Urinary Microalbumin

inflammation

CPT Code 82043/82570
Sample Type Urine

Order Code C919
Tube Type Yellow Top

Increased levels of urinary microalbumin may identify:

- Metabolic syndrome/diabetes
- Kidney disease
- Cardiovascular disease

Urinary microalbumin levels can be reduced by:

- Lowering blood pressure
- Lowering blood sugar levels

Description

Urinary 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. This test is more sensitive than a standard dipstick test routinely performed in an office setting.

Clinical Use

The urinary microalbumin/creatinine ratio 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

- **Renal Significance:** The American Diabetes Association has defined microalbuminuria as a urinary albumin/creatinine ratio of 30-300 mg/g[1]. Individuals with diabetes or hypertension and microalbuminuria are at increased risk for the development of kidney disease[2].
- **Cardiovascular Significance:** Increases in urinary albumin 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[3-8].
- In particular, it was shown that healthy individuals (defined as non-hypertensive, non-diabetic, and without prevalent CVD) with low levels of urinary microalbumin had approximately 3X greater risk for developing cardiovascular disease[3]. These levels were gender-specific and noted to be ≥3.9 mg/g for men and ≥7.5 mg/g for women.
- A direct, linear relationship exists between urinary microalbumin level and the risk of heart attack, stroke and death[5].

Testing Frequency

The frequency of testing is determined by an individual's medical history, but may be monitored more frequently in diabetic or hypertensive individuals.

Sample Type

The urinary microalbumin test should be performed on a urine sample.

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 limitations. Limited information has been provided by the majority of the larger carriers (Aetna, United HealthCare, Cigna, Blues).

Understanding Medical Necessity

The following ICD-9 codes for urinary microalbumin are listed as a convenience for the ordering practitioner. The ordering practitioner should report the diagnosis code that best describes the reason for performing the test and provide the 4th and 5th ICD-9 digit as appropriate.

Diagnosis	Diagnosis Code
Diabetes Mellitus Type II or Unspecified, Not Stated as Uncontrolled	250.00
Diabetes Mellitus Type II or Unspecified, Uncontrolled	250.02
Pure Hypercholesterolemia	272.0
Mixed Hyperlipidemia	272.2
Other and Unspecified Hyperlipidemia	272.4
Benign Essential Hypertension	401.1
Unspecified Essential Hypertension	401.9
Coronary Atherosclerosis of Unspecified Type of Vessel, Native or Graft	414.00
Coronary Atherosclerosis of Native Coronary Artery	414.01
Other Abnormal Blood Chemistry	790.6

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RELATIVE RISK

Urinary Microalbumin/Creatinine (mg/g)

<30.0 Low	≥30.0 High

Treatment Considerations

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

✓ **Assess blood pressure.**

- If not at goal, consider initiating, or titrating, anti-hypertensive therapy.
  NOTE: An elevated blood pressure may damage the endothelium in the kidney and contribute to disease. The presence of urinary microalbumin may suggest systemic endothelial dysfunction and the presence of CAD.
- Retest urinary microalbumin levels in 2-3 months.

✓ **Assess the presence of CAD with imaging techniques such as CIMT or coronary artery calcium scoring.**

- Consider aspirin therapy if not contraindicated.
- Consider clopidogrel if history of CAD (i.e., myocardial infarction or revascularization) and/or cerebrovascular disease (i.e., TIA or stroke).

✓ **Assess risk for pre-diabetes/diabetes.**

- If abnormal fasting glucose or oral glucose tolerance test, consider PPAR agonists, metformin or DPP-IV inhibitors if not contraindicated.

References

1. American Diabetes Association: Clinical recommendations 2001: diabetic nephropathy. *Diabetes Care*. 2001; 24: S69 –S72.
2. Sarafidis PA et al. Insulin resistance, microalbuminuria, and chronic kidney disease. *Curr Hypertens Rep*. 2008; 10: 249-251.
3. 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.
4. Lambers Heerspink HJ et al. Update on microalbuminuria as a biomarker in renal and cardiovascular disease. *Curr Opin Nephrol Hypertens*. 2006; 15: 631-636.
5. Gerstein HC et al. Albuminuria and risk of cardiovascular events, death, and heart failure in diabetic and nondiabetic individuals. *JAMA*. 2001; 286: 421-426.
6. Hillege HL et al. Urinary albumin excretion predicts cardiovascular and noncardiovascular mortality in general population. *Circulation*. 2002; 106: 1777-1782.
7. 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.
8. 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: 1609-1616.

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