I. HEPARIN INFUSION FOR INTERFACILITY TRANSPORT (Paramedic only)

1. PURPOSE

During interfacility transports, a paramedic may monitor a patient on a continuous IV heparin infusion as long as the following criteria have been met.

2. INDICATIONS

The heparin infusion must have been started by the hospital staff prior to an interfacility transfer. IV heparin infusions may NOT be started by the prehospital clinician in the prehospital setting.

3. CONTRAINDICATIONS

a) Patients who have had trauma or surgery to the brain, eye, spinal cord, urinary tract, joints, or retroperitoneum within the last 7 days
b) Patients with active bleeding
c) Third trimester pregnancy

4. PROCEDURE

a) Follow the appropriate ALS algorithm and maintain the infusion as directed by the sending physician.
b) The sending physician must document the infusion to be administered on the patient's record or transport note, including the concentration of the units per hour.
c) The infusion must be maintained on an infusion pump designed for transport, and the clinician must be trained in the appropriate use of that specific infusion pump. The ambulance must have an inverter to power the pump while in the vehicle.
d) The total volume of heparin infused must be recorded on the patient care report.
e) The patient must be on a cardiac monitor and vital signs should be documented on the patient care report every 15 minutes.
f) When in doubt, contact the sending physician for medical direction.

5. SPECIAL CONSIDERATIONS

The ALS service or jurisdiction must provide and document the training of ALS clinicians on the operation of the infusion pump(s) being used. They must also have a quality improvement (QI) program monitoring the appropriateness and quality of care provided. The QI program should be directed or coordinated by, at minimum, an ALS clinician.

HEPARIN
(Paramedic only)

1. Pharmacology

Heparin is an anticoagulant that works by neutralizing several of the clotting factors (XIII, XII, XI, X, IX, and II).

2. Pharmacokinetics

a) Heparin inhibits the coagulation mechanism in 3 sites:
   (1) activation of factor X
   (2) formation of thrombin from prothrombin
   (3) conversion of fibrinogen to fibrin
b) Heparin's effect, which is to retard or prevent blood clotting, is immediate. The half-life of intravenous heparin is 1–1.5 hours.

3. Indications

a) Thromboembolic disease, such as pulmonary embolism deep vein thrombophlebitis, and arterial embolization
b) Acute myocardial infarction. (Heparin may be given alone or in conjunction with thrombolytic therapy.)

4. Contraindications

a) Patients who have had trauma or surgery to the brain, eye, spinal cord, urinary tract, joints, or retroperitoneum within the last 7 days
b) Patients with active bleeding
c) Third trimester pregnancy

5. Adverse Effects

Increased potential for bleeding

6. Precautions

a) Inadvertent infusion of too much heparin can result in over-anticoagulation and the potential for bleeding complications.
b) If it is necessary to draw blood or start an IV while a patient is receiving heparin, extra time to hold pressure over the puncture site will be necessary to stop the bleeding.
c) Use with caution for patients with extreme hypertension.

7. Dosage

a) Adult: Follow the written order from the sending physician. Paramedic may transport patients at a maximum heparin drip rate of 18 units/kg per hour or 2,000 per units per hour, whichever is higher. For doses exceeding the maximum, a SCT Paramedic or nurse is required for transport.
b) Pediatric: Not indicated.