

## Department of Pharmacy Guidelines

SUBJECT: TREPROSTINIL (REMODULIN<sup>®</sup>) INFUSION IN ADULTS

PURPOSE: To provide guidelines for the safe and appropriate transition from home-supply to hospital supply of the pulmonary hypertension medication treprostinil. These guidelines will also cover the safe initiation of treprostinil for chronic use.

### INFORMATION:

- I. According to hospital policy, it is preferred that treprostinil intravenous continuous infusions and subcutaneous infusions only be initiated or continued in an adult intensive care unit (preferably MICU, CCU, or CTICU) or 6 North telemetry bed.
- II. Initiation (for chronic use):
  - A. Initiation should be performed under the direction of a pulmonary hypertension specialist or with direct consultation from a cardiologist or pulmonologist (required upon admission in patients already on therapy).
  - B. Before any treprostinil doses may be sent from Pharmacy, appropriate paperwork must be completed and reimbursement approval must be obtained from the home infusion service supplying treprostinil (ACCREDITO or CuraScript IP). Copies of the application process may be obtained by contacting [1-800-9FLOLAN](tel:1-800-9FLOLAN) or [1-866-474-8326](tel:1-866-474-8326). Once approval is obtained provide a copy of approval confirmation to Pharmacy IV Admixtures. In situations deemed life threatening by the attending physicians exceptions to this enrollment criteria are allowed.
  - C. The decentralized pharmacist will review each order and document the following in the SCM order and in the patient's medical record:
    - i. Dose in nanograms/kilogram/minute (ng/kg/min)
    - ii. Patient's Dosing Weight (The weight when first initiating treprostinil will serve as the dosing weight for **all** future epoprostenol dosing, IT DOES NOT CHANGE).
    - iii. The concentration of treprostinil
    - iv. The rate to be administered in mL / hour and ml/day
    - v. Route of administration: subcutaneous or intravenous
    - vi. All dose calculations require a double check by another pharmacist
  - D. 48-hour dose prepared by Pharmacy
    - i. For subcutaneous treprostinil, CADD syringe pump will be used and the pharmacy will draw up a patient specific dose in the IV room
    - ii. Intravenous doses will also be compounded in the IV room
    - iii. **See Administration section for additional comments**
  - E. Initiate treprostinil at no more than 2 nanograms / kg / min.
  - F. Increase by 1-2 nanograms / kg / min every 24 hours as tolerated.
  - G. Changes in treprostinil concentration may be required for patients on intravenous treprostinil and weighing more than 90 kg or at doses above 5 nanograms / kg / min.

- H. A change in concentration may be warranted at any time that daily intravenous infusion is greater than 86 mL / 24h.

III. Transition from outpatient to inpatient infusion for continuation of therapy:

- A. Patients may use own Continuous Ambulatory Delivery Device (CADD) pump and medication for up to 24 hours after admission.
- B. **Do not** discontinue existing treprostinil infusion until new drug supply from Pharmacy is available.
- C. Determine home treprostinil prescription by calling 1-800-9FLOLAN or 866-474-8326 (there are two specialized pharmacies that distribute this medication). Obtain the following information for the patient: (Clinical support desk for epoprostenol available 24 hours, 7 days a week).
  - i. Dose on file in **nanograms / kg / min**
  - ii. Dosing weight in kg (Note: this weight may differ from current weight but infusion calculations are ALWAYS based on the initial dosing weight)
  - iii. Concentration of CADD pump cassette in **nanograms / mL**
  - iv. Rate of CADD infusion per day in **mL / 24 hours**
  - v. Number and strength (mg) of vials used to mix the infusion.
  - vi. Note: If treprostinil is administered subcutaneously, then undiluted drug is drawn into the 3 mL syringes and placed into the CADD pump.
- D. **Always confirm this information with the patient/caregiver** by speaking with them and documenting the infusion settings on the CADD pump. The prescription on file at the specialty pharmacy may not reflect current dosing.
- E. The rate of treprostinil in nanograms / kg / min, mL / 24 hours, and mL / hr, as well as the patient's dosing weight will all be documented in the SCM order and in the patient medication record.

IV. Administration:

- A. Obtain a secondary means of IV access, either central or peripheral line prior to initiation. This is also necessary on admission for maintenance / continuation of home therapy.
- B. **Do not interrupt treprostinil infusion.**
- C. Do not FLUSH central line containing treprostinil.
  - i. Label IV tubing and central line lumen with "Do not flush" sticker.
- D. No other medications should be administered through the same line.
- E. Do not change dose based on daily weights.
  - i. Use dosing weight determined at initiation of treprostinil (on file with specialty pharmacy). **Note** – this weight may be significantly different than patient's current weight.
- F. Home CADD pumps:
  - i. Patients may use own CADD pump and medication for up to 24 hours after admission. If their hospital stay is anticipated to be greater than 24 hours, they will be converted within that 24 hour time period to hospital supply of treprostinil and medication will be administered with hospital infusion pumps.
    - 1. A secondary infusion pump must be available in the patient's room at all times in case of primary pump failure.
  - ii. Patients must use own CADD pump and supplies for the entire admission if receiving subcutaneous treprostinil
    - 1. After 24 hours, medication for the syringe pump should be sent from central pharmacy.

- G. If the patient was receiving treprostinil prior to admission, the patient's home concentration and infusion rate will be used.
- H. Change IV tubing every 96 hours.
- I. Change treprostinil (syringe or continuous infusion) at least every 48 hours.
- J. Treprostinil stability:
  - i. 48 hours at room temperature or refrigerated

V. Calculations for **intravenous** treprostinil:

- A. Verify the concentration of the patient's home CADD cassette (This concentration should correlate with the concentration provided by the specialty pharmacy clinical support desk and the patient):
  - i. To determine total milligrams in CADD pump patients are instructed to draw a certain volume (mL) of 1, 2.5, or 5 mg / mL medication to mix with CADD pump cassettes = **C** (mg)
  - ii. Concentration (mg/mL) = **C** ÷ by volume (mL) of diluent in CADD cassette (usually 100 mL) = **D** mg / mL
  - iii. **D** x 1,000,000 (nanograms/miligram) = **E** ng / mL
- B. Convert Patient's CADD pump rate which is in **mL / 24 hours** to a dose in **ng / kg / min** (This rate should correlate with the rate provided by clinical support desk and/or the way the patient is currently administering the medication).
  - i. **E** (ng / mL) x CADD pump rate (mL/24 hours) = **F** ng / 24 hours
  - ii. **F** (ng / 24 hours) ÷ by 24 hours in a day = **G** ng / hour
  - iii. **G** (ng / hour) ÷ 60 (min / h) = **H** ng / min
  - iv. **H** (ng / min) divided by patients dosing weight (kg) = **I** ng / kg / min
- C. Convert CADD pump rate which is in **mL / 24 hours** to the standard infusion pump which is mL / hour.
  - i. CADD pump rate of mL/24 hours ÷ 24 hours = **J** mL/hour (round to one decimal place, ex. 1.76 mL/h ~ 1.8mL/h)

VI. Calculations for **subcutaneous** treprostinil:

- A. Verify that the patient draws 3 mL, of undiluted medication, from a 1 mg / mL or 2.5 mg / mL vial into a 3 mL syringe. Therefore the patient's concentration is that of the vial = **D** mg / mL.
- B. Verify the rate on the patients pump (mL / 24 hours).
- C. To calculate dose:
  - i. **D** mg / mL x 1,000,000 ng / mg = 500,000 ng / mL
  - ii. 500,000 ng / mL x patient rate in mL / 24 hours = **F** ng / 24 hours
  - iii. **F** (ng / 24 hours) ÷ by 24 hours in a day = **G** ng / hour
  - iv. **G** (ng / hour) ÷ 60 (min / h) = **H** ng / min
  - v. **H** (ng / min) divided by patients dosing weight (kg) = **I** ng / kg / min

VII. Additional Contact:

- A. If additional questions, please contact:
  - i. Steven Dunn, Pharm.D.
  - ii. Jeremy Flynn, Pharm.D.
  - iii. Tracy Macaulay, Pharm.D.

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