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VTE prophylaxis for the medically ill patient

ACTION

Administration

DOCUMENT PURPOSE

This order set is intended to facilitate standardized venous thromboembolism (VTE) prophylaxis risk stratification of hospitalized medically ill patients for:

- Hospital-acquired VTE
- Prophylaxis-associated bleeding on anticoagulation administration
- Prescription of risk-appropriate VTE prophylaxis

VTE Risk Assessment

See appendices for risk assessment tools (IMPROVE, Padua, Caprini) to assist with VTE risk assessment.

- High or moderate risk of VTE
- Low risk of VTE

If the patient is low risk for VTE per your hospital's Risk Assessment Model and is not anticipated to experience severe immobility, then no VTE prophylaxis (pharmacological or mechanical) is necessary. Reassess your patients' VTE risk status as clinically indicated.

LOW VTE RISK BASED ON RISK ASSESSMENT SCORES

- Improve 4 Score: 0-1
- Improve 7 Score: 0-1
- Padua Score: 0-3
- Caprini Score: 0-2

HIGH OR MODERATE VTE RISK BASED ON RISK ASSESSMENT SCORES

- Improve 4 Score ≥ 2
- Improve 7 Score: ≥ 2
- Padua Score: ≥ 4
- Caprini Score: ≥ 2

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Bleeding Risk Assessment

| IMPROVE Bleeding Risk Factor | Points |
|---|---------------|
| <input type="checkbox"/> Moderate renal failure (GFR 30-59) | 1 |
| <input type="checkbox"/> Sex: Male vs Female | 1 |
| <input type="checkbox"/> Age: 40 – 84 | 1.5 |
| <input type="checkbox"/> Current cancer | 2 |
| <input type="checkbox"/> Rheumatic diseases | 2 |
| <input type="checkbox"/> CV catheter | 2 |
| <input type="checkbox"/> ICU / CCU stay | 2.5 |
| <input type="checkbox"/> Severe renal failure (GFR < 30 ml/min) | 2.5 |
| <input type="checkbox"/> Hepatic failure (INR > 1.5) | 2.5 |
| <input type="checkbox"/> Age ≥ 85 | 3.5 |
| <input type="checkbox"/> Admission platelets < 50 x 10 ⁹ | 4 |
| <input type="checkbox"/> Bleeding prior 3 months | 4 |
| <input type="checkbox"/> Gastro-duodenal ulcer | 4.5 |
| Total Score | _____ |

Scores ≥ 7 indicate higher bleeding risk and caution with pharmacologic prophylaxis. Reassess candidacy for anticoagulant or mechanical prophylaxis as clinically indicated.

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Risk-Appropriate VTE Prophylaxis Orders Continued

SECTION X: PATIENT CRITERIA FOR USE OF BETRIXABAN IN-HOUSE AND FOR EXTENDED PROPHYLAXIS

- No invasive procedures are planned in the next 30 days
- No contraindications to anticoagulant prophylaxis
- Creatinine clearance > 30 ml/min
- Not taking concomitant therapy with a strong PGP inhibitor
- Non-pregnant or breastfeeding
- Not currently on dual antiplatelet therapy (DAPT)
- Confirmation of insurance coverage of betrixaban for duration of prophylactic regimen and hospitalized with acute NYHA Class III/IV heart failure, respiratory failure, acute infectious disease or rheumatic illness or ischemic stroke with lower extremity paresis, and severe immobility (bed or chair bound 100% of the day) for at least 1 day and moderate immobility (bed or chair bound 50% of day) for at least 3 days

AND ONE OF THE FOLLOWING:

- Age 75+
- Age 60-74 and two additional VTE risk factor
- Age 40-59 and a prior VTE or active cancer and one additional risk factor

RISK FACTORS

- Previous VTE or superficial vein thrombosis
- History of NYHA Class III or IV HF
- Concomitant acute infection
- Obesity (BMI >35)
- History of cancer
- Inherited or acquired thrombophilia
- Current use of erythropoiesis-stimulating agent
- Hormone therapy

BETRIXABAN VTE PROPHYLAXIS OPTIONS (SELECT ONE):

- Betrixaban 160 mg PO on day one, then 80 mg daily for 35-42 days (CG CrCl >30ml/min)

ADJUSTED DOSING

- Betrixaban 80 mg PO on day one, then 40 mg daily for 35-42 days renal dosing (CG CrCl 15-30ml/min) or taking strong PGP inhibitor

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Appendixes: VTE Risk Assessments

IMPROVE: 7- ELEMENT IN-HOSPITAL RISK MODEL

VTE RISK FACTORS

3 POINTS

Previous VTE

2 POINTS

Thrombophilia

Lower limb paralysis

Current cancer

1 POINT

Age > 60 years

Immobilization ≥ 7 days

ICU / CCU stay

IMPROVE 7 VTE Score:

Scores 0-6 are low risk with no indication for prophylaxis

Scores ≥ 7 are high risk and warrant prophylaxis

IMPROVE: 4-ELEMENT IN-HOSPITAL RISK MODEL

VTE RISK FACTORS

3 POINTS

Previous VTE

2 POINTS

Thrombophilia

Current cancer

1 POINT

Age > 60 years

IMPROVE 4 VTE Score:

Scores 0-2 are low risk with no indication for prophylaxis

Scores ≥ 2 are high risk and warrant prophylaxis

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Appendixes: VTE Risk Assessments Continued

CAPRINI SCORE

Below depicts the different weighted points for the risk factors included in the Caprini Score:

5 POINTS

- | | |
|--|---|
| <input type="checkbox"/> Stroke (in the previous month) | <input type="checkbox"/> Elective arthroplasty |
| <input type="checkbox"/> Fracture of the hip, pelvis, or leg | <input type="checkbox"/> Acute spinal cord injury (in the last month) |

3 POINTS

- | | |
|--|---|
| <input type="checkbox"/> Age ≥ 75 years | <input type="checkbox"/> Anticardiolipin antibodies |
| <input type="checkbox"/> Prior episode of VTE | <input type="checkbox"/> High homocysteine in the blood |
| <input type="checkbox"/> Positive family history for VTE | <input type="checkbox"/> Heparin induced thrombocytopenia |
| <input type="checkbox"/> Prothrombin 20210A | <input type="checkbox"/> Other congenital or acquired thrombophilia |
| <input type="checkbox"/> Factor V Leiden | |
| <input type="checkbox"/> Lupus anticoagulants | |

2 POINTS

- | | |
|---|---|
| <input type="checkbox"/> Age: 61 – 74 years | <input type="checkbox"/> Cancer |
| <input type="checkbox"/> Arthroscopic surgery | <input type="checkbox"/> Plaster cast |
| <input type="checkbox"/> Laparoscopy lasting more than 45 minutes | <input type="checkbox"/> Bed bound for more than 72 hours |
| <input type="checkbox"/> General surgery lasting more than 45 minutes | <input type="checkbox"/> Central venous access |

1 POINT

- | | |
|--|---|
| <input type="checkbox"/> Age 41 – 60 years | <input type="checkbox"/> Sepsis (in the previous month) |
| <input type="checkbox"/> BMI > 25 kg/m ² | <input type="checkbox"/> Serious lung disease such as pneumonia (in the previous month) |
| <input type="checkbox"/> Minor surgery | <input type="checkbox"/> Abnormal pulmonary function test |
| <input type="checkbox"/> Edema in the lower extremities | <input type="checkbox"/> Acute myocardial infarction |
| <input type="checkbox"/> Varicose veins | <input type="checkbox"/> Congestive heart failure (in the previous month) |
| <input type="checkbox"/> Pregnancy | <input type="checkbox"/> Bed rest |
| <input type="checkbox"/> Post-partum | <input type="checkbox"/> Inflammatory bowel disease |
| <input type="checkbox"/> Oral contraceptive | |
| <input type="checkbox"/> Hormonal therapy | |
| <input type="checkbox"/> Unexplained or recurrent abortion | |

Note: The Caprini score is calculated by adding the scores of all factors present in the patient.

The Caprini score is interpreted in the following way:

Total score of **0-1**: Low risk of VTE

Total score of **≥2**: High/moderate risk of VTE

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Appendixes: VTE Risk Assessments Continued

APEX CRITERIA

VTE Risk Factors:

- Hospitalized with acute NYHA Class III/IV heart failure, respiratory failure, acute infectious disease or rheumatic illness or ischemic stroke with lower extremity paresis, and;
- Severe immobility = 100% bed or chair rest for at least 1 day and anticipated severe or moderate immobility= 50% of time at bed or chair rest with bathroom privileges for at least 4 days, and;
- Age and additional VTE risk factors:
 - ≥ 75 years old
 - 60 to 74 years old, plus D-dimer ≥ 2x ULN **OR** two of the following risk factors
 - 40 to 59 years old, plus history of VTE **OR** history of cancer, plus D-dimer ≥2x ULN **OR** one of the following risk factors

RISK FACTORS:

- Previous VTE or superficial vein thrombosis
- History of NYHA Class III or IV HF
- Concomitant acute infection
- Obesity (BMI >35)
- History of cancer
- Inherited or acquired thrombophilia
- Current use of erythropoiesis-stimulating agent
- Hormone therapy

BMI = body mass index; HF = heart failure; NYHA = New York Heart Association; ULN = upper limit of normal

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