The Benefits of Inhaled and Infused Therapies

Session Description
This session will discuss the benefits of inhaled and infused therapies and how they are used to treat patients with PAH. An overview of current FDA-approved inhaled and infused prostacyclin therapies, as well as emerging prostacyclin infusion therapy will be discussed. Panelists will also address the challenges and potential complications unique to each delivery method. Attendees will also gain insight into how providers select a therapy best suited for the PH patient, including discussing patients’ goals of therapy.

Speakers
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Objectives
Attendees will:
• Gain an overview of Food and Drug Administration (FDA)-approved inhaled and infused prostacyclin therapies, as well as those that may be in the pipeline for development
• Learn about important factors that a PAH patient should consider when deciding on inhaled or infused prostacyclin therapies
• Discover side effects associated with prostacyclin infusion and inhaled therapies

Overview of FDA-approved inhaled and infused prostacyclin therapies for PAH
• Prostacyclin and its biologic effects:
  o Prostacyclin belongs to the prostanoid family: an eicosanoid (a series of signaling molecules)
  o Prostacyclin is naturally occurring, produced by the inner layer of the lung blood vessels (“endothelium”)  
  o Has vasodilatory (opens up blood vessels), platelet aggregation inhibitory (prevents platelet clumping) and anti-smooth muscle proliferative properties (slows the growth of the smooth muscles of the vessels)
• Synthetic prostacyclins/prostacyclin analogues:
  o Epoprostenol (Flolan® and Veletri®) – Intravenous
  o Treprostinil (Remodulin®) – Intravenous or subcutaneous
  o Iloprost (Ventavis®) – Inhaled, 6 to 9 times a day
  o Treprostinil (Tyvaso®) – Inhaled, 4 times a day

Infused Prostacyclin Therapies in Development:
• Implantable Treprostinil (Remodulin®): Implantable pump
• Trevyent™: Treprostinil Patch pump

Common Side Effects of Inhaled Prostacyclin Therapies
  o Cough – the most common side effect can be lessened in several ways
Headache or other prostacyclin side effect management may require temporarily reducing the dose until side effects are tolerable; talk to your health care team before reducing your PH-specific therapies.

Common Side Effects Associated with Prostacyclin Infusion Therapies

- Potential acute side effects
  - Hypotension (low blood pressure), nausea, flushing, headache, diarrhea, jaw pain
- Potential chronic side effects
  - Flushing, headache, diarrhea, jaw pain
  - Thrombocytopenia (decrease in platelet count), increase risk in bleeding
- Side effects often get better over time and the improvement in PH symptoms with therapy often outweighs the side effects of treatment

Important Considerations when Choosing Inhaled or Infused Prostacyclin as a Patient Prescription

- When inhaled therapy or IV infused therapy may be more appropriate
  - Inhaled Therapy
    - Patients with lung disease might want prostacyclin therapy going only to the areas of the lungs that can receive air properly; infused therapy could cause what doctors call “V/Q mismatch”
    - Less severe PAH
    - Less systemic side effects as drugs “go to lung directly”
    - May not have tolerated oral prostacyclin therapy
  - Infused Therapy
    - More severe PAH
    - Desire for aggressive upfront treatment vs. failure of other therapies
  - Patient selection
    - Inhaled therapies require a high level of compliance
    - Infused prostacyclin therapies are effective but also more complex
      - Needs back-up caretaker in case of emergencies
      - Short half-life of epoprostenol (Flolan® and Veletri®) require immediate medical attention if infusion is interrupted for any reason
      - Requires attention to detail and manual dexterity to mix medication correctly
      - Vigilance and cleanliness to prevent infusion line infection
      - Extensive patient education on proper care of the infusion