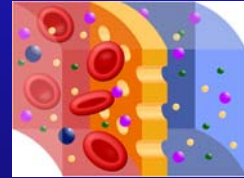




Hemodialysis

What Is Hemodialysis (HD)?

- Machine & filter (dialyzer) remove waste & excess fluid from blood across a porous membrane
- In-center or at home
- During day or at night
- Filter is outside your body
- Uses needles



Freemsm at en.wikipedia

What Does HD Do? (Based on Your Prescription)

- Removes wastes
 - **Kt/V** (periodic lab test) shows how good your HD is
 - **Urea Reduction Ratio (URR)** also measures how well HD is working; not as accurate as Kt/V
- Removes fluids
 - Weighing **before/after dialysis** shows fluid weight gained since last dialysis & lost during dialysis
 - Getting to your **“dry or optimal weight”** is the goal

How Well Does HD Clean Blood & Remove Fluid?

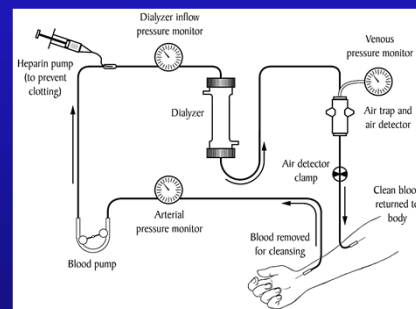
- Healthy kidneys clean blood 24/7 (168 hours/week); in-center HD is only 9-12 hours/week
- **HD 3 times/week for 3-4 hours/day removes only 10-15% of body wastes each treatment**
- Longer or more frequent HD removes more fluid & wastes; you feel better with fewer symptoms
- Skipping or shortening (even 10 mins.) risks your health & life!

What Do HD Machines Look Like?

- HD machines may look different but they do essentially the same thing



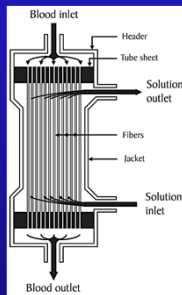
What Are Parts of an HD Machine?



NIDDK

- Pumps blood & dialysate through a dialyzer
- Alarm sounds if attention is needed

How Does a Dialyzer Work?



- Blood flows from the body through lines into a dialyzer's hollow, porous fibers
- Dialysis solution outside the fibers removes wastes/fluid; blood & dialysate don't mix
- Only 1 cup of blood is out of your body at any time

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How Does the HD Machine Get Access to My Blood?

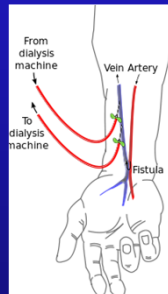
- A surgeon creates an access to allow your blood to be removed & returned to your body during HD
- There are 3 kinds of accesses:
 - Fistula
 - Graft
 - Catheter

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What Is a Fistula?

- A surgeon sews an artery & vein together to make a fistula
- You need to have good vessels
- It takes time to mature
- **FISTULAS ARE BEST**
 - Your natural blood vessels
 - Least likely to clot
 - Least likely to get infected
 - Most likely to last a long time



Kbik at en.wikipedia

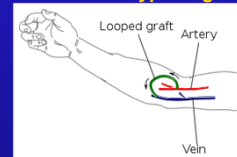
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What Is a Graft?

- A surgeon sews a tube to connect an artery & vein
- Makes a larger vessel to use over & over for HD
- For people whose vessels aren't as good
- **2nd best HD access**
- Usually ready to use in 2 weeks
- More likely to clot & may need to be replaced

One common type of graft

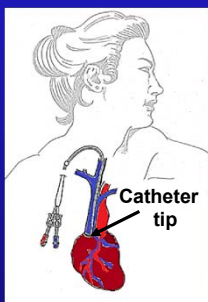


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What Is an HD Catheter?



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- Plastic tube inserted in the neck or chest (tip goes into heart); or leg vein in groin
- Can use right away for **short term, urgent need**
- **Highest risk of infection**
- Can damage vessels

What Can I Do Now to Take Care of My Blood Vessels?

- Avoid getting a PICC line, if possible
 - If your kidney disease is Stage 3 or worse
 - Used for long-term antibiotics, IV nutrition, blood draws/transfusions, or chemotherapy
 - Ask about alternatives to PICC lines
- Avoid IVs or blood draws in non-dominant arm
- Do not use injectable recreational drugs
- Exercise can help strengthen blood vessels

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What Should I Know About HD Accesses?

- Get soon enough to avoid having an HD catheter
- A good access gives better HD
 - Blood vessel narrowing limits blood flow
 - Clotting can require revision or replacement
 - Your access is your lifeline – protect it
- You have a **limited number of access sites**
- Ask for exercises to help a fistula develop

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What Are Possible Problems I Might Have With My Access?

- Infection of site
- Whole body infection (sepsis)
- Bruising
- Clotting
- Poor blood flow & poor dialysis
- Leaks around site
- Stops working, needing revision or replacement
- Aneurysm (vessel bulging) can rupture
- Death from bleeding (rare) – **keep access uncovered & visible during dialysis!**

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What Are Some Tips to Protect My Access?

Don't:

- Sleep on your access arm
- Put prolonged pressure on your access or its limb (purse, groceries, etc.)
- Let anyone take BP on access arm
- Let blood be drawn from your access
- Insert needles without sterile technique

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What Else CAN I Do to Protect My Access?

- Use your access for dialysis only
- Check for blood flow – **bruit** (whoosh sound), **thrill** (buzzing feeling)
- Report infection (heat or redness) to your kidney doctor/nurse right away
- Keep your access site clean & dry
- Rotate needle sites (rope/ladder) for fistula or graft or use the buttonhole technique (fistula only)
- Ask how to protect your access during exercise

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How Is In-center HD Scheduled?

- 3x/week for 3-4 hours at scheduled times:
 - Monday, Wednesday & Friday
 - OR
 - Tuesday, Thursday & Saturday
- 3x/week for 6-8 hours at night may also be an option
- **You will feel better with longer or more frequent dialysis** – ask where you can get it

Patient on dialysis cruise



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What Happens During In-center HD?

- Wait in waiting room
- Wash your access site, unless HD catheter
- Weigh yourself before
- Make your dialysis "station" comfy
- Health assessed before
- Insert needles or have it done for you
- Get dialysis
- Pass time with work, books, TV, sleep, etc.
- Health assessed after
- Weigh yourself after

RNs & techs will be at every treatment
You should have regular access to MD, RD, SW & take part in plan of care meetings

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What Are Possible Problems During Hemodialysis?

- Difficult insertion of needles with swelling & pain (topical medicines can prevent pain)
- Low blood pressure
- Cramps
- Headache
- Nausea
- Access problems
- Bleeding from your needle sites after dialysis



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What Is Self-Care & Why Would I Want to Do That?

- You can learn to do any or all of these:
 - Set up & run your machine
 - Put in your needles
 - Check your weight & vital signs
 - Record your treatments
- To be in more control over your dialysis
- To keep your access healthier & lasting longer
- To have less pain with needle sticks since you can feel your access best



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What Do I Need to Do Home HD?

- HD machine*
 - Recliner* or bed
 - Water treatment, if required* → 
 - Drain to sink/tub/shower
 - Adequate wiring
 - Storage space
- RO system**
- A trained partner at home during dialysis (optional for some)
 - Commitment to HD training & prescription
 - Keep & provide clinic treatment records
 - Come to appointments

***Medicare covers under its payment to clinic**

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How Is Home HD Scheduled?

- # of treatments your kidney doctor prescribes
 - 3x/week for 3-4 hours or more
 - Every other day 3-5 hours or more
 - 4-6 days/week for 2.5-3.5 hours (daily)
 - 3-6 nights/week (nocturnal)
- Change your schedule to fit your needs, but do all your prescribed treatments per week

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What Will My Clinic Provide for Home HD?

- Nurse/other staff do home visits initially & occasionally
- Training for you & your partner (takes 3-8 weeks)
- A manual to take home
- HD machine installed & ready to use
- Supplies delivered to your home & rotated like PD
- Regular follow-up & back-up dialysis in clinic if needed
- Access to RN, RD, SW, MD & machine tech
- Regular plan of care meetings (in person or by phone)
- Access to on-call services 24/7

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What Are Disadvantages of In-center HD?

- Regular contact with other patients—some enjoy, some don't
- Higher infection risk
- Most limited diet
- Less control & more dependence on staff
- Rules to follow (i.e. visitor & food policy)
- Time & cost to travel to a clinic
- Strict schedule
- 3 month wait for Medicare
- 2 day gap between dialysis sessions may increase the risk of heart problems

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What Are Advantages of In-center HD?

- Regular contact with other patients
- Staff monitor you
- Four days off/week
- No machine or supplies at home
- May be able to do nocturnal in-center
- No need to ask anyone to help you do dialysis

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What Are Disadvantages of Home HD?

- Need space for machine/supplies; reminder of dialysis
- Learn in 3-8 weeks
- Some clinics require a trained helper (FDA approved daily home HD done solo during waking hours)
- Clinic must hook machine to existing wiring/plumbing, Medicare won't cover re-wiring/re-plumbing home
- Medicare covers 3x/week HD without MD medical justification; other plans may cover more

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What Are Advantages of Home HD?

- Comfort of own home
- Independence/control
- No wait for Medicare if start training first 3 months
- May have fewer access problems
- Flexible schedule
- Less travel to & from clinic
- Work/school friendly
- Fewer rules (i.e. visit w/ whomever you want, can eat on dialysis)
- Nocturnal, daily HD have less limited diet & fluid
- If done while sleeping, time awake dialysis-free
- May feel better & live longer with longer or more frequent dialysis

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You Can Live a Good Life With Hemodialysis!



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