



Postsurgical Home Use of Limb Compression Devices

Effective: February 1, 2026

Next Review: October 2026

Last Review: December 2025

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

Limb compression devices have been used as an adjunct or alternative to anticoagulation in the home setting for patients in the postoperative period as a method to reduce venous thromboembolisms.

MEDICAL POLICY CRITERIA

Note: This policy only applies to member contracts that are subject to preauthorization for limb compression devices, as specified by their group plan. Please check the preauthorization website for the member contract to confirm requirements.

- I. Postsurgical home use of limb compression devices for venous thromboembolism (VTE) prophylaxis may be considered **medically necessary** for patients with a contraindication to pharmacologic agents for up to 30 days when either of the following Criteria are met:
 - A. After major orthopedic surgery (total hip arthroplasty, total knee arthroplasty, hip fracture surgery); or
 - B. After major non-orthopedic surgery or other orthopedic procedures in patients who are at moderate or high risk of VTE.

- II. Postsurgical home use of limb compression devices for VTE prophylaxis is considered **not medically necessary** when Criterion I. is not met.

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

CROSS REFERENCES

None

BACKGROUND

Antithrombotic prophylaxis is recommended for surgical patients at moderate-to-high risk of postoperative venous thromboembolism (VTE), including deep vein thrombosis (DVT) and pulmonary embolism (PE), based on the surgical procedure and/or patient characteristics. For some types of surgery (e.g., major orthopedic surgery), there is a particularly high risk of VTE due to the nature of the procedure and the prolonged immobility during and after surgery. Common patient risk factors include increasing age, prior VTE, malignancy, pregnancy, and significant comorbidities. Increased risk of bleeding is a contraindication to anticoagulation as are adverse effects and allergic reactions. Limb compression devices have been used as an adjunct or alternative to anticoagulation in the home setting for patients in the postoperative period as a method to reduce VTEs. The guidelines section of this document has guidance on the definition of risk.

EVIDENCE SUMMARY

The objective of this evidence review is to evaluate whether the use of limb compression devices in the home setting reduces the risk of venous thromboembolism in patients in the postsurgical period. The key published literature is summarized below.

MODERATE-TO-HIGH POSTSURGICAL RISK OF VENOUS THROMBOEMBOLISM AND NO CONTRAINDICATION TO PHARMACOLOGIC PROPHYLAXIS

This section focuses on evidence that postdischarge use of limb compression devices in addition to pharmacologic agents provide an incremental benefit to the net health outcome compared with pharmacologic agents alone. The ideal study to address patients with moderate-to-high postsurgical risk of venous thromboembolism (VTE) and no contraindication to pharmacologic prophylaxis is a superiority randomized controlled trial (RCT) comparing VTE prophylaxis with pharmaceutical agents plus limb compression devices to pharmacologic agents alone. No RCTs with this study design were identified in patients discharged after major orthopedic surgery or other types of major surgery. There are, however, RCTs and meta-analyses of RCTs comparing medication plus compression devices with medication alone in surgical patients in hospital. These studies address whether the use of limb compression devices added to pharmacologic therapy improves VTE prophylaxis in the hospital setting but may not permit inferences to the postdischarge home setting. Meta-analyses of RCTs are described next.

Kakkos (2016) published an updated Cochrane review that assessed the efficacy of combined intermittent pneumatic compression (IPC) plus pharmacologic prophylaxis to single therapies alone in preventing VTE.^[1] Overall, 22 trials (total n=9,137) were included, of which 15 were RCTs (n=7,762). For the comparison of IPC plus pharmacologic therapy to pharmacologic

therapy alone, 10 studies evaluated the effect of combined therapies on the incidence of symptomatic pulmonary embolism (PE), 11 studies evaluated the effect on the incidence of deep vein thrombosis (DVT), and five studies evaluated the effect on the incidence of symptomatic DVT. The primary pooled study results are summarized in Table 1.

Table 1: IPC Plus Pharmacologic Therapy vs Pharmacologic Therapy (Kakkos, 2016)^[1]

Outcome	Trials	N	IPC + Pharmacologic Txa	Pharmacologic Txa	Pooled OR	95% CI
Pulmonary embolus	10	3544	1.20% (22/1833)	2.92% (50/1711)	0.39	0.23 to 0.64
DVT	11	2866	2.9% (41/1414)	6.2% (90/1452)	0.42	0.18 to 1.03
Symptomatic DVT	5	2312	0.43% (5/1155)	0.43% (5/1157)	1.02	0.29 to 3.54

CI: confidence interval; DVT: deep vein thrombosis; IPC: intermittent pneumatic compression; OR: odds ratio; Tx: treatment.
a Values are % (n/N).

These findings were similar in subgroup analyses by surgical type, including orthopedic surgeries. The risk of bias in the selected studies was generally unclear or high. Overall, reviewers concluded that combined modalities for VTE prophylaxis were more effective than single modalities. Although the risks for bias were high, the findings of the meta-analysis were consistent with those of previous studies.

A meta-analysis by O'Connell (2016) included nine RCTs (total n=3,347) comparing IPC, with or without pharmacologic therapy, to pharmacologic agent alone in orthopedic and neurologic surgical patients.^[2] Six studies included patients undergoing major orthopedic surgery. In a pooled analysis of all nine studies, significantly fewer patients in the IPC group (38/1680 [2.3%]) were diagnosed with DVT than in the control group (89/1667 [5.3%]) (pooled relative risk [RR] 0.49, 95% confidence interval [CI] 0.25 to 0.96). A pooled analysis of eight studies did not find a significant difference in the rate of PE in the IPC and control groups; however, the total number of events was low (five [0.6%] in the IPC group vs seven [0.9%] in the control group) and five studies had no PE (pooled RR 0.71, 95% CI 0.22 to 2.24).

Zareba (2014) published a meta-analysis of RCTs comparing combined compression plus pharmacologic prophylaxis to either intervention alone for postsurgical VTE prevention.^[3] Twenty-five studies met the inclusion criteria: 13 on orthopedic surgery, seven on abdominal surgery, three on neurosurgery, and one on cardiac surgery (the population in the remaining study was not reported). Eleven RCTs (total n=4,866) compared pharmacologic prophylaxis plus compression to pharmacologic prophylaxis alone. IPC was used in five studies and graduated compression stockings were used in the other six. A pooled analysis of 10 studies found that the risk of DVT with pharmacologic prophylaxis plus compression was significantly lower than with pharmacologic prophylaxis alone (5.1% vs 10.4%, RR 0.51, 95% CI 0.36 to 0.73). In addition, there was a significant between-group difference in the risk of PE (nine studies, RR 0.43, 95% CI 0.27 to 0.66). Reviewers noted that the PE analysis was heavily weighted by one large (n=2,786 patients) study of patients undergoing cardiac surgery, which provided 69 of 89 total PE events. Four studies reported on symptomatic DVT. A pooled analysis did not find a significant difference between groups in risk of symptomatic DVT (four studies, pooled RR 0.39, 95% CI 0.05 to 2.90).

A systematic review and meta-analysis by Sobieraj (2013) included RCTs comparing pharmacologic and mechanical prophylaxis to either treatment alone in patients undergoing major orthopedic surgery.^[4] Six trials (total n=961) were identified, five of which compared

combination prophylaxis to pharmacologic prophylaxis alone. Mechanical prophylaxis included IPCs, venous foot pumps, and graduated compression stockings. A pooled analysis of four RCTs found a significantly lower risk of DVT with combination prophylaxis than with pharmacologic prophylaxis alone (RR 0.48, 95% CI 0.32 to 0.72). In other pooled analyses, there were no significant differences between groups in risk of PE (two studies), proximal DVT (three studies), or distal DVT (two studies).

A meta-analysis by Kakkos (2012) focused on patients undergoing hip and knee replacement.^[5] Six RCTs (total n=1,399) were included; four of them compared pharmacologic plus mechanical prophylaxis to pharmacologic prophylaxis alone. Three studies included both hip and knee replacement patients and the fourth included only hip replacement patients. A pooled analysis of three trials on total knee replacement found a significantly lower rate of DVT in the combined prophylaxis group (3.7%) than in the pharmacologic prophylaxis only group (18.7%, RR 0.27, 95% CI 0.08 to 0.89). Similarly, there was a significantly lower risk of DVT with combined prophylaxis when findings of four studies on hip replacement were pooled (0.9% vs 9.7%, RR 0.17, 95% CI 0.06 to 0.46).

Section Summary: Moderate-to-High Postsurgical Risk of Venous Thromboembolism and No Contraindication to Pharmacologic Prophylaxis

Findings from meta-analyses have suggested that the in-hospital addition of limb compression devices to pharmacologic management improves VTE prophylaxis, especially for prevention of DVTs. Findings related to the risk of PE are more limited because analyses might have been underpowered due to the small number of PE events. RCTs varied in terms of patient populations (e.g., orthopedic surgery, nonorthopedic surgery, medical patients), compression devices (IPCs, foot pumps, sequential compression devices), cointerventions (e.g., compression stockings), duration of follow-up, and outcomes reported. The meta-analyses reported on risk of DVT, but some did not distinguish between symptomatic DVT, which is more clinically relevant, and asymptomatic (imaging-detected) DVT.

The available evidence also does not address if there is an incremental benefit in the postdischarge setting of adding limb compression devices to pharmacologic prophylaxis. The postdischarge setting has important characteristics that preclude making inferences from the inpatient setting. Patient characteristics vary because discharged patients tend to be healthier than those in hospital. Characteristics of home use also vary (e.g., treatment consistency, duration, application errors in use). RCTs evaluating the addition of limb compression devices to pharmacologic management postdischarge in the home setting are needed to permit conclusions about the incremental benefit of this technology on VTE prophylaxis.

MODERATE-TO-HIGH POSTSURGICAL RISK OF VTE AND CONTRAINDICATION TO PHARMACOLOGIC PROPHYLAXIS

This section addresses whether postdischarge limb compression device use in moderate-to-high risk patients with a contraindication to pharmacologic prophylaxis improves the net health outcome compared with no postdischarge VTE prophylaxis. The ideal study design is an RCT comparing limb compression devices and no prophylaxis after hospital discharge. However, there may be ethical and practical barriers to conducting such a study, especially in higher risk patients. Alternatively, a network meta-analysis could indirectly compare outcomes of limb compression device use to no VTE prophylaxis. No RCTs or network meta-analyses of postdischarge use in patients with contraindication to pharmacologic prophylaxis were identified.

There is, however, a meta-analysis of RCTs comparing IPC use with placebo in hospital, published by Ho and Tan (2013).^[6] It included RCTs comparing IPC to no prophylaxis or another type of prophylaxis in hospitalized surgical and nonsurgical patients. As with the meta-analyses reviewed above, there was heterogeneity of participants and interventions. Studies using a no prophylaxis control group may have included lower risk patients and some studies involving higher risk patients also included pharmacologic prophylaxis in both groups. A pooled analysis of 40 RCTs found a significantly lower rate of DVT with IPCs (7.3%) versus placebo (16.7%, RR 0.43, 95% CI 0.36 to 0.52). Similarly, a pooled analysis of 26 trials found a significantly lower rate of PE with IPC (1.2%) than placebo (2.8%, RR 0.48, 95% CI 0.33 to 0.69). Results of the meta-analysis suggested that IPC devices can be beneficial for VTE prophylaxis in patients with a contraindication to medication.

To draw inferences about the benefit of limb compression devices post-discharge in these patients, the feasibility of home use should be considered. An unblinded RCT by Sobieraj-Teague (2012) compared use of a portable battery-operated IPC device to usual care alone in patients undergoing cranial or spinal neurosurgery.^[7] All patients were also prescribed graduated compression stockings and 20% to 25% used anticoagulants. Patients were evaluated at nine days post-surgery and those discharged earlier were permitted to use an IPC at home (median duration of hospitalization, four days). Patients who used the IPC device post-discharge received home visits at least daily to optimize compliance. Three (4%) of 75 patients in the IPC group and 14 (19%) of 75 patients in the usual care group developed VTE; the difference between groups was statistically significant ($p=0.008$). Among evaluable patients in the IPC group, 23.3% were continuous users, 53.4% were intermittent users, and 23.3% discontinued use (this includes both inpatient and outpatient use). The mean duration of IPC use was 6.6 days. Findings suggest that in-home use of IPC devices is feasible with adequate post-discharge planning and support.

Section Summary: Moderate-to-High Postsurgical Risk of VTE and Contraindication to Pharmacologic Prophylaxis

A meta-analysis has supported the conclusion that the use of a limb compression device is superior to placebo for VTE prevention in hospitalized patients. Notably, the incidences of both DVT and PE were significantly lower among patients receiving limb compression. A limitation of the meta-analysis is that it did not stratify patients by risk level, nor was pharmacologic prophylaxis absent in all cases. Nonetheless, the inference is supported that in patients with a contraindication to pharmacologic prophylaxis, post-discharge use of limb compression devices is superior for VTE prophylaxis compared to no prophylaxis.

Results of an unblinded RCT, which only enrolled 150 patients and evaluated a single approach to patient support in the home (i.e., daily visits by care provider), were consistent with the feasibility of post-discharge home use of limb compression devices. In the US health care system, appropriate post-discharge planning and transition are recognized as critical to reducing readmissions.^[8, 9] When appropriate post-discharge planning and support are in place, the use of limb compression devices in the home in moderate-to-high risk patients with a contraindication to pharmacologic prophylaxis is likely to improve VTE prevention.

PRACTICE GUIDELINE SUMMARY

AMERICAN COLLEGE OF CHEST PHYSICIANS

In 2016, the American College of Chest Physicians (ACCP) published an update to its 2012 evidence-based guideline^[10] on antithrombotic therapy and prevention of thrombosis.^[11] The 2016 update addressing antithrombotic therapy for venous thromboembolism (VTE) disease outlined risk factors for bleeding with anticoagulant therapy and estimated the risks of major bleeding for patients in various risk categories (see Table 2). There was a second update to these guidelines in 2021, however, there was no new information for the prevention of thrombosis or mention of the use of limb compression devices.^[12]

Risk factors include (1 point per factor):

- Age >65 y
- Age >75y
- Previous bleeding
- Cancer
- Metastatic cancer
- Renal failure
- Liver failure
- Thrombocytopenia
- Previous stroke
- Diabetes
- Anemia
- Antiplatelet therapy
- Poor anticoagulant control
- Comorbidity and reduced functional capacity
- Recent surgery
- Alcohol abuse
- Nonsteroidal anti-inflammatory drug.

Table 2: ACCP Guidelines for Risk of Bleeding (Adapted From Kearon, 2016)^[11]

Risk Factors	Estimated Absolute Risk of Major Bleeding		
	Low Risk (0 Risk Factors)	Moderate Risk (1 Risk Factor)	High Risk (≥2 Risk Factors)
Anticoagulation 0-3 mo, %			
Baseline risk	0.6	1.2	4.8
Increased risk	1.0	2.0	8.0
Total risk	1.6	3.2	12.8
Anticoagulation after first 3 mo, %/y			
Baseline risk	0.3	0.6	≥2.5
Increased risk	0.5	1.0	≥4.0
Total risk	0.8	1.6	≥6.5

ACCP: American College of Chest Physicians.

In its 2012 guidelines on antithrombotic therapy and prevention of thrombosis, ACCP updated its evidence-based guidelines on prevention of VTE in patients undergoing orthopedic and nonorthopedic surgery. ACCP recommendations on use of limb compression devices in orthopedic surgical patients^[13]:

- 2.1.1 “In patients undergoing total hip arthroplasty (THA) or total knee arthroplasty (TKA), we recommend use of one of the following for a minimum of 10 to 14 days rather than no antithrombotic prophylaxis: low-molecular-weight heparin (LMWH),

- fondaparinux, apixaban, dabigatran, rivaroxaban, low-dose unfractionated heparin (LDUH), adjusted-dose vitamin K antagonist (VKA), aspirin (all Grade 1B), or an intermittent pneumatic compression device (IPCD) (Grade 1C)."
- 2.1.2 "In patients undergoing hip fracture surgery (HFS), we recommend use of one of the following rather than no antithrombotic prophylaxis for a minimum of 10 to 14 days: LMWH, fondaparinux, LDUH, adjusted-dose VKA, aspirin (all Grade 1B), or an IPCD (Grade 1C)."
- 2.5 "In patients undergoing major orthopedic surgery, we suggest using dual prophylaxis with an antithrombotic agent and an IPCD during the hospital stay (Grade 2C).
- 2.6 "In patients undergoing major orthopedic surgery and increased risk of bleeding, we suggest using an IPCD or no prophylaxis rather than pharmacologic treatment (Grade 2C)."

For all above recommendations related to pneumatic compression pumps, ACCP recommended only portable, battery-powered devices be used and stated that efforts should be made to ensure devices are worn for 18 hours a day. Guidelines noted that compliance is the biggest challenge with use of pneumatic compression devices.

ACCP recommendations on use of limb compression devices in nonorthopedic general and abdominal-pelvic surgical patients, stratified by patient risk of VTE and risk of bleeding, included^[14]:

Very low risk patients (<0.5%): "[W]e recommend that no specific pharmacologic (Grade 1B) or mechanical (Grade 2C) prophylaxis be used other than early ambulation."

Low risk for VTE (≈1.5%): "[W]e suggest mechanical prophylaxis, preferably with intermittent pneumatic compression (IPC), over no prophylaxis (Grade 2C)."

Moderate risk for VTE (≈3%) and not at high risk of bleeding: "[W]e suggest low-molecular-weight heparin (LMWH) (Grade 2B), low-dose unfractionated heparin (Grade 2B), or mechanical prophylaxis with IPC (Grade 2C) over no prophylaxis."

Moderate risk for VTE (≈3%) and high risk for major bleeding complications or in whom bleeding consequences would be particularly severe: "We suggest mechanical prophylaxis, preferably with IPC, over no prophylaxis (Grade 2C)."

High risk for VTE (≈6.0%) and not at high risk of bleeding: "[W]e recommend pharmacologic prophylaxis with LMWH (Grade 1B) or low-dose unfractionated heparin (Grade 1B) over no prophylaxis. In these patients, we suggest adding mechanical prophylaxis with elastic stockings or IPC to pharmacologic prophylaxis (Grade 2C)."

High risk for VTE (≈6.0%) and high risk for major bleeding complications or in whom bleeding consequences would be particularly severe: "[W]e suggest use of mechanical prophylaxis, preferably with IPC, over no prophylaxis until the risk of bleeding diminishes and pharmacologic prophylaxis may be initiated (Grade 2C)."

High risk for VTE, both LMWH and unfractionated heparin contraindicated or unavailable and not at high risk for major bleeding complications: "[W]e suggest low-

dose aspirin (Grade 2C), fondaparinux (Grade 2C), or mechanical prophylaxis, preferably with IPC (Grade 2C), over no prophylaxis.”

High risk for VTE, undergoing abdominal or pelvic surgery for cancer and not otherwise at high risk for major bleeding complications: “[W]e recommend extended-duration, postoperative, pharmacologic prophylaxis (4 weeks) with LMWH over limited-duration prophylaxis (Grade 1B).”

Note that a standard duration of prophylaxis was not defined. An “extended-duration” prophylaxis was defined as lasting four weeks.

AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS

In 2011, the American Academy of Orthopaedic Surgeons updated its guidelines on prevention of VTE in patients undergoing elective hip and knee arthroplasty.^[15] The guidelines included the following recommendations relevant to this evidence review:

5. “The work group suggests the use of pharmacologic agents and/or mechanical compressive devices for the prevention of venous thromboembolism in patients undergoing elective hip or knee arthroplasty, and who are not at elevated risk beyond that of the surgery itself for venous thromboembolism or bleeding. (Grade of Recommendation: Moderate) Current evidence is unclear about which prophylactic strategy (or strategies) is/are optimal or suboptimal. Therefore, the work group is unable to recommend for or against specific prophylactics in these patients. (Grade of Recommendation: Inconclusive) In the absence of reliable evidence about how long to employ these prophylactic strategies, it is the opinion of this work group that patients and physicians discuss the duration of prophylaxis. (Grade of Recommendation: Consensus)
6. “In the absence of reliable evidence, it is the opinion of this work group that patients undergoing elective hip or knee arthroplasty, and who have also had a previous venous thromboembolism, receive pharmacologic prophylaxis and mechanical compressive devices. (Grade of Recommendation: Consensus)
7. “In the absence of reliable evidence, it is the opinion of this work group that patients undergoing elective hip or knee arthroplasty, and who also have a known bleeding disorder (e.g., hemophilia) and/or active liver disease, use mechanical compressive devices for preventing venous thromboembolism. (Grade of Recommendation: Consensus)”

AMERICAN COLLEGE OF OBSTETRICIANS AND GYNECOLOGISTS

In 2007 (reaffirmed in 2018), the American College of Obstetricians and Gynecologists updated its practice bulletin on prevention of deep vein thrombosis (DVT) and pulmonary embolism (PE) after gynecologic surgery.^[16] As with ACCP recommendations described above, prophylaxis recommendations varied by patient risk level. For patients at moderate and high risk of DVT, intermittent pneumatic compression was one of the recommended options for DVT prophylaxis. For patients at highest risk (e.g., >60 years plus prior VTE, cancer, or molecular hypocoagulable state), IPC or graduated compression stockings plus LDUH or LMWH were recommended as prophylactic options. For all but the highest risk patients, the practice bulletin stated that, when IPC devices were used, “the devices should be used continuously until ambulation and discontinued only at the time of hospital discharge.” For the

highest risk patients, the bulletin stated that continuing prophylaxis for two to four weeks after discharge should be considered.

AMERICAN ORTHOPAEDIC FOOT AND ANKLE SOCIETY

In 2013 (re-approved in 2020), the American Orthopaedic Foot and Ankle Society published a position statement on VTE prophylaxis after foot and ankle surgery. It stated that: "There is currently insufficient data for the American Orthopaedic Foot & Ankle Society (AOFAS) to recommend for or against routine VTE prophylaxis for patients undergoing foot and ankle surgery. Further research in this field is necessary and is encouraged."^[17] The position statement further notes the following with regards to the use of mechanical prophylaxis: "Mechanical prophylaxis such as elastic compression stockings and sequential compression calf pumps or foot pumps on the contralateral extremity can be utilized intraoperatively and continued post operatively through the duration of the hospital stay. While the true efficacy of this modality in foot and ankle surgery is unknown, complications are negligible and compression pumps may be considered in both the outpatient and inpatient setting. Whether there is a threshold duration of the surgical procedure for which these are beneficial is unknown, as is the optimal duration of their use post-operatively."

AMERICAN SOCIETY OF CLINICAL ONCOLOGY

In 2023, the American Society of Clinical Oncology (ASCO) released updates to the clinical practice guideline on VTE prophylaxis and treatment in patients with cancer.^[18] The guideline was unchanged from the previous 2019 guideline and makes the following recommendations regarding mechanical prophylaxis in this population:

- "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)"
- "A combined regimen of pharmacologic and mechanical prophylaxis may improve efficacy, especially in the highest-risk patients (Type: evidence-based; Evidence quality: intermediate; Strength of recommendation: moderate)"

AMERICAN SOCIETY OF HEMATOLOGY

In 2019, the American Society of Hematology issued guidelines for the prevention and management and of venous thromboembolism in surgical hospitalized patients.^[19] The following are two suggestions for patients undergoing major surgery:

- For those "who receive mechanical prophylaxis,...[use] intermittent compression devices over graduated compression stockings (conditional recommendation based on very low certainty in the evidence of effects)."
- For those "who receive pharmacologic prophylaxis,...[use] combined prophylaxis with mechanical and pharmacological methods over prophylaxis with pharmacological agents alone (conditional recommendation based on very low certainty in the evidence of effects). Remark: For patients considered at high risk of VTE, combined prophylaxis is particularly favored over mechanical or pharmacological prophylaxis alone."

SUMMARY

There is enough evidence to show that postsurgical home use of limb compression devices for venous thromboembolism (VTE) prophylaxis can improve health outcomes for certain patients. Clinical practice guidelines based on research recommend postsurgical home use of limb compression devices for VTE prophylaxis in certain patients. Therefore, postsurgical home use of limb compression devices for VTE prophylaxis may be considered medically necessary when Criteria are met.

There is not enough evidence to show that health outcomes are improved when policy Criteria are not met. Therefore, postsurgical home use of limb compression devices for VTE prophylaxis is considered not medically necessary when Criterion I is not met.

REFERENCES

1. Kakkos SK, Caprini JA, Geroulakos G, et al. Combined intermittent pneumatic leg compression and pharmacological prophylaxis for prevention of venous thromboembolism. *The Cochrane database of systematic reviews*. 2016;9:CD005258. PMID: 27600864
2. O'Connell S, Bashir K, Broderick BJ, et al. The use of intermittent pneumatic compression in orthopedic and neurosurgical postoperative patients: a systematic review and meta-analysis. *Annals of surgery*. 2016;263(5):888-9. PMID: 26720432
3. Zareba P, Wu C, Agzarian J, et al. Meta-analysis of randomized trials comparing combined compression and anticoagulation with either modality alone for prevention of venous thromboembolism after surgery. *The British journal of surgery*. 2014;101(9):1053-62. PMID: 24916118
4. Sobieraj DM, Coleman CI, Tongbram V, et al. Comparative effectiveness of combined pharmacologic and mechanical thromboprophylaxis versus either method alone in major orthopedic surgery: a systematic review and meta-analysis. *Pharmacotherapy*. 2013;33(3):275-83. PMID: 23401017
5. Kakkos SK, Warwick D, Nicolaides AN, et al. Combined (mechanical and pharmacological) modalities for the prevention of venous thromboembolism in joint replacement surgery. *The Journal of bone and joint surgery British volume*. 2012;94(6):729-34. PMID: 22628585
6. Ho KM, Tan JA. Stratified meta-analysis of intermittent pneumatic compression of the lower limbs to prevent venous thromboembolism in hospitalized patients. *Circulation*. 2013;128(9):1003-20. PMID: 23852609
7. Sobieraj-Teague M, Hirsh J, Yip G, et al. Randomized controlled trial of a new portable calf compression device (Venowave) for prevention of venous thrombosis in high-risk neurosurgical patients. *Journal of thrombosis and haemostasis : JTH*. 2012;10(2):229-35. PMID: 22188037
8. Family Caregiver Alliance. Hospital Discharge Planning: A Guide for Families and Caregivers. [cited 12/1/2025]. 'Available from:' <https://www.caregiver.org/hospital-discharge-planning-guide-families-and-caregivers>.
9. Institute for Healthcare Improvement, Effective Interventions to Reduce Rehospitalizations: A Survey of the Published Evidence: <https://www.qualityhealth.org/bree/wp->

content/uploads/sites/8/2014/04/bree_readmissions_background_reading.pdf.

Accessed: 12/1/2025.

10. Guyatt GH, Akl EA, Crowther M, et al. Introduction to the ninth edition: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest*. 2012;141(2 Suppl):48S-52S. PMID: 22315255
11. Kearon C, Akl EA, Ornelas J, et al. Antithrombotic Therapy for VTE Disease: CHEST Guideline and Expert Panel Report. *Chest*. 2016;149(2):315-52. PMID: 26867832
12. Stevens SM, Woller SC, Kreuziger LB, et al. Antithrombotic Therapy for VTE Disease: Second Update of the CHEST Guideline and Expert Panel Report. *Chest*. 2021;160(6):e545-e608. PMID: 34352278
13. Falck-Ytter Y, Francis CW, Johanson NA, et al. Prevention of VTE in orthopedic surgery patients: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest*. 2012;141(2 Suppl):e278S-325S. PMID: 22315265
14. Gould MK, Garcia DA, Wren SM, et al. Prevention of VTE in nonorthopedic surgical patients: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest*. 2012;141(2 Suppl):e227S-77S. PMID: 22315263
15. Mont MA, Jacobs JJ, Boggio LN, et al. Preventing venous thromboembolic disease in patients undergoing elective hip and knee arthroplasty. *The Journal of the American Academy of Orthopaedic Surgeons*. 2011;19(12):768-76. PMID: 22134209
16. Committee on Practice Bulletins--American College of Obstetricians and Gynecologists. ACOG Practice Bulletin No. 84: Prevention of deep vein thrombosis and pulmonary embolism. *Obstetrics and gynecology*. 2007;110(2 Pt 1):429-40. PMID: 17666620
17. American Orthopaedic Foot & Ankle Society (AOFAS). Position Statement: The Use of VTED Prophylaxis in Foot and Ankle Surgery. [cited 12/1/2025]. 'Available from: https://www.aofas.org/docs/default-source/research-and-policy/vted-prophylaxis-in-foot-and-ankle-surgery-position-statement.pdf?sfvrsn=21490028_2.
18. Key NS, Khorana AA, Kuderer NM, et al. Venous Thromboembolism Prophylaxis and Treatment in Patients With Cancer: ASCO Guideline Update. *J Clin Oncol*. 2023;41(16):3063-71. PMID: 37075273
19. Anderson DR, Morgano GP, Bennett C, et al. American Society of Hematology 2019 guidelines for management of venous thromboembolism: prevention of venous thromboembolism in surgical hospitalized patients. *Blood Adv*. 2019;3(23):3898-944. PMID: 31794602

CODES

Codes	Number	Description
CPT	None	
HPCS	E0650- E0673	Pneumatic compression device code range
	E0676	Intermittent limb compression device (includes all accessories), not otherwise specified
	E0678	Non-pneumatic sequential compression garment, full leg
	E0679	Non-pneumatic sequential compression garment, half leg
	E0680	Non-pneumatic compression controller with sequential calibrated gradient pressure
	E0681	Non-pneumatic compression controller without calibrated gradient pressure

Codes	Number	Description
	E0682	Non-pneumatic sequential compression garment, full arm
	E0683	Non-pneumatic, non-sequential, peristaltic wave compression pump

Date of Origin: October 2020