Microalbumin

CPT Code **82043/82570***
Order Code **C919**
Sample Type **Urine**
Tube Type **Yellow Top**

Increased levels of microalbumin may identify:

- Metabolic syndrome/diabetes
- Kidney disease
- Cardiovascular disease (CVD)

Microalbumin levels can be reduced by:

- Lowering blood pressure
- Lowering blood sugar levels

Description

Microalbumin is the quantification of small amounts of albumin, a serum protein, in urine that can be used to identify microvascular endothelial dysfunction. The presence of small amounts of albumin in the urine may suggest the presence of systemic endothelial dysfunction – an early indicator of heart disease.[1] This test is more sensitive than a standard dipstick test routinely performed in an office setting.

Clinical Use

Microalbumin may be performed on individuals with type 1 or type 2 diabetes, hypertension, a family history of chronic kidney disease, those at intermediate (10-20%) risk for CVD, or those with known vascular disease.

Clinical Significance

Cardiovascular Significance:

- Increases in microalbumin excretion in the 'normal' range (<30 mg/g) are associated with increased risk for development of cardiovascular morbidity and mortality, as well as all-cause mortality.[1-6]
- In particular, seemingly healthy individuals from the Framingham Heart Study (defined as non-hypertensive, non-diabetic, and without prevalent CVD) with low microalbumin levels have approximately 3x greater risk for developing cardiovascular disease.[1] These microalbumin levels are gender-specific and are noted to be ≥3.9 mg/g for men and ≥7.5 mg/g for women.
- A direct, linear relationship exists between microalbuminuria and the risk of heart attack, stroke, and death.[3]

Renal Significance:

- The American Diabetes Association (ADA) has defined microalbuminuria as a microalbumin value of 30-300 mg/g creatinine.[7] A persistent microalbumin of >30 mg/g indicates a loss of kidney function and is used in the diagnosis of chronic kidney disease.[8]

Testing Frequency

Microalbumin testing is determined by an individual's medical history, but may be performed semi-annually or annually as necessary. If the initial test result is abnormal, then follow-up testing may be performed within 3-6 months following treatment.

Sample Type

Microalbumin should be performed on a urine specimen. Fasting is not required.

Commercial Insurance or Medicare Coverage

Coverage guidelines, also known as NCD (National Coverage Determination) or LCD (Local Coverage Determination) have been established or posted by CMS (Medicare & Medicaid). Guidelines should be reviewed for coverage and limitation. Limited information has been provided by the majority of the larger carriers (Aetna, United Healthcare, Cigna, Blues).

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RELATIVE RISK

Microalbumin
(mg/g creatinine)

Women	Men
<7.5 Low	<3.9 Low
≥7.5 High	≥3.9 High

Treatment Considerations†

These treatment considerations are for educational purposes only. Specific treatment plans should be provided and reviewed by the treating practitioner.

✓ **Assess insulin sensitivity.**

- If not at an optimal level,[9] consider insulin-sensitizing therapies described in the ADA guidelines for the management of pre-diabetes/diabetes.[10]

✓ **Assess blood pressure.**

- If not at an optimal level, consider initiating or titrating antihypertensive therapy.[9]

Assess the presence of coronary artery disease (CAD) with imaging techniques such as carotid intima-media thickness (CIMT) testing[11] or coronary artery calcium (CAC) scoring.[12]

✓ **Assess clotting risk.**

- Consider anti-platelet therapy if history of CAD (i.e., myocardial infarction or revascularization) and/or cerebrovascular disease (i.e., transient ischemic attack or stroke).[13]

** The CPT codes provided are based on AMA guidelines and are for informational purposes only. CPT coding is the sole responsibility of the billing party. Please direct any questions regarding coding to the payer being billed.*

† The treatment considerations are provided for informational purposes only and are not intended as medical advice. A physician's test selection and interpretation, diagnosis, and patient management decisions should be based on his/her education, clinical expertise, and assessment of the patient.

References

1. Arnlöv J et al. Low-grade albuminuria and incidence of cardiovascular disease events in nonhypertensive and nondiabetic individuals: The Framingham Heart Study. *Circulation*. 2005; 112: 969-975. 2. Lambers Heerspink HJ et al. Update on microalbuminuria as a biomarker in renal and cardiovascular disease. *Curr Opin Nephrol Hypertens*. 2006; 15: 631-636. 3. Gerstein HC et al. Albuminuria and risk of cardiovascular events, death, and heart failure in diabetic and nondiabetic individuals. *JAMA*. 2001; 286: 421-426. 4. Hillege HL et al. Urinary albumin excretion predicts cardiovascular and noncardiovascular mortality in general population. *Circulation*. 2002; 106: 1777-1782. 5. Klausen K et al. Very low levels of microalbuminuria are associated with increased risk of coronary heart disease and death independently of renal function, hypertension, and diabetes. *Circulation*. 2004; 110: 32-35. 6. Kistorp C et al. N-terminal pro-brain natriuretic peptide, C-reactive protein, and urinary albumin levels as predictors of mortality and cardiovascular events in older adults. *JAMA*. 2005; 293: 1609-161 7. American Diabetes Association: Clinical recommendations 2001: Diabetic nephropathy. *Diabetes Care*. 2001; 24: S69 –S72. 8. Fox CH et al. Importance of urine albumin–creatinine ratio in the diagnosis and prognosis of chronic kidney disease. *OA Nephrol*. 2013; 3: 21. 9. Pascual JM et al. Long-Term Impact of Systolic Blood Pressure and Glycemia on the Development of Microalbuminuria in Essential Hypertension. *Hypertension*. 2005;45:1125-1130. 10. American Diabetes Association: Standards of Medical Care in Diabetes-2018. *Diabetes Care*. 2018;41(Supplement 1). 11. Jadhav UM and Kadam NN. Association of microalbuminuria with carotid intima-media thickness and coronary artery disease—a cross sectional study in Western India. *J Assoc Physicians India*. 2002;50:1124-9. 12. Park HE et al. Significance of Microalbuminuria in Relation to Subclinical Coronary Atherosclerosis in Asymptomatic Nonhypertensive, Nondiabetic subjects. *J Korean Med Sci*. 2013;28(3):409-414. 13. American Diabetes Association: Cardiovascular Disease and Risk Management: Standards of Medicare Care in Diabetes—2018. *Diabetes Care*. 2018;41(Supplement 1):S86-S104.

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