

بنام خداوند جان و

پروفیلاکسی با داروهای ضد انعقاد

آمبولی ریه علت قابل پیشگیری مرگ داخل بیمارستانی است. تشخیص آن سخت بوده و علیرغم به کار گیری درمان های هزینه بر می تواند کشنده باشد.

پیشگیری از VTE مهم تر و ارجح بر درمان و تشخیص است.

خوشبختانه دوز کم و ثابت آنتی کواگولان در طول بستری برای پیشگیری موثر و بی خطر است.

اوج بروز VTE در طی یک ماه بعد از ترخیص از بیمارستان اتفاق می افتد.

TABLE 87.9 Padua Prediction Score for Identification of Hospitalized Patients at Risk for Venous Thromboembolism

RISK FACTOR	SCORING
Cancer	3
Previous VTE	3
Immobility	3
Thrombophilia	3
Trauma/surgery	2
Age ≥ 70 years	1
Heart/respiratory failure	1
Acute MI or stroke	1
Infection/rheumatologic disorder	1
Obesity	1
Hormonal treatment	1

Table 2 The International Medical Prevention Registry on Venous Thromboembolism (IMPROVE-VTE) score

VTE risk factor	Points
Previous VTE	3
Known thrombophilia	2
Cancer	2
Current lower limb paralysis	2
Immobilization	1
ICU/CCU stay	1
Age >60	1

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VTE: venous thromboembolism, ICU: intensive care unit, CCU: coronary care unit Low risk: score 0–1 (VTE risk <1.0%) Moderate risk: score 2–3 (VTE risk 1.0–1.5%) High risk: score of ≥4 (VTE risk >4%)

Table 3 IMPROVE-BLEED risk score

Bleeding risk factor	Points
Active gastric or duodenal ulcer	4.5
Prior bleeding within the last 3 months	4
Thrombocytopenia (<50×10 ⁹ /L)	4
Age ≥85 years	3.5
Liver failure (INR >1.5)	2.5
Severe kidney failure (GFR<30 mL/min/m ²)	2.5
Admission to the ICU/CCU	2.5
Central venous catheter	2
Rheumatic disease	2
Active malignancy	2
Age: 40–84 years old	1.5
Male	1
Moderate kidney failure (GFR: 30–59 mL/min/m ²)	1

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INR: international normalization ration, GFR: glomerular filtration rate, ICU: intensive care unit, CCU: coronary care unit Low risk: score <7 - Major bleed risk=0.4% High risk: score ≥7 - ~10% of the population - Major bleed risk=4.1%

Figure 2: Recommendations for VTE Prophylaxis in Medically Ill Patients

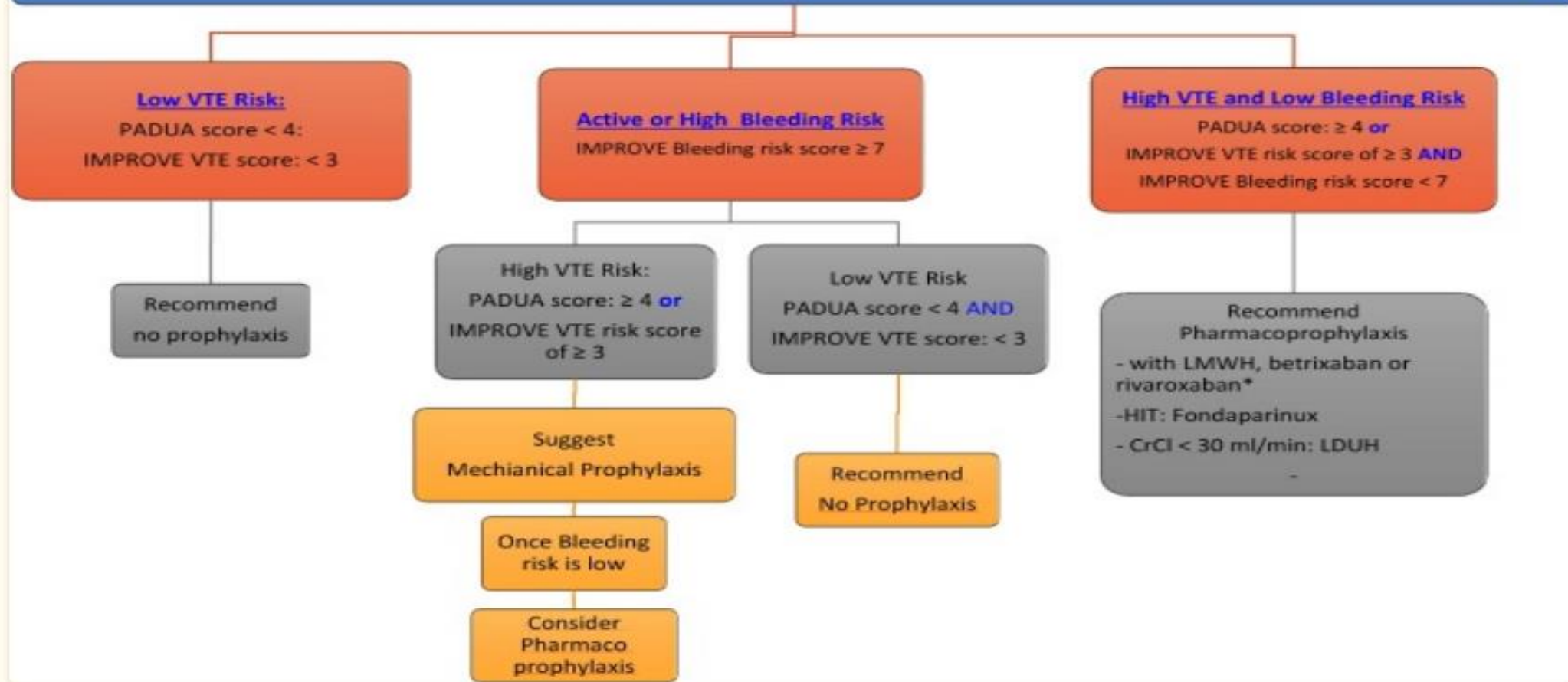


Fig. 2 Recommendations for VTE prophylaxis in medically ill patients.

ESRD: end stage renal disease, HIT: heparin induced thrombocytopenia, LDUH: low dose unfractionated heparin, LMWH: low molecular weight heparin, VTE: venous thromboembolism. * We suggest using betrixaban or rivaroxaban as an alternative to LMWH based on medication coverage and convenience (oral vs. injectable).

TABLE 87.8 Regimens for Venous Thromboembolism Prevention

CONDITION	PROPHYLAXIS
Hospitalization with medical illness	Unfractionated heparin 5000 units SC bid or tid <i>or</i> Enoxaparin 40 mg SC qd <i>or</i> Dalteparin 2500 units or 5000 units SC qd <i>or</i> Fondaparinux 2.5 mg SC qd with normal renal function (in patients with a heparin allergy such as heparin-induced thrombocytopenia) <i>or</i> Rivaroxaban 10 mg qd started at hospital discharge and continued for 5 weeks
General surgery	Unfractionated heparin 5000 units SC bid or tid <i>or</i> Enoxaparin 40 mg SC qd <i>or</i> Dalteparin 2500 or 5000 units SC qd
Major orthopedic surgery	Warfarin (target INR 2.5) <i>or</i> Enoxaparin 30 mg SC bid <i>or</i> Enoxaparin 40 mg SC qd <i>or</i> Dalteparin 2500 or 5000 units SC qd <i>or</i> Fondaparinux 2.5 mg SC qd <i>or</i> Rivaroxaban 10 mg qd <i>or</i> Aspirin 81 mg BID <i>or</i> Rivaroxaban 10 mg qd for 5 days and then aspirin 81 mg daily thereafter Dabigatran 220 mg qd <i>or</i> Apixaban 2.5 mg twice daily

Prevention of Venous Thromboembolism (VTE) in Adult Hospitalised Patients – Guideline Overview

Abridged information; refer to 'Guideline for the Prevention of Venous Thromboembolism (VTE) in Adult Hospitalised Patients' for full details

Identify all patients requiring VTE Risk Assessment (section 1.1); conduct advance-planning when possible (section 1.2)

Not in scope of THIS guideline: pregnancy and puerperium*, paediatrics, outpatients or cancer day patients, treatment of VTE

*Refer to Queensland Clinical Guidelines: Venous thromboembolism (VTE) prophylaxis in pregnancy and the puerperium

VTE Risk Assessment required: (section 1.1)

- All inpatient admissions including mental health, rehabilitation and palliative care
- Day surgery or procedures under general and prolonged anaesthesia with significantly reduced mobility
- Isolated injury requiring temporary lower limb immobilisation, including Emergency Department discharge

VTE Risk Assessment NOT routinely required: (section 1.1)

- Terminally ill or end of life care patients (in consultation with patient or carer and multidisciplinary team)
- Day surgery or procedures under local anaesthesia without reduced mobility
- Emergency Department discharge other than lower limb immobilisation

Undertake VTE Risk Assessment (section 1.3)

As soon as possible using statewide 'Adult Venous Thromboembolism Risk Assessment Tool' or locally endorsed equivalent

Specific patients at increased VTE risk: (section 1.3.4)

Medical Patients:

- Acute stroke
- Critically ill
- Decompensated heart failure
- Active inflammatory bowel disease

Surgical and Orthopaedic Patients:

- Major abdominal-pelvic surgery for cancer
- Total hip or knee arthroplasty
- Fragility fractures (pelvis, hip, proximal femur)
- Major trauma surgery
- Craniotomy
- Cardiac surgery
- Abdominal aortic aneurysm repair

- Thoracic surgery with primary or metastatic cancer
- Elective spinal surgery (admission longer than 2 days) with risk factors
- Bariatric surgery
- Temporary immobilisation (above or below knee cast, or backslab)

ALL other patients individually risk assessed

Increased risk

Low risk

VTE prophylaxis required

No VTE prophylaxis required

Assess Contraindications and Special Considerations to Prophylaxis (section 1.4)

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Mechanical Prophylaxis Contraindications (section 1.4.1)

Contraindications:

- Severe peripheral arterial disease or ulcer
- Skin graft or peripheral arterial bypass graft
- Severe leg or pulmonary oedema
- Allergy to material of manufacture
- Severe localised leg problems

- #### Additional contraindications specific to graduated compression stockings only:
- Leg deformity or obesity preventing correct fit
 - Peripheral neuropathy
 - Stroke

Pharmacological Prophylaxis Contraindications (section 1.4.2) and Special Considerations (section 1.4.3)

Absolute contraindications:

- Already anticoagulated
- Active major bleeding
- Recent clinically significant bleeding
- Thrombocytopenia (platelets less than $50 \times 10^9/L$)
- Inherited or acquired bleeding disorders

Relative contraindications:

- High bleeding risk surgery within last 2 weeks
- Recent gastrointestinal or genitourinary bleeding
- Recent central nervous system bleeding
- High bleeding risk intracranial or spinal lesion
- Uncontrolled systolic hypertension
- High bleeding risk condition

Special considerations:

- Heparin-induced thrombocytopenia or thrombosis
- Lumbar puncture
- Therapeutic anticoagulation
- Antiplatelet therapy
- Patient's personal beliefs

Mechanical Prophylaxis
Contraindicated

No contraindications to
Mechanical Prophylaxis

Pharmacological
Prophylaxis
Contraindicated

No contraindications or
special considerations to
Pharmacological Prophylaxis

Special considerations
with Pharmacological
Prophylaxis

Conduct baseline tests (section 1.5)

Identify relevant VTE prophylaxis recommendations (sections 2.1 and 2.2)

Medical and Mental Health Patients:

- [Acute stroke](#) (section 2.1.1)
- [Critically ill](#) (section 2.1.2)
- [Medical cancer inpatients](#) (section 2.1.3)
- [Acutely ill](#) (section 2.1.4)
- [Mental health patients](#) (section 2.1.5)
- All other medical patients – see prophylaxis options: [pharmacological](#) (section 1.7) and [mechanical](#) (section 1.8)

Surgical and Orthopaedic Patients:

- [General and abdominal-pelvic surgery](#) (section 2.2.1)
- [Major abdominal-pelvic surgery for cancer](#) (section 2.2.2)
- [Total hip or knee arthroplasty](#) (section 2.2.3)
- [Fragility fractures](#) (section 2.2.4)
- [Ambulatory patients with isolated lower limb immobilisation](#) (section 2.2.5)
- [Other orthopaedic procedures](#) (section 2.2.6)
- [Major trauma](#) (section 2.2.7)
- [Craniotomy](#) (section 2.2.8)
- [Cardiac surgery](#) (section 2.2.9)
- [Vascular surgery](#) (section 2.2.10)
- [Thoracic surgery](#) (section 2.2.11)
- [Elective spinal surgery](#) (section 2.2.12)
- [Bariatric surgery](#) (section 2.2.13)
- All other surgical patients – see prophylaxis options: [pharmacological](#) (section 1.7) and [mechanical](#) (section 1.8)

Assess benefits versus risks of VTE prophylaxis

Develop VTE Prevention Plan (section 1.6); document in patient record or ieMR
Prescribe VTE prophylaxis as appropriate in the medication chart or ieMR

Monitor patient (sections 1.10.1 to 1.10.3)

Reassess risks of VTE and bleeding (section 1.10.4)

Write discharge plan (section 1.10.5); ensure transfer of care

Table 6: Standard prophylactic doses and timing of DOAC for THR/TKR surgery

DOAC	Standard prophylactic dose and timing in relation to THR/TKR surgery
Not all regimens suitable for procedures involving neuraxial anaesthesia For timing in relation to epidural or spinal anaesthesia see 1.7.3 , Table 7	
Rivaroxaban	Rivaroxaban 10mg once daily; starting 6-10 hours after surgery when haemostasis established, for maximum 5 weeks THR or 2 weeks TKR
Dabigatran	Dabigatran 110 mg 1-4 hours postoperatively then 220mg daily thereafter. Delay treatment initiation if haemostasis unsecured. If not started on day of surgery, initiate with 220mg daily. Total treatment time following THR 28-35 days and TKR 10 days
Apixaban	Apixaban 2.5mg twice daily; starting 12-24 hours after surgery, for maximum 32-38 days THR or 10-14 days TKR

Table 8: Heparin-based VTE prophylaxis dose adjustments for patients with renal impairment

Renal function [§] (mL/min)	UFH	LMWH ^Ω
30-50	No adjustment required	No adjustment required
15-29	No adjustment required	Enoxaparin: Reduce dose to 20 mg subcut daily Dalteparin^Δ: No dose adjustment required
Less than 15	No adjustment required	Do NOT use LMWH

Table 9: DOAC VTE prophylaxis dose adjustments for THR/TKR patients with renal impairment

Renal function§ (mL/min)	Rivaroxaban	Dabigatran	Apixaban
30-50	10mg once daily	Adjust dose to 150mg once daily	2.5mg twice daily
25-29	10mg once daily (Use with caution)	Contraindicated	2.5mg twice daily (Use with caution)
15-24	10mg once daily (Use with caution)	Contraindicated	Contraindicated
Less than 15	Contraindicated	Contraindicated	Contraindicated
Dialysis	Contraindicated	Contraindicated	Contraindicated

Table 16: VTE prophylaxis in general and abdominal-pelvic surgery (non-cancer) patients

Patient Cohort	ADULT SURGICAL PATIENTS – GENERAL AND ABDOMINAL-PELVIC SURGERY Includes general, gynaecological, urological, gastrointestinal, plastic or reconstructive, oral, maxillofacial, and ear, nose, throat surgery For major abdominal-pelvic surgery for cancer see Table 17					
NO pharmacological prophylaxis is required if patient is already anticoagulated Before prescribing, review contraindications and/or bleeding risk						
VTE Risk Level See Appendix 4 for Caprini risk assessment	Low VTE risk (Caprini Score 1-2)	Moderate VTE risk (Caprini Score 3-4)		High VTE risk (Caprini Score 5 or more)		
Prophylaxis	Start IPC on admission OR GCS	High bleeding risk	Low bleeding risk	High bleeding risk	Low bleeding risk	
		Start IPC on admission	After surgery, use: LMWH ^{a#} : dalteparin 5000 units subcut once daily OR enoxaparin 40 mg subcut once daily OR IPC	Start IPC on admission After surgery, reassess (and document) risks. When bleeding risk decreases, ADD pharmacological prophylaxis.	Start IPC or GCS on admission AND After surgery, use LMWH ^{a#} : dalteparin 5000 units subcut once daily OR enoxaparin 40 mg subcut once daily	
Duration	Continue until mobility has returned to an anticipated or clinically acceptable level			Treat for 5 to 10 days ^b or until mobility has returned to an anticipated or clinically acceptable level or when the patient is discharged from hospital		

Table 18: VTE prophylaxis in total hip arthroplasty and total knee arthroplasty

ADULT ORTHOPAEDIC PATIENTS – Total hip arthroplasty and total knee arthroplasty	
This guideline is based on recommendations from ACCP(6), NICE(7), ESA(34) and ASA(10). All patients in this cohort require thromboprophylaxis.	
NO pharmacological prophylaxis is required if patient is already anticoagulated Before prescribing, review contraindications and/or bleeding risk	
TOTAL HIP ARTHROPLASTY	TOTAL KNEE ARTHROPLASTY
Start IPC or GCS [‡] on admission and continue until patient is discharged AND LMWH for 28 days ^β OR Rivaroxaban 10 mg daily for 35 days ^β OR LMWH for 10 days, then aspirin [‡] 100 mg daily for 28 days ^β	Start IPC or GCS [‡] on admission and continue until patient is discharged AND LMWH for 14 days ^β OR Rivaroxaban 10 mg daily for 14 days ^β OR Aspirin [‡] 100 mg daily for 14 days ^β

Table 19: VTE prophylaxis in fragility fractures of the pelvis, hip and proximal femur

ADULT ORTHOPAEDIC PATIENTS – Fragility fractures of the pelvis, hip and proximal femur

This guideline is based on recommendations from ACCP(6), NICE(7) and ESA(34). All patients in this cohort require thromboprophylaxis.

NO pharmacological prophylaxis is required if patient is already anticoagulated
Before prescribing, review contraindications and/or bleeding risk

Start IPC[‡] on admission and continue until patient is discharged
AND

Start LMWH 6 -12 hours after surgery and use for a month^β

If surgery is likely to be delayed beyond the day after admission, consider giving LMWH pre-operatively. Give the last LMWH dose no less than 12 hours before surgery.

OR

Aspirin[‡] 100 mg daily (see below for duration)^β

If surgery is likely to be delayed beyond the day after admission, consider giving aspirin pre-operatively