MAYO CLINIC LABORATORIES

Test Definition: CRT24

Creatinine, 24 Hour, Urine

Overview

Useful For

Urinary creatinine, in conjunction with serum creatinine, is used to calculate the creatinine clearance, a measure of renal function

Normalizing urinary analytes to account for the variation in urinary concentration

Method Name

Only orderable as part of a profile. For more information see:
-NMH24 / *N*-Methylhistamine, 24 Hour, Urine
-RB24 / Retinol-Binding Protein, 24 Hour, Urine
-A124 / Alpha-1-Microglobulin, 24 Hour, Urine

Enzymatic Colorimetric Assay

NY State Available

Yes

Specimen

Specimen Type

Urine

Specimen Required

Only orderable as part of a profile. For more information see:
-NMH24 / *N*-Methylhistamine, 24 Hour, Urine
-RB24 / Retinol-Binding Protein, 24 Hour, Urine
-A124 / Alpha-1-Microglobulin, 24 Hour, Urine

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	Yes
Refrigerate	Preferred
Frozen	Yes
50% Acetic Acid	Yes
Boric Acid	Yes
Diazolidinyl Urea	Yes
6M Hydrochloric Acid	Yes

6M Nitric Acid	Yes
Sodium Carbonate	Yes
Thymol	No
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	
	Frozen	30 days	
	Ambient	14 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
Only orderable as part of a profile. For more information see:
-NMH24 / *N*-Methylhistamine, 24 Hour, Urine
-RB24 / Retinol-Binding Protein, 24 Hour, Urine
-A124 / Alpha-1-Microglobulin, 24 Hour, Urine

Normal values mg per 24 hours:
Males: 930-2955 mg/24 hours
Females: 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 https://www.mayocliniclabs.com/order-tests/si-unit-conversion.html

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

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

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.

Rifampicin, levodopa, and calcium dobesilate (eg, Dexium) cause artificially low creatinine results. As tested, according to CLSI recommendation, methyldopa causes artificially low creatinine results.

Dicynone (Etamsylate) at therapeutic concentrations may lead to falsely low results.

N-ethylglycine at therapeutic concentrations and DL-proline at concentrations greater or equal to 1 mmol/L gives falsely high results.

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. Meeusen J, Rule A, Voskoboev, N, Baumann N, Lieske J: Performance of cystatin C- and creatinine-based estimated glomerular filtration rate equations depends on patient characteristics. Clin Chem. 2015 Oct;61(10):1265-1272. doi: 10.1373/clinchem.2015.243030
3. Newman DJ, Price CP: Renal function and nitrogen metabolites. In: Burtis CA, Ashwood ER, eds. Tietz Textbook of Clinical Chemistry. 3rd ed. WB Saunders Company; 1999:1204-1270
4. Kasiske BL, Keane WF: Laboratory assessment of renal disease: clearance, urinalysis, and renal biopsy. In: Brenner BM, ed. The Kidney. 6th ed. WB Saunders Company; 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; V 15.0 03/2019)

PDF Report
No

Day(s) Performed
Monday through Sunday

Report Available
1 day

Specimen Retention Time
7 days

Performing Laboratory Location
Rochester

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.

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
CRT24	Creatinine, 24 HR, U	65634-8

Result ID	Test Result Name	Result LOINC® Value
TM10	Collection Duration	13362-9
VL8	Urine Volume	3167-4
CR_A	Creatinine, 24 HR, U	2162-6
CR_24	Creatinine Concentration, 24 HR, U	20624-3