Test Definition: UPH24

pH, 24 Hour, Urine

Overview

Useful For

Assessment of patients with metabolic acidosis, crystalluria, as well as monitoring the effectiveness of alkalinization or acidification of urine for certain medical conditions (eg, treatment of uric acid nephrolithiasis) using a 24-hour collection period

Special Instructions

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

Method Name

pH Meter

NY State Available

Yes

Specimen

Specimen Type

Urine

Necessary Information

24-Hour volume (in milliliters) is required.

Specimen Required

Supplies:

Diazolidinyl Urea (Germall), 5.0 mL (T822)

Urine Tubes, 10 mL (T068)

Container/Tube: Plastic, 10-mL urine tube or a clean, plastic aliquot container

Specimen Volume: 10 mL

Collection Instructions:

1. Collect urine for 24 hours
2. Add 5 mL of diazolidinyl urea as preservative at start of collection **or** refrigerate specimen during and after collection.
3. Specimen pH should be between 4.5 and 8 and will stay in this range if kept refrigerated. Specimens with pH >8 indicate bacterial contamination, and testing will be cancelled. Do not attempt to adjust pH as it will adversely affect results.

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 at the beginning of the collection.

Ambient (no additive)	No
Refrigerate (no additive)	OK
Frozen (no additive)	OK
50% Acetic Acid	No
Boric Acid	No
Diazolidinyl Urea	Preferred
6M Hydrochloric Acid	No
6M Nitric Acid	No
Sodium Carbonate	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)	7 days	
	Frozen	7 days	

Clinical & Interpretive

Clinical Information

Urine pH is a measure of the acidity/alkalinity of urine and, by itself, usually provides little useful information. Under normal conditions its value is influenced by the type of diet. Some diets (eg, diets rich in meat) have more acid content than others (eg, vegetarian diets).

Changes in urine pH may reflect systemic acid-base disorders. For example, the normal response during metabolic acidosis is a lowering of the urine pH to less than 5. If the pH is greater than 5, then a defect in urine acidification should be considered. A urine pH of greater than 8 is suggestive of infection by a urea-splitting organism such as *Proteus mirabilis*.

Therapeutic interventions to either alkalinize or acidify the urine are necessary for some diseases. For example, some crystals have a propensity to form in alkaline urine, while others form in relative acidic urine, and changing the pH may reduce stone formation.

Reference Values

4.5-8.0

Interpretation

Dependent on clinical condition.

A pH greater than 8 suggests the presence of urinary tract infection with a urea-splitting organism.

Cautions

No significant cautionary statements

Clinical Reference

1. Menezes CJ, Worcester EM, Coe FL, Asplin J, Bergsland KJ, Ko B: Mechanisms for falling urine pH with age in stone formers. Am J Physiol Renal Physiol. 2019 Jul 1;317(7):F65-F72
2. Ilyas R, Cho K, Young JG: What is the best method to evaluate urine pH? A trial of three urinary pH measurement methods in a stone clinic. J Endourol. 2015 Jan;29(1):70-74
3. Davidsohn I, Henry JB: Todd-Sanford Clinical Diagnosis by Laboratory Methods. 15th ed. Elsevier; 1974; 43-44
4. Free AH, Free HBS: Urodynamics, concepts relating to urinalysis. Ames Co; 1974:57-61
5. Kaplan LA, Pesce AJ: Clinical Chemistry: Theory, Analysis, Correlation. 3rd ed. Mosby-Year Book Inc; 1996:823

Performance

Method Description

The pH meter is composed of a glass electrode, calomel electrode and voltmeter. The glass electrode has a fixed acid concentration, yielding a corresponding voltage. The calomel electrode is the reference electrode. Its voltage is independent of the H+ ion concentration. The two electrodes constitute a galvanic cell whose electromotive force is measured by the voltmeter. The meter is calibrated to read in pH units, reflecting the H+ ion concentration. The meter is used to determine pH in 0 to 14 range.(Instruction manual: Fisher Scientific accumet Basic (AB) Benchtop Meters. Fisher Scientific; 68x613601.0 07/2012)

PDF Report

No

Day(s) Performed

Monday through Sunday

Report Available

1 to 3 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

83986

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
UPH24	pH, 24 HR, U	27378-9

Result ID	Test Result Name	Result LOINC® Value
PH24	pH, 24 HR, U	27378-9
TM90	Collection Duration	13362-9
VL72	Volume	3167-4