



Taking a Closer Look at

Diabetes and Kidney Disease

Diabetes is a highly prevalent condition affecting 29.1 million Americans, including older institutionalized adults. In addition, an estimated 86 million US adults have prediabetes, a condition in which blood sugar levels are higher than normal, but not high enough to be diagnosed as diabetes. Diabetes is also the number one cause of kidney failure, accounting for 44% of new cases in 2011.¹

Facts

- Moderate to severe chronic kidney disease (CKD) is found in up to 23% of patients with diabetes.²
- In 2011, 48,374 people with diabetes in the US began treatment for end-stage kidney disease.¹
- In 2011, a total of 228,924 people with end-stage kidney disease due to diabetes in the US were living on chronic dialysis or with a kidney transplant.¹

It is important to balance clinical goals with patient preferences.

Related Challenges

Treating adults with both diabetes and renal disease can pose a significant challenge due to the numerous potential comorbidities associated. Even in patients who have their diabetes under control, CKD and kidney failure may still present considerable threats.

Fortunately, by examining the relationship between these diseases, physicians can glean useful insights that can positively impact their patients' level of care and quality of life.

Maximize Care Through Early Diagnosis

The American Diabetes Association (ADA) recommends annual screening for kidney disease in all patients with type 2 diabetes. A yearly assessment of urine albumin excretion to check for kidney damage is standard.³ The clinical diagnosis of diabetic kidney disease (DKD) is typically made by detecting proteinuria.²

Screening Considerations

Screening patients who are at risk for kidney disease may lead to enhanced detection and treatment strategies.

When CKD may be attributed to diabetes²

- Microalbuminuria or macroalbuminuria is present.
- The patient presents with diabetic retinopathy.

The annual screening for diabetic kidney disease should include^{2,3}:

- Measurements of urinary albumin-creatinine ratio (ACR) in a spot urine sample
 - When urine contains more than 30 mg of albumin per gram of creatinine, kidney disease is present.
- Measurement of serum creatinine
- Test for Persistent albuminuria
 - Microalbuminuria (30-299 mg/day) is a marker for earliest stage of diabetic nephropathy
 - Macroalbuminuria (≥ 300 mg/day) is likely to progress to end-stage renal disease.
- Estimation of glomerular filtration rate
 - When eGFR is less than 60 mL per minute, this indicates that kidney disease is present.





Factors to be examined:

1. Diet and Dietary Protein

The ADA states that people with DKD should not reduce the amount of dietary protein below the recommended daily allowance of 0.8 g/kg/day (based on ideal body weight). Recent studies indicate that reducing protein does not alter glycemic measures, cardiovascular risk measures, or the course of GFR decline.³ Patients with CKD may experience complications that are influenced by their diets, including hyperkalemia, hyperphosphatemia, and hypertension.²

2. Glycemic Control

Optimizing glucose control may reduce the risk of DKD or may slow the progression of established kidney disease.³

3. Pharmacological Treatment

Because the clearance of many drugs is decreased by kidney disease, health care providers should perform a periodic review of all of their patients' medications.² Depending on the severity of their kidney disease, patients with diabetes as well as CKD should have their drug regimens adjusted, if necessary, to help minimize adverse effects while achieving glycemic control.²

4. Comorbid Diseases

Patients with both diabetes and chronic kidney disease carry a high risk of comorbidities, including adverse cardiovascular events. In fact, most patients with diabetes and CKD have hypertension.⁴ A multidisciplinary approach, including aggressive identification and treatment of risk factors, may be the optimal solution for maximizing the care of this complex patient population. Other potential comorbidities can include²:

- Hyperlipidemia
- Hyperkalemia
- Hyperparathyroidism
- Anemia
- Hyperphosphatemia

References:

1. Centers for Disease Control. *National Diabetes Statistics Report*, 2014. <http://www.cdc.gov/diabetes/pubs/statsreport14/national-diabetes-report-web.pdf>. Accessed January 5, 2016.
2. Cavanaugh KL. Diabetes management issues for patients with chronic kidney disease. *Clin Diabetes*. 2007;25:90-97.
3. American Diabetes Association. Standards of Medical Care in Diabetes—2016. *Diabetes Care*. 2016;39(suppl 1):S1-S112.
4. National Kidney Foundation. KDOQI. Kidney Disease Outcomes Quality Initiative. *Am J Kidney Dis*. 2007;49(suppl 2):S1-S180.

Clinical Practice Guideline for the Nutritional Management of Diabetes and CKD³

- Target dietary protein intake for people with diabetes and CKD stages 1-4 is 0.8 g/kg body weight per day (the recommended daily allowance).

Clinical Practice Guideline for the Management of Hyperglycemia and Diabetes in CKD³

- Target hemoglobin A1C (HbA1C) for people with diabetes should be <7.0%, regardless of the presence or absence of CKD.*

* Goal may be modified based on age, fragility, and comorbid conditions.

Clinical Practice Guideline for the Management of Hypertension in Diabetes and CKD⁴

- Hypertensive people with diabetes and CKD stages 1-4 should be treated with an ACE inhibitor or an ARB, usually in combination with a diuretic.