

Table 1. Risk Factors for VTE**ESC 2019 GL on PE. Predisposing factors for venous thromboembolism**

Strong risk factors (OR > 10)
Fracture of lower limb
Hospitalization for heart failure or atrial fibrillation/flutter (within previous 3 months)
Hip or knee replacement
Major trauma
Myocardial infarction (within previous 3 months)
Previous VTE
Spinal cord injury
Moderate risk factors (OR 2 – 9)
Arthroscopic knee surgery
Autoimmune diseases
Blood transfusion
Central venous lines
Intravenous catheters and leads
Chemotherapy
Congestive heart failure or respiratory failure
Erythropoiesis-stimulating agents
Hormone replacement therapy (depends on formulation)
<i>In vitro</i> fertilization
Oral contraceptive therapy
Post-partum period
Infection (specifically pneumonia, urinary tract infection, and HIV)
Inflammatory bowel disease
Cancer (highest risk in metastatic disease)
Paralytic stroke
Superficial vein thrombosis
Thrombophilia
Weak risk factors (OR < 2)
Bed rest > 3 days
Diabetes mellitus
Arterial hypertension
Immobility due to sitting (e.g. prolonged car or air travel)
Increasing age
Laparoscopic surgery (e.g. cholecystectomy)
Obesity
Pregnancy
Varicose veins

HIV = human immunodeficiency virus; OR = odds ratio; VTE = venous thromboembolism.

AHA/ACC 2026 GL on PE. Risk Factors for Venous Thromboembolism

Major Reversible Risk Factor	Minor Reversible Risk Factor	Persistent Risk Factor
Surgery with general anesthesia ≥30 minutes	Surgery with general anesthesia <30 minutes	Active cancer with or without ongoing treatment
Hospitalization for acute medical illness ≥72 hours while confined to hospital bed	Hospitalization for acute medical illness <72 hours	Autoimmune disease (eg, rheumatoid arthritis, systemic lupus erythematosus)
Cesarean section	Out-of-hospital acute medical illness ≥72 hours while confined to bed	Inflammatory bowel disease
Lower limb fracture	Estrogen therapy (hormone replacement or contraceptive)	Chronic immobility
	Peripartum period	
	Trauma with decreased mobility ≥72 hours	

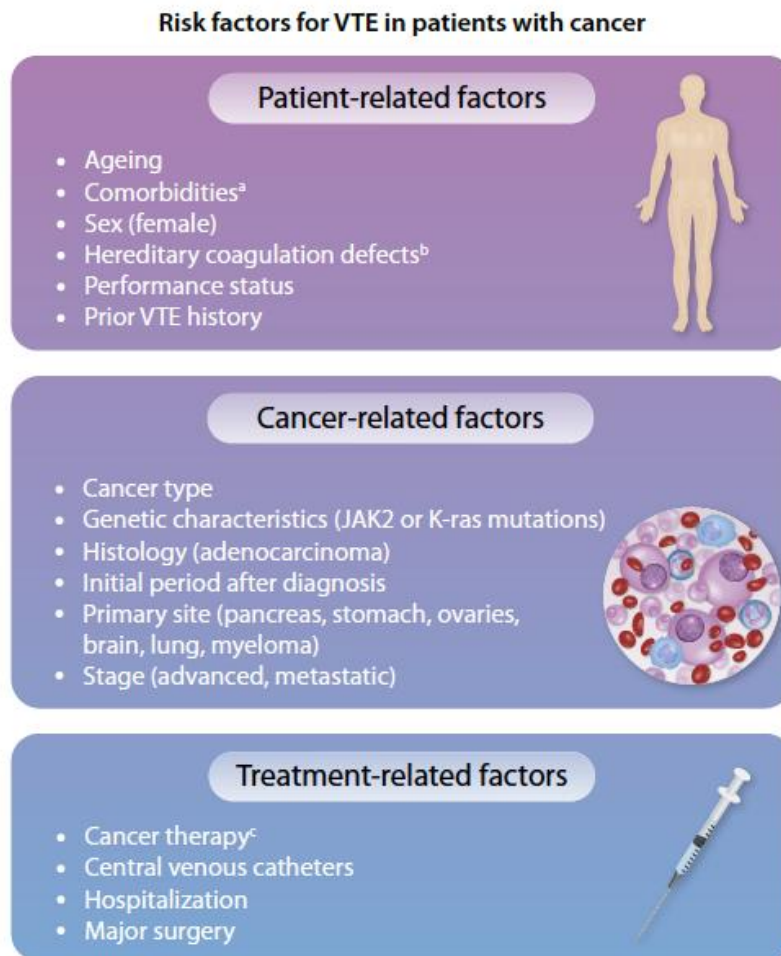


Figure 1. ESC 2022 GL on cardio-oncology. Risk factors for venous thromboembolism in patients with cancer.

ATE, arterial thromboembolism; BMI, body mass index; CrCl, creatinine clearance; IMiD, immunomodulatory drugs; PI, proteasome inhibitors; VTE, venous thromboembolism.

a Acute infection, chronic kidney disease (CrCl, 45 mL/min), pulmonary disease, obesity (BMI $\geq$ 30 kg/m²), ATE.

b Factor V Leiden, prothrombin gene mutation.

c Chemotherapy (carboplatin, cyclophosphamide, anthracyclines, antimetabolites, irinotecan, taxanes, tasonermin), anti-angiogenic agents (bevacizumab, axitinib, lenvatinib, pazopanib, sorafenib, sunitinib), IMiD (thalidomide, lenalidomide), PI (carfilzomib), hormonal therapy, erythropoiesis-stimulating agents.

Table 2. Inherited thrombophilias

Common (increased procoagulant activity)

Factor V Leiden

Prothrombin gene G20210A mutation

Uncommon (decreased anticoagulant activity)*

Protein C deficiency

Protein S deficiency

Antithrombin deficiency

*: uncommon, but stronger risk factors.

Table 3. Acquired thrombophilia

Antiphospholipid antibodies (lupus anticoagulant, anticardiolipin antibody, anti-beta-2 glycoprotein-1 antibody)

Active cancer (including myeloproliferative and myelodysplastic disorders) and chemotherapy

Hormone replacement therapy and oral contraceptive pills (including progesterone-only, and especially third-generation, pills)

Tamoxifen and raloxifene (selective oestrogen receptor modulator)

Hip fracture

Surgery (orthopaedic or surgery for cancer)

Spinal cord injury

Heparin-induced thrombocytopenia

Infection (HIV, sepsis, urinary tract infection)

Intravascular coagulation and fibrinolysis/disseminated intravascular coagulation

Autoimmune disorders

Microalbuminuria, nephrotic syndrome, and paroxysmal nocturnal haemoglobinuria

Hyperhomocysteinaemia due to folate deficiency

Pregnancy/post-partum state

Long-haul air travel (flight distances >5000 km)

Congestive heart failure

Pacemaker or implantable cardiac defibrillator leads and indwelling venous catheters

Dehydration

Dyslipidaemia

Obesity

Smoking

Age

Antiphospholipid antibodies are positive in up to 5% of healthy people, 10% of patients with VTE, and 35% of patients with systemic lupus erythematosus.

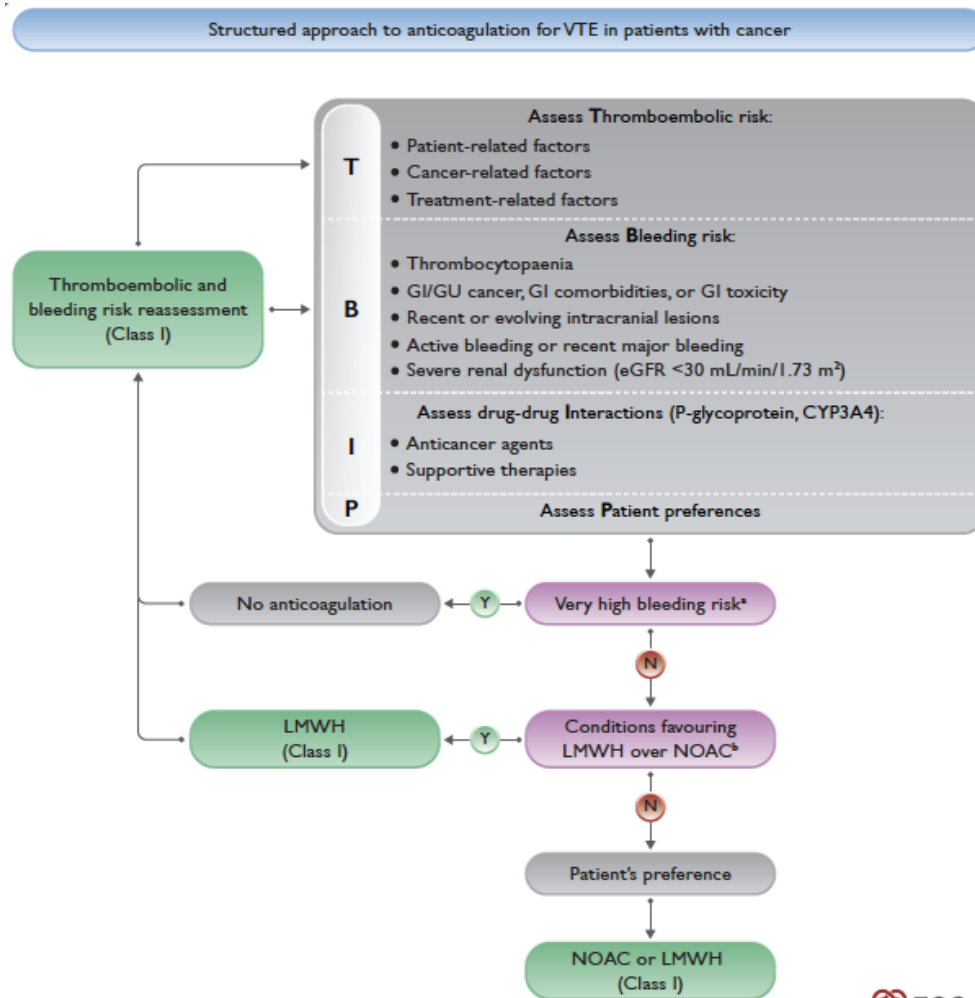


Figure 2. ESC 2022 GL on cardio-oncology. Structured approach to anticoagulation for venous thromboembolism in patients with active cancer.

CrCl, creatinine clearance; eGFR, estimated glomerular filtration rate; GI, gastrointestinal; GU, genitourinary; LMWH, low-molecular-weight heparins; N, no; NOAC, non-vitamin K antagonist oral anticoagulants; VTE, venous thromboembolism; Y, yes.

a Very high bleeding risk: active or recent major bleeding (<1 month); recent/ evolving intracranial lesions; platelet count <25 000/μL. According to the International Society on Thrombosis and Haemostasis, major bleeding is defined as: fall in haemoglobin level ≥2 g/dL, transfusion of ≥2 units of red blood cells, fatal bleeding, or bleeding in a critical area (intracranial, intraspinal, intraocular, pericardial, intra-articular, intramuscular with compartment syndrome, or retroperitoneal).

b Conditions favouring LMWH: unoperated GI/GU cancer; GI comorbidities or toxicity; severe renal dysfunction (CrCl, 15 mL/min); NOAC major drug–drug interactions, platelet count <50 000/μL.

Table 4. ESC 2022 GL on cardio-oncology. Recommendations for the management of venous thromboembolism in patients receiving anticancer treatment

Apixaban, edoxaban, or rivaroxaban ^a for the treatment of symptomatic or incidental VTE in patients with cancer without contraindications. ^b	I A
LMWH for the treatment of symptomatic or incidental VTE in patients with cancer with platelet count >50 000/ μ L.	I A
In patients with cancer with platelet counts of 25 000–50 000/ μ L, anticoagulation with half-dose LMWH after a multidisciplinary discussion.	IIb C
Prolongation of anticoagulation therapy beyond 6 months in selected patients with active cancer ^c including metastatic disease.	IIa A

Catheter-associated VTE

Duration of anticoagulation in patients with cancer with a catheter-associated VTE for a minimum of 3 months and continuing longer if the catheter remains in situ.	I C
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CrCl, creatinine clearance; GI, gastrointestinal; GU, genitourinary; LMWH, low-molecular-weight heparins; ULN, upper limit of normal; VTE, venous thromboembolism.

a Drugs are listed in alphabetical order

b High risk of GI or GU bleeding, GI absorption concerns, significant drug–drug interactions, severe renal dysfunction (CrCl, 15 mL/min), significant liver disease (alanine aminotransferase/aspartate aminotransferase $\geq$ 2 $\times$ ULN), or significant thrombocytopenia (platelet count, $<$ 50 000/ μ L). In addition, patients with primary brain tumours or brain metastases and acute leukaemia were excluded from the seminal apixaban trial.

c Patients receiving cancer treatment, patients diagnosed with cancer in the past 6 months, and patients with progressive or advanced disease.

Table 5. ESC 2022 GL on cardio-oncology. Recommendations for venous thromboembolism prophylaxis during anticancer treatment

Extended prophylaxis with LMWH for 4 weeks post-operatively for patients with cancer undergoing major open or laparoscopic abdominal or pelvic surgery with low bleeding risk and high VTE risk. ^a	I B
Prophylactic LMWH for the primary prevention of VTE in hospitalized patients with cancer or those with prolonged bedrest or reduced mobility in the absence of bleeding or other contraindications.	I B
For ambulatory patients with cancer at high risk of thrombosis receiving systemic therapy, ^b primary thromboprophylaxis with a NOAC (apixaban or rivaroxaban) or LMWH may be considered, provided there are no significant contraindications. ^c	IIb B
A discussion with the patient about the relative benefits and harms, cancer prognosis, drug cost, and duration of treatment prior to prophylactic anticoagulation for the primary prevention of VTE.	I C
LMWH, low-molecular-weight heparins; NOAC, non-vitamin K antagonist oral anticoagulants; VTE, venous thromboembolism.	
a Reduced mobility, obesity, VTE history.	
b Locally advanced or metastatic pancreas or lung cancer or Khorana score $\geq$ 2.	
c Risk factors for bleeding, significant drug–drug interactions, or severe renal dysfunction.	

Table 6. ESC 2025 GL on Pregnancy

Reasons for antepartum/post-partum thromboprophylaxis

Medical conditions	Antepartum thromboprophylaxis	Post-partum thromboprophylaxis
History of unprovoked VTE		
History of hormone-associated VTE		
Homozygous factor V Leiden mutation		
Heterozygous factor V Leiden mutation		
Homozygous prothrombin gene mutation	 ^a	
Heterozygous prothrombin gene mutation		
Antithrombin deficiency	 ^a	 ^a
Antiphospholipid syndrome	 ^b	
Protein C or S deficiency		 ^a
Combined thrombophilia		

 = yes;  = no;  = no clear evidence to administer or not—to be individualized.

^aWith family history of VTE (to be considered without family history of VTE).

^bWith history of VTE or pregnancy loss.

Recommendations for venous thromboembolic diseases and pregnancy

For pregnant or post-partum women at high risk ^c of VTE, a prophylactic fixed dose of LMWH is recommended over a higher weight-adjusted dose to reduce the risk of VTE. ⁵¹⁹	I	B
In pregnant women or women in the post-partum period with suspicion of VTE (DVT and/or PE), an immediate formal diagnostic assessment with validated methods is recommended and should not be postponed. ^{525,526}	I	B
In pregnant women or women in the post-partum period with newly diagnosed VTE (DVT and/or PE), the involvement of the Pregnancy Heart Team, including a vascular specialist and a haematologist, is recommended.	I	C
In pregnant or post-partum women with a diagnosis of VTE without haemodynamic instability, anticoagulation is recommended by using therapeutic-dose LMWH based on early pregnancy body weight. ^{212,532}	I	C
In pregnant women or women in the post-partum period with a strong clinical suspicion of VTE, initiation of treatment with a therapeutic dose of LMWH should be considered until the presence of VTE has been ruled out or confirmed.	IIa	C
In pregnant or post-partum women with a diagnosis of acute high-risk PE, ^d a catheter-based reperfusion strategy or systemic thrombolysis should be considered. ^{533–535}	IIa	C
In pregnant or post-partum women with a diagnosis of acute high-risk PE, ^d surgical thrombectomy may be considered as an alternative to a catheter-based approach or systemic thrombolysis. ^{533–535}	IIb	C

DVT, deep vein thrombosis; LMWH, low-molecular-weight heparin; PE, pulmonary embolism; VTE, venous thromboembolism.