

ICU Management Protocol No. 9

VENOUS THROMBOEMBOLISM PROPHYLAXIS

RECOMMENDATIONS

- 1) On admission to the intensive care unit (ICU), all patients should be assessed for their risk of venous thromboembolism (VTE). Accordingly, most patients should receive thromboprophylaxis. For patients who are at high risk of bleeding (eg. upper GIT bleeding, liver laceration etc.) use mechanical prophylaxis.
- 2) Consider withholding the heparin product when there is a significant decrease of platelet count (30 to 50% of initial count) or decrease to less than 100,000 per micro liter of blood or when INR > 1.5.
- 3) The prevention of VTE in neurosurgical has favoured mechanical prophylaxis methods. However the use of heparin products is considered to be safe after 48 to 72 hours.
- 4) Combined pharmacologic and mechanical prophylaxis may provide greater protection than either alone (e.g. s/c Heparin / low molecular weight heparin (LMWH) in combination with thigh-length antiembolism stockings or intermittent pneumatic compression).
- 5) Prophylaxis should generally not be interrupted for procedures or surgery unless there is a particularly high bleeding risk.
- 6) The insertion and removal of epidural catheters should coincide with the nadir of the anticoagulant effect. The last dose of LMWH should be 12 hours prior to removal of catheter and can be restarted 2 hours later.
- 7) Routine screening of patients for asymptomatic deep vein thrombosis is not recommended since this strategy is neither effective nor cost-effective.
- 8) At the time of discharge from the ICU, further thromboprophylaxis recommendations should be included in the transfer orders.
- 9) LMWH have a number of potential advantages over Low Dose unfractionated Heparin (LDUH) which include once daily administration, greater bioavailability, lower incidence of heparin-induced thrombocytopenia and cost effective due to less laboratory monitoring.

- 10) Early ambulation remains the most important non pharmacologic approach to prevention of VTE.
- 11) Prophylaxis should be reviewed daily and changed, if necessary.

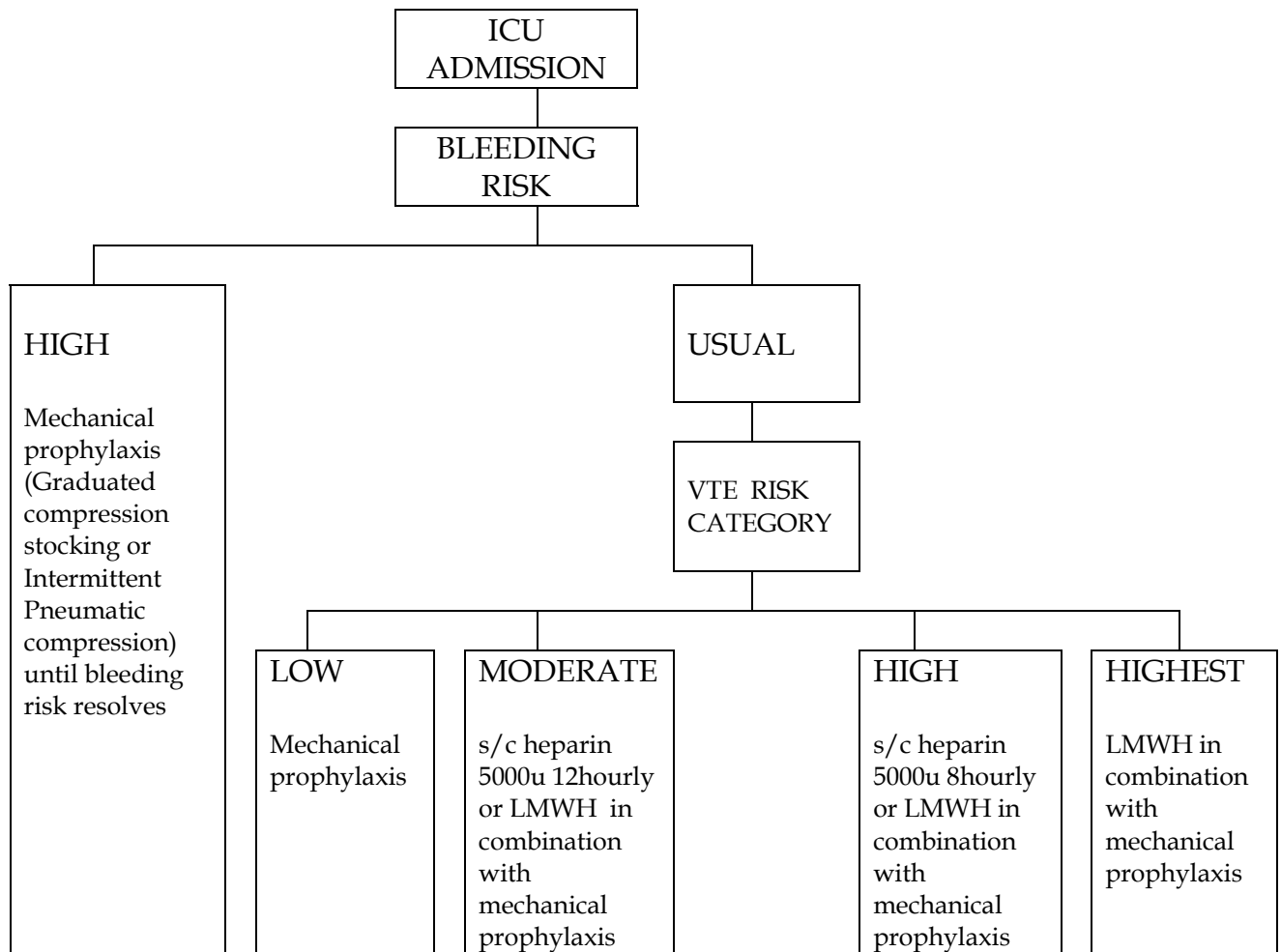
Pharmacological modalities:

- 1. Low Dose unfractionated heparin (LDUH)
eg. Subcutaneous (s/c) Heparin 5,000 units 8 hourly (high risk)
or 12 hourly (moderate risk)
- 2. Low molecular weight Heparin (LMWH)
eg. S/C Enoxaparin (Clexane) 40mg daily when creatinine clearance less than 30ml/min
or 30mg daily when creatinine clearance greater than 30ml/min

ABSOLUTE RISK FOR VTE

Patient category	Recommendation
Low risk eg. medical patients, immobilization, use of pharmacologic paralysis or sedation, heart failure	Mechanical prophylaxis
Moderate risk eg. general surgery, major gynecologic surgery, major urologic surgery, sepsis, vasopressor use, active medical condition	LMWH or s/c Heparin 5000 units 12 hourly in combination with mechanical prophylaxis
High risk eg. stroke, neurosurgery, previous VTE	LMWH or s/c Heparin 5000 units 8 hourly in combination with mechanical prophylaxis
Highest risk eg. spinal cord injury, major trauma hip/knee arthroplasty, hip fracture surgery	LMWH in combination with mechanical prophylaxis

ALGORITHM FOR VTE PROPHYLAXIS IN ICU



References:

- 1) Geerts W, Pireo GF, Heit JA et al: Prevention of VTE : The Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy ; Chest Sept 2004; 126 (suppl) : 338s-400s
- 2) Geerts W, Selby R : Prevention of venous thromboembolism in the ICU; Chest 2003 ; 124 : 357S-363S
- 3) Geerts W, Cook D, Selby R, et al: Venous thromboembolism and its prevention in critical care. J Crit. Care 2002; 17: 95-104