Test Definition: NITU

Nitrogen, Total, 24 Hour, Urine

Overview

Useful For

Assessing nutritional status (protein malnutrition)

Assessment of protein nutrition and nitrogen balance in hospitalized patients

Evaluating protein catabolism

Determining nitrogen balance, when used in conjunction with 24-hour fecal nitrogen measurement

Special Instructions

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

Method Name

Dumas Combustion

NY State Available

Yes

Specimen

Specimen Type

Urine

Necessary Information

24-Hour volume (in milliliters) is required.

Specimen Required

Supplies: Urine Tubes, 10 mL (T068)
Container/Tube: Plastic, 10-mL urine tube
Specimen Volume: 10 mL
Collection Instructions:
1. Collect urine for 24 hours.
2. No preservative. Refrigerated is the preferred preservation method.
Specimen Stability Information: Frozen 3 years
Additional Information: See Urine Preservatives-Collection and Transportation for 24-Hour Urine Specimens for multiple collections

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 (no additive)	OK
Refrigerate (no additive)	Preferred
Frozen (no additive)	OK
50% Acetic Acid	OK
Boric Acid	No
Diazolidinyl Urea	No
6M Hydrochloric Acid	OK
6M Nitric Acid	No
Sodium Carbonate	OK
Toluene	No

Specimen Minimum Volume

2 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)	7 days	
	Ambient	7 days	
	Frozen		

Clinical & Interpretive

Clinical Information

Nitrogen is a key component of proteins. Nitrogen balance is the difference between the amount of nitrogen ingested and the amount excreted in the urine and feces. A majority of nitrogen is excreted as urea in the urine; however, fecal nitrogen can account for 30% to 50% of total nitrogen excretion.

A patient who is in negative nitrogen balance is catabolizing muscle protein to meet the metabolic requirements of protein catabolism; therefore, urine and fecal nitrogen concentrations may be increased due to stress, physical trauma, surgery, infections, burns, and 11-oxysteroid or thyroxine use. Testosterone and growth hormone have anabolic effects on protein synthesis and may decrease urine and fecal nitrogen levels.

In the course of chronic progressive pancreatitis, as the pancreas is destroyed, serum amylase and lipase may revert to normal. However, excessive fecal nitrogen levels persist and are used as an indicator of pancreatic atrophy.

Reference Values

<16 years: Not established

> or =16 years: 4-20 g/24 hours

Interpretation

Urinary nitrogen excretion levels within the normal range are indicative of adequate nutrition.

Slightly abnormal excretion rates may be a result of moderate stress or complications, such as infection or trauma.

Significantly abnormal excretion rates may be associated with severe stress due to multiple traumas, head injury, sepsis, or extensive burns. The goal with therapy for a depleted person is a positive nitrogen balance of 4 to 6 g nitrogen/24 hours.

Cautions

Measurement of both urine and fecal nitrogen is necessary for the accurate determination of nitrogen balance.

During nitrogen balance studies, nitrogen lost from exuding wounds, such as burns, and from copious sputum must be included in the patient's evaluation.

Urine samples with visible blood may exhibit a positive bias for nitrogen due to the contribution of nitrogens present within hemoglobin.

Clinical Reference

1. Morse MH, Haub MD, Evans WJ, Campbell WW. Protein requirement of elderly women: nitrogen balance responses to three levels of protein intake. J Gerontol A Biol Sci Med Sci. 2001;56(11):M724-730
2. Phinney SD: The assessment of protein nutrition in the hospitalized patient. Clin Lab Med. 1981;1:767-774
3. Konstantinides FN, Kostantinides NN, Li JC, Myaya ME, Cerra FB. Urinary urea nitrogen: too insensitive for calculating nitrogen balance studies in surgical clinical nutrition. J Parenter Enteral Nutr. 1991;15(2):189-193
4. Borowitz D, Konstan MW, O'Rourke A, Cohen M, Hendeles L, Murray FT. Coefficients of fat and nitrogen absorption in healthy subjects and individuals with cystic fibrosis. J Pediatr Pharmacol Ther. 2007;12(1):47-52. doi:10.5863/1551-6776-12.1.47
5. Dickerson RN: Nitrogen balance and protein requirements for critically ill older patients. Nutrients. 2016;8(4):226. doi:10.3390/nu8040226

Performance

Method Description

The nitrogen analyzer utilizes the Dumas combustion method of determining total nitrogen in urine.(Unpublished Mayo method)

PDF Report

No

Day(s) Performed

Friday

Report Available

1 to 8 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 was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

84999

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
NITU	Nitrogen, Total, U	2660-9

Result ID	Test Result Name	Result LOINC® Value
DUR8	Collection Duration	13362-9
TOTV	Specimen Volume	28009-9
17418	Nitrogen, Total, U	2660-9