**Overview**

**Useful For**
Screening test for evaluation of kidney function

**Method Name**
Photometric/Urease

Also available as part of an Electrolyte panel.

**NY State Available**
Yes

**Specimen**

**Specimen Type**
Serum

**Necessary Information**
Patient’s age and sex are required.

**Specimen Required**

**Patient Preparation:** Fasting

**Collection Container/Tube:**
- **Preferred:** Serum gel
- **Acceptable:** Red top

**Submission Container/Tube:** Plastic vial

**Specimen Volume:** 0.5 mL

**Collection Instructions:**
1. Serum gel tubes should be centrifuged within 2 hours of collection.
2. Red-top tubes should be centrifuged and aliquoted within 2 hours of collection.

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

**Specimen Minimum Volume**
0.25 mL

**Reject Due To**

| Gross hemolysis | OK |
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>Serum</td>
<td>Refrigerated (preferred)</td>
<td>7 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frozen</td>
<td>365 days</td>
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</table>

Clinical and Interpretive

Clinical Information

Urea is the final degradation product of protein and amino acid metabolism. In protein catabolism, the proteins are broken down to amino acids and deaminated. The ammonia formed in this process is synthesized to urea in the liver. This is the most important catabolic pathway for eliminating excess nitrogen in the human body.

Increased blood urea nitrogen (BUN) may be due to prerenal causes (cardiac decompensation, water depletion due to decreased intake and excessive loss, increased protein catabolism, and high protein diet), renal causes (acute glomerulonephritis, chronic nephritis, polycystic kidney disease, nephrosclerosis, and tubular necrosis), and postrenal causes (eg, all types of obstruction of the urinary tract, such as stones, enlarged prostate gland, tumors).

The determination of serum BUN currently is the most widely used screening test for the evaluation of kidney function. The test is frequently requested along with the serum creatinine test since simultaneous determination of these 2 compounds appears to aid in the differential diagnosis of prerenal, renal and postrenal hyperuremia.

Reference Values

Males

1-17 years: 7-20 mg/dL

> or =18 years: 8-24 mg/dL

Reference values have not been established for patients who are <12 months of age.

Females

1-17 years: 7-20 mg/dL

> or =18 years: 6-21 mg/dL

Reference values have not been established for patients who are <12 months of age.

Interpretation

Serum blood urea nitrogen (BUN) determinations are considerably less sensitive than BUN clearance (and creatinine clearance) tests, and levels may not be abnormal until the BUN clearance has diminished to less than 50%. Clinicians frequently calculate a convenient relationship, the urea nitrogen:creatinine ratio-serum bun in mg/dL/serum creatinine in mg/dL.

For a normal individual on a normal diet, the reference interval for the ratio ranges between 12 and 20, with most individuals being between 12 and 16. Significantly lower ratios denote acute tubular necrosis, low protein intake,
starvation, or severe liver disease. High ratios with normal creatinine levels may be noted with catabolic states of tissue breakdown, prerenal azotemia, high protein intake, etc. High ratios associated with high creatinine concentrations may denote either postrenal obstruction or prerenal azotemia superimposed on renal disease. Because of the variability of both the BUN and creatinine assays, the ratio is only a rough guide to the nature of the underlying abnormality. Its magnitude is not tightly regulated in health or disease and should not be considered an exact quantity.

Cautions
No significant cautionary statements.

Clinical Reference

Performance

Method Description
This is a kinetic ultraviolet assay where urease cleaves urea to form ammonia and CO2. The ammonia formed then reacts with a-ketoglutarate and NADH in the presence of urease/glutamate dehydrogenase (GLDH) to yield glutamate and NAD. The decrease in absorbance, due to the consumption of NADH, is measured kinetically and is proportional to the amount of urea in the sample.(Package insert: Roche Urea/BUN reagent; Indianapolis, IN, Sept 2000)

PDF Report
No

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

Analytic Time
Same day/1 day

Maximum Laboratory Time
2 days

Specimen Retention Time
1 week

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, approved or is exempt 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**

84520

**LOINC® Information**

<table>
<thead>
<tr>
<th>Test ID</th>
<th>Test Order Name</th>
<th>Order LOINC Value</th>
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<tbody>
<tr>
<td>BUN</td>
<td>Bld Urea Nitrog(BUN), S</td>
<td>3094-0</td>
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<table>
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<tr>
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