Urine Collection

Containers
Random specimens should be submitted in a plastic collection cup available in the laboratory and nursing locations. These cups will have a snap-on lid to prevent leakage.

For 24-hour urine collections, an amber colored 3-liter container will be used. It should be kept in the refrigerator or on ice during the 24-hour period. Warning labels will be affixed to these collection containers containing acid or other preservatives.

Specimen Labeling
All specimens submitted to the laboratory for testing must be properly labeled. Minimally, all specimens must be labeled with:

- Patient’s name
- Date of birth
- Date/time of collection

Inpatient specimens must also include a medical record number and initials/tech code of person procuring the specimen.

Types of Urine Specimens

- Random specimen—may be collected at unspecified times
- First morning or 8-hour specimen—generally the most concentrated specimen and thus is preferred for microscopic examinations and for the detection of abnormal amounts of constituents
- Timed specimen—collected at a specific time in the 24-hour period
- 24-hour specimen—when it is necessary to measure the total amount of solutes excreted in a 24-hour period, a strictly timed 24-hour specimen is required because many solutes exhibit diurnal variations

Urine Collections

- “Clean-Catch Midstream” specimen
  — Patient should wash hands first
  — A sterile cleansing towelette should be used to wipe urethral area
    - Males—uncircumcised patient should withdraw foreskin to expose urethral meatus, using a towelette, clean glands beginning at urethra and working away. Repeat this process using a second towelette.
    - Females—squatting over the toilet, clean urethral meatus and surrounding area with a towelette. Repeat this process using a second towelette.
  — Begin urinating, passing the first portion into toilet. Collect the midportion into container without contaminating container. Excess urine can pass into toilet.
- Catheter specimen—collected by nursing personnel or physician after inserting a catheter into the bladder through urethra
- Suprapubic specimen—collected by nursing personnel or physicians by aspirating urine from distended bladder through abdominal wall
- Pediatric and newborn specimen—urine specimen collection bags with hypoallergenic skin adhesive should be used with children who are too young to collect a urine specimen
  — Separate child’s legs
  — Be sure pubic and perineal areas are clean, dry, and free of mucus. Do not apply powders, oils, or lotions to skin.
  — Remove protective paper, exposing hypoallergenic skin adhesive attached to the bag:
    - For girls, stretch the perineum to remove skin folds. Press adhesive firmly to the skin all around the vagina. Be sure to start at the bridge of the skin, separate rectum from vagina, and work forward.
    - For boys, fit the bag over penis and press the flaps firmly to perineum.
  — Check container every 15 minutes
  — Remove collected specimen from patient and label it.
- 24-hour specimen—void first morning urine, discard and record time. Collect all urine excreted during the next 24 hours. At the end of collection period, void and save urine.

Transport
Urine specimens should be transported to the laboratory as soon as possible for processing and prompt examination. Lids should be checked to insure they are secure.
Urine Preservation

- Refrigeration: if specimen cannot be transported and analyzed immediately, it should be refrigerated after collection. When urine is kept for longer than 1 to 2 hours before analysis, special precautions must be taken. Avoid deterioration of chemical and cellular elements, and to prevent multiplication of bacteria that may be present in collected urine, with resultant alteration in urinary constituents. Routine urinalysis specimens should, as a rule, not be refrigerated for >12 hours.

- Chemical Preservatives:
  - Preservatives should always be used cautiously since a preservative suitable for some test procedures may interfere with others.
  - Preservatives have different roles but are usually added to reduce bacterial action or chemical decomposition or to solubilize constituents that might otherwise precipitate out of solution.
    - Urinary preservative tablets—contain a mixture of chemical such as potassium acid phosphate, sodium benzoate, benzoic acid, sodium bicarbonate, etc., act mainly by lowering the pH of the urine and by releasing formaldehyde. Since these tablets contain sodium and potassium salts, among others, they cannot be used for analysis of these analytes.
    - Formalin—has been used for preserving specimens, but in large amounts, it will precipitate urea and inhibit certain reactions such as the dipstick esterase test for leukocytes.
    - Sulfuric acid—can be used to reduce pH.
    - Boric acid—can be used but causes precipitation of urates.
    - Toluene—the only organic solvent that is still used as a preservative. When present in large amounts it acts as a barrier between the air and surface of specimen. It will not, however, prevent the growth of anaerobic microorganisms, and, because of its flammable nature, is a safety hazard.
    - Sodium bicarbonate or a small amount of NaOH—used to preserve porphyrins, urobilinogen, and uric acid.
    - Acidification (Glacial acetic acid and concentrated HCL)—used for preservation of 24 hour specimens in general provided the acid will not interfere with test. Formed elements will be destroyed and uric acid precipitated.