

### Background

In the United States alone, more than 25 million people are affected by Chronic Venous Disease, 6 million of which already present in stages 3-6, which represents chronic venous insufficiency (CVI) and venous leg ulcers (VLU).<sup>1</sup> VLUs have elevated recurrence rates which can be as high as 50-70% at six months post-healing and are often encouraged by comorbid conditions such as diabetes and obesity, which negatively impact the healing of wounds. Chronic VLUs are more likely to progress toward severe complications which include cellulitis, severe infection, osteomyelitis, and neoplastic transformation.<sup>2</sup>

### Purpose of Research

The aim of this research is to discover the effect of compression therapy on the healing and prevention of recurrence of venous leg ulcers (VLUs) in patients diagnosed with Chronic Venous Insufficiency (CVI).

### PICOT

In patients with chronic venous insufficiency, how does compression therapy compared to no compression therapy impact the healing and prevention of venous ulcers?

### Design & Methods

**Keywords:** chronic venous insufficiency, venous leg ulcers, compression therapy, prevention, healing

**Inclusion:** adult patients (>16 years), CVI, VLU

**Exclusion:** pediatric patients (<16 years), pregnant patients, post-operative, focus on post-thrombotic syndrome

**Table 1: Summary of Evidence Search**

Database	Yielded	Reviewed	Included in Analysis
PubMed	341	11	4
Google Scholar	11,200	22	8
Cochrane Library	32	7	2
<b>Total:</b>	<b>11,573</b>	<b>40</b>	<b>14</b>

**Table 2: Synthesis of Evidence**

Level of Evidence	Included in Analysis
Systematic Review	3
Meta Analysis	2
Retrospective Chart Review	1
Evidence Summary	1
Health Technology Assessment	1
interpretative phenomenological study	1
Other/Scholarly Journals	5

### Results:

Compression stocking and bandage use led to shorter complete healing time of VLUs compared to patients not using any compression. The patients in the compression group had more complete VLU healing during 12 month follow up period.<sup>3</sup>

Compression stockings were superior to short-stretch bandages in promoting VLU healing, and those treated with stockings had a mean decrease in wound area by 56.6%.<sup>4</sup>

Higher-grade compression, such as stockings with elastic component or Unna's boot, lead to faster more complete healing when compared to lower grade compression or no compression.<sup>5</sup>

High-grade compression significantly reduced VLU recurrence at 6 month follow up, but high attrition bias led to decreased quality of evidence beyond the 6 month period.<sup>6</sup>

In those with healed VLU, individuals in the compression group had a 24% recurrence rate at 12 month follow up, while those in the non-compression group had a 54% recurrence rate.<sup>7</sup>

Adherence rates were higher in individuals that utilized lower levels of pressure (38.6% adherence for higher grade, 71.4% adherence for lower grade).<sup>7</sup>

Prevention of VLU recurrence is both a challenge for patients and providers due poor patient knowledge on CVI pathophysiology and ulcer etiology along with the difficulty and discomfort that comes along with compression stocking use.<sup>8</sup>

### Best Practice

#### Discussion:

Compression therapy is effective in the healing of VLUs, and also has the potential to shorten time to complete healing time.<sup>3</sup> This is a great benefit to patients with VLUs because faster healing, can shorten the window an individual is susceptible to infection and potentially prevent healing ulcers from further expanding in size. The risk of VLU development is a constant possibility in patients with CVI because damage to the affected veins is irreversible. Research shows some promise in the use of compression therapy to prevent recurrence of VLUs, but high rates of attrition bias lowered the quality this evidence. Adherence to compression is actually lower when the grade of compression is higher.<sup>6-7</sup>

#### Limitations/Further study:

Major limitations of this research included small sample sizes, not accounting for other treatment modalities (medication, wound care) used by participants, and high rates of attrition bias. Further research is necessary when it comes to secondary outcomes of compression therapy such as adverse effects of long-term use. More research is also necessary to determine the best form of compression for specific patients in regard to their disease states and socioeconomic status, along with how to improve compliance rates with compression use.

#### Conclusion:

Compression proved effective in promoting venous ulcer healing, but it is not certain which form of compression is best for healing purposes. Data shows promise that compression therapy could have a positive impact on prevention of recurrence, but more research is necessary to definitively make this conclusion. The results of this research support compression therapy as first line treatment for CVI.

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