Overview

Useful For

Differentiation of acute uric acid nephropathy from other causes of acute renal failure

Patients who cannot collect a 24-hour specimen, typically small children, a uric acid to creatinine ratio can be used to approximate 24-hour excretion

Method Name

Uricase

NY State Available

Yes

Specimen

Specimen Type

Urine

Specimen Required

Container/Tube: Plastic, 5-mL tube (T465)

Specimen Volume: 4 mL

Collection Instructions:

1. Collect a random urine specimen.

2. No preservative.

Additional Information: A timed 24-hour urine collection is usually the preferred specimen for measuring and interpreting this urinary analyte. Random collections normalized to urinary creatinine may be of clinical use in the following 2 scenarios:

1. In patients who cannot collect a 24-hour specimen, typically small children, a uric acid to creatinine ratio can be used to approximate 24-hour excretion.

2. When acute renal failure secondary to uric acid is suspected, a uric acid to creatinine ratio (mg/mg) >1.0 is consistent with acute uric acid nephropathy, whereas values <0.75 are consistent with other causes of acute renal failure.(1)

Forms

If not ordering electronically, complete, print, and send a Renal Diagnostics Test Request (T830) with the specimen.

Specimen Minimum Volume

1 mL

Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.
Specimen Stability Information

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urine</td>
<td>Refrigerated (preferred)</td>
<td>14 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frozen</td>
<td>14 days</td>
<td></td>
</tr>
</tbody>
</table>

Clinical and Interpretive

Clinical Information

Uric acid is the end-product of purine metabolism. It is freely filtered by the glomeruli and most is reabsorbed by the tubules. There is also active tubular secretion.

Increased levels of uric acid in the urine usually accompany increased plasma uric acid levels unless there is a decreased excretion of uric acid by the kidneys. Urine uric acid levels reflect the amount of dietary purines and also endogenous nucleic acid breakdown.

Acute uric acid nephropathy can cause acute renal failure due to uric acid precipitation within tubules. This is most commonly seen in patients with hematologic malignancies (eg, lymphoma, leukemia), often after acute lysis of cells by chemotherapy. Less commonly this may be seen with seizures, treatment of solid tumors, overproduction of uric acid in metabolic disorders such as Lesch-Nyhan syndrome or decreased uric acid reabsorption in the proximal nephron due to tubular disorder (Fanconi syndrome).

Reference Values

No established reference values

Interpretation

Uric acid excretion can be either decreased or increased in response to a variety of pharmacologic agents.

Urine uric acid levels are elevated in states of uric acid overproduction such as in leukemia and polycythemia and after intake of food rich in nucleoproteins.

A uric acid to creatinine ratio (mg/mg) >1.0 is consistent with acute uric acid nephropathy, whereas values <0.75 are consistent with other causes of acute renal failure.(1)

A timed 24-hour collection is usually the preferred method for measuring and interpreting this urinary analyte. Random collections normalized to urinary creatinine may be of clinical use in 2 scenarios, however:

-When acute renal failure secondary to uric acid is suspected, a uric acid to creatinine ratio (mg/mg) >1.0 is consistent with acute uric acid nephropathy, whereas values <0.75 are consistent with other causes of acute renal failure.(1)

-In patients who cannot collect a 24-hour specimen, typically small children, a uric acid creatinine ratio can be used to approximate 24-hour excretion.
Pediatric Reference Ranges of Uric Acid/Creatinine (mg/mg)(2)

<table>
<thead>
<tr>
<th>Age (year)</th>
<th>5th Percentile</th>
<th>95th Percentile</th>
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</thead>
<tbody>
<tr>
<td>0-0.5</td>
<td>&gt;1.189</td>
<td>&lt;2.378</td>
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<tr>
<td>0.5-1</td>
<td>&gt;1.040</td>
<td>&lt;2.229</td>
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<td>1-2</td>
<td>&gt;0.743</td>
<td>&lt;2.080</td>
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<td>2-3</td>
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<tr>
<td>3-5</td>
<td>&gt;0.594</td>
<td>&lt;1.635</td>
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<tr>
<td>5-7</td>
<td>&gt;0.446</td>
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<td>7-10</td>
<td>&gt;0.386</td>
<td>&lt;0.832</td>
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<tr>
<td>10-14</td>
<td>&gt;0.297</td>
<td>&lt;0.654</td>
</tr>
<tr>
<td>14-17</td>
<td>&gt;0.297</td>
<td>&lt;0.594</td>
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</tbody>
</table>

Cautions
High levels of bilirubin and ascorbic acid may interfere with measurement.

Clinical Reference

Performance

Method Description
Uric acid is oxidized by the specific enzyme uricase to form allantoin and peroxide. Peroxide reacts in the presence of peroxidase and a color reagent to form a red color, the intensity of which is proportional to the uric acid concentration. (Package insert: Roche Uric Acid Plus, Roche Diagnostic Corp., Indianapolis IN)

PDF Report
No

Day(s) and Time(s) Test Performed
Monday through Sunday; Continuously

Analytic Time
Same day/1 day

Maximum Laboratory Time
3 days
Test Definition: RURCU
Uric Acid, Random, U

Specimen Retention Time
7 days

Performing Laboratory Location
Rochester

Fees and Codes

Fees
- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact Customer Service.

Test Classification
This test has been cleared or approved by the U.S. Food and Drug Administration and is used per manufacturer’s instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information
84560

LOINC® Information

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<th>Test Order Name</th>
<th>Order LOINC Value</th>
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<tr>
<td>RURCU</td>
<td>Uric Acid, Random, U</td>
<td>3089-0</td>
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</table>

<table>
<thead>
<tr>
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<th>Test Result Name</th>
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<tbody>
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<td>URCO2</td>
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<tr>
<td>CREA7</td>
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<tr>
<td>RATO6</td>
<td>Uric Acid/Creatinine Ratio</td>
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