Care of the Patient with Chronic Ambulatory Peritoneal Dialysis (CAPD)

On-Line Competency Program
State n Island University Hospital
September, 2011

See Patient Care Manual for all CAPD policies and procedures and for additional Information. NSG-II-P-3.10, NSG-II-P-3.3 B, NSG-II-P-3.1, NSG – II-P-3.2
All CAPD supplies located in Storeroom. Dry heat warmer located on 3A.
Objectives

At the end of the presentation, the learner will be able to:

- Describe the basic principles of peritoneal dialysis (PD).
- Identify the steps to complete a PD exchange using Baxter’s Ultrabag system.
- Describe measures to prevent infection.
- Review required documentation
Peritoneal Dialysis

- PD is the process of cleaning the blood by using the lining of the peritoneal cavity as a filter
  - Peritoneum acts as a dialyzing membrane.
  - Wastes, electrolytes, and water cross from the patient into the instilled dialysate.
Indications/Contraindications

Indications

- Acute renal failure
- Chronic renal failure
  - Reduces risk of retinal hemorrhage
  - Patients can perform it themselves
  - Does not require vascular access.

Contraindications

- Extensive abdominal surgery
- Severe vascular disease
**Principles of Dialysis**

**Diffusion:** Solute travel from an area of higher concentration to lower concentration across a semi-permeable membrane. Toxins, electrolytes, and some medications are Removed.
Principles of Dialysis

- **Ultrafiltration:** removal of water by osmosis.
  - Water moves from an area of lower concentration to an area of higher concentration across a semi-permeable membrane.
  - Fluid removal can be increased by increasing the tonicity of the dialysate (amount of dextrose).
    - PD solutions contain 1.5% dextrose, 2.5% dextrose, or 4.25% dextrose.
      - The greater the dextrose concentration in the dialysate, the more fluid removal.
Factors Which Affect Dialysis

- **Flow rate**: An increase in frequency of exchange increases electrolyte removal.
- **Temperature**: Temperature of dialysate improves clearance and comfort.
  - Warmed in dry heat warmer ONLY (range 98.6 – 100.4° F).
  - Dry heat warmer available on 3A
- **Dextrose increases osmolarity**
  - The higher the dextrose concentration the greater the water removal.
  - Dextrose can also be absorbed across the membrane and increase blood sugar.
Phases of PD

- **Fill**
  - Takes approximately 10 - 15 minutes
  - Usual volume is 2000-2500 mls

- **Dwell**
  - Usually 4-6 hours

- **Drain**
  - Takes approximately 20 minutes
  - Volume removed may be slightly less (patient has retained fluid indicating a positive fluid balance)
  - Slightly more (patient has lost fluid indicating a negative fluid balance)
  - The same (even fluid balance)
Access to the Peritoneum

- **Sterile technique required when connecting or disconnecting transfer set to the patient.**
- **Transfer set is clamped prior to opening to protect the PD catheter**
Tenckhoff Peritoneal Dialysis Catheter
Preparing for an Exchange

- Clean the work area
- Gather supplies (check expiration dates)
- Provide privacy: Close doors/curtains.
- Wash hands using antimicrobial soap.
- Limit visitors (anyone in the room during an exchange must wear a mask)
CAPD Exchange using Ultrabag System

- **Aseptic technique mandatory in making all connections!**
- **Check dialysis order for % of dextrose and fill volume**
  - Available in 1.5L, 2L, and 2.5L
- **Dialysate should be warmed to body temp using dry heat warmer**
- **Drained volume must be measured and documented**

**Additional items:**
- Blue non-serrated clamps (2)
- Sterile end-cap (“mini-cap”)
- Spring scale
- Face masks (2)
- Sterile gloves
Intraperitoneal (IP) Medication

- If IP medications are prescribed, they must be added to the dialysate in the pharmacy under strict sterile conditions.

- Medications that may be added include heparin, potassium, antibiotics.
  - Always verify contents of solution to MD order prior to instillation.
  - An appropriately written order contains volume, % dextrose, any additives, frequency and dwell time.
  - Always check expiration date.
PD Exchange: Critical Elements

- Identify patient and explain procedure
- Wash hands
- Apply sterile gloves
- Break the blue “frangible”
- Connect the patient access to the Ultrabag
- Clamp fill line with blue clamp
- Break the green “frangible”
- Open patient access, drain. (Takes approx 10 min)
- Close patient access, open fill line clamp, flush fill line for 5 seconds, clamp drainage tubing.
- Fill peritoneum (takes approx 15 min)
- Clamp fill line
- Disconnect ultrabag and recap with sterile “mini-cap”
- “Zero” spring scale. Weigh drainage
  - For “volume in” use: 1.5 L bag = 1.7 Kg; 2 L bag = 2.2 Kg; 2.5 L bag = 2.7 Kg
  - Weigh full drain bag + empty fill bag + 2 blue clamps
  - Calculate difference between volume out and volume in (in-out)
- Discard drainage in sewer system
- Wash hands. Complete documentation.
Documentation

- Peritoneal Dialysis Treatment Record. (Form # SI0528 – available on 3A)
- Observe fluid balance
  - Notify MD if patient retains 500 ml or loses 1000 ml or more for 3 consecutive runs
- Peritoneal Dialysis Treatment Record uses weight in Kg
  - $1 \text{ gm} = 1 \text{ ml}$ ($0.5 \text{ Kg} = 500 \text{ ml}$)
  - New record started every Monday with a zero balance and exchange #1
- Critical Care Patient Flowsheet
  - Convert weight to ml
  - Record net fluid loss in output section
  - Record net fluid gain in intake section
NOTE: Liter weight
1.5 L bag = 1.7 Kg
2 L bag = 2.2 Kg
2.5 L bag = 2.7 Kg

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<th>UNITS</th>
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Flow Sheet begins each Monday / Start with a zero balance / Begin each flow sheet with exchange #1

CUMMULATIVE FLUID BALANCE
Patient Monitoring

- *Daily weight (wet)*
- *Breath sounds*
- *Presence of edema*
- *Intake and Output (fluid balance)*
- *Blood pressure*
- *Other signs and symptoms of dehydration or fluid overload*
Patient Care/Education

- Patient care as for all chronic and acute renal patients
- Encourage nutrition and diet therapy.
- Observe skin
- Exit site care as per procedure
Complications of PD

- **Peritonitis**
  - **Signs and symptoms:** Rebound tenderness, fever, nausea, malaise, cloudy/brown outflow.
  - **Prevention:** Aseptic technique, hand washing. Care with any and all admixtures and catheter. Assess outflow for color and clarity. Send routine cultures as ordered.
- **Pain/discomfort:** Common with initial therapy
- **Tunnel infection/leakage around the catheter**
- **Fluid and electrolyte imbalance**
  - Notify MD if patient retains 500 ml or loses 1000 ml or more for 3 consecutive runs
- **Poor outflow (Drain bag must be placed below the level of the abdomen)**
  - Constipation may inhibit flow
  - Check for kinked tubing
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