MEDICAL POLICY

MEDICAL POLICY DETAILS	
Medical Policy Title	**Limb Pneumatic Compression Devices for Venous Thromboembolism Prophylaxis**
Policy Number	**1.01.51**
Category	**Technology Assessment**
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Product Disclaimer	• *Services are contract dependent; if a product excludes coverage for a service, it is not covered, and medical policy criteria do not apply.* • *If a commercial product (including an Essential Plan or Child Health Plus product), medical policy criteria apply to the benefit.* • *If a Medicaid product covers a specific service, and there are no New York State Medicaid guidelines (eMedNY) criteria, medical policy criteria apply to the benefit.* • *If a Medicare product (including Medicare HMO-Dual Special Needs Program (DSNP) product) covers a specific service, and there is no national or local Medicare coverage decision for the service, medical policy criteria apply to the benefit.* • *If a Medicare HMO-Dual Special Needs Program (DSNP) product DOES NOT cover a specific service, please refer to the Medicaid Product coverage line.*

POLICY STATEMENT

I. Based on our criteria and assessment of the peer-reviewed literature, pneumatic compression device has been medically proven to be effective and, therefore, is considered **medically appropriate** when used in the home for venous thromboembolism (VTE) prophylaxis after major surgery, including major orthopedic surgery, in patients when pharmacological prophylaxis is contraindicated. Use of a pneumatic compression device is allowed for up to 30 days post-operatively.

II. Based upon our criteria and assessment of the peer-reviewed literature, use of pneumatic compression device for prevention of venous thromboembolism (VTE), other than as described in Policy Statement I., does not improve patient outcomes, and therefore, is considered **not medically necessary**.

Refer to Corporate Medical Policy #1.01.17 Powered Compression Devices/Lymphedema Pumps

POLICY GUIDELINES

I. Major orthopedic surgery includes total hip arthroplasty (THA), total knee arthroplasty (TKA), or hip fracture surgery (HFS).

II. The American College of Chest Physicians (ACCP) guidelines on prevention of venous thromboembolism (VTE) in orthopedic surgery patients list the following general risk factors for bleeding (Falck-Ytter et al., 2012):
   A. Previous major bleeding (and previous bleeding risk similar to current risk),
   B. Severe renal failure,
   C. Concomitant antiplatelet agent, and
   D. Surgical factors: history of, or difficult-to-control, surgical bleeding during the current operative procedure, extensive surgical dissection, and revision surgery.

DESCRIPTION

Antithrombotic prophylaxis is recommended for surgical patients who are at moderate to high risk of postoperative VTE, which includes deep vein thrombosis (DVT) and pulmonary embolism (PE). Individuals may be classified as being moderate to high risk of VTE based on the surgical procedure and/or individuals characteristics. Mechanical prophylaxis using an intermittent pneumatic compression (IPC) device has been utilized as an adjunct or alternative to anticoagulation in the home setting for individuals in the postoperative period as a method to reduce VTEs.

For certain types of surgery, such as major orthopedic surgery (i.e., total knee arthroplasty, total hip arthroplasty, and hip fracture surgery), there is a particularly high risk of VTE due to the nature of the procedures and the prolonged immobility during and after surgery. Other surgical procedures vary in degree of increased risk of VTE and include abdominal surgery, pelvic surgery, cancer surgery, and surgery for major trauma. Numerous individual-related risk factors, such as increasing age, prior VTE, increasing body mass index (BMI), genetic predisposition, malignancy, pregnancy, and significant comorbidities, can be used in conjunction with the type of surgery to determine risk.

Pharmacologic prophylaxis is effective at reducing postoperative VTE, however, it has risks such as bleeding, allergic reactions, and development of heparin antibodies. Contraindications to pharmacologic prophylaxis include previous intolerance to these agents and increased risk of bleeding.

Pneumatic compression devices for prevention of DVT include various types of wraps for the arms or legs and a programmable control module. The wraps of some of these devices are capable of providing cooling or heating to the extremity. Examples of devices that can be used in the home after discharge include the VascuTherm2 (Thermotek, Inc) and the Triple Play VT (Compression Solutions, Inc).

RATIONALE

Studies involving the use of compression devices post-operatively are limited; the studies are often small and non-randomized, with considerable variation in the comparison studies by type of compression stocking and intermittent compression device used, patient group, DVT detection method, and prophylaxis protocol. Many of the studies are in the setting of the hospital, rather than outpatient; consequently, conclusions from the hospital setting may not be able to be applied to the outpatient setting. In the outpatient setting, there are questions about the degree of compliance with the devices, including the ability to correctly use them in the absence of professional supervision.

The study by Snyder et al. (2017) was a randomized control trial (level II) that assessed the difference in the rate of deep venous thrombosis (DVT) following total knee arthroplasty (TKA) using aspirin (ASA)-based prophylaxis with or without extended use of mechanical pneumatic compression device (PCD) therapy. One hundred patients undergoing TKA, were placed on ASA for three weeks and were randomized to receive PCD during hospitalization only or extended use at home up to six weeks post-operatively. Lower extremity Duplex venous ultrasonography was used to diagnose DVT at different time intervals. The rate of DVT was significantly lower for patients receiving extended use of PCD at 0% compared to 23.1% for those with inpatient use of PCD ($p < 0.001$).

Professional Guidelines

In 2023, the American Society of Clinical Oncology (ASCO) released an updated clinical practice guideline on VTE prophylaxis and treatment in patients with cancer (Key et al., 2023). The guideline makes the following recommendations for thromboprophylaxis in this population:

- All patients with malignant disease undergoing major surgical intervention should be offered pharmacologic thromboprophylaxis unless contraindicated.
- Pharmacologic thromboprophylaxis for patients undergoing major surgery for cancer should be continued for at least 7-10 days.
- Extended pharmacologic thromboprophylaxis for up to 4 weeks postoperatively should be offered to patient undergoing major open or laparoscopic abdominal or pelvic surgery for cancer who have high-risk features, such as restricted mobility, obesity, history of VTE, or with additional risk factors. In lower-risk surgical settings, the decision on appropriate duration of thromboprophylaxis should be made on a case-by-case basis.

- Mechanical methods may be added to pharmacologic thromboprophylaxis but should not be used as monotherapy for VTE prevention unless pharmacologic methods are contraindicated because of active bleeding or high bleeding risk (Type: evidence based; Evidence quality: intermediate; Strength of recommendation: strong).

In 2022, the International Consensus Meeting (ICM) brought together over 600 experts spanning a range countries and medical professional to conduct a comprehensive review of the literature and to generate practical recommendations for VTE prophylaxis across all type of orthopedic procedures. Published recommendations include:

- ICM-VTE general practice guidelines (2022a), 95% of the expert panel agreed that intermittent compression devices (ICD) provide protection against VTE development following orthopedic surgery. Utilizing these devices has been shown to be an effective prophylactic measure. The guideline did not address duration of use postoperatively. Noting that although portable IPC has shown effective mechanical prophylaxis for VTE after THA and TKA, the evidence is limited due to confounding variables.
- ICM-VTE hip and knee guidelines (2022b), 92% of the expert panel agreed that mechanical compressive devices can be used routinely in patients undergoing total hip arthroplasty (THA) or total knee arthroplasty (TKA) as venous thromboembolism (VTE) prophylaxis. However, further research should aim to clarify the most appropriate devices, duration of use, as well as synergistic relationship with pharmacological agents. Furthermore, 82% of the expert panel agree that it appears that coadministration of aspirin (ASA) with pneumatic compression devices (PCD) may be more effective than ASA alone in prevention of venous thromboembolism (VTE) following total joint arthroplasty (TJA).

In 2021, the American College of Obstetricians-Gynecologists (ACOG) published an updated practice bulletin on the prevention of VTE in gynecologic surgery, including the following recommendations:

- For gynecologic surgery patients who are at high risk of VTE and average risk of bleeding complications, dual thromboprophylaxis with a combination of mechanical prophylaxis (preferably with intermittent pneumatic compression) and pharmacologic prophylaxis. (Level A evidence)
- For gynecologic surgery patients at low risk of VTE, mechanical thromboprophylaxis (preferably with intermittent pneumatic compression) is recommended. Graduated compression stockings are a reasonable alternative if intermittent pneumatic compression is not available or is not preferred by the patient. Mechanical prophylaxis devices should be placed before initiation of surgery and continued until the patient is fully ambulatory. (Level B evidence)
- For gynecologic surgery patients who are at moderate risk of VTE and high risk of major bleeding complications, mechanical prophylaxis (preferably with intermittent pneumatic compression) is recommended. (Level B evidence)
- For gynecologic surgery patients at high risk of VTE for whom both LMWH and low-dose unfractionated heparin are contraindicated, or not available, mechanical prophylaxis alone (preferably with intermittent pneumatic compression) is recommended until the risk of bleeding diminishes. (Level B evidence)

In 2012, the American College of Chest Physicians (ACCP) published several clinical practice guidelines with recommendations on the use of postoperative intermittent pneumatic limb compression. Gould et al. recommend the use of limb compression devices in general/non-orthopedic and abdominal-pelvic surgical patients who are at any risk for bleeding, rather than no prophylaxis or in addition to pharmacologic prophylaxis. Falck-Ytter et al. recommended ICP for the prevention of VTE in orthopedic surgery patients for a minimum of 10-14 days rather than no antithrombotic prophylaxis (Grade 1C). The suggestion to extend prophylaxis up to 35 days for patient undergoing major orthopedic surgery was a weak recommendation (Grade 2B) and did not specifically mention limb compression devices as a therapy option. Kahn et al. suggest against the routine use of thromboprophylaxis in chronically immobilized persons in a home setting.

CODES

- *Eligibility for reimbursement is based upon the benefits set forth in the member's subscriber contract.*
- *CODES MAY NOT BE COVERED UNDER ALL CIRCUMSTANCES. PLEASE READ THE POLICY AND GUIDELINES STATEMENTS CAREFULLY.*

- *Codes may not be all inclusive as the AMA and CMS code updates may occur more frequently than policy updates.*
- *Code Key: Experimental/Investigational = (E/I), Not medically necessary/ appropriate = (NMN).*

CPT Codes

Code	Description
No Codes	

HCPCS Codes

Code	Description
E0650	Pneumatic Compressor, nonsegmental home model
E0651	Pneumatic Compressor, segmental home model without calibrated gradient pressure
E0652	Pneumatic Compressor, segmental home model with calibrated gradient pressure
E0660	Nonsegmental pneumatic appliance for use with pneumatic compressor, full leg
E0666	Nonsegmental pneumatic appliance for use with pneumatic compressor, half leg
E0667	Segmental pneumatic appliance for use with pneumatic compressor, full leg
E0669	Segmental pneumatic appliance for use with pneumatic compressor, half leg
E0671	Segmental gradient pressure pneumatic appliance, full leg
E0673	Segmental gradient pressure pneumatic appliance, half leg
E0676	Intermittent limb compression device (includes all accessories), not otherwise specified

ICD10 Codes

Code	Description
M05.00-M05.09	Felty's syndrome (code range)
M05.20-M05.29	Rheumatoid vasculitis with rheumatoid arthritis (code range)
M05.30-M05.39	Rheumatoid heart disease with rheumatoid arthritis (code range)
M05.40-M05.49	Rheumatoid myopathy with rheumatoid arthritis (code range)
M05.50-M05.579	Rheumatoid polyneuropathy with rheumatoid arthritis (code range)
M05.60-M05.79	Rheumatoid arthritis of unspecified site with or without involvement of other organs and systems (code range)
M05.80-M06.09	Rheumatoid arthritis with or without rheumatoid factor (code range)
M06.1	Adult-onset Still's disease
M06.20-M06.29	Rheumatoid bursitis (code range)
M06.30-M06.39	Rheumatoid nodule (code range)
M06.4	Inflammatory polyarthropathy

Code	Description
M06.80-M06.9	Other specified rheumatoid arthritis (code range)
M08.00-M08.29	Unspecified juvenile rheumatoid arthritis (code range)
M08.3	Juvenile rheumatoid polyarthritis (seronegative)
M08.40-M08.48	Pauciarticular juvenile rheumatoid arthritis (code range)
M08.80-M08.99	Other juvenile arthritis (code range)
M12.00-M12.59	Chronic postrheumatic arthropathy (Jaccoud) (code range)
M15.0-M19.93	Polyosteoarthritis (code range)
M80.051A-M80.859A	Osteoporosis (code range)
M84.451A-M84.659A	Pathological fracture, hip or femur, initial encounter for fracture (code range; A codes only)
S72.001A-S79.099A	Fracture of lower extremity, initial encounter for fracture type (code range; A codes only)
Z47.1	Aftercare following joint replacement surgery
Z96.641-Z96.659	Presence of artificial lower extremity joint (code range)

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*Key Article

KEY WORDS

Venodyne, VascuTherm2, Triple Play VT

CMS COVERAGE FOR MEDICARE PRODUCT MEMBERS

There is currently a National Coverage Determination (NCD) (280.6) for pneumatic compression devices. Please refer to the following NCD website for Medicare Members: [https://www.cms.gov/medicare-coverage-database/view/ncd.aspx?NCDId=225] accessed 08/09/24.

There is currently a Local Coverage Determination (LCD) (L33829) for pneumatic compression devices. Please refer to the following LCD website for Medicare Members: [https://www.cms.gov/medicare-coverage-database/view/lcd.aspx?LCDId=33829] accessed 08/09/24.

There is currently a Policy Article (A52488) for pneumatic compression devices. Please refer to the following Article website for Medicare Members: [https://www.cms.gov/medicare-coverage-database/view/article.aspx?articleId=52488] accessed 08/09/24.