

End Stage Renal Disease (ESRD)

Annual Compliance Education



This course contains annual compliance education necessary to meet compliance and regulatory requirements.

Instructions:

To receive credit for completion:

1. Read the content in full.
2. Complete the online exam.



Carolinas HealthCare System

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One

End Stage Renal Disease (ESRD)

Welcome

Purpose:

To educate all clinical areas about the care and considerations of End Stage Renal Disease in the adult patient.

Learning Objectives:

When finished with this course, you should be able to:

- Define End Stage Renal Disease (ESRD)
- Describe three treatments for ESRD
- Describe special considerations related to the care of the patient with ESRD
- State how to access the policies related to ESRD



End Stage Renal Disease (ESRD)

Defining End Stage Renal Disease (ESRD)

Chronic kidney disease (CKD), the precursor to End Stage Renal Disease (ESRD), is a **progressive, irreversible** loss in kidney function over a period of months or years. The stages of CKD kidney loss is based on a person's Glomerular Filtration Rate (GFR). The GFR is how much blood passes through the tiny filters of the kidneys per minute.

Stage Description	GFR Level
Normal Kidney Function	Healthy kidneys 90 ml/min or more
CKD Stage 1	Kidney damage with normal or high GFR 90 ml/min or more
CKD Stage 2	Kidney damage and mild decrease in GFR 60-89 ml/min
CKD Stage 3	Moderate decrease in GFR 30-59 ml/min
CKD Stage 4	Severe decrease in GFR 15-29 ml/min
CKD Stage 5 or ESRD	Kidney failure less than 15 ml/min or on dialysis

- The treatment for ESRD is hemodialysis, peritoneal dialysis or a renal (kidney) transplant



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Kidneys Role in Maintaining Health

Kidneys play a critical role in maintaining health. They:

- Eliminate waste products through an internal blood filtering system
- Regulate blood formation and red blood cell production
- Regulate blood pressure
- Control the body's delicate chemical and fluid balance
- Produce Erythropoietin (EPO), which stimulates the bone marrow to make red blood cells
- Produce renin, which regulates blood pressure through electrolyte and water balance



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Signs and Symptoms of ESRD

Common signs and symptoms of ESRD include:

Anorexia	Anemia	Generalized Weakness	Bleeding Tendencies
Mental Confusion	Fatigue	Nausea/Vomiting	Hypertension
Thirst	Electrolyte Imbalances	Uremic Frost (powdery look on skin)	Edema



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Dietary Considerations

There are numerous dietary concerns for the adult patient with ESRD:

- Protein to maintain nitrogen balance
- Calories to maintain or reach ideal weight
- Fluid balance
- Sodium, Potassium and Phosphorous intake

All ESRD patients MUST have a nutritional screen on admission.

A consult is triggered when an ESRD patient is indicated in the Electronic Medical Record (EMR).



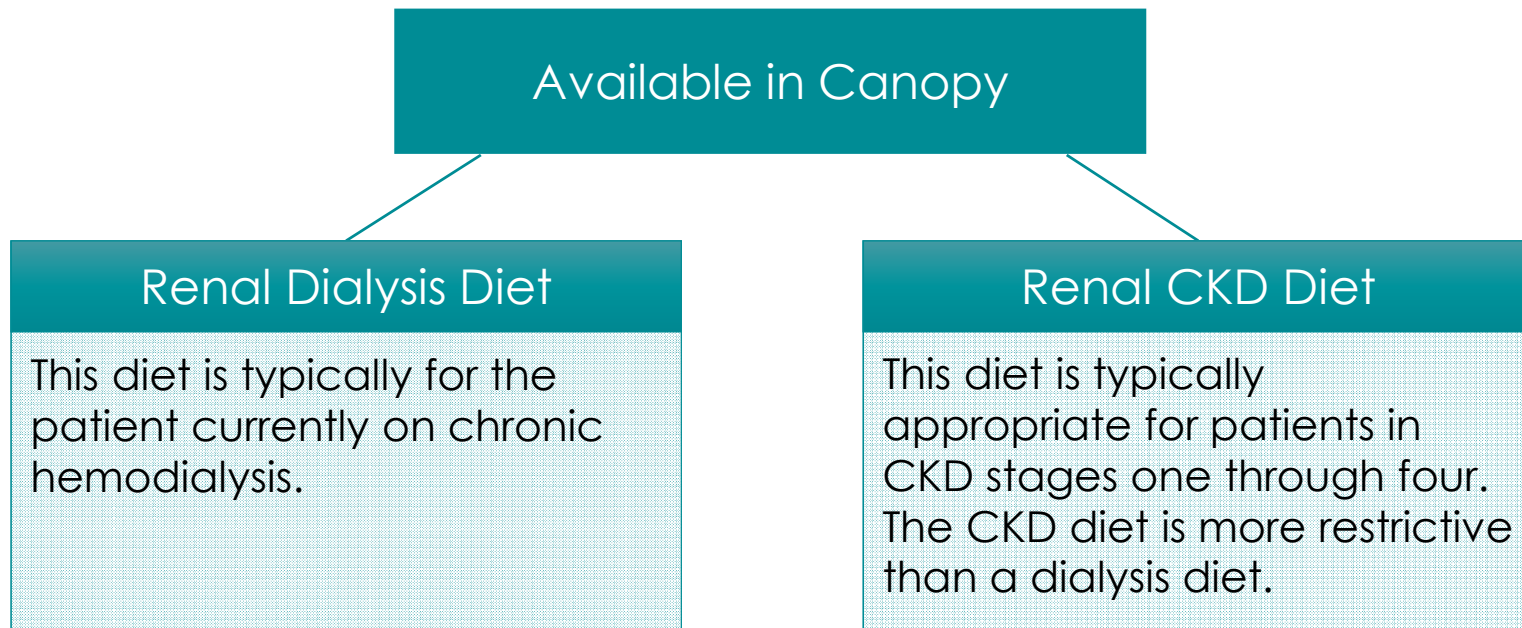
A Renal Dietician can help create a meal plan that contains the correct amounts and types of food to meet individual needs



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ESRD Diets

There are two diets that can be ordered for an ESRD adult patient.



The goal of the diet for hemodialysis is to maintain optimal nutrition while limiting the buildup of waste products between hemodialysis treatments.



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Common Medications

Scheduled medications, including antihypertensives, should be given as ordered. Medications should not be held prior to dialysis without a Physician's order.

Typical medications for the patient with ESRD include:

- Antihypertensives
- Vitamin D supplements such as Rocaltrol, Hectorol or Calcitriol
- Epogen (Procrit)
- Vitamins and minerals
- Iron supplements
- Antibiotics
- Laxatives, Stool softeners
- Atarax or Benadryl for itching



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Complications for Patients with ESRD

Monitor your
ESRD patients
for
complications

Monitor for the following:

- Hypertension
- Hypotension
- Edema
- Pulmonary edema (fluid in the lungs)
- Hyperkalemia (high potassium level)
- Hypokalemia (low potassium level)
- Nausea/Vomiting
- Muscle cramps
- Chest pain
- Seizures
- Air embolism (air bubble trapped in blood vessels)
- Hemolysis
- Bleeding
- Clotting of access devices
- Infection



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Common Medications (continued)

- Phosphate binders such as Renegal, Renvela and Phoslo
 - These medications **MUST** be taken with food
 - Binders will be given as scheduled and documented by the dialysis nurse while patient is in the kidney dialysis unit (KDU)
 - Floor nurse should not “reschedule” on the Electronic Medical Administration Record (eMAR) to allow dialysis nurse to document
 - Phosphate binders do not have to be sent to the dialysis unit with the patient (KDU has stock)



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Nursing Considerations Related to ESRD

Nursing Considerations for patients with ESRD:

- Vital signs
- Strict I/O
- Diet restrictions
- Fluid restrictions
- Activity level
- Skin care
- Accurate daily weight
- Electrolyte balance
- Changes in patient condition
- Patient Care Plan (developed by ESRD Multidisciplinary Team)

Policies related to ESRD and patients receiving hemodialysis are found on PeopleConnect:



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Hemodialysis

Hemodialysis uses a special filter called a dialyzer that functions as an artificial kidney. During treatment, blood travels through tubes into the dialyzer which filters out wastes and extra fluids.

- Most hemodialysis patients go to dialysis three times per week
- Three forms of hemodialysis access devices are:
 1. Arteriovenous fistula (permanent access option)
 2. Arteriovenous graft (permanent access option)
 3. Hemodialysis catheters (**temporary** access option)



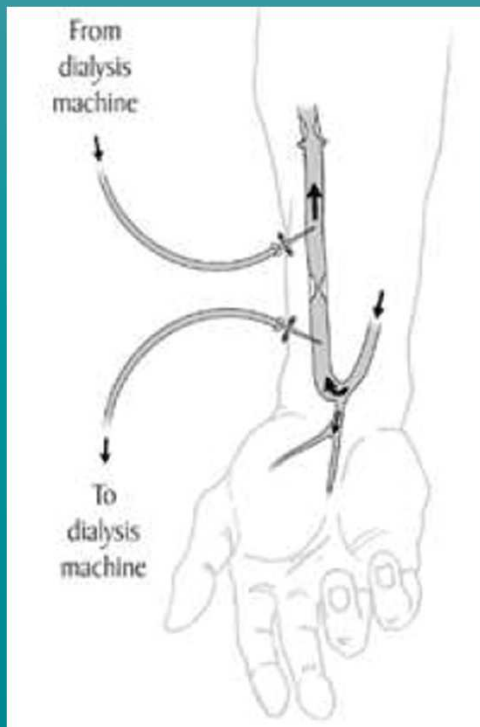
Hemodialysis access devices are the patients' lifeline and must be protected and monitored closely.



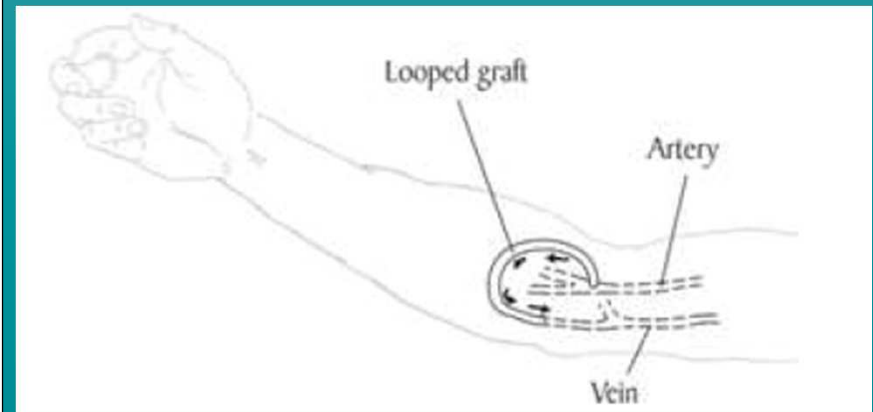
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Ateriovenous Fistula & Graft Diagrams

Arteriovenous Fistula (AVF)



Arteriovenous Graft (AVG)



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Ateriovenous Fistula & Graft

Comparing Arteriovenous Fistula and Graft:

Arteriovenous Fistula	Arteriovenous Graft
Patient's own artery and vein are surgically connected. No artificial material is used.	Artificial material that is attached to the patient's blood vessels
Found in upper or lower arm	Usually found in upper or lower arm. May be in the thigh or chest.
Healing time is longer for a fistula than a graft	Two to three weeks healing time
One incision	Two incisions
Considered the BEST vascular access for patients on dialysis	Considered the second best vascular access for patients on dialysis
Lasts longer than AVG (lasts many years)	Does not last as long as AVF and has a higher risk of clotting
Healing time longer	Can access earlier
Least risk of infection in comparison to any other dialysis access	Lower risk of infection in comparison to hemodialysis catheters



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Nursing Considerations Related to Fistulas & Grafts

Considerations for Fistulas and Grafts are:

- Encourage new fistula patients to perform daily exercises by squeezing a ball or rolled up sock (four to five times per day for five to 10 minutes). Daily exercises will provide growth of the fistula.
- Examine site, palpate for thrill, auscultate for bruit and document findings
- Avoid blood pressures or IV sticks of affected arm with AFV or AVG
 - **A sign should be posted above the patient's bed stating:**
"No IVs, BPs or lab draws on _____ arm."
- Instruct patient to avoid sleeping on affected arm
- Avoid hypotensive episodes which can cause the access to clot
- Maintain dressing on access site after hemodialysis for three to four hours
- Refer to the *Care of the Patient Post Hemodialysis* Policy



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Hemodialysis Catheters

Hemodialysis catheters are often used when patients need dialysis immediately or when patients have no other access alternatives.

- Hemodialysis catheters are inserted into the jugular, subclavian or femoral vein
- The catheter ports are color-coded (red and blue) for accessing the hemodialysis system

All Catheters:

- Not ideal as permanent access
- High infection rates often resulting in serious complications such as sepsis, endocarditis and death
- Difficult to obtain sufficient blood draw for dialysis
- Less efficient dialysis treatment
- Swimming and showering not allowed

Hospitalizations, infections and death increase by 50% in patients with catheters compared to those with an AFG or AVG.



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Temporary & Permanent Hemodialysis Catheters

Comparing Temporary and Permanent Hemodialysis Catheters:

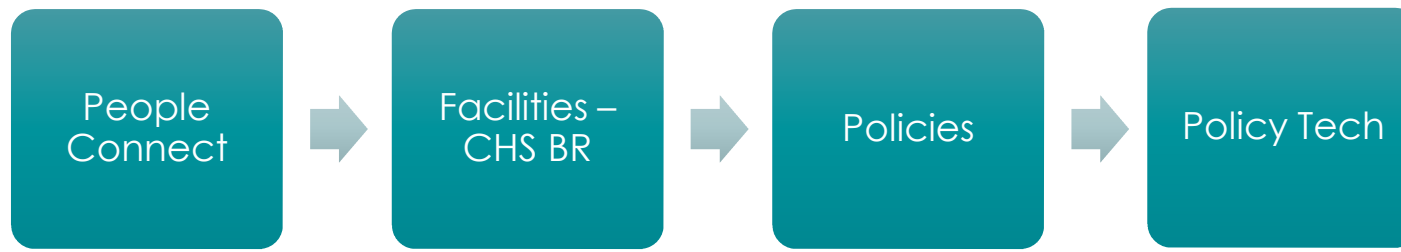
Temporary Hemodialysis Catheter	Permanent Hemodialysis Catheter
Usually stays in one to three weeks	Can stay in longer than one year
Nurse can remove with a physician's order	Only radiology can remove
Three types: 1. Flexible double lumen (light blue hub) 2. Rigid double lumen (teal hub): Strict bed rest if patient has rigid catheter 3. Triple lumen catheter with medical port that can be used like a regular central line	Double lumen (typically white colored hub)
Located at chest or femoral site	Located at chest site and occasionally at femoral site



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Nursing Considerations Related to Hemodialysis Catheters

- Access policies related to hemodialysis catheters via the hospital computer using the following pathway:



- Only dialysis nurses or trained nurses are allowed to access the dialysis catheter
- Gain a Nephrologist order before accessing hemodialysis catheters for blood draws or administration of medications (required)
- Use a strict aseptic technique when accessing devices. Review policy prior to accessing.
- It is important to withdraw the heparin from the catheter prior to accessing
- Do not get the catheters wet. They can become easily infected.



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Peritoneal Dialysis

Peritoneal Dialysis (PD) uses the peritoneal membrane as a filter to remove wastes and excess fluids from the blood.

- The PD catheter is used for peritoneal dialysis to instill and remove fluids



For all peritoneal dialysis patients:

The PD catheter is never accessed without an order from the Nephrologist and can only be done by a trained peritoneal nurse.

This includes accessing the catheter for peritoneal fluid samples or cultures.



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Nursing Considerations Related to Peritoneal Dialysis

- Only PD trained nurses can perform PD
- NEVER move or unplug the PD machine, even when the patient is not being dialyzed
- Place the patient in a private room
- Never use scissors near the tenckoff catheter and tugging on the catheter should be avoided
- Encourage patients to wash their catheter site daily or every other day with antibacterial soap, once healed
- Consult with a dietician to confirm the same renal diet and fluid restriction the patient was on at home is ordered while inpatient

Daily Assessments:

- Fluid balance
- Weight
- Blood pressure
- Lung sounds
- Edema
- Electrolyte imbalance, such as hypokalemia
- Bowel function (constipation can cause problems in the dialysis process)



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Renal Transplants

Renal Transplant patients:

- Are provided a functioning kidney from either a living or deceased donor to someone with ESRD
- Are not cured by the renal transplant
- Must take medications for the rest of their lives to prevent rejection of the organ

Common Medications for Renal Transplant Patients

- Immunosuppressants
 - Prograf (Tacrolimus)
 - Prednisone
 - Cellcept or Myfortic
 - Sirolimus
 - Cyclosporin
- Antihypertensives



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Nursing Considerations Related to Renal Transplant Patients

During transplant surgery, the patient receives IV “induction therapy” (a strong immunosuppressant medication)

A patient will typically be on a combination of immunosuppressant medications

- Prograf is one of the immunosuppressants given to prevent rejection of the kidney
- These medications should be given at specific times
- Prograf levels must be drawn prior to the AM dose unless otherwise ordered
- Grapefruit juice affects absorption of immunosuppressants, such as Prograf, and must be avoided
- Any disruption or change in medication delivery can put the patient at risk for rejection



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Nursing Considerations Related to Renal Transplant Patients (continued)

- Standard Precautions and Protective Environment Precautions should be used, including:
 - Strict hand hygiene
 - Strict ureteral catheter care and maintenance
 - Strict central line care and maintenance
- Elevated temperature (100.5) can indicate infection or rejection and must be monitored
- A decrease in urine output can indicate rejection or graft dysfunction and must be monitored
- Accurate daily weights must be taken
- Regular diet, without restrictions, can be followed unless otherwise ordered



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ESRD Patient Education

ESRD Patient Education at CMC	
ESRD New Patient Educational Manual	<ul style="list-style-type: none">• All patients that are newly diagnosed with ESRD are provided a manual• The manual can be found electronically on Careline (CMCC – patient instructions – ESRD PT Educational Manual)• A nursing order can be entered under “ESRD new patient education”
Educational Magnet	<ul style="list-style-type: none">• Patients that have hemodialysis catheters placed receive an educational magnet titled “Caring for you Short Term Catheter”• The magnet is given with catheter placement in radiology or with treatment in KDU
Hemodialysis Access Education	<ul style="list-style-type: none">• KDU nurses educate new hemodialysis patients on the importance of obtaining a fistula or graft and how to care for their catheter until a permanent access is obtained
ESRD Link	<ul style="list-style-type: none">• A telephone-based self-management program for patients that:<ul style="list-style-type: none">- Are frequently readmitted (in less than 30-90 days of prior admission)- Lack a support system- Are medically non-compliant
ESRD Support Group	<ul style="list-style-type: none">• Support group for patients and families• The Social Worker educates patients receiving dialysis about this group opportunity



End Stage Renal Disease (ESRD): Job Aid

Purpose: Use this job aid as a guide for the care of patients with ESRD.

- Chronic Kidney Disease (CKD) is classified into 5 stages based on a person's estimated GFR. CKD Stage 5 is End Stage Renal Disease (ESRD).
- ESRD is the loss of function in both kidneys and is irreversible
- The three treatments for ESRD are hemodialysis, peritoneal dialysis or a renal transplant
- Patients on dialysis should be on a dialysis diet unless otherwise ordered by their Nephrologist
- On admission, all patients with ESRD must have a Nutritional and Medical Social Work screening
- Nursing considerations for the patient with ESRD include strict standard precautions, I/O, daily weights and monitoring electrolyte balance
- Beds must be zeroed on admission for accurate weights
- Policies related to ESRD, including accessing the hemodialysis catheter, are located on PeopleConnect
- Only PD trained nurses are to perform peritoneal dialysis
- Immunosuppressant medications for renal transplant patients are taken at specific times. Any disruption in delivery puts the patient at risk for rejection.



End Stage Renal Disease (ESRD)

Summary

End Stage Renal Disease involves progressive, irreversible destruction of both kidneys. This course discussed the considerations, treatments and procedures for ESRD, such as hemodialysis, peritoneal dialysis and renal (kidney) transplant.

The following are some strategies reviewed in this course:

- Define End Stage Renal Disease (ESRD)
- Describe three treatments for ESRD
- Describe special considerations related to the care of the patient with ESRD
- State how to access the policies related to ESRD

