

Pneumatic and Non-Pneumatic Compression Devices

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Introduction

Pneumatic and non-pneumatic compression devices are addressed by this guideline.

Health Equity Consideration

Health equity is the highest level of health for all individuals; health inequity is the avoidable difference in health status or distribution of health resources due to the social conditions in which individuals are born, grow, live, work, and age. Social determinants of health are the conditions in the environment that affect a wide range of health, functioning, and quality of life outcomes and risks. Examples include the following: safe housing, transportation, and neighborhoods; racism, discrimination, and violence; education, job opportunities, and income; access to nutritious foods and physical activity opportunities; access to clean air and water; and language and literacy skills.

Criteria

Pneumatic Compression Device Without Calibrated Gradient Pressure

A pneumatic compression device without calibrated gradient pressure and related accessories is considered medically necessary when **any** of the following applies:

- The individual has chronic lymphedema with symptoms and **both** of the following:
 - The individual has **any** of the following:
 - There are dark and thick spots of skin on the extremities (hyperkeratosis, hyperplasia, hyperpigmentation).
 - The skin has lesions called papillomatosis cutis lymphostatica.
 - The limb is enlarged and disfigured due to swelling and thickening of the skin (elephantiasis).
 - There is a wound or weeping (lymphorrhea) of the skin due to congested lymph fluid.
 - Measurements taken over time show persistent lymphedema.
 - The individual has tried **all** of the following for at least four weeks, but the swelling has not gone down:

- The individual used compression wraps or bandages on a daily basis.
- The individual had regular exercise.
- The individual elevated the limb(s).
- The individual has swelling due to problems with their veins (chronic venous insufficiency) and there is documentation of the following:
 - Swelling and ulcers persist after six months of treatment that includes **all** of the following:
 - The individual used compression wraps or bandages on a daily basis.
 - Wound care included removal of any damaged tissue, if needed, and applying dressings to help the wounds heal.
 - The individual had regular exercise.
 - Medications for medical conditions contributing to the swelling were considered and prescribed.
 - The individual elevated the limb(s).

Pneumatic Compression Device with Calibrated Gradient Pressure

A pneumatic compression device with calibrated gradient pressure is considered medically necessary when **all** of the following are met:

- The medical necessity criteria for a pneumatic compression device without calibrated gradient pressure as described above have been met.
- The individual has chronic lymphedema in a limb that extends to the head, neck, chest, trunk, and/or abdomen.
- There is documentation the individual would not tolerate or does not benefit from a standard device.

Additional Information

- Compression device related accessories are considered medically necessary only when the appropriate related base compression meets medical necessity criteria.

Not Medically Necessary

A pneumatic compression device with calibrated gradient pressure is considered not medically necessary for swelling that is confined to the limbs.

A non-pneumatic compression device and related appliances are considered not medically necessary.

An intermittent limb compression device is considered not medically necessary.

A pneumatic compression device, high pressure, rapid inflation/deflation cycle, for arterial insufficiency is considered not medically necessary.

Definitions

The International Society of Lymphology uses the following criteria to diagnose and classify lymphedema:

- **Stage 0 (or Ia) lymphedema** is a subclinical or latent condition where swelling is not yet evident despite impaired lymph transport, subtle alterations in tissue fluid/composition, and changes in subjective symptoms. Most individuals are asymptomatic, but some report a feeling of heaviness in the limb.
- **Stage I lymphedema** represents an early accumulation of fluid relatively high in protein content. Pitting may occur. An increase in various types of proliferating cells may also be seen. Stage I corresponds to a mild grade of lymphedema above.
- **Stage II lymphedema** involves more changes in solid structures; limb elevation alone rarely reduces tissue swelling; and pitting is manifest. Later in Stage II, the limb may not pit as excess subcutaneous fat and fibrosis develop. Stage II corresponds roughly to a moderate grade of lymphedema above.
- **Stage III lymphedema** encompasses lymphostatic elephantiasis where pitting can be absent and trophic skin changes such as acanthosis, alterations in skin character and thickness, further deposition of fat and fibrosis, and warty overgrowths have developed. Stage III corresponds to a severe grade of lymphedema above.

The **New York Heart Association (NYHA)** has established a functional **classification system for heart failure** based on the timing of symptom onset for an individual.

- **Class I** heart failure is characterized by symptom onset with strenuous activity.
- **Class II** heart failure is characterized by symptom onset with an ordinary level of activity.
- **Class III** heart failure is defined as symptom onset with minimal activity, and is further broken down into:
 - **Class IIIa**, in which an individual has no shortness of breath at rest, or
 - **Class IIIb**, in which an individual has recent onset of shortness of breath at rest.
- **Class IV** heart failure is characterized by symptom onset at rest.

Peripheral artery disease (PAD) is a circulatory problem in which narrowed arteries reduce blood flow to limbs, resulting in compromised blood flow to the distal tissue and failure to keep up with oxygen demands.

Chronic limb threatening ischemia (CLTI) is a clinical syndrome defined by the presence of PAD in combination with rest pain, gangrene, or a lower limb ulceration for greater than two weeks duration. Revascularization of the extremities aims to repair the flow of blood into and out of the limbs.

Revascularization procedures can be done in a more traditional surgical manner (e.g., common femoral endarterectomy, femoral-popliteal bypass), or via an endovascular

route (e.g., stenting, percutaneous transluminal angioplasty (PTA), atherectomy). Hybrid revascularization combines endovascular procedures with surgical revascularization to treat both inflow and outflow conditions at the same time.

Evidence Discussion

In a 2024 prospective, longitudinal study (Padberg et al.), individuals with lower extremity lymphedema who used an advanced pneumatic compression device at home demonstrated significant improvements in health-related quality of life and clinical outcomes over 52 weeks. Among the 179 individuals with complete 52-week follow-up, statistically significant improvements were observed across all disease-specific Lymphedema Quality of Life-Leg domains, including function, appearance, symptoms, and emotion, beginning at 12 weeks and sustained through 52 weeks ($p < .0001$). General health status also improved, with significant gains in physical functioning, bodily pain, social functioning, mental health, and the physical component summary score by 52 weeks. Mean limb girth decreased by 1.4cm compared with baseline ($p < .0001$), and the incidence of cellulitis events was reduced over the study period. These findings supported the conclusion that long-term home use of advanced pneumatic compression was associated with meaningful improvements in both quality of life and objective disease measures. Study limitations included the absence of a control group, reliance on a predominantly older male veteran population which may limit generalizability, potential confounding from concurrent compression therapies, and interruptions related to the COVID-19 pandemic, which may have influenced follow-up completeness and adherence.

Ridner et al. (2021) conducted a randomized controlled trial to determine the safety and feasibility of advanced pneumatic compression devices (PCDs) in individuals with head and neck cancer. Forty-nine individuals with head and neck cancer-related lymphedema were randomized to lymphedema self-management plus an advanced PCD versus self-management alone for a duration of eight weeks. The use of an advanced PCD was associated with significant improvement in perceived ability to control lymphedema and visible external swelling. No device-related serious adverse events were reported. The authors concluded the advanced PCD appeared to be a safe and well tolerated treatment of secondary lymphedema in individuals with head and neck cancer.

Dennis et al. (2013) conducted a multicenter randomized trial to assess the effectiveness of intermittent pneumatic compression (IPC) for the reduction of deep vein thrombosis (DVT) in immobile individuals who had an acute stroke (ischemic or hemorrhagic). The study enrolled 2,876 participants who were admitted to the hospital within three days of acute stroke and who were immobile on the day of admission. The participants received treatment with thigh-length IPC or no IPC. At 30 days, there was a significant reduction in the rate of DVT in the femoral or popliteal veins (i.e., proximal DVT) for the IPC group compared with the no IPC group. In addition, the IPC group

had significantly lower rates of symptomatic DVT (proximal or calf veins) and any DVT (symptomatic or asymptomatic, proximal or calf). In the subgroup of 322 participants with hemorrhagic stroke, IPC was associated with reduced risk of proximal DVT at 30 days. The authors concluded that IPC is an effective method of reducing the risk of DVT and potentially improving survival in individuals who are immobile after stroke.

In 2020, the International Society of Lymphology updated the Consensus Document from the most recent 1995 document for the evaluation and management of peripheral lymphedema, and noted that intermittent pneumatic compression devices simulate manual massage, improve area of limb coverage, are easier to use, and may increase individual compliance, particularly for those who cannot complete both phases of complete decongestive therapy.

Although non-pneumatic compression devices demonstrated favorable outcomes in select studies, the available evidence also identified important limitations. Randomized crossover trials such as NILE and TEAYS relied on short treatment durations of 28 to 90 days, which limited assessment of long term durability, disease progression, and recurrence patterns following device use (Barfield et al., 2025; Rockson et al., 2022). Generalizability was further constrained by strict exclusion criteria that removed medically complex patients with peripheral arterial disease, active infection, heart failure, renal disease, open wounds, or recent cancer treatment, populations commonly encountered in routine lymphedema care (Barfield et al., 2025). Crossover designs introduced the possibility of carryover effects, as four week washout periods may have been insufficient to eliminate persistent tissue and volume changes inherent to chronic lymphedema, potentially inflating comparative benefits (Rockson et al., 2022). In addition, existing studies often focused on specific subgroups, such as ambulatory patients or women with breast cancer related lymphedema, leaving limited evidence for patients with advanced fibrotic disease, reduced mobility, truncal involvement, or more severe presentations (Jacobowitz et al., 2025).

A systematic review and meta-analysis by Hou et al. evaluated the efficacy of intermittent pneumatic compression as an adjunct to complete decongestive therapy for breast cancer related upper limb lymphedema. The analysis included 12 clinical studies comparing combined therapy with complete decongestive therapy alone. Results demonstrated that the addition of intermittent pneumatic compression was associated with a small short-term reduction in limb volume within four weeks after treatment. However, this incremental benefit was not sustained, and follow-up analyses performed approximately nine weeks after discontinuation of physical therapy showed no statistically significant difference between groups. The review found no consistent improvement in subjective symptoms or long-term functional outcomes attributable to intermittent pneumatic compression. The authors concluded that intermittent pneumatic compression may provide limited, temporary benefit when combined with complete decongestive therapy but did not demonstrate durable clinical effectiveness, indicating that ongoing and repeated treatment would be required to maintain any observed effect.

Study limitations included variability in outcome measurement methods, short follow-up durations in several included studies, and reliance on limb volume as a surrogate outcome rather than individual-centered endpoints.

Codes Addressed in This Guideline

The inclusion of any code in this table does not imply that the code is under management or requires prior authorization. Refer to the applicable health plan for management details. Prior authorization of a code listed in this table is not a guarantee of payment. The Certificate of Coverage or Evidence of Coverage policy outlines the terms and conditions of the member's health insurance policy.

HCPCS Code	Description
E0650	Pneumatic compressor, non-segmental home model
E0651	Pneumatic compressor, segmental home model without calibrated gradient pressure
E0652	Pneumatic compressor, segmental home model with calibrated gradient pressure
E0655	Non-segmental pneumatic appliance for use with pneumatic compressor, half arm
E0656	Segmental pneumatic appliance for use with pneumatic compressor, trunk
E0657	Segmental pneumatic appliance for use with pneumatic compressor, chest
E0660	Non-segmental pneumatic appliance for use with pneumatic compressor, full leg
E0665	Non-segmental pneumatic appliance for use with pneumatic compressor, full arm
E0666	Non-segmental pneumatic appliance for use with pneumatic compressor, half leg
E0667	Segmental pneumatic appliance for use with pneumatic compressor, full leg
E0668	Segmental pneumatic appliance for use with pneumatic compressor, full arm
E0669	Segmental pneumatic appliance for use with pneumatic compressor, half leg

HCPSC Code	Description
E0670	Segmental pneumatic appliance for use with pneumatic compressor, integrated, 2 full legs and trunk
E0671	Segmental gradient pressure pneumatic appliance, full leg
E0672	Segmental gradient pressure pneumatic appliance, full arm
E0673	Segmental gradient pressure pneumatic appliance, half leg
E0675	Pneumatic compression device, high pressure, rapid inflation/deflation cycle, for arterial insufficiency (unilateral or bilateral system)
E0676	Intermittent limb compression device (includes all accessories), not otherwise specified
E0680	Non-pneumatic compression controller with sequential calibrated gradient pressure
E0681	Non-pneumatic compression controller without calibrated gradient pressure
E0678	Non-pneumatic sequential compression garment, full leg
E0679	Non-pneumatic sequential compression garment, half leg
E0682	Non-pneumatic sequential compression garment, full arm

Codes and Related Accessories

HCPSC Code	Related Accessory Codes
E0650	E0655, E0660, E0665, E0666, E0671, E0672, E0673
E0651	E0667, E0668, E0669
E0652	E0656, E0657, E0667, E0668, E0669, E0670

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