

The Value of Annual Urine Albumin Testing in Slowing the Progression of Diabetic Kidney Disease

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OVERVIEW

- 1) Annual urine albumin testing detects kidney damage, which may lead to kidney failure in diabetic patients.
- 2) According to 2008 Medicare claims data, annual urine albumin testing is performed only 30% of the time on patients with diabetes.
- 3) Urine albumin testing, done at least annually, reflects the integrity of microvascular circulation and serves as a predictive indicator of cardiovascular disease, the major cause of morbidity and mortality in patients with diabetic kidney disease (DKD).
- 4) The use of ACEI or ARB agents has been shown to slow the progression of chronic kidney disease in patients with diabetes.
- 5) In early-stage diabetic kidney disease, effective glycemic and hypertension control offer independent and substantial benefits for slowing diabetic kidney disease.
- 6) Effective testing for, and early detection of DKD is critical for engaging patients in behaviors that will reduce the morbidity and mortality associated with this disease.
- 7) Since hypertension alone is a risk factor for microvascular, kidney and cardiovascular disease, periodic microalbumin testing to detect CKD is appropriate for hypertensive patients. The National Kidney Disease Educational Program (NKDEP) recommends testing at diagnosis and initiation of therapy, then, if normal, every three years for (non-diabetic) patients with hypertension.

ADDITIONAL FINDINGS

The results of a urine albumin test (urine albumin-to-creatinine ratio, or UACR test) often serve as the first indicator of DKD. This test is sensitive to the kidneys' inability to retain small amounts of albumin/protein in the blood, and, if performed regularly, can detect DKD at an early stage, when interventions for slowing the disease's progression are most effective.

A UACR of greater than 30 mg/g (albumin mg/dL ÷ creatinine g/dL) is abnormal and is referred to as microalbuminuria, while a UACR greater than 300 mg/g is labeled macroalbuminuria or proteinuria. Three positive tests for albuminuria over a three-month period confirm at least early stage (stage 1) DKD or CKD. In order to stage CKD and monitor the degree to which kidney disease is progressing an estimated glomerular filtration rate (eGFR), calculated from the measure of serum creatinine, also is needed. Both urine protein (e.g., UACR) and creatinine clearance function (e.g., eGFR calculated from serum creatinine) measures are needed to test for the the presence and monitor the progression of CKD; neither alone is sufficient.

Both the National Kidney Foundation and the American Diabetes Association guidelines and standards of care recommend annual urine albumin testing for patients with diabetes starting at diagnosis for type 2 diabetes, and within five years following a diagnosis of type 1 diabetes¹.



Yet Medicare claims for patients with diabetes show that only 30 percent of this group received an annual urine albumin test in 2008. These figures compare poorly with rates for other recommended tests: within the same group, 84 percent received at least one annual hemoglobin A1c test, 73 percent received a full lipid panel, and 57 percent received an annual dilated eye exam.

In early-stage DKD (stage 1 or 2), while there have been demonstrated benefits of ACEI or ARB therapy slowing the progression of DKD, added benefits come from glycemic and hypertension control. These results may reflect differences in how these agents, hypertension and hyperglycemia impact the renin-angiotensin system (RAS) in the earliest stages of the pathogenesis of CKD. Hypertension control, independent of the added benefits of ACEI or ARB agents beyond their action as antihypertensives, has been shown to slow the progression of DKD, especially with increasing proteinuria. Smoking cessation and lipid control also slow the progression of DKD. The reality is the effective application of all the instrumentalities that might retard the progression of early DKD to overt nephropathy (i.e., glycemic control, hypertension control, smoking cessation, and lipid control, in addition to the use of ACEI or ARB agents), involves a substantial amount of patient and provider engagement. This need for patient self-management argues strongly for effective testing to detect the early presence of DKD, so that physicians can fully engage patients in behaviors that will reduce the impact of this disease. Evaluation of albuminuria or proteinuria levels on at least an annual basis provides physicians with opportunities to implement and fine tune effective interventions.

Finally, the major cause of morbidity and mortality for patients with DKD is neither diabetes nor kidney disease; it is cardiovascular disease (CVD). Diabetes and CKD are independent and equivalent risk factors for CVD. Urine albumin and proteinuria levels and their variation over time are recognized as a significant predictive risk indicator for microvascular disease.

Notes

¹ Both the NKF KDOQI Guidelines and the ADA Standards of Care recommend a first morning void spot urine sample for a urine albumin-to-creatinine ratio (UACR) test.

References

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