

# Nursing Care of the Dialysis Patient

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- Understand principles of hemodialysis
- Recognize different access ports
- Identify side effects and complications
- Discuss nursing care for pre and post hemodialysis patients

# Objectives

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- A method used to remove waste products such as creatinine, urea and free water from the blood when the kidneys are in a state of renal failure.



# What is hemodialysis?

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- Hemodialysis is usually done three times per week, for appx 3–4 hours each treatment
- The patient's blood is drawn out through a tube at a rate of 200-400 mL/min
- Blood is then pumped through the dialyzer, and the processed blood is pumped back into the patient's bloodstream
- During treatment, the patient's entire blood volume (about 5000 cc) circulates through the machine every 15 minutes.

## **Did you know?**

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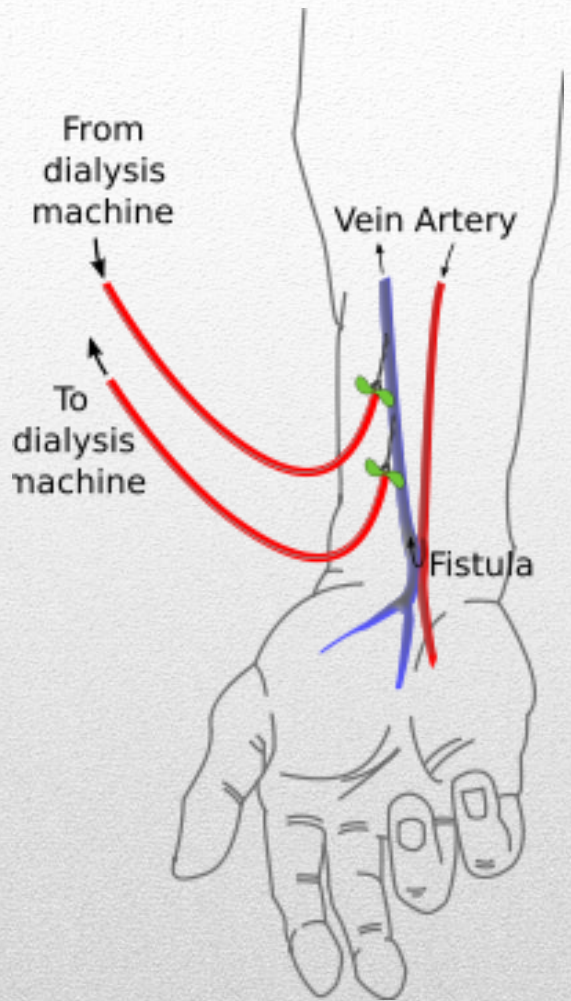
- Three primary methods are used to gain access to the blood:
  - Arteriovenous fistula (AV)
  - Synthetic graft
  - Central Venous Catheter (CVC)

Patients may have multiple accesses, usually because an AV fistula or graft is maturing and a catheter is still being used.

*All methods require surgical placement*

# Access Ports

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- Preferred access method
- Surgeon joins artery and vein together in anastomosis
- Fistula can be located on hand, radial, or brachial area
- By bypassing capillaries, blood flows rapidly through the fistula, causing a “buzzing” feeling or the “thrill”.
- Blood flow can be auscultated with a stethoscope over the fistula. This sound is known as “bruit”
- Takes an average of 4-6 weeks to mature

# AV Fistula

## Advantages

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- Lower infection rates, because no foreign material is involved in their formation
- Higher blood flow rates (which translates to more effective dialysis)
- Lower incidence of thrombosis.



## AV Fistula cont...

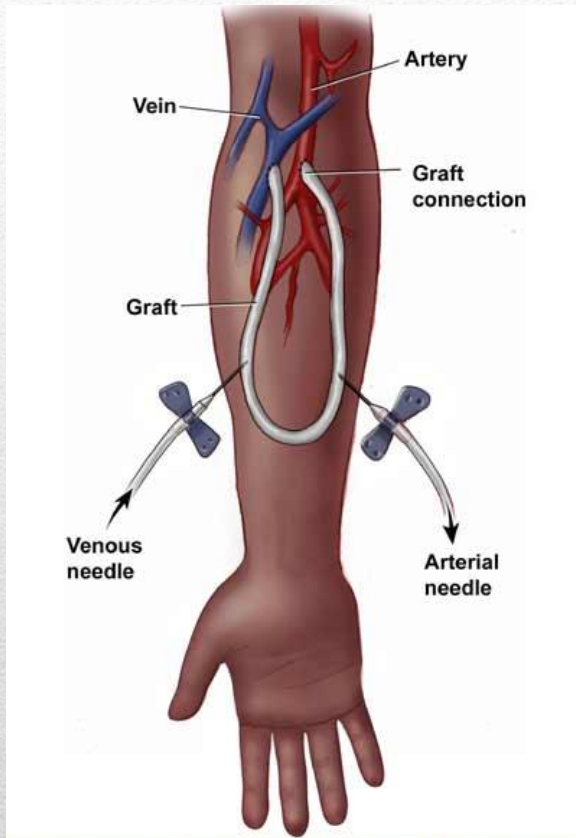
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## Disadvantages

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- Steal syndrome (circulating blood in extremity bypasses capillaries, causing coldness in limb, cramping, and, if severe, tissue damage)
- Aneurysm – from multiple needle sticks to same site

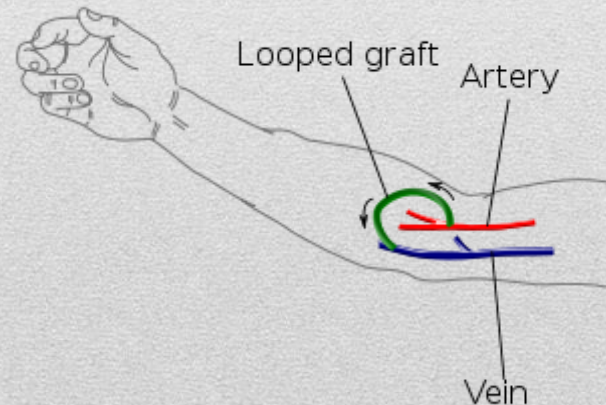




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# AV Graft

- **Artificial** vessel is used to join the artery and vein
- Has same function as a fistula
- Made from synthetic material or sterilized animal veins
- Inserted when pts own vasculature does not support a fistula

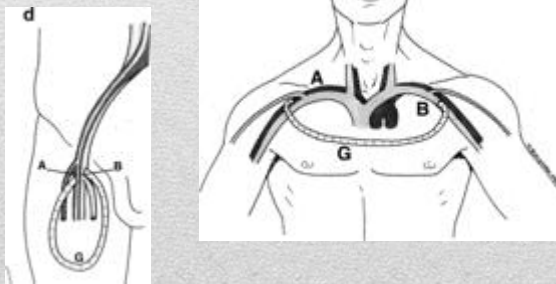




## Advantages

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- Mature faster than fistulas (can sometimes be used as soon as two weeks post insertion)
- Due to synthetic material, graft can be made long, which offers more options for graft sites (ie thigh or neck)



## Disadvantages

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- High risk of developing narrowing
- Narrowing of veins leads to higher incidence of thrombosis
- Greater risk for infection due to foreign material

# AV Graft cont...

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- Removing too much fluid and/or removing fluid too rapidly could cause low blood pressure, fatigue, chest pains, leg-cramps, nausea and headaches
- May expose their circulatory system to microbes, which can lead to sepsis

## **Side effects and complications**

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- **EVALUATE**

- Patency of vascular access
  - Check for bruit and thrill
- Skin integrity and presence of infection
- Circulation to the extremity in which the vascular device is located
- Perform **STERILE** dressing changes based on faculty protocol and evidence-based recommendations

# **Hemodialysis Site Care**

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- **ONGOING ASSESSMENT**

- Patient weight
- Input and output
- Presence of edema
- VS, especially changes in BP
- Pulmonary status
- Neurological status
- Abnormal lab values related to renal function

# **Nursing Responsibilities**

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**Assesses the patient's health status/health concerns between hemodialysis treatments for inter-current illness and complications that might affect current hemodialysis treatment including, but not limited to:**

- new medications, changes in medication dosing, or discontinued medications
- bleeding
- bruising
- falls
- medical/surgical treatments or procedures
- dizziness
- weakness
- hypotension
- fever
- nausea
- vomiting
- diarrhea
- chest pain
- shortness of breath

# **Nursing responsibilities**

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## Signs and Symptoms of Inadequate Dialysis

- Fatigue
- Loss of appetite
- Nausea
- Vomiting
- Pruritus
- Difficulty concentrating
- Weight loss
- Anemia
- Secondary hyperparathyroidism
- Neuropathy
- Restless legs
- Abnormal electrolytes
- Pericarditis
- Changes in cognitive function

**Call physician with concerns!**

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- Post sign above patient bed to prevent use of hemodialysis access/limb for:
  - Blood draws
  - BP checks
  - Injections

# **Nursing Responsibilities**

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- **Inform patient not to sleep on access limb**
- **Instruct patient to report:**
  - fever
  - chills
  - bleeding
  - drainage
  - absence of /or diminished thrill
  - swelling of access limb
  - numbness, tingling, and or decreased motor function of the access limb

# **Patient education**

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- Update pt. plan of care/ HD site care in McKesson to include:
  - Date/time of HD site care
  - Description/location of HD site
  - Patient assessment information: dressing, assessment of site, and if present, CVC integrity
  - Assessment of bruit and thrill
  - Tolerance of procedure
  - Any unexpected pt. outcomes, interventions performed, and name of clinician performing procedure
  - Patient/family education, communication

# Documentation

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- Wood, M, Ballantyne, L, et al. Canadian Association of Nephrology Nurses and Technologists Nephrology Nursing Standards and Practice Recommendations CANNT Nursing Standards, (2008).
- National Kidney and Urologic Diseases Information Clearinghouse guidance *Kidney Failure: Choosing a Treatment That's Right for You*

# References

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