**Bivalirudin use in pediatrics**

In patients with heparin induced thrombocytopenia, heparin resistance, or significant thrombosis while on therapeutic heparin, alternative anticoagulation management is desired, such as a direct thrombin inhibitor (DTI). Young children have lower concentration of anticoagulants such as antithrombin (AT), Protein C and S, especially during the neonatal period.

Bivalirudin has the shortest half-life among all DTI’s with lower dependence on renal or liver function for removal (~80% enzymatic) which is a benefit in patients who have a high risk of bleeding, organ failure, or who may require an invasive procedure.

The dosing presented below is a guide to aid in the initiation of Bivalirudin infusion; however alterations may occur based on the clinical presentation of the patient. All other uses including for surgical procedures/intraoperative use, call Anticoagulation Service.

**Bivalirudin initial dosing guide: (Note this is not the package insert dose)**

- Range: 0.03-0.3 mg/kg/hour
  - If deemed necessary by physician, bolus dose: 0.1-0.2 mg/kg

**Dose Adjustments:**

- aPTT values 1-15 seconds outside of target ➔ adjust by 0.02mg/kg/hr of the initial infusion rate
- aPTT values 16-30 seconds outside of target ➔ adjust by 0.04mg/kg/hr of the initial infusion rate

**Monitoring:**

- Request aPTT 4 hours post starting the infusion. **Target aPTT is 1.5-2.5 times** baseline value or institutional mean value if baseline value is unknown
- In high bleeding risk patients, a Q2 hour aPTT x3 draws is suggested to evaluate response
- INR every day with (morning) aPTT
- CBC/Platelets/aPTT 4 hours post each rate adjustment and every morning while on DTI infusion
- Do not stop the DTI infusion simply because the INR increases (no warfarin); If the INR exceeds baseline INR by 0.5 with an aPTT that is not excessively elevated, call the pharmacy for further assessment.

**References**


Approved by UCDHS Pharmacy & Therapeutics Committee 3/2017.
Bivalirudin use in extracorporeal life support (ECLS)

ECLS is an invasive, lifesaving intervention in patients with temporary and reversible cardiac and/or respiratory failure. Due to the conflict between the blood and nonbiologic surface of the circuit, patients require systemic anticoagulation to prevent thrombosis. Heparin is usually the standard; however bivalirudin may be desirable in select patients. Please call the Anticoagulation Service for assistance.

Bivalirudin has the shortest half-life among all DTI’s with lower dependence on renal or liver function for removal (~80% enzymatic) which is a benefit in patients who have a high risk of bleeding, organ failure, or who may require an invasive procedure.

The dosing presented below is a guide to aid in the initiation of Bivalirudin infusion; however alterations may occur based on the clinical presentation of the patient. All other uses including for surgical procedures/intraoperative use, call Anticoagulation Service.

Bivalirudin initial dosing guide: (Note this is not the package insert dose)

- Range: 0.15-0.4 mg/kg/hour
  - If deemed necessary by ECLS Attending Physician, bolus dose: 0.1-0.2 mg/kg

Dose Adjustments:

- aPTT values 1-15 seconds outside of target → adjust by 0.02mg/kg/hr of the initial infusion rate
- aPTT values 16-30 seconds outside of target → adjust by 0.04mg/kg/hr of the initial infusion rate

Monitoring:

- aPTT goal to be determined by ELCS attending physician and documented in bivalirudin order. **Target aPTT is 1.5-2.5 times baseline value** (or the institutional mean if the baseline value is unknown) or unless otherwise specified.
- Request aPTT 4 hours post starting the infusion
- In high bleeding risk patients, a Q2 hour aPTT x3 draws is suggested to evaluate response
- If aPTT greater than goal, do NOT stop infusion, call HO
- INR every day with (morning) aPTT
- CBC/Platelets/aPTT 4 hours post each rate adjustment and every morning while on DTI
- Do not stop the DTI infusion simply because the INR increases (no warfarin); If the INR exceeds baseline INR by 0.5 with an aPTT that is not excessively elevated, call the pharmacy for further assessment.

References:


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