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URINALYSIS

TECHNICAL PROCEDURE MANUAL

A COMPREHENSIVE GUIDE TO
ACCURATE AND RELIABLE
URINALYSIS TESTING



ROUTINE
EXAMINATION



STANDARD
PROTOCOLS



LABORATORY
EQUIPMENT



CLINICAL
INTERPRETATION



URINALYSIS	
PHYSICAL EXAMINATION	
Color	
Appearance	
Specific Gravity	
pH	
CHEMICAL EXAMINATION	
Protein	
Glucose	
Ketones	
Bilirubin	
Blood	
Nitrite	
Leukocyte Esterase	
MICROSCOPIC EXAMINATION	
RBC	
WBC	
Epithelial Cells	
Casts	
Crystals	
Others	

PRECISION • RELIABILITY • QUALITY

FOR LABORATORY PROFESSIONALS
AND HEALTHCARE PROVIDERS

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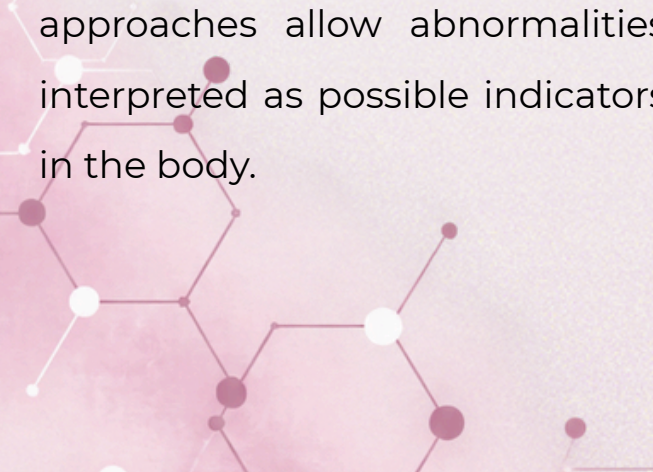
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URINALYSIS PRINCIPLES

The fundamental principle of urinalysis is based on recognizing urine as an important specimen that can reflect the body's internal condition and provide information useful in identifying and monitoring diseases. This concept dates back approximately 6,000 years to uroscopy, an early practice of observing urine for changes that could provide clues about a person's health. Although uroscopy primarily relied on visual observation, it established the significance of urine in understanding diseases and changes occurring within the body. This principle continues in modern urinalysis, where urine specimens are systematically evaluated through physical, chemical, and microscopic analysis. Proper collection and handling are essential to minimize contamination and preserve the specimen's characteristics, ensuring that the findings accurately represent the patient's condition.

Physical analysis evaluates characteristics such as color, clarity, odor, and specific gravity. Chemical analysis detects substances and properties including pH, glucose, protein, blood, ketones, bilirubin, leukocyte esterase, and nitrites. Microscopic analysis identifies formed elements such as cells, casts, crystals, and microorganisms. Together, these approaches allow abnormalities in the urine to be recognized and interpreted as possible indicators of diseases or other changes occurring in the body.





URINALYSIS SPECIMEN REQUIREMENTS

CRITERIA FOR SPECIMEN COLLECTION, LABELING, REJECTION,
STORAGE, AND TRANSPORT

Specimen Collection

A. Specimen Types:

a. First Morning Specimen: The patient voids before going to bed and collects some urine again immediately after waking up.

- *Most concentrated specimen:* Retained in the bladder for about 8 hours, making it ideal for detecting substances such as nitrites and protein.
- *Preserves formed elements:* Its high concentration and osmolality help maintain WBCs, RBCs, and casts, making it useful for microscopic examination and some cytology studies.
- *Requires proper handling:* Because it is highly concentrated, crystals may form as it cools, and the specimen should be analyzed within about 2 hours or properly preserved if delayed.

b. Random Urine Specimen: The patient provides a urine specimen at any time of the day, usually without prior preparation, for routine screening.

- *Convenient:* Requires no special preparation and can be collected at any time.
- *Routine screening:* Suitable for detecting abnormalities that may indicate disease.
- *Affected by conditions:* Fluid intake, hydration, and strenuous exercise can alter urine composition.



URINALYSIS SPECIMEN REQUIREMENTS

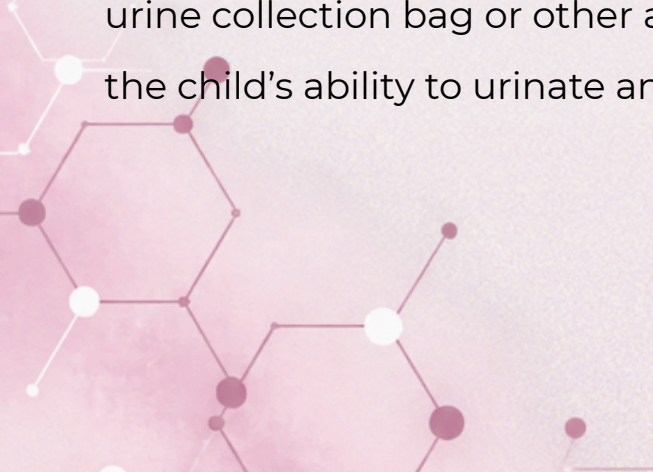
CRITERIA FOR SPECIMEN COLLECTION, LABELING, REJECTION, STORAGE, AND TRANSPORT

c. *Timed Collections*: The patient collects all urine produced during a specified period, such as 2, 12, or 24 hours, for quantitative testing.

- *Quantitative testing*: Measures the amount of substances such as proteins, hormones, and creatinine excreted.
- *Requires strict timing*: All urine produced during the specified period must be collected for accurate results.
- *Specific collection periods*: The duration depends on the substance being measured and the purpose of the test.

B. Collection Techniques:

Non-invasive

- *Routine Void*: The patient urinates normally into a clean container without special preparation, mainly for routine screening.
 - *Midstream "Clean Catch"*: The patient cleans the genital area, discards the initial urine, and collects the midstream portion for cultures, screening, or cytology.
 - *Pediatric Collections*: The patient's urine is collected using a pediatric urine collection bag or other age-appropriate method, depending on the child's ability to urinate and the purpose of testing.
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URINALYSIS SPECIMEN REQUIREMENTS

CRITERIA FOR SPECIMEN COLLECTION, LABELING, REJECTION, STORAGE, AND TRANSPORT

Invasive

- *Catheterized Collection:* A catheter is inserted through the urethra into the bladder, or further into the ureter when needed, to obtain a urine specimen directly for culture, routine testing, or to identify the source of infection.
- *Suprapubic Collection:* A sterile needle is inserted through the abdominal wall into the bladder to obtain a highly sterile urine specimen.

C. Collection Instructions:

Preferred collection method: first morning midstream clean-catch urine specimen

The patient should use the sterile container provided by the laboratory and wash their hands before collection. The genital area should be cleaned properly before urination. The patient should begin urinating into the toilet, then collect the midstream urine in the container without touching its inside. After collecting enough urine (12 mL), the patient should finish urinating into the toilet, tightly secure the lid, and submit the specimen to the laboratory as soon as possible.



URINALYSIS SPECIMEN REQUIREMENTS

CRITERIA FOR SPECIMEN COLLECTION, LABELING, REJECTION,
STORAGE, AND TRANSPORT

Specimen Labeling

- **Complete Patient Identification:** The label should include the patient's full name, date of birth, identification number, and other required information.
- **Collection Details:** The date and exact time of specimen collection should be recorded.
- **Clear and Accurate Labeling:** All information should be legible, correct, and properly matched to the patient.

Storage Guidelines

- **Prompt Submission:** The specimen should be submitted to the laboratory within 2 hours whenever possible.
- **Refrigerated Storage:** If delayed, the specimen should be kept at approximately 4°C (39°F) in a sealed plastic bag.
- **Maximum Storage Time:** A refrigerated specimen should generally be submitted within 24 hours.
- **Preservation of Results:** Proper storage helps prevent bacterial growth and changes in urine composition.



URINALYSIS SPECIMEN REQUIREMENTS

CRITERIA FOR SPECIMEN COLLECTION, LABELING, REJECTION,
STORAGE, AND TRANSPORT

Transport Recommendation

- *Leak-Proof Container:* The specimen should be placed in a tightly sealed container to prevent leakage.
- *Secondary Containment:* The container should be placed inside a separate sealed plastic bag during transport.
- *Proper Temperature:* The specimen should be transported at the appropriate temperature according to laboratory requirements.
- *Separate Documentation:* The request form should be kept separate from the specimen container.
- *Safe Transportation:* The specimen should not be placed in pockets, food containers, or other inappropriate containers.

Specimen Rejection Criteria

- *Unlabeled Specimen:* A specimen without proper patient identification may be rejected.
- *Improper Container:* Leaking, damaged, or improperly sealed containers may result in rejection.
- *Incorrect Information:* Mismatched or incomplete patient details can make the specimen unacceptable.
- *Improper Handling:* Specimens that were stored or transported incorrectly may produce unreliable results.



URINALYSIS REAGENTS, MEDIA, SUPPLIES, AND EQUIPMENT

Reagents

- *Urine Reagent Strips:* Detect chemical components such as pH, protein, glucose, ketones, blood, bilirubin, urobilinogen, nitrite, and leukocyte esterase.
- *Quality Control Materials:* Known materials used to check the accuracy and reliability of urinalysis tests.

Positive Controls: Should produce the expected positive reaction for specific analytes.

Negative Controls: Should produce the expected negative reaction.

Commercial Urine Controls: Prepared materials that simulate urine and can test several reagent-strip parameters simultaneously.

- *Urine Sediment Stains:* Used to improve the visibility and identification of formed elements during microscopic examination.

Sternheimer-Malbin Stain: Helps differentiate and identify urinary cells and casts.

Sternheimer Stain: Used to enhance the appearance of urinary sediment.

Lugol's Iodine: Enhances the visibility of certain cells and structures.

Sudan III: Used to demonstrate fat or lipid droplets.

Eosin: Used to enhance cellular structures in urinary sediment.



URINALYSIS REAGENTS, MEDIA, SUPPLIES, AND EQUIPMENT

Media

- *Blood Agar*: Supports the growth of many bacteria when a urine culture is performed.
- *MacConkey Agar*: Helps isolate and differentiate Gram-negative bacteria.
- *CLED Agar*: Commonly used for the cultivation and enumeration of bacteria in urine cultures.

Supplies

- *Sterile Specimen Containers*: Used for proper urine collection.
- *Test Tubes*: Used for specimen processing.
- *Transfer Pipettes*: Used to transfer urine or sediment.
- *Microscope Slides and Coverslips*: Used for microscopic examination.
- *Labels and Markers*: Used for specimen identification.
- *Gloves*: Protect the hands during specimen handling.
- *Laboratory Coat/Gown*: Protects clothing and skin from contamination.
- *Protective Eyewear*: Protects the eyes from accidental splashes.
- *Waste Containers*: Used for contaminated laboratory materials.



URINALYSIS REAGENTS, MEDIA, SUPPLIES, AND EQUIPMENT

Equipment

- *Microscope*: Used to examine cells, casts, crystals, and microorganisms.
- *Centrifuge*: Concentrates urinary sediment for microscopic examination.
- *Refractometer*: Measures urine specific gravity.
- *Urinalysis Analyzer*: Automates chemical and sediment analysis.
- *Urine Strip Reader*: Provides standardized reagent-strip readings.
- *Pipettes*: Provide accurate specimen measurement and transfer.
- *Timer*: Ensures reagent strips are read at the appropriate time.
- *Urine Racks*: Keep specimens organized during processing.
- *Biohazard Waste Receptacle*: Used for disposing of contaminated materials such as used gloves, urine-contaminated tissues, and disposable laboratory supplies.
- *Sharps Container*: Used for safely disposing of needles, lancets, and other sharp objects when applicable, particularly for invasive specimen collection.



URINALYSIS CALIBRATION AND VERIFICATION

Calibration and Verification

- *Refractometer:* The prism will be cleaned and checked using distilled/deionized water or a suitable reference solution. The reading will be compared with the expected value, and the instrument will be adjusted according to the manufacturer's instructions if it is outside the acceptable range.
- *Urinalysis Analyzer:* The analyzer will undergo its manufacturer's calibration procedure using the specified calibrator or calibration material. The resulting values will be checked against the expected values before patient testing.
- *Urine Strip Reader:* The reader will be checked using the manufacturer's calibration strip or material to ensure that it correctly detects and interprets the color reactions produced by reagent strips.
- *Pipettes:* The pipette will be tested by dispensing a known volume and comparing the delivered volume with the expected volume. Repeated measurements will help assess both accuracy and precision.



URINALYSIS CALIBRATION AND VERIFICATION

- *Centrifuge*: The centrifuge will be verified for its required speed and operating time. Proper tube balancing and normal operation will also be checked to ensure consistent urine sediment preparation.
- *Timer*: The timer will be compared with a verified reference timer to confirm accurate timing, particularly for reagent-strip reactions.
- *Microscope*: The microscope will be checked for clean lenses, adequate illumination, proper focusing, and appropriate magnification. A calibration slide may be used when microscopic measurements are required.
- *Measuring Devices*: Measuring containers used for urine volume will be checked against a calibrated reference to ensure accurate volume readings.

URINALYSIS QUALITY CONTROL

Quality Control

- *Prepare QC Materials:* The laboratory will prepare appropriate positive, negative, or commercial urine controls with known or assigned values.
- *Check Reagents:* Reagent strips and other reagents will be inspected for expiration, storage conditions, and deterioration before testing.
- *Run Controls:* QC materials will be analyzed using the same equipment and procedures used for patient specimens.
- *Compare Results:* Obtained values will be compared with the manufacturer's or laboratory's established acceptable ranges.
- *Accept QC:* Results within the acceptable range indicate that the testing system is functioning properly and patient testing may proceed.
- *Investigate QC Failure:* Results outside the acceptable range require investigation of possible problems with reagents, equipment, technique, or environmental conditions.
- *Correct and Repeat:* The identified problem will be corrected, and QC will be repeated until acceptable results are obtained.
- *Document:* QC results, reagent/control lot numbers, dates, and corrective actions will be recorded for quality assurance.



URINALYSIS STEP-BY-STEP TESTING PROCEDURES

I. Patient Preparation and Specimen Collection

Step 1: Verify the Patient and Test Request

- Confirm the patient's identity using the required identifiers.
- Verify the requested urinalysis and determine the appropriate specimen type.
- Explain the collection procedure and any necessary preparation to the patient.

Step 2: Select the Collection Technique

- Non-invasive techniques
 - Routine void
 - First-morning midstream clean catch
 - Random specimen
 - Timed collection
 - Pediatric collection
- Invasive technique
 - Catheterized specimen
 - Ureteral catheterization
 - Suprapubic aspiration



URINALYSIS STEP-BY-STEP TESTING PROCEDURES

Step 3: Perform Clean-Catch Collection When Required

- The patient will wash their hands and cleanse the genital area properly.
- The patient will begin urinating and discard the initial portion.
- The midstream urine will be collected in a sterile container without touching the inside.
- The container will be closed securely after collection.

Step 4: Label and Transport the Specimen

- Label the specimen with the required patient identifiers, collection date, and collection time.
 - Check that the container is properly sealed and leak-proof.
 - Submit the specimen promptly or store it according to laboratory requirements if analysis is delayed.
- 



URINALYSIS STEP-BY-STEP TESTING PROCEDURES

II. Physical Examination

Step 5: Inspect the Urine

- Observe the specimen for color and clarity/appearance.
- Note unusual characteristics such as excessive cloudiness or abnormal coloration.
- Record the observations according to the laboratory's reporting system.

Step 6: Measure Specific Gravity

- Mix the specimen gently before testing.
- Use a refractometer or other validated method to determine specific gravity.
- For a refractometer, verify the instrument using an appropriate reference before testing.
- Record the specific-gravity result.

Step 7: Perform Physical Quality Checks

- Confirm that the specimen is properly identified and has sufficient volume.
- Check for possible contamination or improper storage.
- Ensure that physical observations are recorded accurately.



URINALYSIS STEP-BY-STEP TESTING PROCEDURES

III. Chemical Examination

Step 8: Prepare the Reagent Strips

- Check the expiration date and storage condition of the reagent strips.
- Remove only the required strip and immediately close the container.
- Ensure the strip is not damaged, discolored, or contaminated.

Step 9: Perform Quality Control

- Run the appropriate positive, negative, or commercial urine controls according to the laboratory's QC procedure.
- Compare the control results with the established acceptable ranges.
- Patient testing should proceed only when QC results are acceptable.

Step 10: Apply the Reagent Strip

- Mix the urine specimen gently.
- Completely immerse the reagent strip in the specimen according to the manufacturer's instructions.
- Remove the strip and allow excess urine to drain appropriately.
- Avoid contaminating the reagent pads.



URINALYSIS STEP-BY-STEP TESTING PROCEDURES

Step 11: Read the Chemical Reactions

- Read each reagent pad at its specified reaction time.
- Compare the color changes with the manufacturer's reference scale or use a urine strip reader/analyzer.
- Common parameters include pH, protein, glucose, ketones, blood, bilirubin, urobilinogen, nitrite, and leukocyte esterase.

Step 12: Record and Evaluate Results

- Record the chemical findings accurately.
- Review abnormal reactions and correlate them with the physical and microscopic findings.
- If QC or testing conditions are unacceptable, investigate the problem before reporting results.

IV. Microscopic Examination

Step 13: Prepare the Urine Sediment

- Mix the urine specimen thoroughly.
- Transfer the required amount into a test tube.
- Centrifuge the specimen using the laboratory's standardized speed and time.
- Carefully remove the supernatant while retaining the sediment.



URINALYSIS STEP-BY-STEP TESTING PROCEDURES

Step 14: Prepare the Microscope Slide

- Resuspend the sediment gently and consistently.
- Place an appropriate amount of sediment on a clean microscope slide.
- Cover it with a coverslip.
- Routine sediment examination generally does not require staining.

Step 15: Examine Under the Microscope

- Begin with low-power magnification to scan the sediment.
- Use higher magnification to identify and characterize formed elements.
- Examine for:
 - Red blood cells (RBCs)
 - White blood cells (WBCs)
 - Epithelial cells
 - Casts
 - Crystals
 - Bacteria and other microorganisms
 - Yeast or other structures, when present



URINALYSIS STEP-BY-STEP TESTING PROCEDURES

Step 16: Record Microscopic Findings

- Record the type and amount of identified formed elements using the laboratory's reporting system.
- Use standardized terminology and reporting units where required.
- Correlate microscopic findings with the physical and chemical results.

V. Final Quality Assessment

Step 17: Review the Complete Results

- Compare the physical, chemical, and microscopic findings.
- Check for results that are inconsistent or require further investigation.
- Confirm that specimen identification and documentation are correct.

Step 18: Report the Results

- Report the findings using the laboratory's established format.
- Ensure that abnormal findings are properly documented.
- Complete all required records for quality assurance and traceability.

URINALYSIS CALCULATIONS



- **Urine Volume:** Determines the total amount of urine produced during a specified period, particularly in a 24-hour collection.
 - Formula: Total Urine Volume = Sum of all urine collected
 - Reference: Normal urine volume is approximately 750–2,000 mL/24 hours.
- **Urine Flow Rate:** Determines the amount of urine produced per unit of time during a timed collection.
 - Formula: Urine Flow Rate = Total Urine Volume ÷ Collection Time
- **Protein Excretion:** Determines the total amount of protein eliminated in urine over 24 hours.
 - Formula: 24-hour Protein Excretion = Urine Protein Concentration × Total Urine Volume
 - Reference: Normal total protein excretion generally does not exceed 150 mg/24 hours. Values above this are considered *proteinuria*.
- **Glucose Correction of Specific Gravity:** Corrects the measured specific gravity when a high glucose concentration contributes to the urine's specific gravity.
 - Formula: Corrected Specific Gravity = Measured Specific Gravity – (0.004 × % Glucose)
 - Reference: 0.004 is subtracted for every 1% glucose to determine the non-glucose solute concentration.

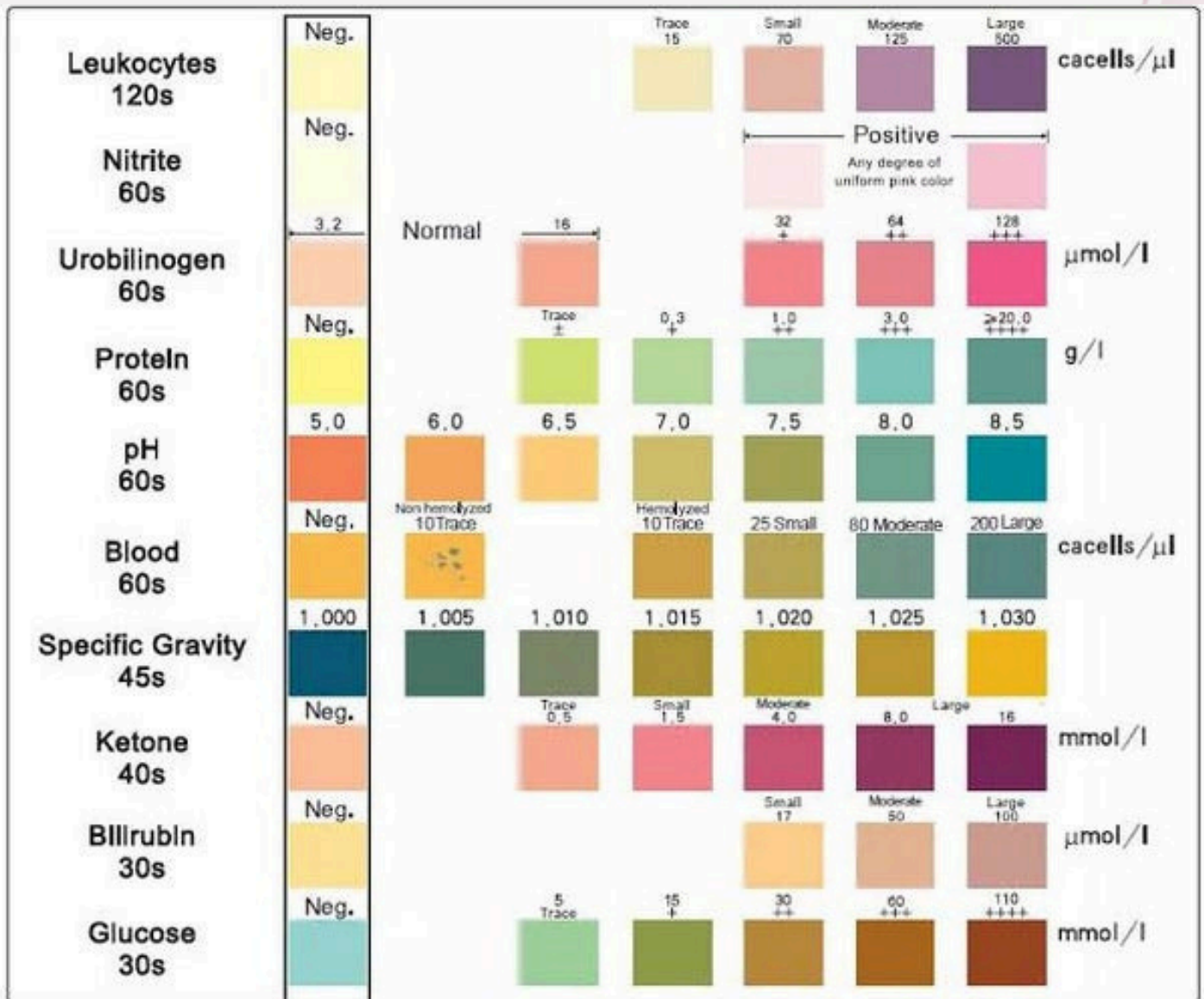
URINALYSIS REPORTING RESULTS

Urinalysis Physical Examination Reference Range Chart

MACROSCOPIC (PHYSICAL) URINALYSIS REFERENCE RANGES AND ASSOCIATIONS		
1. COLOR		
Parameter	Normal Finding	Associations
Yellow	Yellow (light/pale to dark/deep amber)	Normal
Amber	—	Bile pigments
Brown/Black (Tea-colored)	—	Bile pigments, cascara, chloroquine, fava beans, homogentisic acid (alkaptonuria), levodopa, melanin or oxidized melanogen, methemoglobin, methylidopa, metronidazole, myoglobin, nitrofurantoin, primaquine, rhubarb, riboflavin, senna
Dark Yellow	—	Concentrated specimen (dehydration, exercise)
Green/Blue	—	Amitriptyline, asparagus, biliverdin, cimetidine, clarets (breath mint), indicans, indigo carmine, indomethacin, methocarbamol, methylene blue, promethazine, propofol, pseudomonal UTI, triamterene
Orange	—	Bile pigments, carrots, coumadin, nitrofurantoin, phenothiazines, phenazopyridine, rifampin, vitamin C
Pink/Red	—	Beets, blackberries, chlorpromazine, food dyes, hematuria, hemoglobinuria, menstrual contamination, myoglobinuria, phenolphthalein, porphyrins, rifampin, rhubarb, senna, thioridazine, uric acid crystals. Note: Urine that turns red on standing suggests the presence of porphobilinogen, which is increased in acute porphyrias.
2. SPECIFIC GRAVITY		
Parameter	Normal Range	Associations / Conditions
Specific Gravity (USG)	1.002 – 1.035 (usually 1.016 – 1.022)	- Normal: USG = 1.002–1.035 (usually 1.016–1.022). O = 50–1200 mOsm/kg (usually 275–900 mOsm/kg) [Both parameters are lab dependent] - Variations according to the patient's diet, health, hydration status, and physical activity.
Association	Conditions	
High Values	Contrast media, dehydration, decreased renal blood flow (shock, heart failure, renal artery stenosis), diarrhea, emesis, excessive sweating, glycosuria, hepatic failure, syndrome of inappropriate antidiuretic hormone (SIADH)	
Low Values	Acute tubular necrosis, acute adrenal insufficiency, aldosteronism, diuretic use, diabetes insipidus, excessive fluid intake (psychogenic polydipsia), impaired renal function, interstitial nephritis, hypercalcemia, hypokalemia, pyelonephritis	
False Elevation	Dextran solutions, intravenous (IV) radiopaque contrast media, proteinuria	
False Depression	Alkaline urine	
3. VOLUME		
Parameter	Normal Range	Associations / Conditions
Urine Volume	0.5 – 1.5 cc/kg/hour or 600 – 2,000 mL daily (typically 1,000 – 1,600 mL/day)	- Anuria (<100 cc/day) and oliguria (<500 cc/day): Severe dehydration from vomiting, diarrhea, hemorrhage or excessive sweating; renal disease, renal obstruction, renal ischemia secondary to heart failure or hypotension. - Polyuria (>2,500 – 3,000 cc/day): Alcohol or caffeine consumption, diabetes mellitus, diabetes insipidus, diuretics, increased water intake, saline or glucose intravenous therapy.
4. FOAM		
Parameter	Normal Finding	Associations / Conditions
Foam	Appears upon agitation and dissipates readily on standing	Proteinuria, bile pigments, retrograde ejaculation, medications (phenazopyridine, etc.), non-specific/unexplained
5. APPEARANCE		
Parameter	Normal Finding	Associations / Conditions
Appearance	Clear or translucent	Bacteria, blood clots, contrast media, a diet high in purine-rich foods, fecal contamination or material (i.e., gastrointestinal-bladder fistula), lipids such as chyluria (chylomicrons in the urine), lymph fluid, mucus, precipitation of cells (RBC, WBC, squamous and non-squamous epithelial cells), casts or crystals (calcium phosphate, calcium oxalate, uric acid), pyuria, semen, small calculi, talcum powder, vaginal creams or secretions, yeast or non-specific/normal.
6. ODOR		
Parameter	Normal Finding	Associations / Conditions
Odor	"Urinoid"	- Cystine Decomposition: Sulfuric smell - Dehydration/Prolonged Room Temperature: Strong smell - Diabetes Mellitus: Honey - Diabetic Ketoacidosis: Fruity/sweet - Gastrointestinal-bladder Fistula: Fecal smell - Maple-syrup Urine Disease: "Burnt sugar." - Prolonged Bladder Retention: Ammoniacal - Urinary Tract Infection: Pungent or fetid - Medications and Diet: Onions, garlic, asparagus
Note: Reference ranges may vary slightly by laboratory, method, patient age, and clinical condition.		

URINALYSIS REPORTING RESULTS

Urinalysis Chemical Examination Reference Range (Dip Stick)



A 4x8 grid of purple dots, with 4 rows and 8 columns, totaling 32 dots.



URINALYSIS PROCEDURE NOTES

Proper specimen: Use a correctly labeled, fresh specimen and prevent contamination during collection and handling.

Timely analysis: Analyze the specimen promptly to prevent changes in its physical, chemical, and microscopic characteristics.

Standardized testing: Follow the proper procedures for physical, chemical, and microscopic examination, including correct timing and centrifugation.

Quality control: Check reagents and equipment and run appropriate QC materials before patient testing.

Accurate reporting: Record findings using the laboratory's standardized terminology and reporting units.



URINALYSIS METHOD LIMITATIONS

- **Specimen Collection:** Incorrect or contaminated collection can produce inaccurate results, making proper patient preparation and clean-catch collection important.
- **Specimen Stability:** Urine changes after collection. Delays can affect cells, casts, crystals, glucose, bilirubin, urobilinogen, and bacterial growth.
- **Dipstick Interferences:** Reagent-strip results may produce false-positive or false-negative reactions because of substances such as vitamin C, medications, bacteria, urine concentration, and improper storage.
- **Non-Specific Findings:** Some abnormalities detected by urinalysis may also occur in otherwise healthy individuals, so results should not be interpreted independently.
- **Physical Factors:** Diet, hydration, exercise, medications, light, and temperature can alter urine characteristics and affect interpretation.
- **Microscopic Limitations:** Urinary cells and casts can deteriorate or dissolve when examination is delayed, making prompt microscopic analysis important.



URINALYSIS TROUBLESHOOTING AND BACK-UP PLANS

- **Request a new specimen:** If contamination, incorrect collection, or incorrect labeling is suspected, recollect the urine using the appropriate collection technique.
- **Use a fresh specimen:** If the urine has been stored improperly or testing is significantly delayed, obtain a new specimen when possible. Delays can alter cells, bacteria, glucose, nitrite, and other components.
- **Repeat and confirm:** Check reagent-strip storage and expiration, repeat the test with a fresh strip/specimen when appropriate, and use another method or microscopic examination when confirmation is necessary.
- **Correlate with other findings:** Compare the dipstick result with the physical and microscopic findings rather than relying on the strip result alone. For example, a positive blood reaction can be followed by microscopic examination to determine whether RBCs are actually present.
- **Review relevant information:** Consider hydration, exercise, diet, medications, and other known factors that may influence urine findings before interpreting an abnormal result.
- **Perform clinical correlation:** An abnormal urinalysis result should be interpreted together with the patient's clinical information and, when necessary, followed by additional laboratory testing rather than being used alone to establish a diagnosis.



REFERENCES

Basic Medical Key. (2022). *Urine specimen types, collection, and preservation*.
<https://basicmedicalkey.com/urine-specimen-types-collection-and-preservation/>

Cleveland Clinic. (2024). *Urinalysis*.
<https://my.clevelandclinic.org/health/diagnostics/17893-urinalysis>

Devkota, B. (2025). *Urinalysis*. Medscape.
<https://emedicine.medscape.com/article/2074001-overview#a3>

Giovannoni, G. (2022). *How to interpret a urine dipstick result*. MS Selfie.
<https://gavingiovannoni.substack.com/p/how-to-interpret-a-urine-dipstick>

Milani, D., and Jialal, I. (2023). *Urinalysis*. StatPearls Publishing.
<https://www.ncbi.nlm.nih.gov/books/NBK557685/>

Perez, A. (2025). *Urinalysis normal value chart*. Carepatron.
<https://www.carepatron.com/templates/urinalysis-normal-values-chart/>

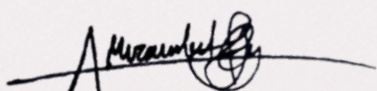
University of Florida Health. (n.d.). *Specimen collection procedures: Urology*.
<https://pathlabs.ufl.edu/client-services/specimen-shipping/specimen-collection-procedures-urology/>

WebPath. (n.d.). *Urinalysis*.
<https://webpath.med.utah.edu/TUTORIAL/URINE/URINE.html>



EFFECTIVE DATE
EFFECTIVE UPON APPROVAL

**SIGNATURE OF THE
LABORATORY DIRECTOR**


ARYEN JEAH D. MIRAMBEL