



Strategies for Improving Adequacy

Decreasing the Risk of Premature Death

✓ **Educate Your Dialysis Team**

- Review Proper Procedure for Drawing Lab Samples
 - Lab Samples Drawn Incorrectly Can Cause Incorrect Results
 - Audit Technique of Every Person to Verify Correct Procedure is Used
 - Document Quarterly Audits to Monitor Continued Compliance with Procedure
- Review Meaning of Adequacy Lab Results
 - **URR \geq 65 KT/V \geq 1.2**
- Review Symptoms of Uremia
 - Nausea, Vomiting, Poor Appetite, Yellow Skin Color, Weakness, Infections, Bleeding
- Do Skills Check and Retraining for Cannulation Competency
- Reuse Dialyzer Baseline Measurement for Total Cell Volume Should be Measured Prior to the First Treatment Use to Assure Proper Dialyzer Clearance

✓ **Ensure Proper Lab Sampling Is Performed**

- **Single Pool Variable Volume Model** is Recommended by K/DOQI
 - Calculates KT/V Using Pre and Post Dialysis BUN Samples Drawn During a Single Hemodialysis Treatment
- Drawing Pre BUN Sample
 - Should be Drawn Immediately Prior to Treatment Initiation
 - Avoid Dilution of Pre BUN with Saline or Heparin
 - To Avoid BUN Sample Dilution with Heparin from CVCs, Withdraw 10 ml of Blood from the Arterial CVC Port Prior to Taking the Pre BUN Blood Sample (Re-infusion of This 10ml Blood Withdrawn is Optional)
- Drawing Post BUN Sample
 - Should be Drawn Using the **Slow Flow or Stop Pump Technique** (see below) to Prevent Dilution of Post BUN Sample with Recirculating Blood and Minimize Effects of Urea Rebound
 - At the Completion of Hemodialysis, Turn **Dialysate Flow Off**, Decrease **UFR to Lowest Setting or Off** and Decrease **Blood Flow Rate to 50-100 ml/min for 15 seconds**
 - **Slow Flow Sampling:** With Blood Pump Still Running, Draw Post BUN Sample From the Arterial Sample Port Closest to the Patient
 - **Stop Pump Sampling:** Stop the Pump. Clamp Arterial and Venous Blood Lines. Clamp Arterial Needle Tubing. Draw the Post BUN Sample from the Arterial Sample Port Closest to the Patient
- Discontinue Treatment Per Facility Procedure



Strategies for Improving Adequacy

Decreasing the Risk of Premature Death

- ✓ **Teach Your Patient About Adequate Dialysis**
 - “Know Your Adequacy Number” **URR \geq 65, KT/V \geq 1.2**
 - Complete Entire Treatment Time – Do not Come in Late or Sign off early
 - Encourage Patients to Have an AV Fistula Placed – Less Likely to Clot or Get Infected and They Last Longer

- ✓ **Monitor Patient’s Treatment Prescription**
 - Review Lab Results Immediately when Received
 - Make Treatment Prescription Changes to Improve Adequacy
 - Increase Blood Flow Rate
 - Increase Dialysate Flow Rate
 - Use Dialyzer with Greater Ability to Remove Urea (KOA)
 - Increase Treatment Duration Time
 - Implement New Treatment Physician Orders for Inadequate Lab Results with Next Dialysis Treatment
 - Repeat Adequacy Lab Draws, with Physician Order, when Results Appear Incorrect
 - Verify Prescribed Dialyzer Type is Used Every Treatment
 - Verify Prescribed Dialysate Flow is Used Every Treatment
 - Maintain Prescribed Blood Flow Rate Throughout Entire Treatment
 - Avoid Hypotensive Episodes that Decrease Dialysis Delivery
 - Avoid Excessive Ultrafiltration
 - Slow the Ultrafiltration Rate
 - Increase Dialysate Sodium Concentration
 - Reduce Dialysate Temperature
 - Correct Anemia
 - If Blood Flow Rate is Decreased During Treatment, Re-adjust Blood Flow to Prescribed Rate As Quickly As Possible
 - Treatment Time Begins When Prescribed Blood and Dialysate Flows are in Place
 - Notify Physician If Access is Unable to Meet Prescribed Blood Flow Rate **Every Treatment** Until Access Problems are Resolved
 - Monitor Arterial Pressure for Signs of Inadequate Flow
 - (Negative Pressure $>$ -260 is Considered Inadequate)
 - Monitor Venous Pressure for Signs of Excessive Pressure
 - (Venous Pressure $>$ $\frac{1}{2}$ of Blood Flow Rate May Indicate Excessive Pressure, i.e.: If Blood Flow Rate 400, Venous Pressure should be $<$ 200)

Strategies for Improving Adequacy

Decreasing the Risk of Premature Death

✓ Evaluate Vascular Access Functioning

- Visit <http://www.fmqai.com/ESRD/esrd.htm> to Learn About the “Fistula First” Initiative
- Promote AV Fistula Use
- Decrease Central Venous Catheter Use
- Assess Access Status Before Every Treatment
- Utilize the “Sleeves Up” Protocol for Converting AV Grafts to AV Fistulas
Visit <http://www.fmqai.com/ESRD/tools.htm> for Information on Change Concept 6
- Become Proficient in Your Access Cannulation Skills
- Verify Throughout Treatment that Prescribed Blood Flow Rate is Being Met
- Refer Patient for Evaluation of Access if Unable to Maintain Prescribed Blood Flow Rate during Dialysis
- Monitor Arterial Pressure Throughout Treatment and Maintain Less Than -250 mmHg
- Monitor Venous Pressure Throughout Treatment and Maintain Less Than $\frac{1}{2}$ the Blood Flow Rate (i.e.: If Blood Flow Rate is 400, Venous Pressure Should be Less Than 200)

✓ Form an Adequacy QI Team

- Include Medical Director, Charge Nurse, Social Worker, Dietitian and Other Team Members that can Impact Care
- Include Referring Nephrologists with High Volume Patient Census
- Schedule Regular Monthly Adequacy Team QI Meetings with Dates and Times so Members Can Plan Ahead
- Evaluate your Current Process for Improving Adequacy and Your QI Plan
- Identify Barriers in your Process that Contribute to Poor Adequacy and Their Root Causes
- Evaluate the Actions Already Implemented to Improve Adequacy
 - Were They Effective? Did They Work? If Not, Why Not?
- Implement New Action Steps and Strategies to Address Root Causes
- Review Monthly Adequacy Lab Data. Identify Patients Not Meeting Adequacy Goals and Reasons Why
- Develop a Patient Specific Care Plan for All Patients Not Meeting Adequacy Goals to Address Barriers and Issues Impacting Their Adequacy
- Review This Care Plan with the Patient and All of the Patient's Care Givers
- Update and Evaluate Your Current Adequacy QI Plan as Needed