Test Definition: URCON

Urea, Random, Urine

Overview

Useful For
Assessment of kidney failure (prerenal vs acute kidney injury)

Method Name
Photometric

NY State Available
Yes

Specimen

Specimen Type
Urine

Ordering Guidance
A timed 24-hour urine collection is the preferred specimen for measuring and interpreting this urinary analyte. See URCR / Uric Acid, 24 Hour, Urine.

Random collections normalized to urinary creatinine may be of some clinical use in patients who cannot collect a 24-hour specimen, typically small children.

Specimen Required
Supplies: Sarstedt 5 mL Aliquot Tube (T914)
Container/Tube: Plastic tube
Specimen Volume: 4 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

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Specimen Type	Temperature	Time	Special Container
Urine	Refrigerated (preferred)	14 days	
	Ambient	7 days	
	Frozen	30 days	

Clinical & Interpretive

Clinical Information

Urea is a low molecular weight substance (60 Da) that is freely filtered by glomeruli, and the majority is excreted into the urine, although variable amounts are reabsorbed along the nephron. It is the major end-product of protein metabolism in humans and other mammals. Approximately 50% of urinary solute excretion and 90% to 95% of total nitrogen excretion is composed of urea under normal conditions. Factors that tend to increase urea excretion include increases in glomerular filtration rate, increased dietary protein intake, protein catabolic conditions, and water diuretic states. Factors that reduce urea excretion include low protein intake and conditions that result in low urine output (eg, dehydration). Urea excretion is a useful marker of protein metabolism.

In oliguric patients with a rising creatinine a fractional excretion of urea below 35% is consistent with a prerenal cause, while values above 35% are more consistent with acute kidney injury.(1) The fractional excretion of sodium is also used for this purpose but may be more affected by diuretics. Therefore, the fractional excretion of urea may be particularly useful for patients receiving diuretics.

Reference Values

No established reference values

Random urine urea may be interpreted in conjunction with serum urea, using both values to calculate fractional excretion of urea.

The calculation for fractional excretion (FE) of urea is
FE(U)= ([U(urine)XCreat(serum)]/[U(serum)XCreat(urine)]) X 100

Interpretation

Fractional excretion of urea under 35% is consistent with a prerenal cause.

Cautions

No significant cautionary statements

Clinical Reference

1. Carvounis CP, Nisar S, Guro-Razuman S: Significance of the fractional excretion of urea in the differential diagnosis of acute renal failure, Kidney Int. 2002 Dec;62(6):2223-2229
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; 2018:498-500
3. Bankir L, Trinh-Trang-Tan MM: Urea and the kidney. In: Brenner B, ed: The kidney. 6th ed. WB Saunders Company; 2000

Performance

Method Description

Kinetic test with urease and glutamate dehydrogenase. Urea is hydrolyzed by urease to form ammonium and carbonate. In the second reaction 2-oxoglutarate reacts with ammonium in the presence of glutamate dehydrogenase and the coenzyme reduced nicotinamide adenine dinucleotide (NADH) to produce L-glutamate. In this reaction two moles of NADH are oxidized to NAD[+] for each mole of urea hydrolyzed. The rate of decrease in NADH concentrations is directly proportional to the urea concentration in the specimen and is measured photometrically.(Package insert: Urea/BUN reagent. Roche Diagnostics; 07/2024)

PDF Report

No

Day(s) Performed

Monday through Sunday

Report Available

Same day/1 day to 24 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

84540

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
URCON	Urea, Random, U	3092-4

Result ID	Test Result Name	Result LOINC® Value

URCON	Urea, Random, U	3092-4