

**BEST PRACTICES**

Adherence to procedures

**Keeping Kidney Patients Safe**[www.kidneypatientsafety.org](http://www.kidneypatientsafety.org)**Optimal Inpatient Hemodialysis**

UPMC Shadyside Hospital

**Contact Information**

Nicolette C. Mininni, RN, MEd, CCRN  
Advanced Practice Nurse, Critical Care  
UPMC Shadyside  
Phone: 412-623-6314  
Email: MininniNC@upmc.edu

**Category:** Adherence to procedures  
**Type of Facility:** Hospital-based inpatient unit  
**Number of Patients:** 8 bed unit; 5000 treatments per year

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**Background**

UPMC Shadyside Hospital maintains and staffs an 8 bed inpatient hemodialysis unit that performs over 5000 inpatient hemodialysis treatments per year. Hemodialysis treatments are also performed by the hemodialysis nurses on patients in the intensive care units. The staff of hemodialysis nurses and technicians are also responsible for hemodialysis services at two other hospitals within the UPMC Health System. Nursing staff includes a Unit Director, 18 nurses, 9 technicians and an Advanced Practice Nurse. Two nephrology groups, totaling 36 physicians, provide care for patients at UPMC Shadyside and the two closely associated system hospitals.

Over the past four years, staffing requirements for dialysis nurses and technicians have increased substantially, driven by more treatments per hospital and inclusion of the two additional hospitals. An assessment was conducted of the orientation, training and ongoing education needs for both existing and new nursing and hemodialysis technician staff. Key stakeholders in this process included the Medical Director, Unit Director, Advanced Practice Nurse, senior nurses, lead technician and biomedical engineer.

This assessment identified several opportunities for improvement, and prompted a re-examination of the entire staff training process. Key deficiencies included: outdated and contradictory policies and procedure, gaps in reference materials, inconsistencies in staff practice, and inadequate training in patient safety.

These deficiencies:

1. Increased the risk for patient injury
2. Produced inconsistencies in bedside practice
3. Increased staff dissatisfaction and turnover
4. Suggested the lack of standards for evaluation of performance
5. Implied the absence of best practices
6. Impaired the validation of competencies for all staff



Taken together, these deficiencies compromised the ability to establish standardized training, best practices, and an environment of patient safety.

### **Policies and activities implemented**

The process of re-engineering staff training began with developing a unique definition of optimal inpatient hemodialysis:

“Optimal Inpatient Hemodialysis” is a Hemodialysis Treatment that:

- Is Safe
- Effective in improving the chemical abnormalities and volume disorders of kidney failure
- Well tolerated
- Allows for obtaining all necessary lab samples and data
- Provides necessary medications at the correct time
- Keeps the patient comfortable and calm
- Provides a smooth transition to the next step in care
- Ensures that potential problems are anticipated, prevented, and treated effectively

Because patient safety was identified as the highest priority in a dialysis treatment, a new standard of enhanced patient safety was established based on:

- Know your patient
- Know the policies and procedures for a safe, correct hemodialysis treatment
- Know the risks & complications of the every procedure you perform
- Emphasize best nursing practice
- Use clear communication
- Provide full documentation
- Ask, don't assume; clarify
- No “work-arounds”
- When rushed, *slow down*
- For the patient, dialysis is *never* routine

The Hemodialysis Nurses' responsibility for patient safety was crystalized into a single question, to be asked and answered before every treatment begins:

***“Is it safe and appropriate to dialyze this patient, now, with the orders I have in hand?”***

Every nurse is empowered to delay, cancel or interrupt a hemodialysis treatment if the answer is not “YES”.

### **Nursing and technician workflow**

Inpatient hemodialysis differs from outpatient treatments in several critical facets:

- The medical condition of the patient may vary substantially from one treatment to the next, including volume status, hemodynamic stability, infection status, mental status
- Multiple medications and ongoing treatments may affect the patient's response to hemodialysis



- Ongoing complex nursing care must be provided
- Before, during and after a treatment, various blood samples may be obtained, and medications and blood products may be given
- Patients are much more likely to have pain, mental status changes, hemodynamic instability, arrhythmias, and respiratory difficulties
- Diagnostics tests and treatments that precede or follow a hemodialysis treatment may have major effect on how the dialysis is conducted and how the patient responds.

The workflow of the hemodialysis nurse was re-defined into a 4-step process:

1. Collect information about the patient's condition, before the initiation of treatment, from:
  - The patient's medical record
  - The patient's nurse, via "nursing report"
  - A bedside assessment of patient
2. Review and evaluate the current hemodialysis orders.
3. Formulate a treatment plan that describes all of the nursing duties that must be performed, for the patient, vascular access and hemodialysis machine before, during and after the treatment.
4. Determine, based upon the information collected, if it is "safe and appropriate to dialyze this patient, now, with the orders I have in hand."

By instituting this process, based on UPMC Shadyside's Hemodialysis Rubric (Attachment A), they sought to insure that all necessary medications are administered at the appropriate times with respect to the dialysis treatments. For example, the nursing report process assures that a discussion will occur, when needed, between floor nurse and dialysis nurse regarding administration of antihypertensive and diabetic medications prior to any particular hemodialysis treatment.

In addition, in conjunction with their pharmacists, they developed a list of antibiotics that could, or should not, be given during a hemodialysis treatment.

To facilitate the revised workflow process, UPMC Shadyside developed a Hemodialysis Report Form. (Attachment B). This non-permanent template allows the dialysis nurse to organize information from nursing report, chart review and bedside assessment into a coherent description of the patient's current status, the treatments and testing required, and potential problems to be anticipated during the treatment. It also provides contact information for the attending nephrologist, resident, and bedside nurse, and describes the steps in care that will follow the hemodialysis treatment.

Additional resources that could have been utilized for this project would have been utilizing the hospital Quality Improvement Department.

This project has changed the culture of the Hemodialysis Unit from managing patients in a timely manner, to managing patients with safety and optimum patient outcomes as the priority.