

## Overview

### Useful For

Urinary creatinine, in conjunction with serum creatinine, is used to calculate the creatinine clearance, a measure of renal function. In a random specimen, urinary analytes can be normalized by the creatinine concentration to account for the variation in urinary concentrations between subjects.

### Method Name

EnzymaticColorimetricAssay

### NY State Available

Yes

## Specimen

### Specimen Type

Urine

### Specimen Required

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

**Specimen Volume:** 5 mL

### Collection Instructions:

1. Collect a random urine specimen.
2. No preservative.

### 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

Specimen Type	Temperature	Time	Special Container
Urine	Refrigerated (preferred)	30 days	
	Ambient	30 days	
	Frozen	30 days	

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## Clinical and Interpretive

### Clinical Information

Creatinine is formed from the metabolism of creatine and phosphocreatine, both of which are principally found in muscle. Thus the amount of creatinine produced is in large part dependent upon the individual's muscle mass and tends not to fluctuate much from day-to-day.

Creatinine is not protein-bound and is freely filtered by glomeruli. All of the filtered creatinine is excreted in the urine. Renal tubular secretion of creatinine also contributes to a small proportion of excreted creatinine. Although most excreted creatinine is derived from an individual's muscle, dietary protein intake, particularly of cooked meat, can contribute to urinary creatinine levels.

The renal clearance of creatinine provides an estimate of glomerular filtration rate (GFR). Since creatinine for the most part in the urine only comes from filtration, the concentration of creatinine reflects overall urinary concentration. Therefore, creatinine can be used to normalize other analytes in a random urine specimen.

### Reference Values

No established reference values

### Interpretation

Decreased creatinine clearance indicates decreased glomerular filtration rate. This can be due to conditions such as progressive renal disease, or result from adverse effect on renal hemodynamics that are often reversible including certain drugs or from decreases in effective renal perfusion (eg, volume depletion or heart failure).

Increased creatinine clearance is often referred to as "hyperfiltration" and is most commonly seen during pregnancy or in patients with diabetes mellitus, before diabetic nephropathy has occurred. It also may occur with large dietary protein intake.

### Cautions

24-Hour specimens are preferred for determining creatinine clearance.

Intraindividual variability in creatinine excretion may be due to differences in muscle mass or amount of ingested meat.

Acute changes in glomerular filtration rate, before a steady-state has developed, will alter the amount of urinary creatinine excreted.

### Clinical Reference

1. Newman DJ, Price CP: Renal function and nitrogen metabolites. In Tietz Textbook of Clinical Chemistry. Third edition. Edited by CA Burtis, ER Ashwood. Philadelphia, WB Saunders Company, 1999, pp 1204-1270
2. Kasiske BL, Keane WF: Laboratory assessment of renal disease: clearance, urinalysis, and renal biopsy. In The Kidney. Sixth edition. Edited by BM Brenner. Philadelphia, WB Saunders Company, 2000, pp 1129-1170

## Performance

### Method Description

The enzymatic method is based on the determination of sarcosine from creatinine with the aid of creatininase, creatinase, and sarcosine oxidase. The liberated hydrogen peroxide is measured via a modified Trinder reaction

using a colorimetric indicator. Optimization of the buffer system and the colorimetric indicator enables the creatinine concentration to be quantified both precisely and specifically. (Package insert: Roche Diagnostics, Indianapolis IN, 2004)

**PDF Report**

No

**Day(s) and Time(s) Test Performed**

Monday through Sunday; Continuously

**Analytic Time**

1 day

**Maximum Laboratory Time**

1 day

**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**

82570

**LOINC® Information**

Test ID	Test Order Name	Order LOINC Value
RCTUR	Creatinine, Random, U	2161-8

Result ID	Test Result Name	Result LOINC Value
RCTUR	Creatinine, Random, U	2161-8