Peritoneal Dialysis Education for Hospital Staff

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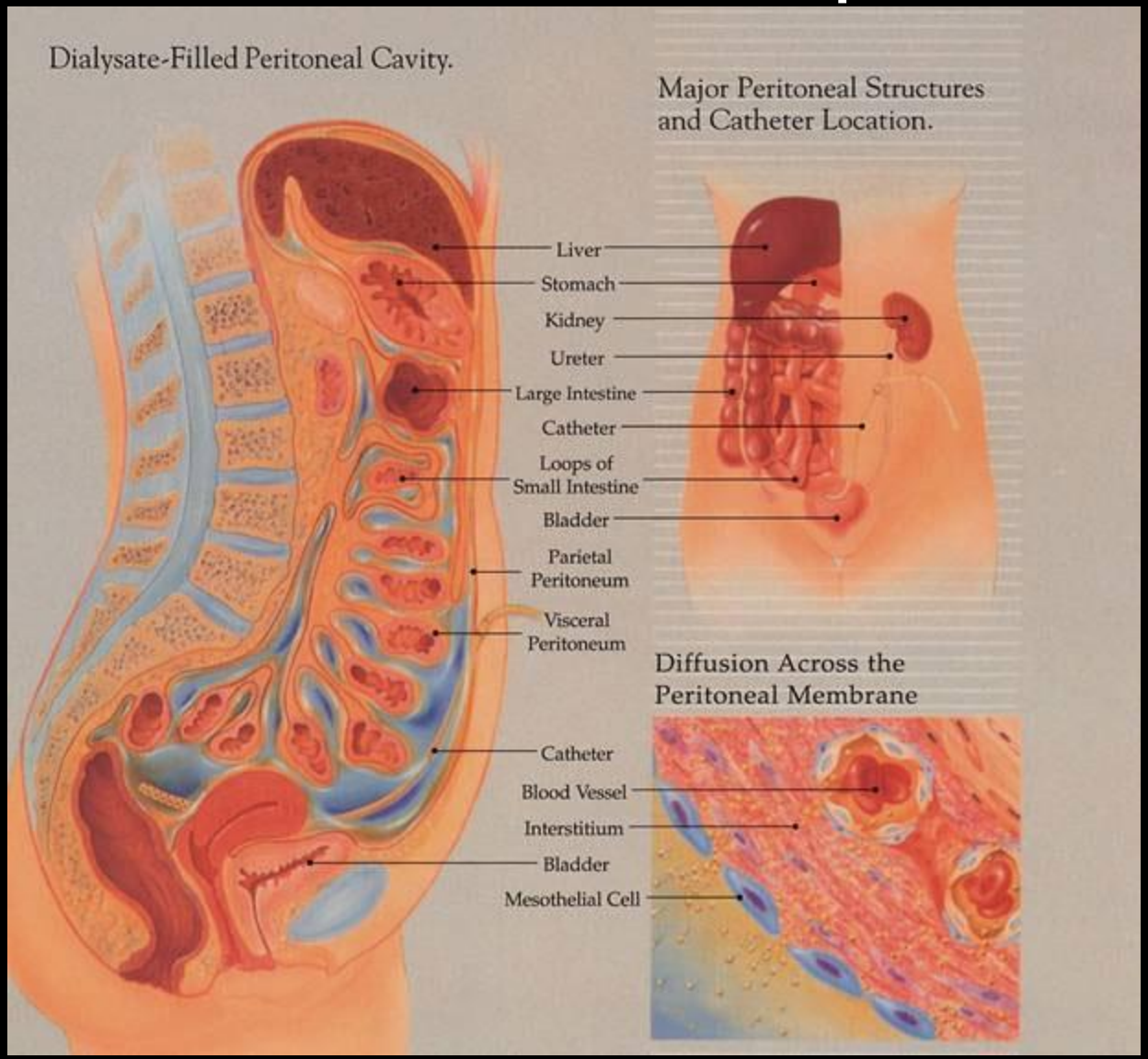
What is Peritoneal Dialysis?

- Home therapy
- Continuous treatment - 24 hours a day / 7 days a week
- Cleans waste products from the blood
- Removes excess fluid

Where does PD take place?



- The peritoneal cavity in the body.

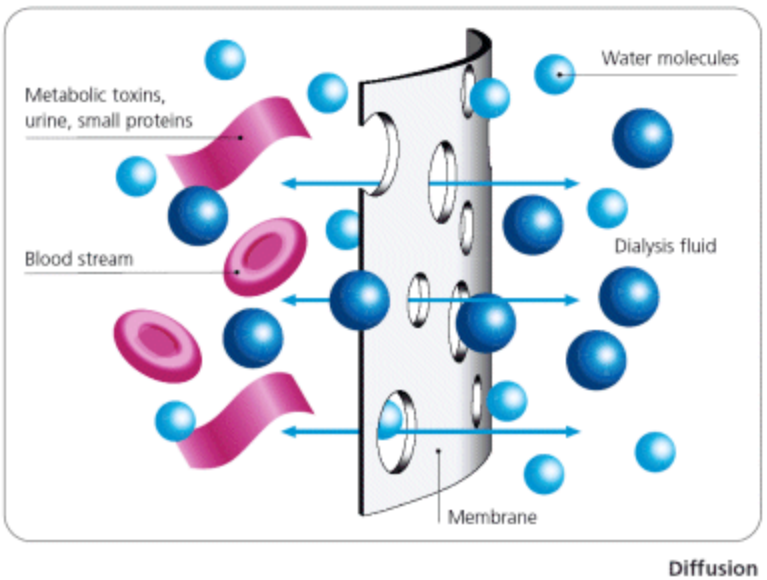
What is necessary to do PD?

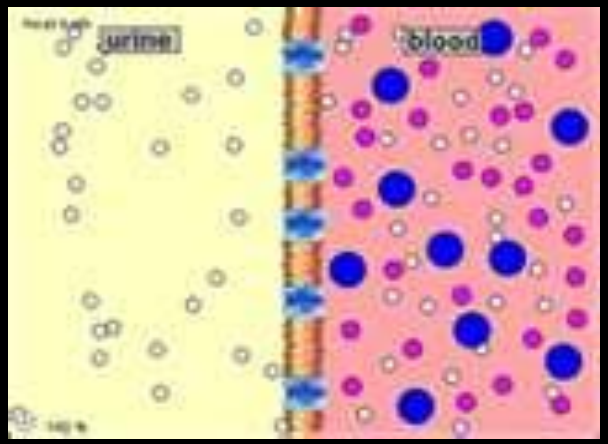
- A semipermeable membrane
- A blood supply
- An artificial access in the body
- Dialysis solution

What is the semipermeable membrane?

- Covers and supports the internal organs in the peritoneal cavity
- Has tiny holes that allow water and particles to pass through
- About the same surface area as the skin
- Living tissue with a rich blood supply

The membrane





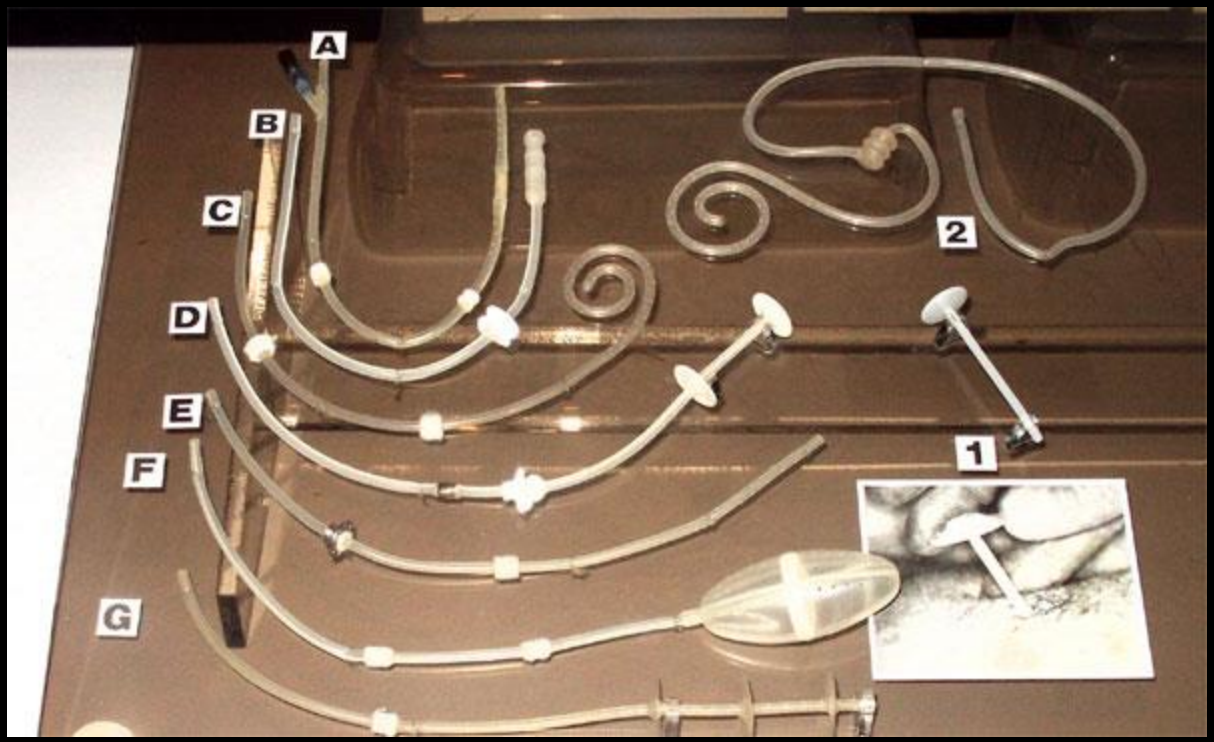
Where is the blood supply?

- Capillaries in the membrane supply the blood for dialysis
- The blood vessels are small and provide a blood flow rate of 25 ml/minute
- The peritoneal membrane contains millions of blood vessels

What is the artificial access?

- The peritoneal dialysis catheter
- It is surgically placed 3-4 weeks before it is used for dialysis
- About as big around as a pencil but soft
- Extends several inches outside of the abdomen
- Has two dacron cuffs that the body's tissue grows into
- Is placed below and to the side of the belly button

The Peritoneal Dialysis Catheter



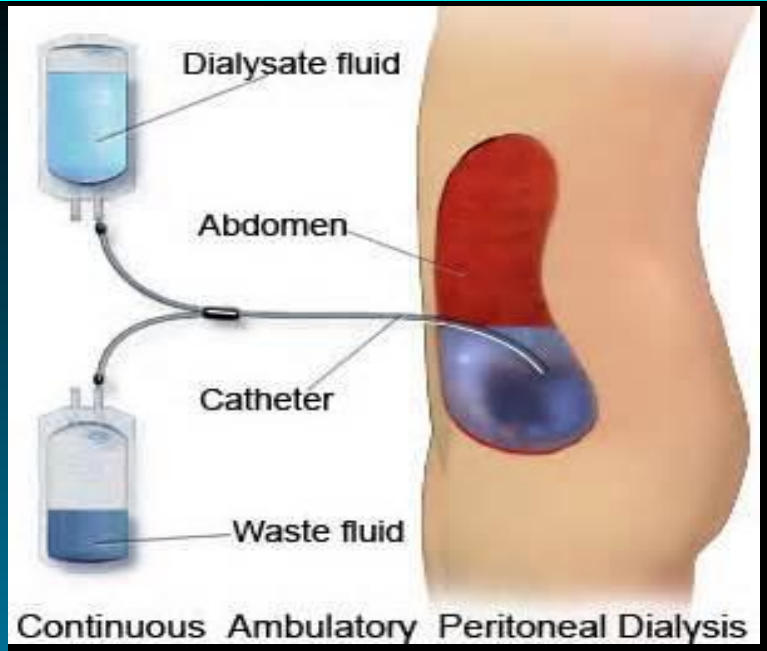
What is dialysis solution?

- The liquid that creates the cleaning and fluid removing actions of dialysis
- Called peritoneal dialysate
- Sterile
- Made of a sugar base
- Three basic strengths of solution

How do all of the parts fit together?

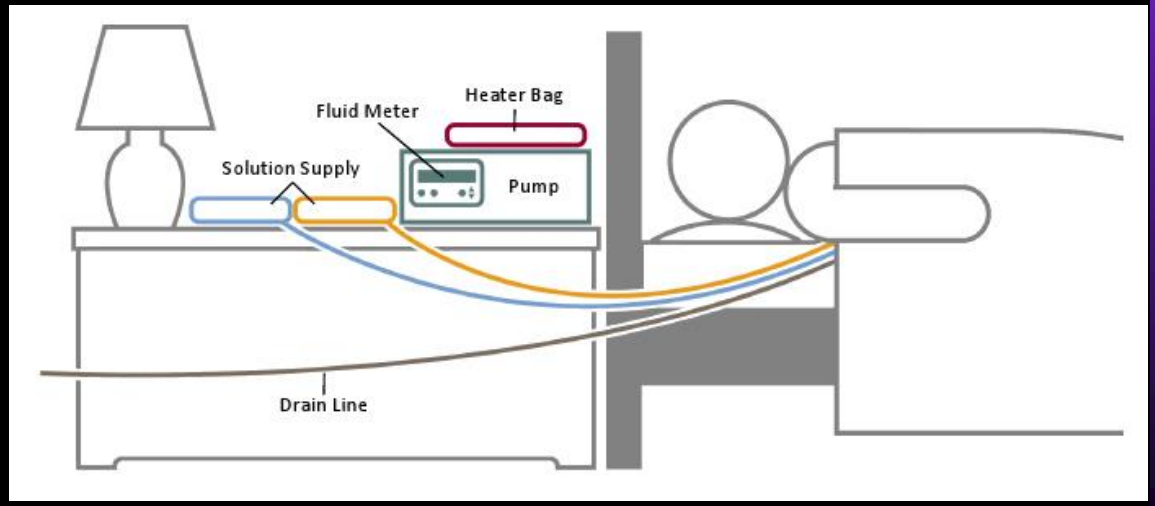
- The peritoneal cavity provides a space for the dialysis to take place
- It becomes the "artificial kidney"
- The catheter is the way that the dialysis solution gets into the body

There are two kinds of peritoneal dialysis


Dialysate fluid
Abdomen
Catheter
Waste fluid
Continuous Ambulatory Peritoneal Dialysis

- CAPD

- CCPD


Heater Bag
Fluid Meter
Solution Supply
Pump
Drain Line

C.A.P.D.

- Continuous Ambulatory Peritoneal Dialysis
- Most patients start with this method
- It is the most portable
- Each fluid change is called an “exchange”
- Each exchange takes 30-40 minutes
- Performed manually every 4-6 hours
- The overnight exchange remains in the peritoneal cavity for up to 9 hours
- Total of 4-5 exchanges each day

How is C.A.P.D. done?

- A series of drain, fill and dwell
- The system includes a fresh bag of solution, an empty bag to drain in to and sterile tubing to attach to the catheter
- Additional supplies are a new sterile cap, clamps and a mask

C.C.P.D.

- Continuous Cycling Peritoneal Dialysis
- NKC patients use the Baxter Home Choice cycler
- Most of the treatment occurs overnight with 1 or 2 daytime exchanges
- Well-suited for the working person

What does the cycler do?

- Warms the solution
- Measures the solution going in and coming out of the belly
- Drains the solution from the body
- Fills the belly with fresh solution
- Repeats the cycle according to the doctor's prescription and how the machine has been programmed
- Produces an alarm whenever a task cannot be completed

Other facts about C.C.P.D.

- Frees up the day from doing multiple exchanges
- Machine, tubing and solution bags are prepared before bedtime
- At bedtime the catheter is attached to the cycler tubing
- Runs on electricity or a generator

Why do people choose P.D.?

- Home therapy
- Only a monthly visit to the dialysis clinic
- Able to perform independently
- Flexible schedule
- Less stress on the body than 3 day a week hemodialysis
- More liberal diet than 3 day a week hemodialysis
- No dialysis needles
- Portable and easy to travel with

Some personal reasons for choosing P.D.

- Needle phobia
- Desire for independence
- Lifestyle: employment and social
- Desire for a more flexible diet
- Proximity of a dialysis center to home
- Personal desire to control own treatments
- Better flexibilty for individual lifestyle
- Easier to travel

The down side of P.D.

- Body image changes due to the catheter and fluid in the abdomen
- Daily schedule
- Probable weight gain
- Need for storage for supplies

Medical reasons for doing P.D.

- Preserve residual kidney function
- Save vessels for future hemodialysis
- Hemodialysis access failures
- Hemodialysis complications
- Congestive heart failure
- Transplant expected in 6 months

Complications of PD

Infectious:

- exit-site inflammation (flare, suppurative secretion, granulation)
- peritonitis (turbid dialysate, abdominal pain, fever)

Non-infectious:

- hernias
- hydrothorax
- hemoperitoneum

Peritonitis in the PD Patient

- Patients with peritonitis **usually** present with cloudy fluid and abdominal pain.
- Assess patient for possible source of infection (i.e. Catheter exit site, break in technique, recent contamination, constipation or diarrhea, cracks or leak in the catheter or transfer set).

Peritonitis in the PD Patient

- Prevention is the most important intervention
- Treatment (usually with intra-peritoneal antibiotics)

Hemoperitoneum

- Definition:
- • Bloody peritoneal effluent
- Presentation:
- • scary ! (not as bad as it looks)
- • must consider “benign” and “serious” causes

Hemoperitoneum (cont'd)

- "Benign" Causes:
- • menstruation
- • ovulation
- • ruptured renal or ovarian cysts
- • trauma
- • coagulopathy

- Serious Causes:
- • ischemic bowel
- • colon cancer
- • pancreatitis
- • encapsulating peritoneal sclerosis
- • urologic cancer

NKC Hospital Service Responsibilities

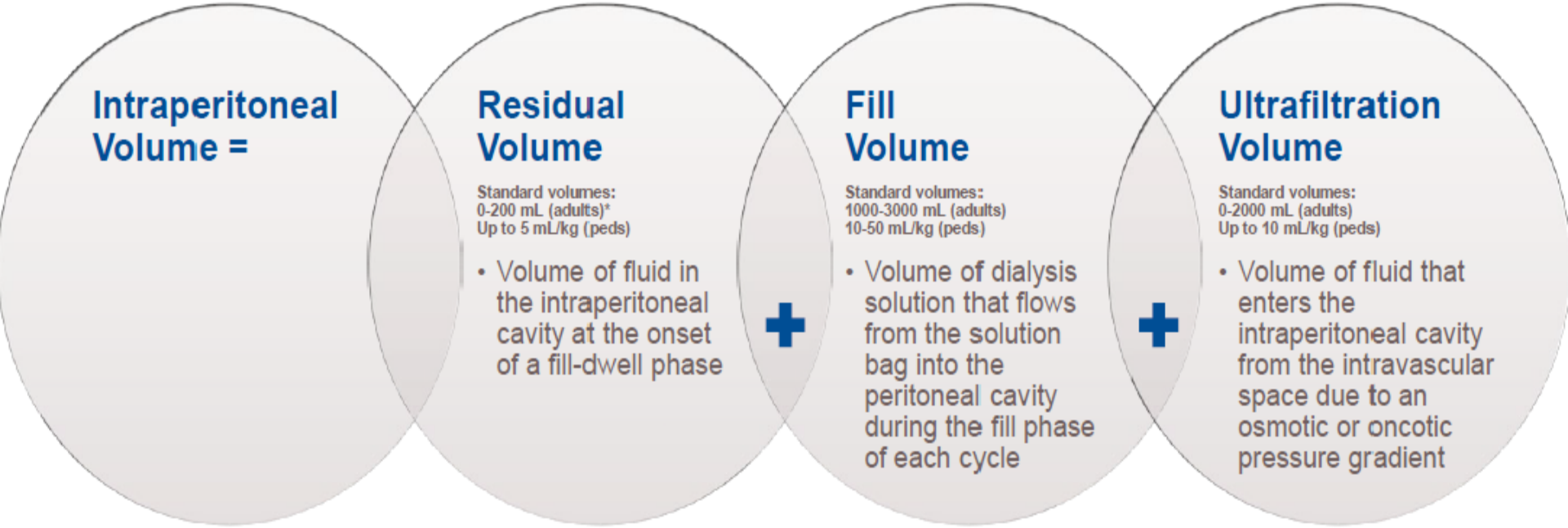
- Obtain the dialysis orders and interface with the nephrologist
- Setup the machine and connect the patient
- Start the PD flow sheet and review with staff
- Stay through the first cycle to ensure all is well
- Respond to hospital nursing staff calls 24 hours per day
- Return in the morning to take the patient off and dispose of used supplies

Hospital Staff Responsibilities

- **Respond to alarm conditions**
- Read the message bar
- Refer to the troubleshooting booklet
- Follow the instructions
- Ok to check with the patient
- Contact NWKC Hospital Services with any questions 1-855-292-3045

Cycler Alarms and Trouble Shooting

Intra-peritoneal Volume and "Overfill"



Overfill: A feeling of fullness in the abdomen. This feeling can come from IIPV, or can come from eating a large meal, constipation, or abdominal masses.

IIPV: More fluid in the abdomen that what was prescribed. Could result in abdominal discomfort, serious injury, or death.

Increased Intra-peritoneal Volume (IIPV)

Most commonly observed signs and symptoms of IIPV (overfill)

- Feeling full, bloated or overfull
- Abdominal pain or discomfort
- Expanded or tense abdomen
- Vomiting or spitting up
- Difficulties feeding
- Localized swelling around the PD catheter exit site, belly button, groin region or genital area
- Leakage of fluid from the PD catheter exit site
- Difficulty breathing

Overfilling or not draining enough fluid can result in excess fluid in the peritoneal cavity

Increased Intra-peritoneal Volume (IIPV)

If you suspect your patient has IIPV, do the following:

- Press **STOP** immediately, then press and initiate a Manual Drain;
- Once the fluid is completely drained from the abdomen, and patient is stable, notify nephrologist

Manual Drain Procedure

- Press ***STOP.***
- Press "DOWN" arrow till you see Manual Drain.
- Press ***ENTER. (will automatically start Draining process)***
  - The display screen shows the Drain Volume. The system continues to drain until flow is no longer detected.
- Press ***GO*** to return to therapy after Manual Drain is complete.
- Reinitiate a Manual Drain if it is stopped during Fill.
- For assistance in performing the above steps, call the Baxter Customer Service line which is available 24 hours a day, 7 days a week at 1-800-553-6898, Prompt 1.

Do not *STOP* or BYPASS a Manual Drain during Fill.

Low Drain Volume Alarm

Top causes for LOW DRAIN VOLUME alarms are:

- I-Drain alarm (initial drain volume alarm) setting too high for the expected patient drain volume
- Patient empty at start of I-Drain and the I-Drain alarm setting is too high
- Poor drain function
  - Catheter obstruction
  - Catheter position
  - Constipation
  - Fibrin
  - Kinked tubing

Low UF Alarm

Top cause for LOW UF alarm:

UF Target was not Met

- Related to inappropriate UF Target programmed

—or—

- Poor drain function
  - Catheter obstruction
  - Catheter position
  - Constipation
  - Fibrin
  - Kinked tubing

Low UF Alarm

Corrective action for LOW UF alarm:

- 1. Press ***STOP***.
- 2. Press ***GO*** to continue draining automatically.

– OR –

- 3. Press "DOWN" arrow to:
  - View Manual Drain information.
  - Initiate a Manual Drain.

- **Bypassing a LOW UF alarm can leave fluid in the peritoneal cavity and result in an increased intraperitoneal volume (IIPV) situation.**

Check Lines Alarms

- Check Lines alarm types
  - Check Lines and Bags
  - Check Patient Line
  - Check Supply Line
  - Check Heater Line
  - Check Drain Line
  - Check Final Line

- Causes for Alarm
  - Empty solution bags
  - Closed clamps
  - Kinks
  - Disconnected solution bags
  - Fibrin Blockage

Check Lines Alarms--continued

Auto Restart Alarm

If auto restart fails then follow the steps below

1. Press STOP—mutes alarm
2. Check all the lines and bags for:
   - Kinks in the tubing or bag ports
   - Closed clamps
   - Empty Solution bags
   - Fibrin blockage
3. Correct the problem found
4. Press GO to resume therapy

For assistance in performing the above steps, call the Northwest Kidney Centers Hospital Services # 1-855-292-3045

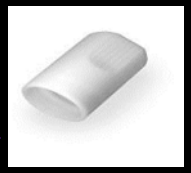
System Error Alarms

1. Press STOP—mutes alarm
2. Write down or memorize Error Number
3. Call Northwest Kidney Centers at 1-855-292-3045 for instructions

For assistance in performing the above steps, call the Northwest Kidney Centers Hospital Services # 1-855-292-3045

Emergency Disconnect Procedure

1. Press STOP
2. Close the clamp on the patient line and transfer set
3. Use aseptic technique, prepare to disconnect
4. Open new FlexiCap disconnect cap and MiniCap disconnect cap
5. Disconnect transfer set from patient line
6. Place the patient line back in the organizer
7. Cap off transfer set with new MiniCap disconnect cap →



8. Attach new FlexiCap disconnect cap to the patient line connector →

9. The patient can now leave the cycler

For assistance in performing the above steps, call the Northwest Kidney Centers Hospital Services # 1-855-292-3045

Reconnect after a Disconnect

1. Use aseptic technique, prepare to connect
2. Remove the **FlexiCap** disconnect cap from the patient line connector

3. Remove the **MiniCap** disconnect cap from the transfer set connector

4. Remove the patient line connector from the organizer
5. Connect the patient line to the transfer set
6. Open the clamp on the patient line
7. Open the transfer set
8. Press GO

For assistance in performing the above steps, call the Northwest Kidney Centers Hospital Services # 1-855-292-3045

PD Catheter Care

PD Catheter Care

1. The skin around the catheter site should be washed daily or every other day with antibacterial soap. The soap should be stored in the original bottle (not poured into another container).
    a) Hydrogen peroxide or alcohol, should **NOT** be used.
2. Before cleaning the area, wash your hands with soap and water and put on mask and clean gloves.
3. Hold the catheter still during cleaning, which helps prevent injury to the skin.
4. Do not pick at or remove crusts or scabs at the site.
5. Pat the skin around the site dry after cleaning. Clean gauze is suggested.
6. Apply a prescription antibiotic cream to the skin around the catheter every time the dressing is changed.
7. Avoid using tapes or dressings that prevent air from reaching the skin. The site should be covered with a sterile gauze dressing, which should be changed every time the site is cleaned. The catheter should be anchored to the skin with tape or a specially designed adhesive.

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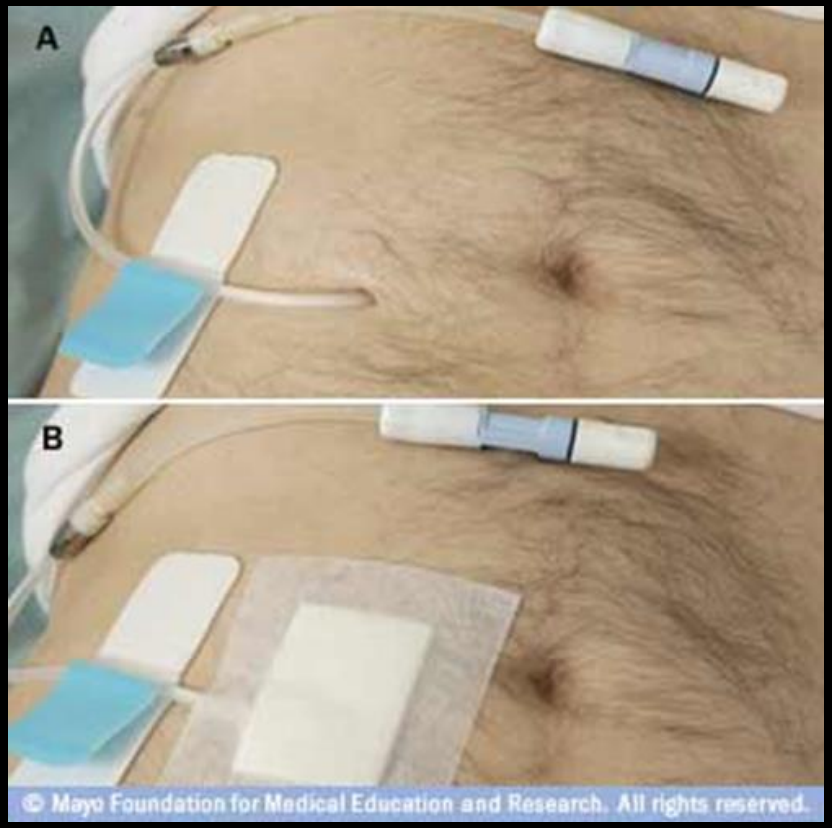
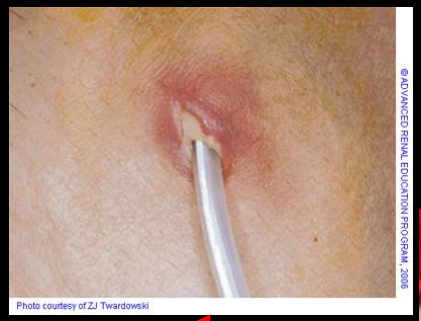
PD Catheter Care



Exit Site Appearance

- **Appearance** — the skin around the catheter should not be red or painful. The skin should feel soft. There may be a small amount of thick yellow mucus discharge around the catheter. A crust or scab may form every few days.
  - If the skin is reddened, painful, firm, or there is pus-like discharge around the catheter, there may be an infection.

Healthy

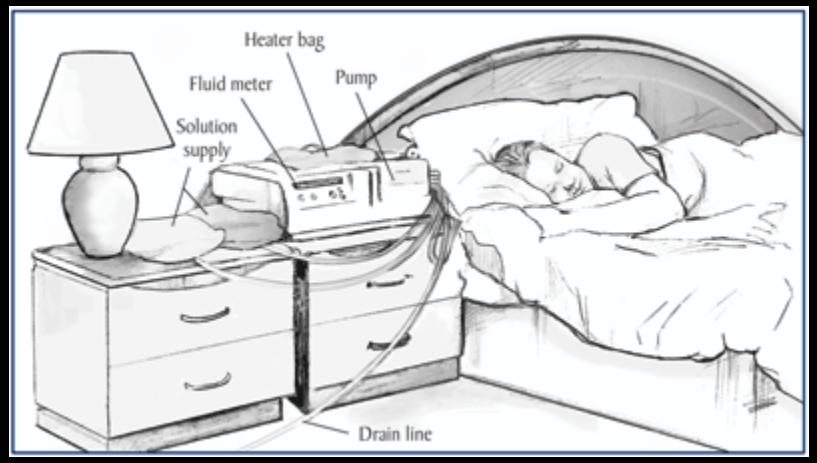


Infected

Care after injury to the catheter site

- If there is an injury to the catheter site, such as an accidental pull on the catheter, or if the catheter is moved excessively, a short course of antibiotics may be recommended to prevent infection from developing inside the abdomen (peritonitis). You should call NWKC if you suspect injure to the catheter site to determine if further evaluation or treatment is needed.

With appropriate catheter placement and exit site care, most PD catheters are problem free and work for many years. If the catheter no longer works or is needed, a minor surgical procedure is required to remove it



QUESTIONS