

Adults with chronic kidney disease: Overview and nursing care goals

Gain the knowledge
to care for these
patients confidently.

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LEARNING OBJECTIVES

1. Identify causes and risk factors for chronic kidney disease (CKD) in adults.
2. Describe the diagnosis of CKD.
3. Discuss three nursing care goals for patients with CKD.

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APPROXIMATELY 30 million American adults have chronic kidney disease (CKD), an additional 20 million are at risk for developing it, and a variety of factors (such as the pervasiveness of obesity and chronic health conditions) may increase its incidence. Nurses will continue to encounter patients with CKD in all practice settings, where they will help manage the disease and prevent progression. This article provides an overview of CKD in adults and care goals for nurses who want to ensure that they can help meet the needs of patients with CKD. (Visit myamericannurse.com/?p=64618 for an overview of kidney function.)

Overview

CKD is a structural and/or functional abnormality of the kidney that lasts 3 months or longer. It's a progressive and chronic condition that affects many aspects of the patient's health.

Common causes and risk factors

The top three causes of CKD (in order of incidence) are diabetes, hypertension, and glomerulonephritis. Diabetes and hypertension cause approximately 70% of CKD cases. Other risk factors include:

- congenital abnormalities (for example, polycystic kidney disease, Alport syndrome, sickle cell disease)
- urinary tract or systemic infections
- family history of CKD
- urinary or kidney stones
- history of acute kidney injury or failure
- urinary tract obstruction
- autoimmune disease (for example, scleroderma, systemic lupus erythematosus)
- nephrotoxin exposure from sources such as over-the-counter pain medications (for example, aspirin or ibuprofen), prescribed pain relievers (for example, oxycodone or naproxen), other medications (for example, antibiotics or antineoplastics), pesticides, and heavy metals (for example, lead, mercury, or arsenic)
- age 60 or older and ethnicity (African American, American Indian, Asian, Pacific Islander, or Hispanic).

Early-stage CKD can be asymptomatic, so recognizing risk factors and alerting patients and providers to them is crucial for prevention, early diagnosis, and optimal disease management.

Diagnosis

In the past, CKD diagnosis was based on serum creatinine results. However, recent evidence suggests that's not an accurate measure because of variations in patients' body size, weight, and muscle mass. Now, CKD is diagnosed based on glomerular filtration rate (GFR), which is a calculated value that takes into account body size, weight, and muscle mass and includes modifications for ethnicity. GFR is automatically calculated and reported by laboratories as part of serum results (for example, as part of a comprehensive metabolic panel). Labs calculate the rate using the Modification of Diet in Renal Disease or the Chronic Kidney Disease Epidemiology Collaboration formulas. Other tests, such as urinalysis and serum results, also are important in CKD diagnosis and management. For example, a provider may find that a patient has decreased serum hemoglobin and hematocrit values that require prescribing a synthetic erythropoietin, such as epoetin alfa. (Visit myamericannurse.com/?p=64618 to view a list of CKD diagnostic tests.)

Staging and symptoms

As with many chronic diseases, trended data (or data collections over time) can be used to help manage CKD. Typically, interventions are planned based on CKD stage and how a patient feels physically and mentally. Stage is determined mainly based on GFR and the presence of kidney damage. (See *CKD staging*.)

Due to the kidneys' compensatory abilities, symptoms occur gradually and may not become obvious until CKD is advanced. In earlier stages (1 to 3), patients may be asymptomatic or have subtle, nonspecific symptoms that are attributed to other conditions. By the time patients experience overt symptoms (stages 3 to 5), typically 80% to 90% of kidney function has been destroyed. (Stage 3 CKD may be considered early or late depending on many factors, including diagnostic test results and how a patient feels.) (See *CKD symptoms*.)

Complications

CKD complications include heart failure, hypertension, hypervolemia, arrhythmias, anemia, pulmonary edema, anorexia, seizures,

Provide patient-specific education to help patients take charge of their condition and promote well-being.

CKD staging

Chronic kidney disease (CKD) staging is based on glomerular filtration rate (GFR).

1

- GFR ≥ 90 mL/min/1.73m²
- Kidney damage, normal or increased GFR

2

- GFR 60-89 mL/min/1.73m²
- Kidney damage, mildly decreased GFR

3

- GFR 30-59 mL/min/1.73m²
- Kidney damage, moderately decreased GFR

4

- GFR 15-29 mL/min/1.73m²
- Kidney damage, severely decreased GFR

5

- GFR < 15 mL/min/1.73m² or **need for renal replacement therapy**
- Kidney failure, end-stage renal disease

stroke, convulsions, coma, renal osteodystrophy, amenorrhea, and erectile dysfunction. CKD also can advance to end-stage renal disease (ESRD). Patients with ESRD may die from complications of their disease, typically from cardiovascular-related events.

Nursing care goals

Nurses care for adults with various stages of CKD in a variety of inpatient and outpatient settings. Regardless of CKD stage, the three main nursing care goals are:

- prevent or slow disease progression
- promote physical and psychosocial well-being
- monitor disease and treatment complications.

Prevent or slow disease progression

Identifying and managing risk factors is the best way to prevent or slow CKD progres-

sion. Collaborate with patients and providers to target modifiable risk factors, specifically focusing on diabetes and hypertension management to keep glucose levels and blood pressure readings within appropriate target ranges. A combination of self-management techniques and medication therapies guide management of these chronic comorbidities.

Promote physical and psychosocial well-being

Provide patient-specific education to help patients take charge of their condition and promote well-being. Focus education on a broad overview of CKD, treatment, and self-management techniques. Specific educational needs will depend on the patient's baseline knowledge, CKD stage, and current and/or future treatment plans. Conclude all education with an evaluation to gauge the patient's understanding. Be particularly sensitive to patients' psychological needs.

Overview. Your overview of CKD should include information about normal kidney function, common causes and risk factors, diagnostic testing, staging, symptoms, and complications. To identify specific areas of educational need, start with questions such as, "What do you know about your illness?" "What would you like to know about your illness?" and "What would you like to know about treating your illness?"

Treatment. Early-stage CKD treatment includes medications, appointments, and many lifestyle changes. Late-stage treatment also may include renal replacement therapies (RRTs), which require a strong support system.

Treatment education should occur regularly. In early-stage CKD, focus on engaging patients in self-management and care plans to slow progression. As CKD progresses, patients will need education about RRTs—hemodialysis, peritoneal dialysis, or kidney transplant. Many choices exist within each therapy. For example, hemodialysis can be provided at home or at a dialysis center, at night or during the day. Peritoneal dialysis can be continuous or intermittent. Transplants can come from a living or deceased donor. Several considerations go into deciding which RRT is best for the patient, including patient preference, which best suits the patient's daily life (including social, home,

body image, activities, and employment considerations), options available in the patient's area, clinical contraindications, social support systems, and skill or ability to complete therapy requirements. Provide patients with information about these topics and welcome questions, concerns, and comments. (See *RRT patient education tips*.)

Throughout disease progression, ask patients about their future treatment plans ("Have you thought about what treatments you may or may not want in the future?"). Share patients' answers with providers to help develop care plans.

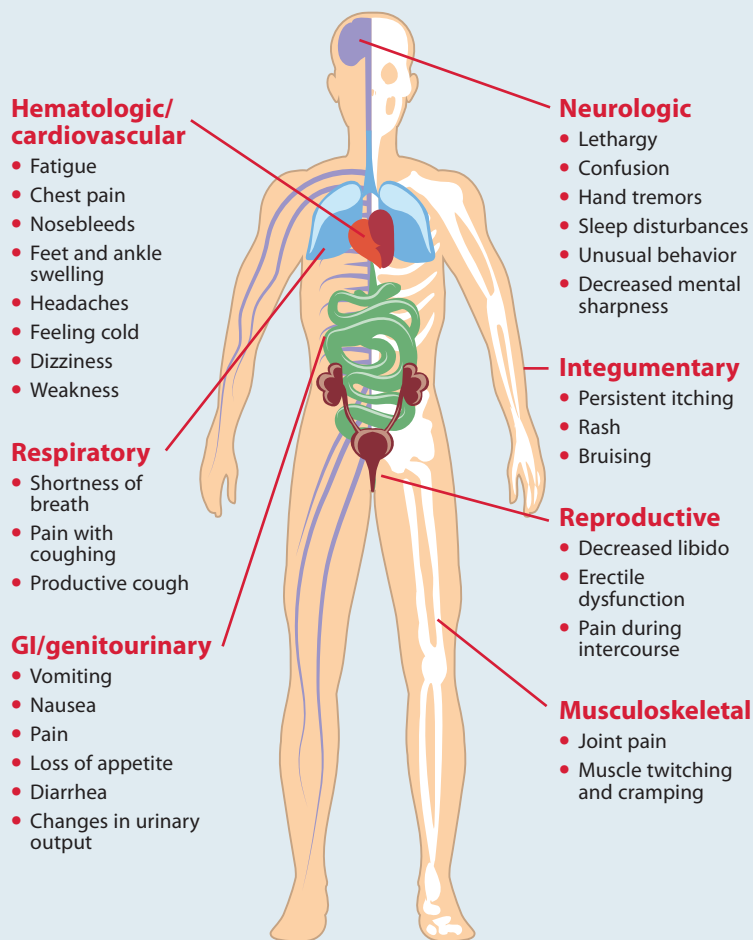
Self-management. Maintaining a healthy weight is key to CKD self-management. Talk to patients about healthy eating and activity habits. Some patients may require specific dietary modifications because of kidney function changes. For example, depending on individual patient requirements, some electrolytes (such as potassium, sodium, and phosphorus) may need to be limited. Review any provider-prescribed restrictions with patients and verify their understanding, including what foods to eat and avoid. In general, encourage patients to eat a variety of foods that are fresh, lean, low-fat, low-sugar, and low-cholesterol.

Explain to patients that avoiding alcohol and nephrotoxins will help slow CKD progression. If a patient smokes, work with him or her to develop an individualized cessation plan. In addition, educate patients about how to protect themselves from injury and infection. For example, explain that they should wash their hands frequently, avoid ill family and friends, and remove safety hazards (for example, throw rugs and exposed power cords) from the home. Teach patients how to recognize signs and symptoms of infection and to report them to healthcare providers.

Care plans developed collaboratively between engaged patients and the care team can improve outcomes. Even if you're not involved in treatment decisions, you can support patients by sharing information to help them understand their treatment. Explain treatment options and what each involves (including benefits, adverse events, and how to manage complications); discuss how treatment may impact their daily lives; and provide information about treatment loca-

CKD symptoms

Early-stage chronic kidney disease (CKD) can be asymptomatic, but as the disease progresses it may affect many body systems with accompanying symptoms.



tions in the area, transportation, and other support services. Talk to patients about the importance of adhering to medications and other prescribed treatments, and encourage them to ask questions and voice concerns.

Assess patients' self-management abilities before and after educational sessions. Ask questions, such as: "How is your physical and/or emotional health?" "What are your worries or what concerns you most?" "What's important for you to achieve?" "What are your priorities?" "What would improve your quality of life and well-being?" and "How are you and your loved ones handling your illness?" Based on the answers, provide education and resources to help patients improve their self-management skills.

Psychological needs. Keep in mind that patients with CKD are at risk for many psychosocial issues, such as anxiety, depres-



RRT patient education tips

Patients receiving renal replacement therapy (RRT), whether it's hemodialysis, peritoneal dialysis, or a kidney transplant, will require education and support to manage access sites, adverse events, and psychosocial issues.

Access site management

For patients receiving dialysis, provide education about access site protection:

- Access sites should be used for dialysis only and are not for other procedures (such as blood pressure readings, I.V. insertion, or lab draws).
- Only trained professionals should enter the access site.
- Patients should avoid strenuous activities, including carrying heavy objects, that might injure the access site.
- Patients should keep the access site clean and dry to avoid infection; some sites are covered with occlusive dressings that will need to be changed regularly, while others are left uncovered.

In addition, instruct patients to

promptly report the following adverse events to their providers:

- increase or decrease in blood pressure
- nausea
- vomiting
- chest and/or back pain
- cramping
- fever with or without chills.

Transplant education

Focus education for patients receiving a kidney transplant on preventing organ rejection. Emphasize that they should continue antirejection therapy for the rest of their lives, even if they feel well. Therapies vary, but in general they involve:

- taking a combination of antirejection and other medications as prescribed
- going to appointments and completing laboratory tests
- protecting against injury and infection
- promptly reporting any issues or concerns, such as illness, to providers.

Common antirejection medications include:

- azathioprine
- cyclophosphamide
- cyclosporine
- mycophenolate mofetil
- prednisone
- sirolimus
- tacrolimus.

Encourage patients to take their medications as prescribed, including taking generic versus brand name versions of their medications. Some debate exists about whether switching from generic to brand name versions of medications (and vice versa) is appropriate. Ensure that patients understand this and encourage them to speak up if a healthcare professional other than their nephrologist attempts to make medication changes.

Instruct patients to report signs and symptoms of acute organ rejection, which include:

- flu-like symptoms, such as a fever
- pain at the transplant site
- sudden weight gain, swelling, or changes in blood pressure or heart rate
- feeling generally unwell.

sion, and stress. For example, Casey and colleagues' systematic review of patients beginning hemodialysis found that they felt vulnerable because of their access site and related procedures, disfigured by their therapy access site, their body image was altered, and their life had been encroached on. They also felt anxious because they had to confront decisions they wanted to avoid. Patients who undergo transplants may feel guilty, especially if they received a deceased-donor transplant.

The complex and lifelong nature of the

CKD diagnosis will present many challenges and concerns. For example, many patients take several medications, conform to dietary and other restrictions, travel to appointments and treatments, experience employment effects, may feel they're a burden on their loved ones, and pay for expensive medications and therapies. In addition, their self-image may be altered as a result of their disease and treatments. Assess patients' psychosocial status and coping mechanisms, and help them identify strategies, resources, and interventions to support their well-being.

Resources

Many chronic kidney disease (CKD) resources are available for nurses and patients. Several local and national organizations provide free resources, including answers to frequently asked questions, information booklets and brochures, trained professionals who provide on-site and remote assistance, and support groups for patients with CKD or end-stage renal disease who are receiving renal replacement therapies. Visit these organizations' websites to gather resources, learn more, and refer patients as needed.

- American Kidney Fund
kidneyfund.org
- American Nephrology Nurses Association
annanurse.org
- Living Legacy Foundation of Maryland
thellf.org
- National Kidney Foundation
kidney.org
- Standardised Outcomes in Nephrology
songinitiative.org
- United Network for Organ Sharing
unos.org

Monitor disease and treatment complications

CKD can result in several complications (such as fluid overload, electrolyte imbalances, and anemia) that will require treatment. In collaboration with patients and providers, nurses help deliver treatment by assessing, planning, implementing, and evaluating care plans. For example, if your patient is experiencing fluid overload, you may need to carry out provider orders that include applying fluid restrictions and/or administering diuretic medications. Electrolyte imbalances may require dietary changes and/or medication administration. Use the nursing process when performing these treatments, and frequently and promptly communicate with patients and providers to help improve outcomes. Your accurate and thorough nursing assessment data will help in revising treatment plans to ensure that patients meet goals. These data should include vital signs, including pain and pulse oximetry levels, intake and output, weight, mental status, energy level, reflexes, skin color and integrity, presence of blood in sputum and stools, heart and lung sounds, psychological status and needs, and the patient's ability to accomplish activities of daily living.

For patients with late-stage CKD who are receiving hemodialysis or peritoneal dialysis, assess access sites for any issues (for example, signs and symptoms of occlusion and/or infection), keep sites clean and dry to prevent infection, and promptly report concerns to providers. Place an identification band on the access extremity so other healthcare professionals know not to use it for any other procedures.

Promptly report signs and symptoms (changes in blood pressure, nausea, vomiting, chest pain, back pain, cramping, and fever with or without chills) of RRT adverse events and infection to providers. Signs and symptoms of local infection at the access site include redness, warmth, tenderness, purulent drainage, sores, and swelling. Signs and symptoms of systemic infection include fever, chills, blood pressure changes, nausea, and vomiting. If a patient has a hemodialysis arteriovenous graft or fistula, assess for patency and signs that the access site may fail by palpating for a thrill (vibration); auscultating for a bruit (swishing); and assessing capillary refill time, pulses, and for

alterations in sensation, color, temperature, and shape (abnormalities such as blebs, ballooning, and bulging).

For patients who have undergone transplantation, report any signs of acute organ rejection (for example, flulike symptoms, pain at the transplant site, sudden weight gain or swelling, feeling generally unwell). Work with the transplant team to meet patients' care and educational needs.

Patients always have the right to refuse treatment or choose palliative care. Help patients make the best choice for themselves and respect their wishes. Collaborate with and involve providers in these discussions and decisions. (See *Resources*.)

Build confidence, improve care

Nurses encounter adults with CKD in all settings and at all stages of the disease. When you can identify the risk factors for CKD, understand how to prevent or slow disease progression, and are skilled at providing patient education and monitoring the disease and its treatment, your confidence in caring for these patients will increase. With that confidence and knowledge, you can promote patient physical and psychosocial well-being to help ensure quality of life. **AN**

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Please mark the correct answer online.**1. Which of the following cause about 70% of chronic kidney disease (CKD) cases?**

- a. Hypertension and glomerulonephritis
- b. Diabetes and hypertension
- c. Diabetes
- d. Glomerulonephritis

2. CKD is primarily diagnosed based on which of the following tests?

- a. Renal ultrasound
- b. Creatinine
- c. Glomerular filtration rate (GFR)
- d. Uric acid

3. All of the following are risk factors for CKD except

- a. antineoplastic therapy.
- b. sickle cell disease.
- c. urinary infections.
- d. age 70 or older.

4. Signs and symptoms of CKD include

- a. feeling warm.
- b. feet and ankle edema.
- c. increased appetite.
- d. occasional itching.

5. By the time patients experience overt symptoms of CKD, how much of their kidney function has typically been destroyed?

- a. 10% to 20%
- b. 30% to 40%
- c. 50% to 60%
- d. 80% to 90%

6. You are caring for Mr. Johnson*, who has been diagnosed with CKD. His most recent GFR is 20 mL/min/1.73m², indicating what stage of CKD?

- a. 2
- b. 3
- c. 4
- d. 5

7. General dietary instructions for Mr. Johnson include eating a variety of foods that are

- a. low sugar.
- b. high fat.
- c. frozen.
- d. high carbohydrate.

8. You learn that Mr. Johnson will require hemodialysis. Patient education related to the access site includes:

- a. Access sites should be used for dialysis only.
- b. Access sites can be used for dialysis and blood draws.
- c. Carrying heavy objects over moderate distances is permitted.
- d. The occlusive dressing doesn't need to be regularly changed.

9. Mr. Johnson reports fever, chills, and nausea. You suspect

- a. electrolyte imbalance.
- b. localized infection.
- c. systemic infection.
- d. poor oxygenation.

10. Ultimately, Mr. Johnson requires a kidney transplant. Patient education should include which of the following?

- a. Signs of acute organ rejection include decrease in temperature.
- b. Signs of acute organ rejection include sudden weight loss.
- c. Generics can be substituted for brand name medications.
- d. Antirejection medications, such as cyclophosphamide, should be taken as prescribed.

*Name is fictitious.