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

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)

<table>
<thead>
<tr>
<th>Comparison Group</th>
<th>CONS (n = 86)</th>
<th>CONS + FLX (n = 87)</th>
<th>CONS + SPCDs (n = 34)</th>
<th>CONS + FLX (n = 23)</th>
<th>CONS + Other APCDs (n = 69)</th>
<th>CONS + FLX (n = 67)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs</td>
<td>$12,253</td>
<td>$3,839 (69% reduction, P=.001)</td>
<td>$7,449 (85% reduction, P=.008)</td>
<td>$1,153 (53% reduction, P=.032)</td>
<td>$8,436</td>
<td>$3,973 (69% reduction, P=.001)</td>
</tr>
</tbody>
</table>

- CONS = Conservative Therapy
- FLX = Flexitouch® Advanced Pneumatic Compression Device
- SPCDs = Simple Pneumatic Compression Devices
- APCDs = Advanced Pneumatic Compression Devices
RESULTS continued

- FLX demonstrated a 53% reduction vs. other APCDs in PYYY total costs, driven by 57% reduction in outpatient hospital costs and 58% reduction in 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 documented7, 8, 9 the disease is understood to be common and expensive. This study demonstrates that FLX use reduced PYYY 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, statistically 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.

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

<table>
<thead>
<tr>
<th></th>
<th>Comparison Group #1</th>
<th>Comparison Group #2</th>
<th>Comparison Group #3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CONS + FLX (n = 87)</td>
<td>CONS + FLX vs. CONS</td>
<td>CONS + FLX vs. CONS + SPCDs (n = 34)</td>
</tr>
<tr>
<td>Total Costs (PYYY)</td>
<td>$3,839</td>
<td>$12,253</td>
<td>0.001</td>
</tr>
<tr>
<td>Inpatient Hospital Costs</td>
<td>$1,560</td>
<td>$8,715</td>
<td>0.003</td>
</tr>
<tr>
<td>Outpatient Hospital Costs</td>
<td>$1,129</td>
<td>$2,534</td>
<td>0.027</td>
</tr>
<tr>
<td>Other Outpatient Related Costs</td>
<td>$1,090</td>
<td>$2,453</td>
<td>0.029</td>
</tr>
</tbody>
</table>

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 Nieceko 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
7 Niecko Health Economics, LLC, Tierra Verde, FL
8 Tactile Medical, Minneapolis, MN
9 Health Advances LLC, Weston, MA