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VENOUS THROMBOEMBOLISM



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P indicates a recommendation or evidence relevant to pediatric care.

MEDICAL ABBREVIATIONS & ACRONYMS

ACCP – American College of Chest Physicians
ACFAS – American College of Foot and Ankle Surgeons
ACOG – American Congress of Obstetricians and Gynecologists
ASMBS – American Society for Metabolic Bariatric Surgery
DVT – Deep vein thrombosis
ERAS – Enhanced Recovery After Surgery

MRI – Magnetic resonance imaging
NICE – National Institute for Health and Care Excellence
PE – Pulmonary embolism
RCT – Randomized controlled trial
RN – Registered nurse
VTE – Venous thromboembolism

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GUIDELINE FOR PREVENTION OF VENOUS THROMBOEMBOLISM

The Guideline for Prevention of Venous Thromboembolism was approved by the AORN Guidelines Advisory Board and became effective November 1, 2017. It was presented as a proposed guideline for comments by members and others. The recommendations in the guideline are intended to be achievable and represent what is believed to be an optimal level of practice. Policies and procedures will reflect variations in practice settings and/or clinical situations that determine the degree to which the guideline can be implemented. AORN recognizes the many diverse settings in which perioperative nurses practice; therefore, this guideline is adaptable to all areas where operative or other invasive procedures may be performed.

Purpose

This document provides guidance to perioperative team members for developing and implementing a protocol for prevention of venous thromboembolism (VTE), including prevention of deep vein thrombosis (DVT) by mechanical and pharmacologic prophylaxis and prevention of pulmonary embolism (PE) as a complication of DVT.

According to the Centers for Disease Control and Prevention,¹ approximately 900,000 people in the United States experience VTE each year. Approximately 33% of patient deaths related to VTE in the United States occur following a surgical procedure.² Among people who develop VTE,

- 50% have long-term complications (eg, swelling, pain, discoloration, scaling in the affected limb) as part of a condition called post-thrombotic syndrome,¹
- 33% have a recurrence within 10 years,^{1,3}
- 10% to 30% die within 1 month of diagnosis,¹
- 25% with PE experience sudden death as the first symptom,^{1,3} and
- 4% who survive PE develop chronic thromboembolic pulmonary hypertension.⁴

Treatment for VTE involves therapeutic anticoagulation, often for a minimum of 3 months; this treatment is associated with minor bruising and hematoma as well as major bleeding events that can be fatal.⁴ Patients who have survived VTE have experienced anxiety, adverse effects from anticoagulant treatment, financial burden, loss of function, and fear of recurrence.⁴

Hospital-associated VTE, including DVT and PE, has been identified as a major public health concern.^{1,4} Although as many as 70% of hospital-associated VTE cases could be prevented, fewer than half of hospitalized patients receive preventive measures according to the standard of care.¹ The gap between evidence-based practice and actual clinical

practice for VTE prevention is concerning and presents a major opportunity for improvement in patient care.⁴

Prevention of VTE is also important for reducing economic burden,^{5,6} as costs attributed to VTE in surgical patients have been found to be 1.5 times greater than costs for care of patients without VTE, and the expenses may persist for up to 5 years.^{3,7} Although the prevention of VTE should be a priority for the entire health care organization, the particular risks facing surgical patients makes it critical that perioperative registered nurses (RNs) take an active role in VTE prevention.⁸⁻¹²

All perioperative patients, including children, may be at risk for VTE because of immobility, vessel injury, compression of tissue caused by retraction, and patient positioning requirements. As such, recommendations for prevention of VTE are applicable to all perioperative patients, including children. The patient may have one or more of the three primary causative factors of venous thrombus formation, which is commonly referred to as Virchow's triad (ie, venous stasis, vessel wall injury, hypercoagulability). Although DVT usually occurs in the lower extremities, it also may occur in the upper extremities.¹³⁻²⁰ **P**

Pulmonary embolism may result as a complication of DVT, although PE may occur independently from DVT.²¹ Further research is needed to determine the ideal means to prevent PE and whether a reduction in DVT will lead to a reduction in the incidence of PE.²¹

The selection of VTE prophylaxis, including inferior vena cava filter use, is a medical decision and is outside the scope of this document. The following topics are also outside the scope of this document:

- diagnosis of VTE,
- treatment of VTE and complications (eg, post-thrombotic syndrome, venous stasis ulcers, chronic thromboembolic pulmonary hypertension),
- arterial thrombosis,
- superficial vein thrombosis,
- thrombosis at the surgical site (eg, flap, brain, portal vein thrombosis),
- use of regional anesthesia with DVT prophylaxis,
- laboratory testing of D-dimer levels to assess VTE risk,
- conditions that were studied as potential risk factors and found not to be associated with VTE (eg, use of cement, preoperative travel, Asian ethnicity, hemophilia, arthroscopy, laparoscopic cholecystectomy, shoulder procedures, non-oncologic otorhinolaryngology procedures),
- thromboprophylaxis for a patient with an implanted stent,
- anticoagulation for cardiac bypass,
- medication administration, and
- recommendations for bridging anticoagulant therapy.