



Venous Thromboembolism Prophylaxis – Adults - Inpatient/Ambulatory Consensus Care Guideline Summary

Target Population: inpatients with the intent to remain hospitalized for greater than 24 hours or who are discharged on extended VTE prophylaxis.

Full Guideline: <https://uconnect.wisc.edu/clinical/cckm-tools/content/cpg/hematology-and-coagulation/related/name-141119-en.cckm>

Guideline Overview

- Risk for thromboembolism and bleeding is evaluated in all inpatients
- Modified Padua risk model is used to assess VTE risk in medical patients; prophylactic recommendations including mechanical and pharmacologic, are provided
- Caprini risk model is used to assess VTE risk in surgical patients; prophylactic recommendations, including mechanical and pharmacologic, are provided
- Prophylactic recommendations, including mechanical and pharmacologic, are provided for orthopedic patients

Definitions

Obesity Class 3	▪ patients with a BMI ≥ 40 kg/M ²
Renal dysfunction	▪ patients with a CrCl < 30 mL/min or evidence of stage 4 [eGFR 15-29 mL/min/1.73M ²] or 5 [eGFR < 15 mL/min/M ²] renal dysfunction
Mechanical prophylaxis	▪ methods may include graduated compression stockings (GCS), intermittent pneumatic compression devices (IPC), and venous foot pumps (VFP)

Evaluation of Bleeding Risk

Table 1. IMPROVE bleeding RAM for medical patients

Renal dysfunction (GFR 30-59 mL/min)	1
Male	1
Age 40-84 years old	1.5
Current cancer	2
Rheumatic disease	2
Central venous catheter	2
ICU/Critical care unit during admission	2.5
Renal failure (GFR < 30 mL/min)	2.5
Hepatic failure (INR > 1.5)	2.5
Age > 84 years old	3.5
Platelet count $< 50 \times 10^9/L$	4
Bleeding in the 3 months prior to admission	4
Active gastroduodenal ulcer	4

- A score of < 7 : 0.4%-1.5% risk for bleeding
- A score of ≥ 7 : 4.1%-7.9% risk for bleeding

Table 2. Bleeding risk factor consideration for medical and surgical patients

Medical Patients*	Surgical Patients
Platelet count < 50 x10 ⁹ /L	Active bleeding or previous major bleeding
Bleeding in the 3 months prior to admission	Renal failure (CrCl < 30 mL/min)
Active gastroduodenal ulcer	Hepatic failure (INR > 1.5 without anticoagulants)
	Thrombocytopenia
	Acute stroke
	Uncontrolled systemic hypertension
	Concomitant use of anticoagulants, antiplatelets or thrombolytics

- *Risk factors listed under medical patients are considered *absolute* contraindications to anticoagulation while risk factors listed under surgical patients are *relative* contraindications

VTE Risk Assessment Medical Patient

Table 3: Modified Padua Risk Assessment Model

Risk Factor	Points
Critically Ill	4
Inflammatory Bowel Disease	4
Admission for trauma (injured patient with fracture)	4
Active COVID-19 infection	4
Active Cancer	3
Previous VTE	3
Reduced Mobility	3
Thrombophilic Condition	3
Recent (< 1month) Trauma/Surgery	2
Age ≥ 70 years	1
Heart or Respiratory Failure	1
Acute Myocardial Infarction or Ischemic Stroke	1
Acute Infection or Rheumatologic Disorder	1
BMI ≥ 30	1
Ongoing Hormonal Treatment	1
	Total Points
Low VTE Risk – no prophylaxis needed	< 4
High VTE Risk – prophylaxis recommended	≥ 4

Table 4: VTE Prophylaxis Regimens for High VTE Risk Medical Patients

Patient Population	VTE Prophylaxis Regimens	
	Preferred Option	Alternative Option
High VTE Risk	Enoxaparin 40 mg SQ every 24 hrs ^a	Heparin 5000 units SQ every 8-12 hrs ^a
Trauma/Injury with fracture	Enoxaparin 30 mg SQ every 12 hrs ^a	Enoxaparin 0.5 mg/kg every 12 hrs Heparin 5000 units SQ every 8-12 hrs ^c
Renal failure (CrCl < 30 mL/min)* *Not on renal replacement therapy	Heparin 5000 units SQ every 8-12 hrs ^a	Enoxaparin 30 mg SQ every 24 hrs ^b
Obesity Class 3 (BMI > 40 kg/M ²)	Enoxaparin 40 mg SQ every 12 hrs ^b	Heparin 5000 units SQ every 8 hrs ^b
Low body weight (weight < 50 kg)	Heparin 5000 units SQ every 8-12 hrs ^a	Enoxaparin 30 mg SQ every 24 hrs ^c
High Bleeding Risk	Intermittent pneumatic compression devices (IPC) ^a	Graduated compression stockings (GCS) or Venous foot pumps (VFP) ^c

a: UW Health GRADE Moderate quality evidence, strong recommendation

b: UW Health GRADE Low quality evidence, strong recommendation

c: UW Health GRADE Low quality evidence, weak/conditional recommendation

VTE Risk Assessment Surgical Patient

Table 5: Caprini Risk Assessment Model

1 Point	2 Points	3 Points	5 Points
Age 41-60	Age 61-74	Age ≥ 75	Acute spinal cord injury (< 1 mo)
Acute MI (<1 mo)	Central venous access	Established thrombophilia	Elective lower extremity arthroplasty
BMI > 25	Immobile ≥ 72 hrs	HIT	Hip, pelvis, or leg fracture (< 1 mo)
CHF exacerbation (<1 mo)	Leg plaster cast or brace	Hx of VTE	Stroke (< 1 mo)
Hx of Inflammatory Bowel Disease	Malignancy	Family hx VTE (1 degree relative)	
Procedure with local anesthesia	Surgery- arthroscopic		
Swollen legs or Varicose veins	Surgery > 45 mins		
Sepsis (< 1 mo)			

Serious lung dx ex. <i>Pneumonia</i> (<1 mo)	
1 point (For Women Only)	
Oral contraceptives or HRT	
Pregnancy or postpartum (< 1 month)	
Hx of unexplained stillborn infant, spontaneous abortion (≥3), premature birth with toxemia or growth restricted infant	

Points	Risk	Recommendation
0	Very Low VTE Risk	Early and frequent ambulation
1-2	Low VTE Risk	Mechanical Prophylaxis
3-4	Moderate VTE Risk and Low Bleed Risk	Pharmacologic Prophylaxis
≥ 5	High VTE Risk and Low Bleed Risk	Mechanical AND Pharmacologic Prophylaxis
> 2	High Bleed Risk	Mechanical Prophylaxis

Table 6: VTE Prophylaxis Regimens for High VTE Risk General Surgery Patients

Patient Population	VTE Prophylaxis Regimens	
	Preferred Option	Alternative Option
High VTE Risk	Heparin 5000 units SQ every 8-12 hrs ^a	Enoxaparin 40 mg SQ every 24 hrs ^a
Renal impairment (CrCl < 30 mL/min)* <small>*Not on hemodialysis</small>	Heparin 5000 units SQ every 8-12 hrs ^a	Enoxaparin 30 mg SQ every 24 hrs ^b
Bariatric Surgery	Enoxaparin 40 mg SQ every 12 hrs ^a	Heparin 5000 units SQ every 8-12 hrs ^c
Major Trauma	Enoxaparin 30 mg SQ every 12 hrs ^a	Enoxaparin 0.5 mg/kg every 12 hrs Heparin 5000 units SQ every 8-12 hrs ^c
Abdominal/Pelvic Surgery for Cancer	Enoxaparin 40 mg SQ every 24 hrs ^b	Heparin 5000 units SQ every 8-12 hrs ^c
High Bleed Risk	Intermittent pneumatic compression devices (IPC) ^a	Graduated compression stockings (GCS) or Venous foot pumps (VFP) ^c
Cardiac Surgery	Heparin 5000 units SQ every 8-12 hrs	Enoxaparin 40 mg SQ every 24 hrs
Craniotomy	Intermittent pneumatic compression devices (IPC) ^a	Graduated compression stockings (GCS) or Venous foot pumps (VFP) ^c
Spinal Surgery	Intermittent pneumatic compression devices (IPC) ^a	Graduated compression stockings (GCS) or Venous foot pumps (VFP) ^c

Thoracic Surgery	Heparin 5000 units SQ every 8-12 hrs	Enoxaparin 40 mg SQ every 24 hrs
Trauma Surgery	Enoxaparin 30 mg every 12 hrs ^a	Enoxaparin 0.5 mg/kg every 12 hrs Heparin 5000 units SQ every 8-12 hrs ^c

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VTE Prophylaxis Orthopedic Patient

Table 7. VTE Risk Categories for Orthopedic Surgery Population

Elevated Risk (if any are present)	Elevated Risk (if 2 or more are present)
Hip fracture surgery	Age > 70 years
Surgical revision or protective weight bearing	New onset ischemic stroke
Personal history of DVT or PE	Morbid obesity (BMI > 40 or >120 kg)
History of active malignancy	Venous stasis (varicose veins)
History of known thrombophilia	Active heart failure (NYHA Class III or IV)
	Acute myocardial infarction
	Acute respiratory disease (COPD or asthma exacerbation or pneumonia)
	1 st degree family history of DVT or PE
	Active (treated) inflammatory disease (IBD, rheumatic disease)
	Immobility (bedridden > 72 hrs, immobilizing lower extremity cast, paralysis)

Table 8. VTE prophylaxis regimens for orthopedic surgeries

	Standard VTE Risk	Elevated VTE Risk	High Bleed Risk
Total Hip, Total Knee, or Shoulder Arthroplasty	Apixaban 2.5 mg PO BID ^a ASA 81 mg BID ^b ASA 325 mg QD - BID ^b Enoxaparin 40 mg SQ daily ^a Enoxaparin 30 mg SQ every 12 hrs ^a *Fondaparinux 2.5 mg daily ^b Rivaroxaban 10 mg PO daily ^a Warfarin (target INR 1.8-2.2) ^b	Apixaban 2.5 mg PO BID ^a Enoxaparin 30 mg SQ every 12 hrs ^a Enoxaparin 40 mg SQ daily ^a *Fondaparinux 2.5 mg daily ^b Rivaroxaban 10 mg PO daily ^a Warfarin (target INR 1.8-2.2) ^b	Mechanical prophylaxis
Hip Fracture Surgery	<u>All patients considered at elevated VTE risk:</u> Apixaban 2.5 mg BID Enoxaparin 30 mg SQ every 12 hrs ^a Enoxaparin 40 mg SQ every 24 hrs ^a *Fondaparinux 2.5 mg daily ^b		Mechanical prophylaxis

	Rivaroxaban 10 mg PO daily ^a Warfarin (target INR 1.8-2.2) ^b	
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* May be considered for patients with heparin allergy

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