Wake Forest Baptist Medical Center	**Urine Culture Procedure** **MB-1**	**Dept:**	Cl Micro
		Effective Date:	07/01/1993
		Revised Date:	08/27/2018
		Contact:	Section Manager
Name & Title: Dr. Gregory Pomper		**Date:**	
Signature:			

1) General Procedure Statement:

a. **Purpose:** This procedure is to serve as a guide for trained personnel in the Clinical Microbiology Laboratory to perform the test described herein. This procedure should be used in conjunction with proper training and only by qualified technologists.

b. **Responsible Department/Scope:**
   i. Procedure owner/Implementer: Dr. Elizabeth Palavecino.
   ii. Procedure prepared by: Christy Hernandez, MT(ASCP).
   iii. Who performs procedure: Clinical Microbiology Laboratory personnel.

2) Procedure:

PRINCIPLE:

Acute urinary tract infections are generally caused by a single organism in numbers exceeding 10,000 cfu/ml. On occasion, two organisms may cause an infection; however, more than this number of causative agents is highly unlikely.

SPECIMEN:

Since the external urethra has a normal flora of organisms, it is important that the patient be instructed to properly cleanse this area before collecting the specimen. The specimen should be brought to the laboratory within one hour and processed as soon as possible to avoid overgrowth of these organisms. For clean voided specimens, instruct the patient to clean off the external genital area with the cleansing wipes provided. Request that the patient void 50 - 100 ml of urine before collecting the specimen in the sterile container provided. Transfer the specimen into a urine culture preservative tube (Vacutainer or Vacuette), label the container with the Wake One barcoded patient label and send to the Microbiology lab. Urine specimens not in a preservative tube greater than 2 hours old cannot be accepted for culture if not refrigerated. Catheterized urine specimens should be collected into a sterile container after proper genital disinfection as above. Transfer the specimen into a urine culture preservative tube (Vacutainer or Vacuette), label the container with the Wake One barcoded patient label and send to the Microbiology lab. Urine from patients with Foley catheters should be obtained by clamping the exit tube and

disinfecting with betadine before aspirating with needle and syringe. Under no circumstances should urine be obtained from the Foley bag.

INSTRUMENTATION: None.

PROCEDURE: INOCULATION

1. Receive the sample into Beaker by scanning the barcode into the receiving activity.

2. Check to ensure that the source description is appropriate and correct if necessary.

3. Check that the barcode label on the specimen is oriented vertically on the tube. Place the tube in the appropriate Kiestra InoqulA rack.

4. If the urine sample did not arrive to the lab in a preservative tube, transfer the sample to a culture preservative tube. Label the tube with a Beaker barcode label oriented vertically and place into the appropriate Kiestra InoqulA rack.

4. All specimens shall be held in their original state for 24 hours before discarding. Full biohazard buckets and baskets containing specimens and tubes to be held can be kept at room temperature.

5. Specimen containers which are outwardly contaminated or specimens with needles attached represent a potential hazard to the laboratory and must not be accepted.

6. Problems concerning specimen inoculation should be called to the attention of the supervisor.

7. All specimens must be processed as if they contain highly infectious agents; gloves must be worn and the person processing the sample must wear a face shield or perform all processing within the safety hood.

Setup:

Blood Agar Plate

MacConkey Agar Plate

BHI broth - for bladder tap, suprapubic, or nephrostomy site.

Type I Specimens:

Includes clean catch urines, in/out catheters, and voided urines. Inoculated to a blood agar plate and a MacConkey agar plate using a 10µl pipet by the Kiestra InoqulA specimen processor. The plates are streaked with a zigzag pattern. Incubate at 37ºC for 24 hours in the aerobic walk-in incubator.

Type II Specimens:

Includes bladder taps, suprapubic, and nephrostomy urines. Inoculated the same as Type I urines with the addition of a BHI broth to facilitate the recovery of small numbers of organisms, including anaerobes. Incubate the BHI broth at 37ºC for 48 hours in an anaerobic jar.

Workup

1. No growth cultures:

    a. Type I and type II urines which have no growth at 24 hours are to be reported in the computer as "No Growth."

    b. Type I urines can be finalized as no growth if they were received before 5pm the previous day. Type I urines received after 5pm or urines from pediatric patients ≤ 5 years must be re-incubated for an additional day. If still no growth on day 2, report as "No Growth."

    c. Type II urines must be re-incubated for an additional day regardless of the time received.

2. Cultures with Growth:

    a. Determine colony count on Type I cultures and determine workup protocol using the "Workup List" that follows in this text.

    b. For type II specimens, any growth on plates or from the BHI broth is to be identified and have susceptibilities done regardless of quantity (exception for MSP nephrostomy urines). If the BHI broth shows turbidity at 24 hours, it is to be subbed to an aerobic BAP and an anaerobic BAP. The subculture plates are held for 48 hours. Both anaerobes and aerobes are to be identified from the BHI broth. Anaerobes should be worked up according to anaerobic protocol in the wound culture procedure. If there is growth only in the BHI broth, it should be identified and susceptibility tested and the colony count should be reported as <100 cfu/ml. Nephrostomy samples that contain "Many Species" are reported as such but the predominant species is worked up.

    c. Documentation of workup in Beaker:

        i. For Type I urines a workcard is not required if there is only one species present AND the organism is gram negative and you are working it up from the MacConkey plate OR the organism is gram positive and you are working it up from the blood agar plate.

        ii. For Type I urines a workcard is required if there is only one species present, it is gram negative, and you are working it up from the blood agar plate.

        iii. For Type I urines a workcard is required if there are two or more species present.

        iv. For Type II urines a workcard is always required for documentation.

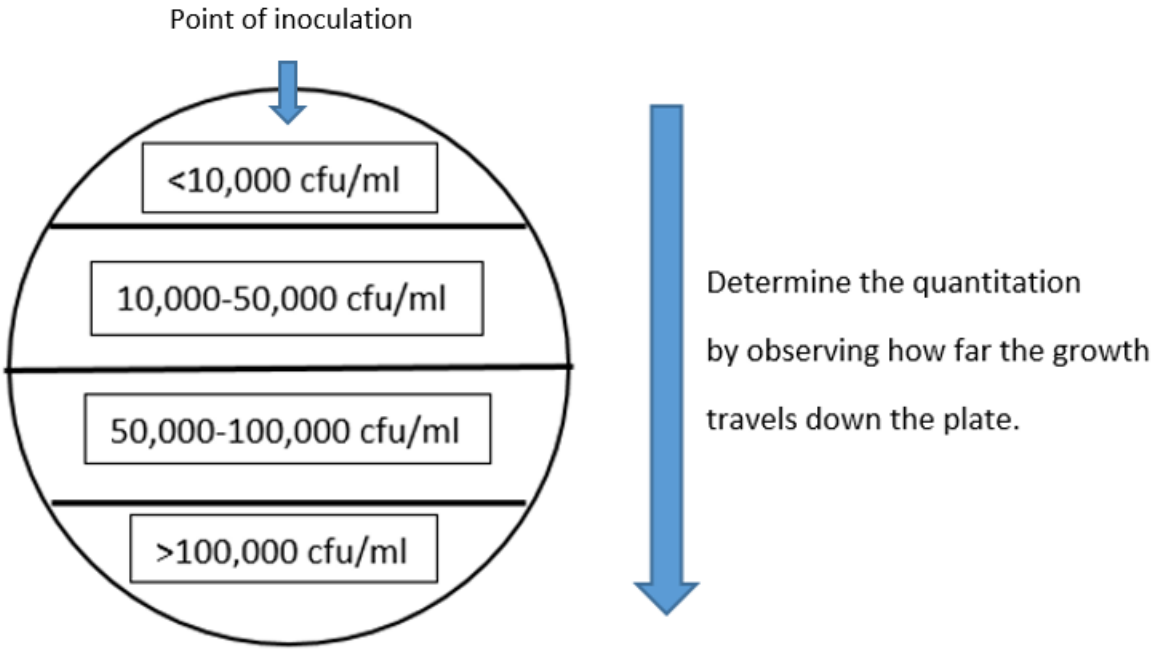
Workup List:

1. Acute urinary tract infections are generally caused by a single organism in numbers exceeding 10,000 cfu/ml. On occasion, two organisms may cause an infection; however, more than this number of causative agents is highly unlikely.

2. No distinction is made between catheter and voided samples in workup.

3. All requests to "Identify all organisms regardless of count etc." and "Many Species Urines" must be reviewed by the Supervisor or Director.

4. To determine the colony count, observe how far the growth travels down the plate.



5. Report the quantitation of growth as one of these four categories:

   <10,000 cfu/ml

   10,000-50,000 cfu/ml

   50,000-100,000 cfu/ml

   >100,000 cfu/ml

Urine Culture Colony Counts

# Species	Quantity	Procedure	Report
1	<10,000	None	<10,000 cfu/ml. No further workup.
1	≥10,000	ID & MIC (if appropriate)	Quantity, ID & MIC (if appropriate)
2	both <10,000	None	<10,000 cfu/ml. No further workup.
2	one ≥10,000 and one <10,000	ID & MIC (if appropriate) only for the species ≥10,000	Quantity, ID & MIC (if appropriate) only for the species ≥10,000
2	both ≥10,000	ID & MIC (if appropriate) both species	Quantity, ID & MIC (if appropriate) for both species
3 or more	One ≥10,000, and two or more <10,000	ID & MIC (if appropriate) only the species ≥10,000	Quantity, ID & MIC (if appropriate) only for the species ≥10,000
3 or more	At least two species ≥10,000	None	>3 species present, probable contamination. No work up indicated.
3 or more	All <10,000	None	<10,000 cfu/ml. No further workup.

6. Antibiotic susceptibilities are performed on all identified gram negative rods, Staphylococci, Enterococci, and *Strep. pneumoniae*.

7. If >10,000 cfu/ml of yeast are present, report the MALDI-TOF identification (no sensitivities or germ tube should be done). If >10,000 cfu/ml of fungus/mold are present, report as "Mold." Do not send yeast or fungi to Mycology for further identification or sensitivities unless it is requested by a physician and the appropriate special MIC or Fungal Culture (to ID fungi) is ordered.

8. If a urine grows out >100,000 cfu/ml of *Corynebacterium JK* or *Corynebacterium urealyticum* report susceptibilities to Vancomycin, Gentamicin, Clindamycin, Ceftriaxone, and Penicillin by E test.

9. Report *Staphylococcus saprophyticus* when identified. *Staphylococcus lugdunensis* should be reported as Coagulase Negative Staphylococcus.

10. **Urine cultures from Urology Clinic locations** should be ordered as Culture, Urine Urology. Identify any organism in quantity of ≥10,000 cfu/ml and do MIC on any organism that would routinely get an MIC.

Saving of plates: All plates with growth shall be placed in the cabinet above the bench according to the day they were read. These plates will be kept for one week.

3) Review/Revision/Implementation:

All procedures must be reviewed at least every 2 years.

- All new and procedures that have major revisions must be signed by the Department Chairman.
- All reviewed procedures and procedures with minor revisions can be signed by the designated section medical director.

4) Related Procedures: n/a

5) References:

1. Manual of Clinical Microbiology. Murray, et al., ASM, 1995.
2. Detection, Prevention and Management of Urinary Tract Infections. C.M. Kunin, 1995.
3. Clarridge JE, Johnson JR, Pezzlo MT. Cumitech 2B: Laboratory diagnosis of urinary tract infections. Coordinating ed. Washington, DC: American Society for Microbiology; 1998.
4. Centers for Disease Control and Prevention, MMWR, Prevention of Perinatal Group B Streptococcal Disease: Volume 59, Nov. 19,2010, p 1 – 32.

6) Attachments: None.

7) **Revised/Reviewed Dates and Signatures:** Reviewed 6/26/06 by EP, Reviewed 3/1/07 by EP, Reviewed 5/2/08 by EP, Reviewed 2/10/09 by EP, Reviewed 3/29/10 by EP, Reviewed 3/10/11 by EP, Reviewed 3/28/12 by EP, Revised 2/15/13 by EP, Revised 6/6/14 by CH, Reviewed 4/20/15 by EP, Reviewed 3/7/17 by EP, Revised 8/27/18 by CH.

Review/Revision Date	Signature