

Multi-Chamber Programmable Pneumatic Compression Pumps

Effective: July 1, 2018

Next Review: June 2019

Last Review: June 2018

IMPORTANT REMINDER

Medical Policies are developed to provide guidance for members and providers regarding coverage in accordance with contract terms. Benefit determinations are based in all cases on the applicable contract language. To the extent there may be any conflict between the Medical Policy and contract language, the contract language takes precedence.

PLEASE NOTE: Contracts exclude from coverage, among other things, services or procedures that are considered investigational or cosmetic. Providers may bill members for services or procedures that are considered investigational or cosmetic. Providers are encouraged to inform members before rendering such services that the members are likely to be financially responsible for the cost of these services.

DESCRIPTION

Compression pumps may be used to reduce postoperative or other swelling, help circulation, and prevent blood clot formation in immobilized patients.

MEDICAL POLICY CRITERIA

Note: This policy addresses only multi-chamber programmable pumps described by HCPCS code E0652. This policy does *not* address single- or multi-chamber non-programmable pumps, which are considered a standard of care for the treatment of lymphedema, prevention of venous thromboembolism in high risk patients, and chronic venous insufficiency.

Multi-chamber programmable pneumatic compression pumps (HCPCS code E0652) are considered **not medically necessary** because these programmable pumps are more costly, but have not been shown to be superior to either single compartment or multi-chamber non-programmable pneumatic compression pumps.

NOTE: A summary of the supporting rationale for the policy criteria is at the end of the policy.

CROSS REFERENCES

None

BACKGROUND

Multi-chamber programmable pneumatic compression pumps may be used to lessen the accumulation of fluids in the arms, legs or trunk, to treat chronic venous insufficiency, or to prevent blood clot formation in immobile patients. Similar in action to the way a blood pressure cuff inflates and deflates, these devices provide air compression to segmented sleeves that are wrapped around the limbs or trunk. These multi-chambered sleeves can be individually adjusted to allow different pressures (gradient pressure) in each segment.

EVIDENCE SUMMARY

Assessment of efficacy for therapeutic interventions involves a determination of whether the intervention improves health outcomes. The optimal study design for a therapeutic intervention is a randomized controlled trial (RCT) that includes clinically relevant measures of health outcomes. Intermediate outcome measures, also known as surrogate outcome measures, may also be adequate if there is an established link between the intermediate outcome and true health outcomes. Nonrandomized comparative studies and uncontrolled studies can sometimes provide useful information on health outcomes, but are prone to biases such as selection bias (e.g., noncomparability of treatment groups) and observation bias (e.g., the placebo effect).

SYSTEMATIC REVIEWS

Ezzo (2015) published a systematic review (SR) that included six randomized or quasi-randomized trials that were divided into three categories based on similar design.^[1] Only one study^[2] included compression therapy using pneumatic pumps. This quasi-randomized, controlled trial (RCT) compared compression sleeve plus manual lymphedema drainage (MLD) to compression sleeve plus intermittent pneumatic pump in 24 women with post-mastectomy arm lymphedema. Both groups reported a statistically significant improvement in sensations of heaviness compared to baseline. Volume reduction was statistically better in the MLD group than in the pneumatic pump group, though no significant difference was found for percent reduction, strength, or range of motion. Adverse effects were not reported. The limitations of the included study were the lack of assessor blinding, the small patient population, and the short-term follow-up period of four weeks. In addition, this study was published in 1998 and may not reflect the outcomes from newer technologies.

RANDOMIZED CONTROLLED TRIALS

No high quality RCTs were identified that compared the effectiveness of multi-chamber programmable pneumatic compression pumps with either single compartment or multi-chamber non-programmable pneumatic compression pumps.

NON-RANDOMIZED COMPARATIVE STUDIES

Data on the effectiveness of pneumatic compression devices is limited. The evidence consists primarily of small non-randomized studies for a variety of single and multi-chamber pumps.^[3-5] Evidence from these studies does not permit conclusion about the effectiveness and safety of these pumps due to methodological limitations including but not limited to the following:

- Non-random allocation of treatment which may introduce selection or response bias.
- Lack of blinding may bias treatment effect estimates.
- Lack of appropriate comparison groups which does not permit conclusions on the efficacy of multi-chamber programmable pumps compared to other available pumps.
- Variable pump protocols limit effective analysis across studies because it is difficult to determine whether a treatment effect is related to the pump type or protocol used.
- Small study populations which limit the ability to rule out the role of chance as an explanation of findings.
- Variable patient baseline characteristics such as severity of conditions (e.g., lymphedema) which may bias treatment effect estimates.

ADVERSE EVENTS

Concerns about damage to remaining intact lymphatics caused by too high pump pressures have been reported; however, these concerns are not well quantified in the literature.

PRACTICE GUIDELINE SUMMARY

SOCIETY FOR VASCULAR SURGERY AND AMERICAN VENOUS FORUM

The Society for Vascular Surgery and the American Venous Forum performed a systematic review and published a 2014 guideline on the management of venous ulcers. The guideline included the following statement on pneumatic compression: “We suggest use of intermittent pneumatic compression when other compression options are not available, cannot be used, or have failed to aid in venous leg ulcer healing after prolonged compression therapy.^[6] The recommendation is based on Grade - 2; Level of Evidence - C (Very weak recommendations; Other alternatives may be reasonable).

SUMMARY

Multi-chamber programmable pneumatic compression pumps (HCPCS code E0652) are considered **not medically necessary** because these programmable pumps have not been shown to be superior to either single compartment or multi-chamber non-programmable pneumatic compression pumps and they are more costly.

REFERENCES

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2. Johansson, K, Lie, E, Ekdahl, C, Lindfeldt, J. A randomized study comparing manual lymph drainage with sequential pneumatic compression for treatment of postoperative arm lymphedema. *Lymphology*. 1998 Jun;31(2):56-64. PMID: 9664269
3. Mayrovitz, HN. Interface pressures produced by two different types of lymphedema therapy devices. *Phys Ther*. 2007 Oct;87(10):1379-88. PMID: 17712034
4. Ridner, SH, McMahon, E, Dietrich, MS, Hoy, S. Home-based lymphedema treatment in patients with cancer-related lymphedema or noncancer-related lymphedema. *Oncol Nurs Forum*. 2008 Jul;35(4):671-80. PMID: 18591171

5. Wilburn, O, Wilburn, P, Rockson, SG. A pilot, prospective evaluation of a novel alternative for maintenance therapy of breast cancer-associated lymphedema [ISRCTN76522412]. *BMC Cancer*. 2006;6:84. PMID: 16571129
6. O'Donnell, TF, Jr., Passman, MA, Marston, WA, et al. Management of venous leg ulcers: clinical practice guidelines of the Society for Vascular Surgery (R) and the American Venous Forum. *Journal of vascular surgery*. 2014 Aug;60(2 Suppl):3S-59S. PMID: 24974070
7. BlueCross BlueShield Association Medical Policy Reference Manual "Pneumatic Compression Pumps for Treatment of Lymphedema." Policy No. 1.01.18

CODES

Codes	Number	Description
CPT	None	
HCPCS	E0652	Pneumatic compressor, segmental home model with calibrated gradient pressure
	E0671	Segmental gradient pressure pneumatic appliance, full leg
	E0672	Segmental gradient pressure pneumatic appliance, full arm
	E0673	Segmental gradient pressure pneumatic appliance, half leg

Date of Origin: November 2009