I. GENERAL PRINCIPLE

Urinary tract infections may involve the kidneys, ureters, bladder, and urethra. In most hospitals, urinary tract infections represent the most common form of nosocomial infection. Urine is normally a sterile body fluid, submitted for culture from patients with urinary tract infection symptoms. The agents of UTI are usually limited to the enteric gram negative organisms, *Pseudomonas* species, and *Enterococcus* species, which can also be included as part of the normal flora of the perineum, prostate, urethra and/or vagina. Since urine is an excellent growth medium for microorganism, introduction of just a few contaminants into a specimen that is allowed to sit over a prolonged period of time, can produce a colony count indicative of infection. Thus following proper collection procedures is very important to avoid contamination from these body sites and confusion on the issued of infection versus normal flora.

II. COLLECTION

A. General considerations

1. NEVER COLLECT URINE FROM A BEDPAN OR URINAL.

2. Soap rather than disinfectant is recommended for cleaning the urethral and/or vaginal area. If disinfectant is introduced into the urine during collection, it may be inhibitory to the growth of microorganisms.

3. Use sterile containers to collect and transport urine. Use of the sterile urine container with the needle sampling device in the lid allows for the use of the Vacutainer urine preservative tube, which is the preferred specimen and acceptable for 48 hrs after collection, with or without refrigeration.
   - Clean the gray stopper of the tube with an alcohol prep pad.
   - After collecting urine in the cup, recap. Cup must be at least half full of urine.
   - Peel back sticker on lid to expose the needle.
   - Slide stopper over needle and urine will flow into the tube by vacuum pressure.
   - Remove tube from the lid and press sticker back into place.
   - Submit both the tube and the cup. Make sure both are labeled.

4. The only urine specimen suitable for anaerobic culture is one obtained by suprapubic aspirate and it must be transported in an anaerobic collection system.

5. Catheterization procedures must be performed with scrupulous aseptic technique to avoid introduction of microorganisms.

6. The first morning voided urine is the best specimen due to the increased bacterial count after overnight incubation in the bladder.

7. Be advised that forcing fluids to help the patient void will dilute the urine and may decrease the colony count. It is not recommended.

8. If the patient is responsible for collection of specimen, he/she should be given specific, detailed instructions on collection procedure. Emphasize the importance of not contaminating the interior of the collection container by touching with hands or penis.
9. A culture can be performed on less than 1 ml of urine.

B. Clean catch urine

1. The person responsible for collection should thoroughly wash hands with soap and water, rinse and dry.

2. Females:
   a. Cleanse the urethral opening and the vaginal vestibule with soapy water or pads soaked with liquid soap, using front-to-back strokes. Rinse well. (Or use the pads included in the sterile urine kit)

   b. To collect midstream urine, hold the labia apart and instruct patient to begin voiding. Allow a few milliliters of urine to pass, then pass the sterile container into the urine stream and remove before the void ends.

3. Males:
   a. Cleanse the penis and retract the foreskin if the patient is not circumcised. Wash with soapy water or pads soaked with liquid soap. Rinse well. (Or use the pads included in the sterile urine kit).

   b. To minimize contamination with skin flora, keep the foreskin retracted and instruct patient to begin voiding. Allow a few milliliters of urine to pass, then pass the sterile container into the urine stream and remove before void ends.

C. Straight catheter urine

1. Performed when results from clean catch specimens are suspect and diagnosis is critical.

2. After thoroughly cleaning the urethral and/or vaginal area, and using sterile technique, insert a catheter into the patient's bladder.

3. Discard the initial 15-30 mls of urine. Collect and submit sample in a sterile container from the mid-or-later flow of urine.

D. Indwelling catheter urine

1. Clean the catheter port with an alcohol wipe.

2. Using sterile technique, puncture the port with a needle and syringe. Aspirate the urine and transfer to a sterile container.

3. Never submit urine for culture from the catheter collection bag.
E. Suprapubic aspirate of urine from the bladder
   1. SPA is useful:
      a. In cases where infection is suspected, routine procedures have not produced satisfactory results and diagnosis is critical.
      b. In pediatric patients when clean catch specimens are difficult to obtain.
      c. As the only acceptable urine specimen for anaerobic culture.
   2. The patient should force fluids until the bladder is full. This may reduce the number of organisms recovered.
   3. Shave and disinfect the suprapubic skin overlying the bladder.
   4. The physician will perform a needle aspiration procedure to puncture the bladder and collect the urine.

F. Surgical collection
   1. Urine specimens may be collected during surgical procedures.
   2. Generally they are very specifically selected by the physician and the exact site of collection should be noted on the laboratory request.

III. TRANSPORT

A. Transport urine to the laboratory as soon as possible after collection.

B. If transport will be delayed more than 2 hours, refrigerate urine specimen. Refrigerated specimens are acceptable for up to 24 hours after collection, as colony counts usually remain stable for that length of time at 4°C.

C. Refrigeration is not necessary if specimen is transferred to a gray top transport tube with preservative.
   1. Place at least 3 ml of urine into the tube to avoid an inhibition or dilution effect on the microorganism.
   2. The preservative will hold the bacterial count in stasis for approximately 48 hrs at room temperature.

D. Repeat collection of unpreserved urine will be requested when:
   1. The specimen is more than 2 hours old and there is no evidence of refrigeration.
   2. The collection time and method of collection have not been provided.
E. If an improperly collected, transported or handled specimen cannot be replaced, the final report will document that specimen quality may have been compromised.

F. As always, transport specimen to the lab in a biohazard container or bag.

REVISION HISTORY:

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See original policy in the Laboratory for all documented biennial reviews.

REFERENCES

Clinical Microbiology Procedures Handbook, 1992, Isenberg, American Society for Microbiology.
