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Dr. Linden disclosed that his firm's clients include Optimal Renal Care and DaVita, providers of dialysis services. Dr. Butterworth disclosed that she is part of the Motivational Interviewing Network of Trainers and that Q-Consult provides motivational interviewing training for clients. Dr. Biuso reported no potential conflict of interest relevant to this article.

Help patients with chronic kidney disease stave off dialysis

Screening and timely referral are, of course, key. But this health coaching technique can make a big difference, too.

PRACTICE RECOMMENDATIONS

- ☐ *Screen all patients for chronic kidney disease (CKD) by estimated glomerular filtration rate and persistent proteinuria. (A)*
- ☐ *Treat all CKD patients with angiotensin II receptor blockers or angiotensin-converting enzyme inhibitors, unless there is a contraindication. (A)*
- ☐ *Recommend a heart-healthy diet and refer patients with CKD to a registered dietitian for more intensive dietary modifications. (A)*
- ☐ *Integrate motivational interviewing into your care of CKD patients. This health coaching technique has been shown to be causally and independently associated with positive behavioral outcomes. (C)*

Strength of recommendation (SOR)

- (A)** Good-quality patient-oriented evidence
- (B)** Inconsistent or limited-quality patient-oriented evidence
- (C)** Consensus, usual practice, opinion, disease-oriented evidence, case series

Over the last decade, the prevalence of chronic kidney disease (CKD) has grown approximately 20% to 25%, and current estimates are that the disease affects about 15% of the general population.¹ All-cause hospitalization rates are almost 3 times higher among CKD patients than in those without the disease, and costs associated with CKD account for as much as 28% of the Medicare budget.¹ Most disturbingly, the incidence at which patients diagnosed with CKD progress to end-stage renal disease (ESRD) continues to increase annually, reaching 354 cases per million population in 2007.¹ By 2020, estimates are that more than 750,000 people in the United States will need dialysis for kidney failure.¹

Guidelines exist, but awareness falls short

Several initiatives to increase awareness of CKD have been publicized. They include the Kidney Disease Outcome Quality Initiative (KDOQI) of the National Kidney Foundation (NKF), which issued clinical practice guidelines for treating chronic kidney disease in 2002, and *Healthy People 2010*, which includes specific measures to reduce the number of new cases and the complications, disability, economic costs, and mortality associated with the disease.^{2,3} Despite these efforts, studies show that many primary care providers are still unaware of these guidelines.^{4,5}

Patients go undiagnosed until they reach the later stages of the disease, and many receive suboptimal care—even when they are identified—including lack of timely referral to a nephrologist and inadequate management of CKD comorbidities.⁶⁻¹³ (More on comorbidities, in a bit.)

Plus, there's a lack of support ... Care for these conditions is complex and difficult, and consultation or referral to a nephrologist may not be readily available, as the current pool of specialists is barely adequate to meet the needs of a growing population of CKD patients and the number of physicians-in-training entering the specialty is not adequate

to meet the need.¹⁴ In this situation, primary care providers will have to assume an ever-enlarging share of the responsibility for care of CKD patients, including some clinical activities that are currently performed by specialists.

The first step: Screen all patients for CKD

Incorporating CKD screening into routine blood work for all patients facilitates earlier detection, evaluation, and treatment of the disease. Screening tests include the estimated glomerular filtration rate (GFR) based on serum creatinine as well as measurements of urine albumin and proteinuria. The persistence of proteinuria must be confirmed by 2 of 3 abnormal readings over a minimum of 3 months, because factors such as fever or exercise may affect test results. Measurement of albumin or total protein concentration in a spot sample avoids the need for timed collections. Factoring the concentration of total protein or albumin by urine creatinine concentration and using age/sex-specific thresholds eliminates most variations in measurement.¹⁵

Keep these comorbidities on your radar screen

■ **Diabetes and hypertension** are 2 of the most common causes of CKD in the United States, and the number of kidney failure cases due to these problems is increasing. The most important adverse outcomes of CKD are not only progression to ESRD, but also increased risk for cardiovascular disease (CVD). Studies show that the presence of albuminuria and a decreased estimated GFR consistently and incrementally increase the risk for CVD.¹⁶ Decreased GFR is an independent risk factor for CVD outcomes and for all-cause mortality, including sudden death in patients with existing coronary artery disease. Moreover, patients with CKD are 100 times more likely to die from CVD than to develop kidney failure.¹⁶

■ **Depression** is another prevalent, yet commonly overlooked, comorbid condition. Patients with any chronic disease are at risk for depression, with the incidence rising with

the severity of the medical condition.¹⁷ CKD is no exception. Rates of depression as high as 29%, as well as rates of anxiety disorders as high as 46%, have been documented in patients on dialysis.¹⁸ Patients with depression are impaired in overall functioning and less able to follow medical regimens.¹⁷ In addition, low quality of life and depression predict higher morbidity and mortality rates in patients with ESRD.¹⁹ Because the diagnosis of depression is frequently missed in primary care settings, screening for depression should be a basic element in CKD management.²⁰

Clinical management of kidney disease

The treatment goal for early-stage kidney disease is to address the risk factors that contribute to the progression of kidney disease: hypertension, heart disease, stroke, diabetes, and dyslipidemia. The **TABLE** reviews clinical management areas by disease stage.

■ **Prescribe angiotensin antagonists.** Angiotensin II receptor blockers (ARBs) and angiotensin-converting enzyme (ACE) inhibitors antagonize the toxic effects of increases in circulating angiotensin II and are therefore a key component of a therapeutic strategy to halt progressive kidney disease.²¹

■ **Review medications, promote a healthier lifestyle.** In addition to prescribing ARBs or ACE inhibitors, the family physician should review the CKD patient's current medications to eliminate nephrotoxic drugs and adjust other medications on the basis of the patient's creatinine clearance. Other measures include making sure vaccinations for influenza, pneumococcal pneumonia, and hepatitis B are up to date and emphasizing the importance of smoking cessation and exercise.

■ **Treat comorbid conditions.** Hypertension and diabetes must be treated aggressively. Patients with dyslipidemia should be managed with statins.² Certain complications of progressive kidney disease, such as anemia, bone/mineral metabolic disease, and metabolic disorders, are typically treated by a nephrologist. Nevertheless, primary care providers need to understand these conditions in order to work



Decreased glomerular filtration rate is an independent risk factor for cardiovascular disease outcomes and all-cause mortality.

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Current guidelines do not propose normalizing hemoglobin in patients with renal disease.

together with the nephrologist in managing the CKD patient.

■ **Check thyroid hormone and vitamin D levels.** Understanding which factors predict disease progression or poor outcome is particularly useful. Most patients with CKD have low T3 syndrome, that is, low serum triiodothyronine levels in the absence of a thyroidal illness. In a recent paper, Song and colleagues showed that low T3 syndrome was common in early CKD and that estimated GFR was positively related with T3, independent of age and serum albumin.²²

In another recent study, Ravani et al showed that plasma 25-hydroxyvitamin D is an independent, inverse predictor of disease progression and death in patients with stage 2 to 5 CKD.²³ Vitamin D deficiency has been linked to CVD and early mortality in patients on hemodialysis.²³ Checking for these 2 markers—low T3 syndrome and vitamin D deficiency—should therefore be part of your screening process for early stage CKD.

■ **Refer to a dietitian.** Dietary modification is another important component of the treatment plan. Dietary modifications are often needed to protect against CVD, help control blood pressure, reduce proteinuria, and improve metabolic control in patients with diabetes.^{2,24} Dietary modifications for CKD patients may go well beyond standard recommendations for a heart-healthy diet.^{2,24} Calcium, sodium, phosphorus, and potassium may need to be restricted according to laboratory values and stage of the disease.²⁵ The KDOQI guidelines recommend referring CKD patients to a registered dietitian with experience in CKD for a complete nutritional assessment, comprehensive education on dietary restrictions and guidelines, and detailed dietary instruction.²

■ **Manage CKD-associated anemia.** Current guidelines do *not* propose normalizing hemoglobin in patients with renal disease, because lower levels of hemoglobin probably represent an adaptive response and correction to a “normal” level may disturb that response and lead to worse outcomes.²⁶ For a discussion of management of anemia associated with CKD, see “Anemia and chronic kidney disease: What’s the connection?” in the January 2010 issue of this journal.²⁷

■ **Refer to a nephrologist early.** A recent study by Chan et al demonstrates the beneficial effects of early referral to a nephrologist.²⁸ There is no clear definition of early vs late referral and, at times, the only criterion is how much time elapsed before the patient was put on dialysis. Referral is considered “late” when management could have been improved by earlier contact with a specialist. It is probably prudent to refer stage 3 and 4 patients, at least for initial consultation. Chan’s meta-analysis found that patients referred late had nearly a 2-fold risk of death compared with those with early referrals. This risk persists at least up to 1 year after the initiation of renal replacement therapy.

■ **Prepare patients for dialysis.** It is very important that new hemodialysis patients present for initial treatment with an arteriovenous fistula in place, as first access for hemodialysis. Fistula placement is one of the most important reasons for timely referral to a nephrologist. Later referral is associated with a significantly prolonged hospital stay for initial renal replacement therapy. Late-referred patients are sicker, and many of the complications discussed here have not been optimally treated.

The optimal time to start preparing your patient for dialysis is when GFR measures between 15 and 29 mL/min/1.73 m². Preparation includes counseling on nutrition and exercise, hepatitis B vaccination if needed, and scheduling for fistula placement.²⁹

The hardest part: Changing habits

Effective CKD treatment must emphasize lifestyle management. You need to persuade smokers to quit and “couch potatoes” to start exercising regularly. Eating habits need to change, as well: This means fewer calories and restrictions on intake of salt and certain minerals. Medications for high blood pressure, diabetes, and kidney disease need to be taken consistently, as prescribed. The **TABLE** reviews the lifestyle issues that are particularly salient at each stage of CKD.

Lifestyle modifications like these are very difficult, and helping patients make them involves much more than simple patient education. In 1 study, Durose et al found that patients on hemodialysis failed to stay on their

TABLE

Keying interventions to CKD stages

Stage	Description	GFR (mL/min/1.73 m ²)	Clinical action	Lifestyle management
	At increased risk	≥60 (with CKD risk factors)	Screening; CKD risk reduction	Healthy habits according to public health recommendations
1	Kidney damage with normal or increased GFR	≥90	Diagnosis and treatment; treatment of comorbid conditions; slowing of progression; CVD risk reduction	Emphasis on heart health: physical activity, healthy diet, weight management, and stress management. Restricted sodium, potassium, calcium, phosphorus, and protein, with emphasis on plant vs animal food sources. Treatment adherence to medications and CV/diabetes/hypertension treatment plan if applicable. Assessment of depression and referral to treatment if appropriate.
2	Kidney damage with mildly decreased GFR	60-89	Same, plus estimation of progression	Same recommendations as stage 1
3	Moderately decreased GFR	30-59	Same, plus evaluation and treatment of complications	Same recommendations as stage 1
4	Severely decreased GFR	15-29	Preparation for kidney replacement therapy	Same as above, plus assessment of social support to prepare for dialysis treatment if appropriate
5	Kidney failure	<15 or dialysis	Replacement (if uremia present)	Same as above, plus restricted fluid intake and additional protein intake

Note: Shaded area identifies patients who have CKD; unshaded area designates individuals who are at increased risk for developing CKD. CKD is defined as either kidney damage or GFR <60 mL/min/1.73 m² for ≥3 months. Kidney damage is defined as pathologic abnormalities or markers of damage, including abnormalities in blood or urine tests or imaging studies.

CKD, chronic kidney disease; CVD, cardiovascular disease; GFR, glomerular filtration rate.

Adapted from: Table 3: Chronic kidney disease: a clinical action plan. National Kidney Foundation. *KDOQI clinical practice guidelines for chronic kidney disease: evaluation, classification, and stratification*. 2002.²

diets even when they knew which dietary restrictions they should follow and what the consequences of going off their diets would be.³⁰

Update your persuasive techniques: Take on the role of coach

Newer theories of behavior change no longer rely on simply providing information and advice, but rather address the complex interaction of motivations involved in attempts to change. These include cues to action, perception of benefits and consequences, environmental and cultural influences, sense of

self-efficacy, ambivalence, and the intention to change.³¹

Unfortunately, health care providers are rarely trained in motivational techniques. Often, their approach to inducing change is authoritarian, confrontational, overly forceful, or guilt inducing. Such attitudes not only limit progress, but are actually correlated with negative behavioral and clinical outcomes.^{32,33} Recent research has verified the power of the patient-provider interaction in influencing treatment adherence and lifestyle change.³³

To be successful in getting patients to adopt new behaviors, physicians need to move away

The motivational interviewing tool kit

Express empathy

Objective: To establish rapport and avoid resistance by demonstrating your understanding of the patient's situation.

Example: "It's not easy making all these changes."

Follow-up: "But you also say you know these numbers put you at risk for more serious disease."

Roll with resistance

Objective: To avoid magnifying resistance by allowing patients to explore their barriers in a nonjudgmental, supportive manner.

Example: "You really don't want to take the medication anymore. It's hard to remember and you don't feel sick, so you don't see why you need it."

Follow-up: "I'm wondering where you see yourself in 6 months if you stop taking the medication?"

Elicit/provide reminder/elicit

Objective: To find out what the patient already knows, fill in the gaps or correct misconceptions, and explore how the change you suggest will fit into the patient's life. This is a time-saving strategy that both validates patient knowledge and allows time to address barriers.

Example:

Elicit: "Mrs. Roberts, can you tell me what you know about managing your chronic kidney disease?"

Provide reminder: "That's great. You've pretty much got it nailed. I'd just like to remind you about taking your statin medications and keeping close track of your blood pressure."

Elicit: "What do you think the biggest barrier is for you right now in managing this condition?"

Support autonomy

Objective: To reduce resistance by assuring patients you know you can't *make* them do anything—it's their choice.

Example: "Of course, it's your choice, but as your doctor, I'd be concerned if you decided not to try this medication."

Follow-up: "Nobody can make you do anything that you don't want to do. You need to consider all your options and make the choice that's right for you at this time. If you *do* decide to try this medication, I assure you that we will monitor any side effects closely and adjust the dosage to minimize any problems."

Explore ambivalence

Objective: To help the patient consider the pros and cons of change in a relaxed yet systematic manner.

Example: "So let's talk about the pros and cons of trying to quit smoking at this time."

Follow-up: "Let me see if I can summarize where you are. On the one hand, it's pretty stressful for you right now and smoking helps you cope. You've tried to quit before and you couldn't keep it up for very long. On the other hand, you really do understand the damage it's doing to your body and how it is making it more difficult for us to treat your heart disease. Your wife is willing to quit with you and you've heard about this new quit medication that can help curb cravings. Did I get it all? What are you thinking you are going to do?"

Elicit change talk

Objective: To evoke the patient's reasons, desire, ability, and need for change. This "change talk" predicts increased commitment to the lifestyle change, which, in turn, is correlated to a good clinical outcome.

Examples:

"What makes it important to you to start an exercise program?"

"What benefits would come from losing weight?"

"Why do you want to quit smoking?"

Follow-up: "You know that exercise will help you manage your stress, lose some weight, and lower your cholesterol levels. Plus, when you did it before, you had more energy and slept better. You also want to be a good role model for the kids and be able to play sports with them."

Develop an action plan

Objective: To help the patient develop a plan that is realistic and fits into his or her life. When a patient "owns" the plan, he or she is more likely to follow through.

Examples:

"So what's the next step for you?"

"What do you think you could do (and would be willing to do) for your health right now that would make the most difference?"

"What do you think your best option is?"

Follow-up: "You've outlined a great plan. You're going to try to eat more vegetables and less meat, plus cut back on portion sizes. You're also going to try and walk more. Lastly, you're willing to try the pill box to see if it makes it easier to take your medications correctly." (Pause). "So, are you going to do this?"

CONTINUED

Talking about change: A motivational interviewing conversation

Physician: Now that we've gone over your lab values and you don't have any more questions, I'd like to take a few minutes to talk about how you're doing with your treatment plan. Would that be okay with you?

Patient: Sure, doc.

Physician: You're dealing with a lot of things all together—trying to change your diet, watching your weight, monitoring your blood sugar, and taking your medications.

Patient: It is a lot. Guess it's obvious from my labs that I'm not doing so well. I feel like I get a handle on one thing but something else blows up.

Physician: Sounds like it feels a bit overwhelming right now.

Patient: Yeah, it really is... but I think I could do better.

Physician: Why don't we start with reviewing what you're doing well? You are getting your prescriptions filled, and it seems like you're taking your medications regularly.

Patient: I really do, nearly all of the time.

Physician: What else are you doing well?

Patient: I've cut down on my salt intake. We're using that salt substitute and it's okay. Ummm...but I guess by the labs I'm not watching my potassium and phosphorus like I should.

Physician: What else are you doing well?

Patient: Well, my blood pressure is down from what it was. But my sugars are still out of whack and I can't seem to lose weight.

Physician: Okay, so you've done a great job taking your medications and you've started to change your diet with the salt—both of which have really helped your blood pressure. As you say, there are some things we still need to tackle. But let's break it down into small steps—forget the whole list. Can you think of just 1 or 2 more small things that you think you could do that would make a difference right now?

Patient: Well, my wife walks every evening after dinner. She's been nagging me to walk with her. I guess I wouldn't mind that so much as long as she doesn't drag me too far. That would help me drop a few pounds and that might motivate me to be more careful with my diet. Plus, I know that exercise is also supposed to help my blood sugar.

Physician: So, a walk after dinner. Do you think you can do this?

Patient: Yes, I do.

Physician: When would you be willing to start?

Patient: Heck, I could start tomorrow. That's something that wouldn't be that big of a deal.

Physician: Great! Seems like a plan then. I'm confident that by taking these small steps like a walk every evening, you can get this under control. You have already improved in some important areas.

Patient: Thanks doc! I'll see you next visit and hopefully my numbers will be better.

from authoritarian modes and take on some of the attributes of a coach urging on the team.

How this coaching technique works

Motivational Interviewing is a health coaching technique that has been shown to be causally and independently associated with positive behavioral outcomes.³⁴ The techniques used in the motivational interviewing approach are summarized in "The motivational interviewing tool kit" on page 216. Motivational interviewing is a goal-oriented, patient-centered counseling style for helping patients explore and resolve their ambivalence about behavior change.³⁵ The approach has been used in diverse populations, settings, and medical conditions. Its efficacy was first demonstrated in the treatment of addictions to illegal drugs and alcohol.³⁶ Continued research and 2 recent meta-analyses using rigorous methodology have validated the usefulness of this approach.^{37,38}

Motivational interviewing has been shown to be effective in improving general health status and sense of well-being, promoting physical activity, improving nutritional habits, encouraging medication adherence, and managing chronic conditions such as hypertension, hypercholesterolemia, obesity, and diabetes.³⁵ A review of the literature on health behavior change demonstrates that motivational interviewing outperforms traditional advice-giving in the treatment of a broad range of behavioral problems and diseases.³⁸

Motivational interviewing is focused on helping patients explore their ambivalence and identify individual barriers that are preventing change. The skill set that motivational interviewing provides can be modified for use in the brief patient encounters typically found in the primary care setting. For an example of how you might use motivational interviewing techniques with your CKD patients, see "Talking about change: A motivational interviewing conversation" at left.

Your crucial role

CKD is well on its way to becoming a full-blown epidemic in the United States. Primary care providers carry the brunt of responsibility for the care of these

patients, and with an increasing shortage of nephrologists, the scope of those activities will likely grow. Physicians in solo or small group practice must be prepared to deliver both the clinical and behavioral/life-style components of care themselves. While this is a challenging endeavor, we believe

the framework outlined here will improve your ability to meet the complex needs of CKD patients.

JFP

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To get patients to adopt new behaviors, move away from authoritarian modes and take on the attributes of a coach.