Long-term anticoagulation for secondary VTE prophylaxis should be considered for patients with active cancer. In the absence of contraindications to anticoagulation, such as major bleeding, the panel concluded that the benefits of long-term anticoagulation outweigh the harms.

Long-term anticoagulation can be discontinued when patients are no longer at high risk for recurrent VTEs or if patients are entering the last weeks of life. The decision to use long-term anticoagulation will depend on the type and stage of cancer (e.g., metastatic or not), overall prognosis, periodic reevaluations of the risk of recurrent VTE and bleeding, comorbidities, costs and patients' preferences. The choice of anticoagulant must also be based on the specific clinical setting to minimize risk, after careful consideration of bleeding risk, drug-drug interactions, patient preference, and the availability of treatment options, including cost considerations.

Figure 5. Summary of Recommendations for Cancer Associated VTE

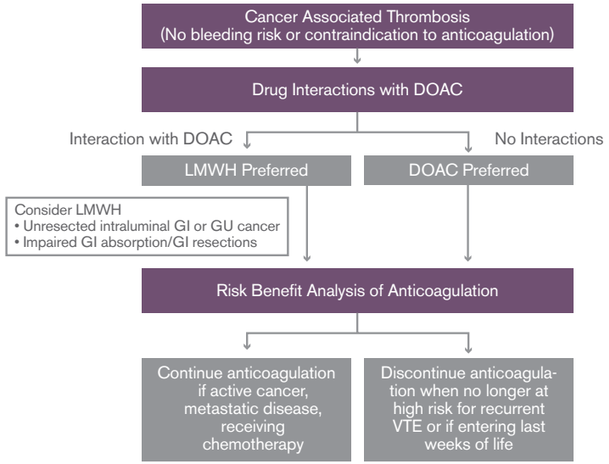

Table 2. Anticoagulant Agents and Dosing for VTE Treatment in Patients With Cancer

Agent	Dose
Low molecular weight heparin (LMWH)	• Enoxaparin: 1 mg/kg SC every 12 hours or 1.5 mg/kg SC daily • Dalteparin: 100 IU/kg SC every 12 hours or 200 IU/kg SC daily for 1 month, then 150 units/kg SC daily • Tinzaparin: 175 IU/kg SC daily • Nadroparin: 86 IU/kg SC every 12 hours or 171 IU/kg SC daily
Unfractionated heparin (UFH)	IV 80 units/kg bolus, followed by 15-25 IU/kg/h, adjust to target activated partial thromboplastin time (aPTT) or anti-Xa per standard practice
Fondaparinux	<50 kg → 5 mg SC daily 50-100 kg → 7.5 mg SC daily >100 kg → 10 mg SC daily
Apixaban	10 mg every 12 hours PO for 1 week, then 5 mg every 12 hours PO
Edoxaban	LMWH or UFH for 5 days followed by edoxaban 60 mg PO daily (30 mg PO daily if weight < 60 kg; Creatinine clearance (CrCl) 30-50 mL/min or concomitant p-glycoprotein inhibitors)
Rivaroxaban	15 mg every 12 hours PO for 3 weeks, then 20 mg daily PO
Warfarin	Start concurrently with LMWH, fondaparinux, or UFH and adjust dose for target INR of 2-3

Strength of Recommendations

✓	**Strong recommendations** - Most individuals should follow the recommended course of action. Formal decision aids are not likely to be needed to help individual patients make decisions consistent with their values and preferences.
C	**Conditional recommendations** - Recognize that different choices will be appropriate for individual patients and that you must help each patient arrive at a management decision consistent with his or her values and preferences. Decision aids may be useful in helping individuals to make decisions consistent with their individual risks, values and preferences.

How to Use This Pocket Guide

ASH pocket guides are primarily intended to hswelp clinicians make decisions about diagnostic and treatment alternatives. The information included in this pocket guide is not intended to serve or be construed as a standard of care. Clinicians must make decisions on the basis of the unique clinical presentation of an individual patient, ideally though a shared process that considers the patient's values and preferences with respect to all options and their possible outcomes. Decisions may be constrained by realities of a specific clinical setting, including but not limited to institutional policies, time limitations, or unavailability of treatments. ASH pocket guides may not include all appropriate methods of care for the clinical scenarios described. Evidence relevant to the guideline this pocket guide is based on is routinely reviewed. ASH will update derivative resources, including this pocket guide, accordingly. Following the recommendations outlined in this pocket guide cannot guarantee successful outcomes. ASH does not warrant or guarantee any products described in this pocket guide.

The complete American Society of Hematology 2021 Guidelines for Management of Venous Thromboembolism: Prevention and Treatment in Patients with Cancer[1] include additional remarks and contextual information that may affect clinical decision making. To learn more about these guidelines, visit ***hematology.org/VTEguidelines***.

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Conflict of interest declarations for Drs. Lauw, Gangaraju, and Carrier may be found at ***hematology.org/pocketguidescoi***.

[1] *Lyman GH, Carrier M, Ay C, Di Nisio M, Hicks LK, Khorana AA, Leavitt AD, Lee AYY, Macbeth F, Morgan RL, Noble S, Sexton EA, Stenehjem D, Wiercioch W, Kahale LA, Alonso-Coello P. American Society of Hematology 2021 guidelines for management of venous thromboembolism: prevention and treatment in patients with cancer.* Blood Adv *2021; 5 (4): 927–974. doi: https://doi.org/10.1182/bloodadvances.2020003442*

This and other ASH pocket guides are also available in the ASH Pocket Guides App, available for Android and iOS devices. Printed guides are available for order at ***www.hematology.org/Store***.

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For expert consultation on VTE in patients with cancer and other hematologic diseases, submit a request to the ASH Consult a Colleague program at ***www.hematology.org/Consult*** (ASH members only).

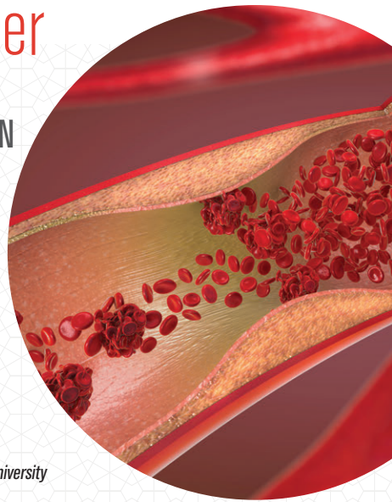
ASH CLINICAL PRACTICE GUIDELINES
VENOUS THROMBOEMBOLISM (VTE)

POCKET GUIDE

Treatment of Venous Thromboembolism (VTE) in Patients with Cancer

A POCKET GUIDE FOR THE CLINICIAN

OCTOBER 2023



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The recommendations in this guide are based on the American Society of Hematology 2021 Guidelines for Management of Venous Thromboembolism: Prevention and Treatment in Patients with Cancer

Context

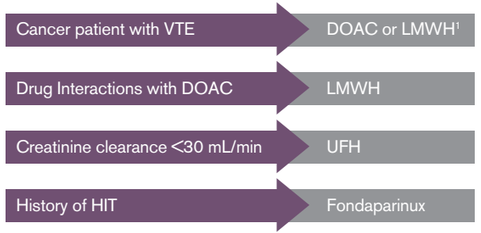
Patients with cancer are at increased risk for VTE, as well as major bleeding compared with the general population. Any consideration of VTE treatment for patients with cancer should be based on an assessment of the patient's individual risk for recurrent thrombosis and major bleeding after full discussion of the potential benefits and harms. The information in this pocket guide is intended to support patients, clinicians, and other health care professionals in their decisions about the treatment of VTE in patients with cancer. This pocket-guide contains information specifically pertaining to the use of anticoagulation for the initial, short-term, and long-term treatment of VTE in patients with active cancer.[1] A pocket guide titled ***Primary Prophylaxis of VTE in Patients with Cancer*** addressing mechanical and pharmacological prophylaxis in hospitalized medical patients with cancer, those undergoing a surgical procedure, and ambulatory patients receiving cancer chemotherapy is also available.

[1] Active cancer is defined as (1) nonsquamous cell or basal cell invasive cancer diagnosed within 6 months, (2) cancer treated within the previous 6 months, or (3) recurrent or metastatic cancer.

Initial Treatment of VTE for Patients with Cancer

For patients with cancer and VTE, the ASH guideline panel **suggests** that Direct Oral Anticoagulants (DOACs) (apixaban or rivaroxaban) or low molecular weight heparin (LMWH) be used for initial treatment (first 5-10 days). C If a DOAC is not used, the ASH guideline panel **recommends** LMWH over unfractionated heparin (UFH) ✅ and LMWH over fondaparinux C for initial treatment of VTE in patients with cancer. The anticoagulant agents including their dose available for VTE treatment in patients with cancer are outlined in Table 2.

Figure 1. Anticoagulation Considerations for Initial Treatment of VTE



[1] UFH or LMWH may be considered instead of DOAC in hemodynamically unstable patients or those with bleeding risk or requiring a procedure.

Short-Term Treatment of VTE in Patients with Cancer

For the short-term treatment of VTE (3-6 months) in patients with active cancer, the ASH guideline panel **suggests** DOAC (apixaban, edoxaban, or rivaroxaban) over LMWH. C

For the short-term treatment of VTE in patients with active cancer, the ASH guideline panel **suggests** DOAC over Vitamin K antagonist (VKA). C [1]

If a DOAC is not used for the short-term treatment of VTE in patients with active cancer, the ASH guideline panel **suggests** LMWH over VKA. C

The anticoagulant agents including their dose available for VTE treatment in patients with cancer are outlined in Table 2.

Table 1. Recommended Anticoagulant Agents for Short-Term Treatment

	Recommendation	Certainty of Evidence
DOAC over LMWH	Conditional	●●○○
DOAC over VKA	Conditional	●○○○
If DOAC is not used: LMWH over VKA	Conditional	●●●○

[1] DOACs should be used carefully for patients with unresected intraluminal GI or GU cancers because of the higher risk of bleeding. The choice of treatment must be based on the specific clinical setting, after careful consideration of potential drug-drug interactions, bleeding risk, patient preference, and the availability of treatment options. The direct factor Xa inhibitors apixaban, edoxaban, and rivaroxaban are the only DOACs that were evaluated for the short-term treatment of VTE in patients with cancer. Different DOACs have different drug-drug interactions. VKA can be preferred over LMWH and DOAC for patients with cancer and severe renal impairment (defined as creatinine clearance < 30 mL/min).

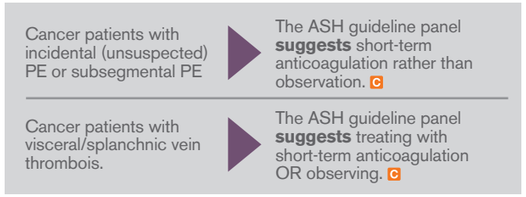
Special VTE Situations in Patients with Cancer

SHORT-TERM TREATMENT OF PATIENTS WITH CANCER AND INCIDENTAL PULMONARY EMBOLISM, SUBSEGMENTAL PULMONARY EMBOLISM, OR VISCERAL/SPLANCHNIC VEIN THROMBOSIS

For patients with cancer and special VTE situations, i.e., incidental (unsuspected) or subsegmental PE (SSPE), or patients with cancer and visceral/splanchnic vein thrombosis, the ASH guideline panel has special considerations.

Clinicians should use clinical judgment when considering anticoagulation for incidental PEs, SSPEs, or splanchnic vein thrombosis. Factors that should be considered include diagnostic certainty, chronicity (age of thrombus), extent of thrombosis, associated symptoms, co-morbidities, and bleeding risks. Caution should be observed to ensure a favorable balance of benefits vs risks when anticoagulating patients with a higher bleeding risk. If therapeutic anticoagulation is warranted, the ASH guideline panel **recommends** the use of the same anticoagulants recommended for cancer-associated thrombosis.

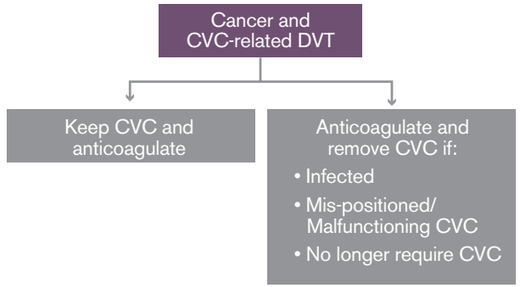
Figure 2. Incidental Pulmonary Embolism, Subsegmental Pulmonary Embolism, or Visceral/Splanchnic Vein Thrombosis



CENTRAL VENOUS CATHETER-RELATED (CVC) DEEP VEIN THROMBOSIS (DVT) IN PATIENTS WITH CANCER

If a patient with cancer develops a CVC-related DVT, anticoagulation needs to be initiated. The CVC can be kept if still functional, non-infected and necessary. The choice of treatment must be based on the specific clinical setting to minimize risk, after careful consideration of bleeding risk, drug-drug interactions, patient preference, and the availability of treatment options, including cost considerations. Patients with infected, mispositioned, or malfunctioning CVCs or those no longer requiring their CVC should have it removed. Similarly, patients who cannot receive anticoagulation (e.g., severe refractory thrombocytopenia, bleeding) may need CVC removal if not required for optimal care.

Figure 3. CVC-Related DVT in Patients with Cancer



RECURRENT VTE ON ANTICOAGULATION IN PATIENTS WITH CANCER

For patients with cancer and recurrent VTE, despite receiving therapeutic LMWH, the ASH guideline panel suggests increasing the LMWH dose to a supratherapeutic level OR continuing with a therapeutic dose. C [1]

[1] Supratherapeutic dosing of LMWH should be considered carefully for patients with a high risk for bleeding.

For patients with cancer and recurrent VTE despite anticoagulation, the ASH guideline panel **suggests *against*** using an inferior vena cava (IVC) filter over using a filter. C [2]

[2] An IVC filter may be required if there is a contraindication to anticoagulation therapy (active bleeding or urgent surgery required). If an IVC filter is required, a retrievable filter is preferred, and it should be removed once anticoagulation can be safely resumed.

Long-Term Treatment of VTE in Patients with Cancer

For patients with active cancer and VTE, the ASH guideline panel **suggests** long-term anticoagulation for secondary prophylaxis (>6 months) rather than short-term treatment alone (3-6 months). C

For patients with active cancer and VTE receiving long-term anticoagulation for secondary prophylaxis, the ASH guideline panel **suggests** continuing indefinite anticoagulation over stopping after completion of a definitive period of anticoagulation. C

For patients with active cancer and VTE requiring long-term anticoagulation (>6 months), the ASH guideline panel **suggests** using DOACs or LMWH. C

The anticoagulant agents including their dose available for VTE treatment in patients with cancer are outlined in Table 2.

Figure 4. Considerations for Long-Term Treatment of VTE in Patients with Cancer