Overview

Useful For
Evaluation of calcium oxalate and calcium phosphate kidney stone risk, and calculation of urinary supersaturation
Evaluation of bone diseases, including osteoporosis and osteomalacia

Special Instructions
- Urine Preservatives-Collection and Transportation for 24-Hour Urine Specimens

Method Name
Photometric

NY State Available
Yes

Specimen

Specimen Type
Urine

Necessary Information
24-Hour volume is required.

Specimen Required

Patient Preparation: Patient cannot have a laxative during the 24-hour collection period.

Supplies: Aliquot Tube, 5 mL (T465)

Collection Container/Tube: 24-hour graduated urine container with no metal cap or glued insert

Submission Container/Tube: Plastic, 5 mL tube or a clean, plastic aliquot container with no metal cap or glued insert

Specimen Volume: 4 mL

Collection Instructions:
1. Collect urine for 24 hours.
2. Refrigerate specimen within 4 hours of completion of 24-hour collection.

Additional Information: See Urine Preservatives-Collection and Transportation for 24-Hour Urine Specimens in Special Instructions for multiple collections.

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

Urine Preservative Collection Options
Test Definition: CALU
Calcium, 24 HR, U

**Note:** The addition of preservative or application of temperature controls must occur within 4 hours of completion of the collection.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Ambient</td>
<td>OK</td>
</tr>
<tr>
<td>Refrigerate</td>
<td>Preferred</td>
</tr>
<tr>
<td>Frozen</td>
<td>OK</td>
</tr>
<tr>
<td>50% Acetic Acid</td>
<td>OK</td>
</tr>
<tr>
<td>Boric Acid</td>
<td>OK</td>
</tr>
<tr>
<td>Diazolidinyl Urea</td>
<td>OK</td>
</tr>
<tr>
<td>6M Hydrochloric Acid</td>
<td>OK</td>
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<tr>
<td>6M Nitric Acid</td>
<td>OK</td>
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<tr>
<td>Sodium Carbonate</td>
<td>No</td>
</tr>
<tr>
<td>Thymol</td>
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<tr>
<td>Toluene</td>
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</tbody>
</table>

**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>
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<tbody>
<tr>
<td>Urine</td>
<td>Refrigerated (preferred)</td>
<td>14 days</td>
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</tr>
<tr>
<td></td>
<td>Frozen</td>
<td>30 days</td>
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<tr>
<td></td>
<td>Ambient</td>
<td>72 hours</td>
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**Clinical and Interpretive**

**Clinical Information**
Calcium is the fifth most common element in the body. It is a fundamental element necessary to form electrical gradients across membranes, an essential cofactor for many enzymes, and the main constituent in bone. Under normal physiologic conditions, the concentration of calcium in serum and in cells is tightly controlled. Calcium is excreted in both urine and feces. Ordinarily about 20% to 25% of dietary calcium is absorbed and 98% of filtered calcium is reabsorbed in the kidney. Traffic of calcium between the gastrointestinal tract, bone, and kidney is tightly controlled by a complex regulatory system that includes vitamin D and parathyroid hormone. Sufficient bioavailable calcium is essential for bone health. Excessive excretion of calcium in the urine is a common contributor to kidney stone risk.

**Reference Values**
Males: <250 mg/24 hours*
Females: <200 mg/24 hours*

*Values represent clinical cutoffs above which studies have demonstrated increased risk of kidney stone formation. These values were not determined in a reference range study.

Reference values have not been established for patients who are less than <18 years of age.

Reference values apply to 24-hour collection.

**Interpretation**

Increased urinary calcium excretion (hypercalciuria) is a known contributor to kidney stone disease and osteoporosis. Many cases are genetic (often termed idiopathic). Previously such patients were often divided into fasting versus absorptive hypercalciuria depending on the level of urine calcium in a fasting versus fed state, but the clinical utility of this approach is now in question. Overall, the risk of stone disease appears increased when 24-hour urine calcium is above 250 mg in men and above 200 mg in women. Thiazide diuretics are often used to reduce urinary calcium excretion, and repeat urine collections can be performed to monitor the effectiveness of therapy.

Known secondary causes of hypercalciuria include hyperparathyroidism, Paget disease, prolonged immobilization, vitamin D intoxication, and diseases that destroy bone (such as metastatic cancer or multiple myeloma).

Urine calcium excretion can be used to gauge the adequacy of calcium and vitamin D supplementation, for example in states of gastrointestinal fat malabsorption that are associated with decreased bone mineralization (osteomalacia).

**Cautions**

No significant cautionary statements

**Clinical Reference**


**Performance**

**Method Description**

Calcium ions react with 5-nitro-5'-methyl-BAPTA (NM-BAPTA) under alkaline conditions to form a complex. This complex reacts in the second step with EDTA. The change in absorbance is directly proportional to the calcium concentration and is measured photometrically. (Package insert: Roche CA2 kit. Roche Diagnostics; V5.0 03/2019)
PDF Report
No

Day(s) Performed
Monday through Sunday

Report Available
Same day/1 to 3 days

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, approved, or is exempt by the US 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
82340

LOINC® Information

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<thead>
<tr>
<th>Test ID</th>
<th>Test Order Name</th>
<th>Order LOINC Value</th>
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<tbody>
<tr>
<td>CALU</td>
<td>Calcium, 24 HR, U</td>
<td>6874-2</td>
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</table>

<table>
<thead>
<tr>
<th>Result ID</th>
<th>Test Result Name</th>
<th>Result LOINC Value</th>
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</thead>
<tbody>
<tr>
<td>CA24</td>
<td>Calcium, 24 HR, U</td>
<td>6874-2</td>
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<tr>
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<td>Collection Duration</td>
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<td>VL110</td>
<td>Urine Volume</td>
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