockson SG, Ridner SH. The Cutaneous, Net Clinical, and Health Economic Benefits of Advanced Pneumatic Compression Devices in Patients with Lymphedema. *JAMA Dermatol.* 2015;151(11):1187-1193.

Tactile Medical

3701 Wayzata Blvd, Suite 300
Minneapolis, MN 55416 USA
T: 612.355.5100
F: 612.355.5101

Customer Service

Toll Free Tel: 833.382.2845 (833.3TACTILE)
Toll Free Fax: 866.435.3949
Hours: 7 a.m. to 7 p.m. CT, Monday–Friday
tactilemedical.com