



ASPAN

American Society of PeriAnesthesia Nurses

Clinical Practice: Frequently Asked Question

Q: Does ASPAN have standards or recommendations guiding the use of perioperative leg compression therapy for VTE prevention? What are some of the indications and contraindications for use?

A: ASPAN does not have a standard or recommendation that specifically addresses who utilizes leg compression therapy for VTE prophylaxis. However, the ASPAN *2019-2020 Perianesthesia Nursing Standards, Practice Recommendations, and Interpretive Statements* includes Practice Recommendation 2, Components of Assessment and Management for the Perianesthesia Patient, and Practice Recommendation 4, Recommended Competencies for the Perianesthesia Nurse, that stress integrating relevant patient data to individualize care, to maximize patient safety, and improve outcomes as they navigate through the perianesthesia experience.¹

Integrating these recommendations into nursing practice requires critical thinking and analysis and should reflect evidence based knowledge about patient selection for VTE prophylaxis, physiologic variables (risk factors) leading to thrombus formation, and effective leg compression prophylaxis.

Venous thromboembolism (VTE) is the combination of deep vein thrombosis (DVT) and pulmonary embolism (PE). Studies indicate that in the absence of prophylaxis, as many as 10% to 40% of hospital acquired DVT occur in medical and general surgical populations and 40% to 60% occur in the orthopedic surgery population.²

Three physiologic variables, Virchow's Triad, lead to thrombus formation: 1.) Disturbance in blood flow causing stasis, 2.) Hypercoagulability, and 3.) Vessel wall damage.² Physiologic conditions predisposing individuals to this triad are considered to be high risk for VTE. High risk conditions for VTE include: trauma, orthopedic surgery, burns, procedures lasting more than 30 to 45 minutes, positioning that constricts blood vessels, use of tourniquets, varicosities, obesity, smoking, HRT, pregnancy or postpartum, CHF, COPD, dehydration, hypovolemia, ethnicity, immobility or sedentary lifestyle, personal history or a family history of clotting disorders, DVT, PE, blood clots.² Research has shown that emptying the deep veins of the legs (preventing stasis) reduces thrombus formation. Stasis prevention can be achieved through early mobilization and compression therapy with intermittent pneumatic compression (IPC) and/or graduated compression stockings (GCS).^{3,4}

Correctly applied IPC that includes three locations, foot, calf, and thigh, has been shown to be the most effective (using current technology). Ideally, IPC sleeves should sense each leg independently and provide compressions to match postcompression venous refill times.⁴ GCS can be knee or thigh length. Thigh length GCS are associated with wrinkling, rolling, and a tourniquet effect. Hilleran-Listerud (2008) concluded that knee length GCS and IPC were equally effective in reducing VTE, were more comfortable for patients, were associated with greater compliance and ease of use, were more cost effective and posed less injury risk related to poor fit and wrinkling.⁴

While GCS and IPC are highly effective in VTE prevention, there are potential contraindications for their use: peripheral vascular disease, arterial insufficiency, leg deformity, excessive (greater than 3+) edema, pulmonary edema, peripheral neuropathy, and preexisting skin conditions.

In summary, each patient should be properly assessed for both indications and contraindications for VTE prophylaxis. Some patients will require anticoagulation along with compression therapy. Others may only require early ambulation and performing "ankle pumps" (ankle flexion and extension) during immobile periods. Many will require compression therapy, either alone or combined IPC and GCS. Some patients

will be discharged to home wearing GCS and/or with a home IPC unit. All should be educated to the risks of VTE and how they are an equally important link in prevention.

References:

1. American Society of PeriAnesthesia Nurses, *2019-2020 Perianesthesia Nursing Standards, Practice Recommendations, and Interpretive Statements*, Cherry Hill, NJ: ASPAN; 2018.
2. Association of Perioperative Registered Nurses. AORN guideline for prevention prevention of venous venous stasis. *AORN J.*,-2007; 85-(3):, 607–622.
3. Comerota, A. J., Intermittent pneumatic compression for DVT prophylaxis. *Supplement to Endovascular Today* . 2011:3-5
4. Hilleren-Listerud, A. E., (2009), *Graduated compression stocking and intermittent pneumatic compression device length selection.*, Clin Spec, 2009:23(1); 21-24.

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