Urinary Microalbumin

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

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

<table>
<thead>
<tr>
<th>CPT Code</th>
<th>Sample Type</th>
<th>Tube Type</th>
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<tbody>
<tr>
<td>82043</td>
<td>Urine</td>
<td>Yellow Top</td>
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### 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.

### RELATIVE RISK

<table>
<thead>
<tr>
<th>Urinary Microalbumin/Creatinine (mg/g)</th>
<th>&lt;30.0 Low</th>
<th>≥30.0 High</th>
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### References