

PROTOCOL FOR: FLOLAN (epoprostenol sodium): Continuous IV Administration

- POLICY:
1. For an acute illness requiring hospitalization, patients receiving FLOLAN will be admitted to the Cardiac Step-Down Unit (CSDU) or the Intensive Care Unit (ICU), and will be assigned to a CSDU or ICU RN.
 2. FLOLAN is administered intravenously via a central venous catheter. A single lumen catheter is preferred. If a multilumen catheter is utilized, the FLOLAN should infuse via the distal port.
 3. A peripheral line may be used in the event of an emergency situation with the central line; however, this is a temporary measure only. A back-up peripheral line designated for emergent FLOLAN use must be present at all times. This peripheral line should have a needleless cap and no extension set. (An extension could delay the medication reaching the patient if the medication needed to be hooked up to this back-up access emergently.)
 4. FLOLAN will be infused utilizing a CADD pump (a portable, battery-operated infusion pump) with a CADD medication cassette and tubing. An Alaris pump may be used in the event of an emergency situation (ie. primary and/or back-up CADD pump malfunction or unavailability, or emergent new start), and drug "guardrails" must be used.
 5. Each patient on FLOLAN must have 2 functioning CADD pumps available for their use specifically at all times, one for the infusion, and a second for back-up, which must be available at the patient's bedside. Options for providing two pumps include:
 - Patient's own pump(s) with a valid preventative maintenance (PM) sticker. (RN to check that the maintenance sticker is in date.)
 - Loaner CADD pump(s): these are stored in Pyxis on CSDU and are avail as a back-up for patient use while in the hospital. (These pumps are maintained by Accredo Therapeutics.)
 - CADD pump(s) requested from Accredo Therapeutics: [1-866-FIGHT PH \(1-866-344-4874\)](tel:1-866-FIGHT-PH)
- Other necessary supplies include: AA batteries, ice packs, and pouch. (If a hospital Alaris pump is used, a second pump must also be available.)
6. During hospitalization, FLOLAN doses will be prepared by the JDH pharmacy. (Exception: medication dose prepared in an educational session - see policy statement # 12.) If a patient has their own FLOLAN infusing upon admission, they may use this med until the time that the JDH pharmacy prepared product is available. Nursing staff will

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communicate with pharmacy with regard to the optimal time for converting the patient's cartridge over to the pharmacy prepared cartridge. This may be at the next scheduled cassette change, or sooner, if deemed necessary.

7. FLOLAN doses are stated as nanograms/kilogram/minute (ng/kg/min) which will be calculated to an infusion rate expressed as mls/24 hour for the CADD pump. (Note: Alaris pumps infuse mls per hour, thus ml rates cannot be transferred from the CADD to the ALARIS without recalculation. Pharmacy will only prepare FLOLAN in an IV bag for infusion on the Alaris pump for an emergent new start or if 2 functioning CADD pumps are unavailable.)
8. The weight upon which to base FLOLAN dosing will be documented on the order sheet by the ordering physician. THE SAME DOSING WEIGHT IS USED THROUGHOUT THERAPY. No medication changes are to be made based on daily weight fluctuations.

** If the patient is not new to therapy, the patient's dosing weight, cassette concentration, and current dosage can be verified by calling Accredo Therapeutics: 1-866-FIGHT PH (1-866-344-4874).
9. The FLOLAN infusion must be light protected, and ice packs will be used to keep FLOLAN at refrigerator temperature (36-46 degrees F.) This will allow a 24 hour infusion time, as the medication is only stable for 8 hours at room temperature.
10. FLOLAN is not to be combined with any other drug therapies via the same IV line. The line must have NO piggybacks meds, NO blood draws and NO flushing. A tag should be placed on the line indicating: "FLOLAN: DO NOT FLUSH". A separate peripheral IV catheter is required if the patient needs additional intravenous drugs.
11. FLOLAN has an extremely short half-life (approximately 3-5 minutes); therefore, the continuous infusion must not be interrupted or stopped. Patient response must be monitored closely, and prompt response to a pump alert or patient call light is a necessity.
12. Patients who are just beginning FLOLAN therapy may mix and administer the drug during an educational training session under the direct supervision of the Accredo Therapeutics RN. The Accredo RN or staff RN must coordinate/communicate the time of the educational session to pharmacy so that the medication and supplies are available on the unit, and so that pharmacy duplication of a med dose is prevented.

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Medication administration "by patient" will be documented on the medication administration record by the staff RN.

DESIRED

PATIENT OUTCOME: Patient will receive benefit of continuous FLOLAN therapy and experience no complications related to continuous IV FLOLAN.

CLINICAL ASSESSMENT

AND PATIENT CARE: Prior to Starting Infusion:

1. Review FLOLAN orders on Pulmonary Arterial Hypertension Admission Order Form.
 2. Verify that 2 functioning CADD pumps with in-date preventive maintenance stickers are available. (If more than 1 patient is on FLOLAN, each patient is to have 2 designated pumps.)
 - If available, the patient's own pump(s) will be used.
 - If patient is a new start, the pulmonologist or RN must contact Accredo Therapeutics at [1-866-FIGHT PH \(1-866-344-4874\)](tel:1-866-FIGHT-PH) to arrange CADD pump delivery. Loaner CADD pumps may be utilized pending new pump arrival.
 - If it is an emergent start, and two CADD pumps are not available, an Alaris pump may be used. Pharmacy must be notified to prepare the infusion for Alaris pump.
- Check that AA batteries (for CADD) and ice packs (stored in freezer) are available on the unit.
3. Obtain baseline laboratory data per MD order.
 4. Document baseline vital signs, including patient weight. Note: This weight may differ from weight used for dose calculation. Refer to order sheet for weight used for all FLOLAN dosing.
 5. Insert two 1-2 peripheral IV catheters. (One peripheral site must be available solely for emergent FLOLAN use.)
 6. Assess the line for patency. (If medication is already infusing, patency is presumed as long as the infusion pump is functioning and no high pressure alarms are occurring; do not draw back or flush.)
 7. Initiate the infusion on the CADD pump per MD order. (Or via Alaris pump, used in emergent situation.)

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8. Note: With a new start at a slow IV rate, it could take a significant amount of time for the medication to reach the patient. If the catheter fill volume is known or can be determined (by slowly drawing back on the catheter until blood first noted), the fill amount may be drawn off the pump line and very slowly instilled as a prime. Patient acuity and symptoms will determine if this priming step is necessary.

During the Infusion:

1. Assess infusion pump function and dose settings q. shift.
2. Change ice pack when they begin to soften (approximately every 4-6 hours).
3. Monitor VS and pulse oximetry per MD orders.
4. Monitor lab values per MD orders.
5. Assess & maintain central and peripheral IV sites per protocol.
6. Monitor patient for signs/symptoms of progressive pulmonary arterial hypertension and notify MD of worsening symptoms:
 - a. Chest Pain
 - b. Worsening dyspnea
 - c. Palpitations
 - d. Orthopnea
 - e. Syncope
 - f. Edema
7. Monitor patient for side effects of FLOLAN therapy:
 - a. Flushing
 - b. Jaw pain
 - c. Headache
 - d. Nausea
 - e. Diarrhea
 - f. Rash
 - g. Vomiting
 - h. Abdominal pain
 - i. Hypotension
 - j. Leg and foot pain
 - k. Ascites
8. Alternate CADD pumps every 24 hours, when the FLOLAN cartridge is changed.
9. Change CADD tubing every 48-72 hours. Patients generally do this M-W-F at home.

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10. Change CADD pump batteries weekly and assure that extra AA batteries are available at all times.

DOCUMENTATION: 1. Document assessment findings and interventions on the unit flowsheets, MAR, Infusion Record, and Patient/Family teaching record.

2. Document patient response to teaching on patient/family teaching record.

APPROVAL: Nursing Standards Committee
ICU/CSDU Standards Committee
ICU/CSDU Nurse Manager
Pharmacy Department

EFFECTIVE DATE: 2/03

REVISION DATES: 6/06, 1/07