MAYO CLINIC LABORATORIES

Test Definition: CTU

Creatinine, 24 Hour, Urine

Overview

Useful For
Calculation of creatinine clearance, a measure of renal function, when used in conjunction with serum creatinine

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

Method Name
Enzymatic Colorimetric Assay

NY State Available
Yes

Specimen

Specimen Type
Urine

Necessary Information
24-Hour volume (in milliliters) is required.

Specimen Required
Supplies: Sarstedt 5 mL Aliquot Tube (T914)
Collection Container/Tube: 24-hour graduated urine container with no metal cap or glued insert
Submission Container/Tube: Plastic 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:
1. This test does not require the use of a chemical preservative; if a chemical preservative is used, it must be added to the specimen within 4 hours of completion of 24-hour collection.
2. See Urine Preservatives-Collection and Transportation for 24-Hour Urine Specimens for multiple collections.

Forms
If not ordering electronically, complete, print, and send 1 of the following forms with the specimen:
-Kidney Transplant Test Request
-Renal Diagnostics Test Request (T830)

Urine Preservative Collection Options

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

Ambient	OK
Refrigerate	Preferred
Frozen	OK
50% Acetic Acid	OK
Boric Acid	OK
Diazolidinyl Urea	OK
6M Hydrochloric Acid	OK
6M Nitric Acid	No
Sodium Carbonate	OK
Thymol	OK
Toluene	No

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	14 days	
	Frozen	30 days	

Clinical & 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.

Reference Values

Reference values mg per 24 hours:

Males > or =18 years: 930-2955 mg/24 hours
Females > or =18 years: 603-1783 mg/24 hours

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

For SI unit Reference Values, see www.mayocliniclabs.com/order-tests/si-unit-conversion.html

Interpretation

Twenty-four-hour urinary creatinine determinations are principally used for the calculation of creatinine clearance.

Decreased creatinine clearance indicates decreased glomerular filtration rate. This can be due to conditions such as progressive renal disease or result from adverse effects on renal hemodynamics, which are often reversible, including certain drug usage 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

The reliability of 24-hour urinary creatinine determinations is, as for all timed urine collections, very dependent on accurately collected 24-hour specimens.

Intra-individual 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. Delaney MP, Lamb EJ: Kidney disease. In: Rifai N, Horvath AR, Wittwer CT, eds: Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. 6th ed. Elsevier; 2018:1256-1323
2. Lamb EJ, Jones GRD: Kidney function tests. In: Rifai N, Horvath AR, Wittwer CT, eds: Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. 6th ed. Elsevier; 2018:chap32
3. Kasiske BL, Keane WF: Laboratory assessment of renal disease: clearance, urinalysis, and renal biopsy. In: Brenner BM, ed. The kidney. 6th ed. WB Saunders; 2000:1129-1170

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: Creatinine plus ver 2. Roche Diagnostics; V15.0 03/2019)

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PDF Report
No

Day(s) Performed
Monday through Sunday

Report Available
1 to 2 days

Specimen Retention Time
7 days

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Main Campus

Fees & 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 account representative. 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
82570

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
CTU	Creatinine, 24 HR, U	65634-8

Result ID	Test Result Name	Result LOINC® Value
NCTU_	Creatinine Concentration	20624-3
CRE_A	Creatinine, 24 HR, U	2162-6
TM10	Collection Duration	13362-9
VL8	Urine Volume	3167-4