



# Venous Thromboembolism (VTE) Prophylaxis for Gynecologic Surgery

2020 Update

This care process model (CPM) was created by the GYN Development Team, which is part of Intermountain Healthcare’s **Women and Newborns Clinical Program**. Derived primarily from the American College of Obstetricians and Gynecologists (ACOG) Practice Bulletin, *Prevention of Deep Vein Thrombosis and Pulmonary Embolism*<sup>ACOG</sup>, and the American College of Chest Physicians Clinical Practice Guideline, *Prevention of VTE in Nonorthopedic Surgical Patients: Antithrombotic Therapy and Prevention of Thrombosis*<sup>GOU</sup>, this CPM presents an evidence-based approach that is appropriate for most patients. It should be adapted to meet the needs of individual patients and situations, and should not replace clinical judgment.

## ► Why Focus ON VTE?

- **It’s common and costly.** Among over 7 million patients discharged from 944 acute hospitals in the U.S., postoperative VTE was the second most common medical complication, the second most common cause of excess length of stay, and the third most common cause of both excess mortality and excess charges.<sup>GOU</sup> Among patients undergoing major gynecologic surgery, deep vein thrombosis (DVT) prevalence ranges from 15% to 40% without prophylaxis.<sup>ACOG</sup>
- **It has a range of adverse consequences.** About one-fourth to one-third of preventable DVTs involve the proximal deep veins, and are much more likely to produce symptoms and result in pulmonary embolism (PE). Most patients who die from PE do so within 30 minutes of the event, leaving little time for therapeutic intervention.<sup>ACOG</sup> PE accounts for about 10% of hospital deaths (about 200,000 a year), and is the most common cause of preventable hospital death.<sup>AND</sup> In addition to PE, DVT results in increased risk of chronic limb pain and swelling (post-thrombotic syndrome), and an increased risk of recurrent VTE.<sup>CDC</sup>
- **VTE prophylaxis improves clinical outcomes and saves money.** Appropriate thromboprophylaxis has repeatedly been shown to be both efficacious and cost-effective in prevention of VTE, DVT, and fatal PE. It is estimated that appropriate prophylaxis decreases the incidence of VTE by 60%.<sup>CLA</sup> Based on “overwhelming evidence” to this effect several years ago, **the Agency for Healthcare Research and Quality (AHRQ) recommended VTE prophylaxis as the highest ranked safety practice.**<sup>AND</sup>

## ► WHAT’S INSIDE?

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## MEASUREMENT & GOALS

**The goal of this model** is to reduce the incidence of preventable VTE by promoting appropriate risk screening and VTE prophylaxis.

**The recommendations in this CPM are consistent with the measures defined in the Surgical Care Improvement Project (SCIP).** SCIP requirements are based on surgery type and thus outline the minimum care. This CPM stratifies based on surgery type and individual risk factors and promotes a preferred VTE prophylactic regimen for each patient.

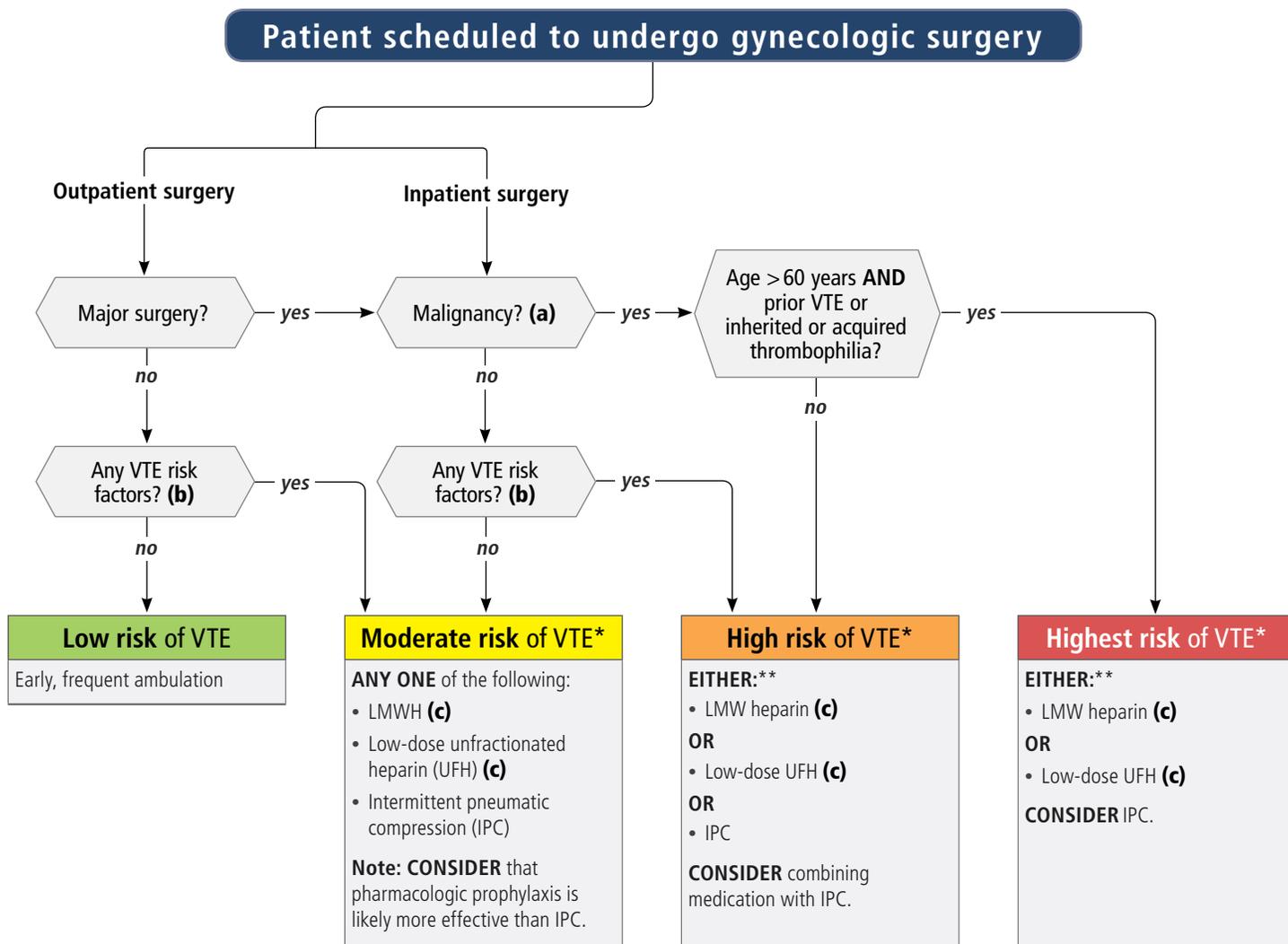
 Indicates an Intermountain measure

## Key points

- **All patients undergoing gynecologic procedures are at risk for VTE** due to one or more of these three conditions: Hypercoagulability, venous stasis, or vessel wall endothelial damage. For this reason, all patients require some degree of prophylaxis (if only early, frequent ambulation).
- **Risk classification is important to prescribe the best VTE prophylactic regimen for each patient.** This CPM follows ACOG recommendations in outlining four risk categories—low, medium, high, and highest—based on procedure type, the patient’s age, and the presence of other risk factors.
- **Prophylaxis includes pharmacologic and mechanical methods.** In the highest risk categories, a combination of both types should be considered.
- **Patients requiring pelvic surgery for cancer should receive extended prophylaxis with low-molecular-weight heparin (LMWH) for 4 weeks after discharge.**



## ▶ ALGORITHM: VTE PROPHYLAXIS FOR GYNECOLOGIC SURGERY



\* If patient is at high risk for bleeding, mechanical prophylaxis (preferably IPC) is recommended until high bleeding risk diminishes and pharmacologic prophylaxis may be initiated. If bleeding risk is high enough, pharmacologic agents may be temporarily contraindicated even if VTE risk is high/highest.

\*\* High-risk patients requiring pelvic surgery for cancer should receive LMWH prophylaxis for 4 weeks.<sup>GOU</sup> For abdominal-pelvic surgery patients at high risk for VTE for whom both LMWH and UFH are contraindicated and who are not at high risk for major bleeding complications, consider fondaparinux (preferable) especially as this situation will include patients with prior HIT, low-dose aspirin, and/or mechanical prophylaxis (preferably IPC).

## ALGORITHM NOTES

### (a) Malignancy

The indication for the procedure is to address a malignancy (e.g., ovarian, uterine, cervical, vulvar, etc.).

### (b) VTE risk factors

**General risk factors:**

**YES NO**

- Age >60 years
- Obesity
- Use of estrogen-containing birth control pills or hormone-replacement therapy
- Use of selective estrogen receptor modulators (SERMs)
- Use of an erythropoiesis-stimulating agent (ESA)
- Smoking
- Pregnant (or up to 6 weeks post-partum)

**Acute or recent problems, current orders:**

**YES NO**

- Acute medical illness
- Medical hospitalization in the preceding 2 months
- Respiratory failure
- Immobility, paresis
- Venous compression due to tumor, hematoma, or arterial abnormality
- Central venous line/catheter

**Cancer therapy:**

**YES NO**

- Hormonal, chemotherapy, or radiography

**Medical history and chronic conditions:**

**YES NO**

- Prior VTE (DVT or PE)
- Unprovoked VTE in one or more first-degree relatives
- Inherited or acquired thrombophilia
- Myeloproliferative disorder
- Heart failure
- Paroxysmal nocturnal hemoglobinuria
- Varicose veins
- Nephrotic syndrome
- Inflammatory bowel disease

### (c) Medications used in VTE prophylaxis for gynecologic surgery

Medication name	Dose	Timing	Pros / Cons
Low-molecular-weight heparin (LMWH) (enoxaparin)	40 mg	<ul style="list-style-type: none"> <li>• If practical, <b>START</b> LMWH 12 hours before surgery; otherwise, <b>START</b> LMWH 6 – 12 hours postoperatively.</li> <li>• <b>CONTINUE</b> postoperatively once daily for all patients.</li> <li>• <b>CONTINUE</b> for 4 weeks for patients requiring pelvic surgery for cancer.</li> </ul>	<p><b>Pros:</b> No need for monitoring; once-daily dosing; greater bioavailability.</p> <p><b>Con:</b> N/a.</p>
Low-dose unfractionated heparin (UFH)	5,000 units	<ul style="list-style-type: none"> <li>• <b>START</b> low-dose UFH 2 hours before surgery (or, if intraoperative bleeding is a concern, may wait to give first dose until 6 hours postoperatively).</li> <li>• <b>CONTINUE</b> postoperatively every:                             <ul style="list-style-type: none"> <li>– 12 hours for moderate-risk patients (2 times per day)</li> <li>– 8 hours for high- and highest-risk patients (3 times per day)</li> </ul> </li> </ul>	<p><b>Pro:</b> Inexpensive.</p> <p><b>Con:</b> Need to get platelet counts every other day between postoperative days 4 and 14 or until heparin is discontinued.</p>

**REFERENCES**

ACOG Committee on Practice Bulletins—Gynecology. American College of Obstetricians and Gynecologists. Prevention of deep vein thrombosis and pulmonary embolism. ACOG Practice Bulletin No. 84. *Obstet Gynecol.* 2007;110(2 Pt 1):429-440.

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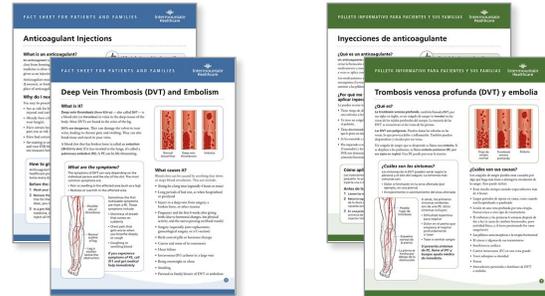
**► RESOURCES AND REFERENCES**

**Patient resources**

Clinicians can order Intermountain patient education fact sheets (available in English and Spanish) for their patients from **Print It**, Intermountain’s Design and Print Center for one-stop access and ordering of Intermountain-approved education.

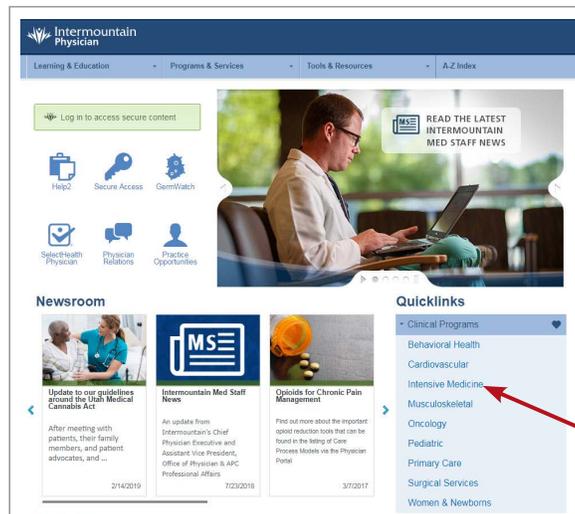
**Fact sheets:**

- [Anticoagulant Injections](#)
- [Deep Vein Thrombosis and Embolism](#)



**Provider resources**

To find this CPM, clinicians can go to [intermountainphysician.org](https://intermountainphysician.org) and select **Women & Newborns** from the **Quicklinks > Clinical Programs** menu on the lower right of the screen.



This CPM presents a model of best care based on the best available scientific evidence at the time of publication. It is not a prescription for every physician or every patient, nor does it replace clinical judgment. All statements, protocols, and recommendations herein are viewed as transitory and iterative. Although physicians are encouraged to follow the CPM to help focus on and measure quality, deviations are a means for discovering improvements in patient care and expanding the knowledge base.