



Managing Chronic Kidney Disease in Long-Term Care: What you can do for your residents

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Introduction

Chronic Kidney Disease (CKD) is defined as a *permanent* loss of kidney function and is defined by stage based on glomerular filtration rate (GFR). CKD decreases the ability of kidney to perform necessary functions and may eventually lead to kidney failure (ESRD), requiring dialysis or a kidney transplant to maintain life.

According to the National Kidney Foundation, the incidence of CKD has risen progressively over the past 30 years. Currently, 19.2 million Americans or 11% of the population have CKD, and another 20 million are at increased risk. Kidney disease is the ninth leading cause of death in the US, with over 80,000 deaths from CKD reported annually.¹

Racial and ethnic minorities have a higher risk of CKD, especially African Americans and American Indians.² In addition, age is a key predictor independent of other risk factors. Eleven percent of people in the United States 65 years of age or older have moderately to severely decreased kidney function.¹ The two most common causes of CKD are diabetes and hypertension. Currently diabetes accounts for nearly half of all new end-stage renal disease (ESRD) cases. By 2006, diabetes is expected to surpass all other causes of new cases of CKD combined.¹

It is clear from these statistics that many residents of skilled nursing and assisted living facilities are at risk of, or have, CKD. The number of geriatric end-stage renal disease (ESRD) patients in the United States is increasing disproportionately to other age groups on dialysis. As a result, there will be more dialysis patients that will require the assistance of nursing homes in the future. In fact, some facilities in Florida recently reported that over 5% of their residents receive routine dialysis treatments.

The long-term care dietitian must be familiar with the standards of care for both pre-dialysis CKD and ESRD. Because there is evidence that earlier stages of CKD can be detected and treated and that adverse outcomes can be prevented or delayed, the long-term care dietitian should play an active role in determining which residents are at risk for, or have, CKD.

Screening and Diagnosis

Fortunately, determining which long-term care residents are at risk for CKD is fairly simple. Those residents with diabetes and hypertension, particularly minorities, are at highest

risk. While not all residents with diabetes or hypertension will have CKD, preventive measures should be followed for all residents at risk. Preventive measures include:

1. Stringent control of blood pressure with angiotensin-converting enzyme inhibitors (ACEIs) and angiotensin II receptor blockers (ARBs) ³
2. Careful glycemic control in individuals with diabetes. ³ It is important to remember that undernutrition is a significant problem in long-term care. The diet must be liberalized to the extent possible while still maintaining good glycemic control. A consistent-carbohydrate meal plan has been shown to be most effective in controlling blood sugars and allowing residents flexibility in meal choices.

In order to determine which of those residents at risk for CKD may be in the early stages of CKD, a simple cost-effective diagnostic tool is needed. The urine albumin test, which detects microalbuminuria, has been shown to be the most sensitive test for detecting early-stage CKD. Current recommendations call for annual urine testing of all individuals with diabetes. ⁴ There are no recommendations for testing other individuals, but testing for proteinuria with the dipstick method has been shown to be cost-effective in individuals with hypertension.

CKD can also be diagnosed clinically by the Glomerular filtration rate (GFR), which measures the level of kidney function and determines the stage of kidney disease. Normal GFR in both kidneys in adults is 120 to 125 milliliters per minute (ml/min)/1.73m². The lower the GFR result, the greater the decline in kidney function. The GFR can be calculated by the laboratory and by using one of two mathematical formulas²:

Cockcroft-Gault Equation

$$GFR = [(140 - \text{age}) \times \text{body wt (kg)} \times 0.85 \text{ if female}] / 72 \times \text{serum creatinine (mg/dl) or}$$

Modified Diet in Renal Disease Equation

$$GFR = 170 \times [\text{serum creatinine concentration (mg/dl)}^{-0.999}] \times [\text{age}^{-0.176}] \times [0.762 \text{ if patient is female}] \times [1.18 \text{ if patient is black}] \times [\text{serum urea nitrogen concentration (mg/dl)}^{-0.170}] \times [\text{serum albumin concentration (g/dl)}^{+0.318}]$$

The GFR is used to determine the stage of CKD. Table I lists the stages of CKD. There is evidence that a low-protein diet can be used to delay the progression of early-stage CKD. When protein is restricted, adequate intake of calories is needed to maintain body weight, protein stores, skin integrity and overall nutritional health.

Stage	Description	GFR (ml/min/1.73m ²)
1	Kidney damage with normal kidney function	≥90
2	Kidney damage with mild decrease in kidney function	60-89

3	Moderate decrease in kidney function	30-59
4	Severe decrease in kidney function	15-29
5	Kidney Failure (Dialysis or Transplant needed)	<15

Table I: Stages of CKD²

Nutritional Management of CKD in Long-term Care

The goals of nutritional management of CKD across the continuum of care include delaying the progression of kidney disease, preserving protein and nutritional status, minimizing complications and symptoms and maintaining blood chemistries. Nutritional management of the resident with CKD, as with all residents, should follow the Nutrition Care Process developed by the American Dietetic Association.⁵

The Nutrition Care Process begins with a comprehensive nutritional assessment. The assessment for residents at risk for, or with, CKD includes an evaluation of the same areas as any other assessments. Anthropometrics, biochemical data, clinical and physical data and dietary history should all be assessed. Areas of particular importance in long-term care are:

1. Weight history

The dietitian should analyze the resident's current weight, usual weight and body mass index to determine if the resident has had a recent involuntary weight loss or is at risk for malnutrition.

2. Chewing/swallowing ability

The dietitian should observe the resident at meal time to observe for signs and symptoms of difficulty chewing and swallowing and to determine if the resident is tolerating the diet as ordered. If the resident exhibits signs and symptoms of chewing or swallowing difficulties, the dietitian should request a consult for the speech therapist. Once evaluated by the speech therapist, a care plan should be developed to ensure that the resident receives the appropriate diet and required supervision with meals.

3. Feeding ability

The dietitian should observe the resident during meal time to determine if the resident requires assistance with meals or adaptive devices. If the resident appears to have difficulty eating, the dietitian should request a consult for the occupational therapist. Once evaluated by the occupational therapist, the dietitian should confirm that a care plan is in place to ensure the resident receives adequate assistance or equipment with meals.

4. Diet order

The dietitian should review the diet order to determine if it can be liberalized for the resident. Liberalized diets help increase intake and prevent malnutrition, but

the decision to liberalize the diet must be balanced against the need to restrict protein in early-stage CKD and the need for tight glycemic control.

5. Lab Values

A baseline albumin and prealbumin should be recommended so that nutritional status can be monitored and changes in protein status can be evaluated. Both albumin and prealbumin may be affected by stress and infection and must therefore be evaluated in the context of the resident's current medical status. In addition, pre-albumin is elevated in renal disease, but is still a valid marker of protein-energy status. To overcome the limitation of higher prealbumin levels, it is recommended that the outcome goal for prealbumin be greater than or equal to 30 mg/dL. The dialysis facility draws labs each month. The dietitian should contact the dialysis facility to determine when labs are drawn each month and arrange a telephone conference with the dialysis dietitian after the labs are received.

6. Fluid Restrictions

The new Centers for Medicare and Medicaid (CMS) survey guidelines require that staff be aware of fluid restrictions and that fluid intake is monitored. The dietitian should review the procedure for providing and monitoring fluids for residents with fluid restrictions. For dialysis residents not on a fluid restriction, the dietitian should consult the dialysis facility to determine if a fluid restriction is required.

7. Educational Needs

The new CMS survey guidelines require that all residents on dialysis understand any dietary restrictions, including food and fluids. The dietitian must evaluate the resident's current intake, including calories, macronutrients, sodium, potassium, calcium, phosphorus, fluids and vitamins and minerals to determine the resident's dietary compliance and need for diet education.

8. Nutrient Needs

Nutrient needs in long-term care are the same as those for other individuals with CKD. Calculation of estimated nutrient needs must be balanced with the need for liberalization of the diet. Detailed nutrient requirements can be found in the Pocket Guide to Nutrition Assessment of the Patient with CKD published by the National Kidney Foundation⁶. A summary of nutrient needs specific to long-term care is shown in Table II.

Nutrient	CKD	Hemodialysis	Peritoneal Dialysis
Protein	Stages 1-3: RDA GFR < 25 ml/min/1.73m ² : 0.6 to 0.75 g pro/kg BW with ≥ 50% high biological value	≥ 1.2 g/kg BW with ≥ 50% high biological value	≥ 1.2 – 1.3 g/kg BW with ≥ 50% high biological value
Calories	30-35 kcal/kg BW for patients over 60; 35 kcal/kg BW for patient under 60	Same	Same, include dialysate calories

Sodium	In long-term care use No Added Salt diet and avoid salty meats, luncheon meats, salty seasonings, canned soups and salty snacks	Same	Same
Potassium	Generally unrestricted until dialysis is initiated.	2-3 g/day, work with dialysis dietitian to adjust to serum levels. In long-term care, avoid citrus, bananas, tomato products and potatoes.	3-4 g/day, other recommendations same as for hemodialysis
Phosphorus	Normal amounts are needed for bone metabolism. Protein-restricted diets will limit high phosphorus sources of food. If phosphorus is elevated, limit milk and dairy to 8 oz per day and/or consider phosphorus binders.	Limit milk and dairy to one serving (8 oz milk or one equivalent dairy serving). Work with dialysis dietitian to determine need for phosphorus binders.	Same as hemodialysis.
Calcium	Limit to 1.0 to 1.5 g/day, < 2.0 to 2.5 gm, including binder load	< 2.0 to 2.5 g/day, including binder load	Same as hemodialysis
Fluid	Usually unrestricted, exceptions include CHF, edema or uncontrolled hypertension	Output plus 1000 ml or restrict to achieve \leq 2 to 3 kg weight gain between treatments	Maintain fluid balance; most patients can tolerate approximately 2000 ml/day
Vitamins and Minerals	RDA: B complex and Vitamin C, individualize Vitamin D, Fe and Zn	Water-soluble vitamin: 2 mg B ₆ , 1 mg folate, 3 mcg B ₁₂ , RDA for other B vitamins, 60-100 mg Vitamin C, RDA for Vitamin E and Zn, individualize Fe and Vitamin D	Same as hemodialysis

Table II: Summary of Nutrient Needs in Long-term Care

The next step of the Nutrition Care Process is the nutrition diagnosis, a detailed explanation of which is beyond the scope of this article. Detailed information on development of the nutrition diagnosis statement can be found in ADA's Nutrition Diagnosis and Intervention manual. It is important to note that CKD is a medical diagnosis. The nutrition diagnosis will be a statement of the problems the resident is experiencing due to CDK, such as abnormal labs, excessive weight gain, lack of dietary compliance or lack of knowledge.

Once the nutrition assessment and diagnosis statement is complete, step three of the Nutrition Care Process, the nutrition interventions, can be planned and implemented. The first component, planning, involves deciding on the interventions that will address the identified problem. Interventions should be based on the current standards of practice and should be developed in coordination with the dialysis facility dietitian.

Interventions specific to long-term care residents include:

1. Liberalized diet

Liberalize the diet to the extent possible based on Table II. Add LCS or carbohydrate-controlled restriction for residents with diabetes. Work with the dialysis dietitian to individualize the diet to each resident's specific needs.

2. Sack Breakfast or Lunch

Each patient who receives dialysis treatment outside the facility must be provided with a bag lunch or breakfast depending on the time the resident goes for dialysis treatment. A sack breakfast and lunch menu cycle must be in place to ensure consistency and adequate nutrition are provided. Dietary employees must receive training on renal diets and the use of sack breakfast and lunch meals.

3. Supplements

Always try “food first” by obtaining and honoring the resident’s preferences. If a supplement is necessary, try to choose supplements that are high-calorie, high-protein in a small volume. Monitor the resident’s sodium, potassium, calcium and phosphorus levels as needed. A method must be developed to ensure that supplements are provided with the resident’s sack breakfast or lunch on dialysis days.

4. Nausea, vomiting, poor intake, loss of appetite

Residents with poor intake or decreased appetite may benefit from a liberalized diet as previously discussed. Giving small frequent meals that emphasize resident preferences may also help. Minimizing food odors by using cold protein foods, such as meat sandwiches, can help avoid nausea, as can softer, less spicy foods.

5. Edema, high blood pressure or excessive weight gains between dialysis treatments

For residents experiencing any of the above problems, it may be necessary to limit salt and salty foods. If a salt restriction is required, the dietitian should explain to the resident the benefits of reducing sodium intake to encourage compliance. Alternative methods for adding flavor to foods should be tried. If weight gains are excessive between treatments, the dietitian should consult with the dialysis dietitian to determine the appropriate fluid restriction and should educate the staff on providing and monitoring fluids correctly.

6. Education

Many long-term residents are capable of understanding their diet. The diet should be explained using survival level terms and handouts. Based on the resident’s diet order, the dietitian should relate the physical effects of diets high in protein, sodium, potassium, phosphorus, calcium and/or fluids and how limiting these nutrients can help the resident to feel better. Diet education should be documented in the chart, including the education provided, materials provided and the resident’s comprehension and willingness to comply. Residents who are non-compliant should be re-educated at regular intervals based on labs, weight changes and other physical effects and the re-education should be documented. Care givers, including staff and family, should be educated when the resident cannot understand the dietary restrictions.

The second component of the intervention step is implementation. This includes the development of a nutrition problem list with an individualized plan of care and prioritized interventions and an individualized diet prescription and meal pattern. The Nutrition Diagnosis

Statement and the planned interventions will form the basis of the nutrition care plan. The dietitian and/or the facility staff should follow up on all recommendations and ensure that they are implemented in an expeditious manner.

Once the interventions are implemented, the dietitian and the facility staff must monitor the resident's response and revise the care plan as needed. Consultant dietitians will need to develop a procedure for communicating with the facility between visits as necessary. Communication between the dialysis center dietitian and the long-term care dietitian is critical to this step and documentation of this communication is expected by state and federal surveyors. The long-term care dietitian should arrange to speak with the dialysis dietitian a minimum of monthly. Weight status and changes, labs, fluid gains, skin status and any other concerns should be reviewed and documented. If the dialysis facility is unable to weigh the resident, the facility must weigh the resident at least once each week following dialysis treatment.

The prevalence of CKD in the elderly population is increasing each year. The long-term care dietitian must be alert to residents at risk of, or with, early-stage CKD in order to implement nutrition care plans that ensure maintenance of adequate nutrition status while minimizing complications and symptoms of the disease. For more information on medical nutrition therapy in CKD, go to www.beckydorner.com, where a pre-recorded teleseminar with accompanying CEUs is available.

References

- ¹ Schoolwerth AC, Engelgau MM, Rufo KH, et al. Chronic Kidney Disease: A Public Health Problem That Needs a Public Health Action Plan. *Prev Chron Dis*. 2006; 3(2):A57. Available at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1563984>. Accessed March 26, 2007.
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- ³ Formica RN. CKD Series: Delaying the Progression of Chronic Kidney Disease. *Hospital Physician*. 2003; April: 24-33, 43. Available at: http://www.turner-white.com/memberfile.php?PubCode=hp_apr03_delaying.pdf. Accessed March 26, 2007
- ⁴ Synder S, Pendergraph B. Detection and Evaluation of Chronic Kidney Disease. *American Family Physician*. 2005; 72(9). Available from: <http://www.aafp.org/afp/20051101/1723.html>. Accessed March 26, 2007.
- ⁵ *Nutrition Diagnosis and Intervention: Standardized Language for the Nutrition Care Process*. Chicago, IL: American Dietetic Association; 2007.
- ⁶ McCann L, editor. *Pocket Guide to Nutrition Assessment of the Patient with Chronic Kidney Disease*. New York, NY: National Kidney Foundation; 2002.

Resources

The Florida Medical Nutrition Therapy Manual; 2005 Edition

National Kidney Foundation: www.kidney.org

NKF K/DOQI Guidelines http://www.kidney.org/professionals/kdoqi/guidelines_ckd/toc.htm

National Institutes of Diabetes and Digestive and Kidney Diseases: www.niddk.nih.gov

Current Recommendations for Medical Nutrition Therapy for the Patient with Chronic Kidney Disease, Janet McKee, MS, RD, LD/N and Susan Tassinari, MS, RD, LD/N. PreRecorded Teleseminar available at www.beckydorner.com

The Nephron Information Center: <http://nephron.com>

Worldwide Kidney Disease Community: <http://ikidney.com>

American Association of Kidney Patients: www.aakp.com

American Dietetic Association: www.eatright.org