Basic Water Treatment for Hemodialysis

Fundamentals of Water

- **Sources**
- **Maximum allowable contaminant levels**
- **(AAMI Standards)**
- **Water Analysis**

Basic Pre-Treatment of Hemodialysis Water Systems

- **Placement of Pretreatment equipment (order of placement)**
- **Blending Valves**
  What do they do?
  When are they necessary?
- **Booster Pumps**
  What do they do?
  How are they initiated?
- **Sediment filters,**
  (Multi-Cartridge Housings, Hurricane Filters, Multi-Media Depth Filters)
- **Carbon Filters,**
  What is Empty Bed Contact Time?
  How many and how much is required?
  How to properly size Carbon Filters?
  How Carbon Works
  How to know when Re-bedding is necessary
- **Softeners / Brine Tanks**
  When are softeners needed?
  How big do they need to be?
  How to properly size softeners
  Principals of Ion Exchange
  Regenerating Softener Resin
  How to know when re-bedding is necessary
- **Reverse Osmosis Pre-Filtration**

Reverse Osmosis for Hemodialysis Water Systems

- **Basics of Osmosis and Reverse Osmosis**
- **Detailed look at Reverse Osmosis Membrane**

Reverse Osmosis for Hemodialysis Water Systems (con't)

- **What features should the Reverse Osmosis Machine have?**
- **Start-up and shut-down**
- **Monitoring the RO and all of its functions**
- **Direct Feed and Tank Feed Systems**

Basic Post Treatment Equipment

- **Reservoirs**
  How big does the reservoir need to be?
  Reservoir requirements
  Monitoring the reservoir
  Disinfecting the reservoir

- **Repressurization Pumps**
  What do they do?
  How are they initiated?
  How are they protected?

- **Final Filtration for Hemodialysis Water Systems**
  Ultra Filters
  Hollow Fiber Absolute Filters
  Ultra Violet Irradiation Units

Water Testing & Monitoring

- **What tests to perform?**
- **When tests are performed?**
- **What to record and why?**
- **Daily Log Sheets**

Disinfecting and Cleaning

- **What should be used to disinfect?**
- **How often should the system be disinfected?**