Purpose Statement: To define pediatric patient populations at risk for VTE and their prophylaxis.

Procedure:

For patients at high risk of VTE\(^1\) with low risk of bleeding\(^2\):

- anticoagulate with low molecular weight heparin at 0.5mg/kg subcutaneous, twice daily until hospital discharge

For patients at high risk of VTE\(^1\) with high risk of bleeding\(^3\):

- apply sequential compression devices
- on PICU day 7 obtain screening ultrasound of bilateral lower extremities, and upper extremity if CVL is present

For patients at low risk of VTE\(^4\):

- no anticoagulation or other clinical intervention indicated

Risk Factors for VTE:

- projected immobility > 5 days
- Glasgow Coma Scale less than 9
- presence of CVL
- spinal cord injury
- complex lower extremity fracture
- operative pelvic fracture
- use of inotropes
- CPR during resuscitation
- exogenous estrogen
- chronic inflammatory state
- history of previous clot

- known thrombophilia
- current malignancy
Risk Factors for Bleeding:

- intracranial bleed
- solid organ injury
- planned surgical intervention or invasive procedure in the next 24 hours
- heparin allergy
- high risk of severe bleeding
- renal failure

1High risk of VTE defined as age greater than 13 years OR age less than 13 years with four or more risk factors for VTE.
2Low risk of bleeding defined as no risk factors for bleeding.
3High risk of bleeding defined as one or more risk factors for bleeding.
4Low risk of VTE defined as age less than 13 years AND three or fewer risk factors for VTE.

VTE = venous thromboembolism; PICU = pediatric intensive care unit; CVL = central venous line; CPR = cardiopulmonary resuscitation

References:


ALGORITHM FOR VTE RISK ASSESSMENT AND PROPHYLAXIS

DVT indicates deep-vein thrombosis; PE - pulmonary embolism; SQ - subcutaneous; BID - twice daily; uFH - unfractionated Heparin

ALTERED MOBILITY
Immobility refers to a permanent state of altered mobility (e.g. paralysis)
Impaired physical mobility refers to a temporary state of altered mobility (e.g. cast, post-op activity restrictions)

VTE RISK FACTORS
ACUTE CONDITIONS
Major lower extremity orthopedic surgery
Spinal cord injury
Major trauma to lower extremities
Lower extremity central venous catheter
Acute infection
Known active viral infection
Current antibiotic treatment
Burns
Pregnancy

CHRONIC MEDICAL CONDITIONS
Obesity
weight > 80 kg, age 14 – 16
weight > 85 kg, over age 16
Estrogen containing medications
Inflammatory bowel disease
Nephrotic syndrome
Known acquired or inherited thrombophilia

HISTORICAL FACTORS
Previous history of DVT/PE
Family history of VTE in first-degree relative < 40 y

CONTRAINDICATIONS TO ANTICOAGULATION
Intracranial hemorrhage
Acute stroke
Ongoing and uncontrolled bleeding
Uncorrected coagulopathy
Incomplete spinal cord injury with suspected or known paraspinal hematoma
Allergy to pork products
Heparin induced thrombocytopenia

PHARMACOLOGIC PROPHYLAXIS
Enoxaparin
Patients > 60 kg
30 mg SQ bid (High-risk Orthopedic surgery – to be initiated 12/24 hrs post-op)
OR
40 mg daily (Medical patients)
Patients < 60 kg
0.5 mg/kg SQ bid
uFH
(Neurosurgical patients)

Patients > 60 kg
5000 units SQ bid

Intervention:
EARLY AMBULATION
AND
MECHANICAL PROPHYLAXIS
Pneumatic compression device (preferred);
and/or
Graduated compression stockings

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Patient ≥ 14 y?
No
Yes

Does not meet routine criteria for prophylaxis guidelines. May receive prophylaxis if determined to be high risk (e.g. stroke patients)

Altered mobility?
No
Yes

Other VTE risk factors?
No
Yes

LOW RISK
AT RISK

No
Yes

NO
YES

Yes

HIGH RISK

Contraindication to anti-coagulation?
No
Yes

Patient ≥ 21 y?
No
Yes

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