**PURPOSE:**

This document describes the processing and interpretation of urine cultures.

**SCOPE:**

This policy applies to UPMC Hanover Hospital laboratory.

**SPECIMEN:**

**Bladder Urine (noninasive):**

* Clean catch, midstream
* Catheterized
* Suprapubic aspirate
* Cystostomy

**Kidney Urine (invasively obtained):**

* Urostomy
* Nephrostomy
* Renal pelvis
* Ureter
* Ileal loop
* Cystoscopy

All specimens for urine culture must be submitted in sterile containers or grey top urine tubes.

If specimens submitted in sterile containers with no preservative cannot be transported to the laboratory within 2 hours of collection, refrigerate the specimen no longer than 24 hours. *Do not freeze.*

Specimens submitted in grey tops are acceptable up to 48 hours.

**MATERIALS:**

* 5% Sheep blood agar (BAP)
* MacConkey agar (MAC)
* .001 ul calilbrated disposable plastic loop
* .01 ul calibrated plastic loop

**PROCEDURE:**

**NOTE: All manipulations of culture specimens must be performed in the BSC (biosafety cabinet).**

1. On receipt of the specimen, select and confirm the specimen to print labels.
2. Label culture plates.
3. Mix specimen well.
4. Holding the disposable loop vertically, immerse it just below the surface of the urine specimen.
5. Using the loop, inoculate the plate by making a straight line down the center of the BAP. Then streak the plate beginning at the top of the plate by making a series of passes at 90º through the inoculum. **NOTE: Specimens obtained by invasive procedures listed above should be set up using a .01 ul loop.**
6. Repeat step 4 and 5 for the MAC plate.
7. Incubate plates in 35⁰C incubator without CO2.

**CULTURE INTERPRETATION:**

1. At 18 to 24 hours, examine plates for growth.
2. If there is no growth, reincubate plates and issue a preliminary report.
3. For positive cultures, determine the colony count of each morphotype in the culture (obtained by multiplying the number of colonies present by 1000 or in the instance of urines obtained invasively by 100).
4. **Refer Table 1 to determine the extent of workup.**
5. Do not report normal urogenital or skin flora to the genus or species level.
6. Minimally ID: Alpha hemolytic streptococcus, Staphylococcus coagulase negative, lactobacillus, *Corynbacterium spp*, using colony morphology, Staph latex or Gram stain.
7. If susceptibilities were performed, examine the purity plate prior to reporting results. Do not report ID and sensitivities on any mixed cultures.
8. *Streptococcus agalactiae* should be reported from women in childbearing years regardless of the colony count.
9. Hold all specimens 36 – 48 hours with the exception of grossly contaminated cultures containing >100,000 CFU/ml each of 3 or more organisms.

**TABLE 1 Criteria for Reporting and Work up of Urine Cultures**

|  |  |  |  |
| --- | --- | --- | --- |
| **Type of Specimen** | **# of Isolates** | **Colony Count** | **Extent of Workup and Reporting** |
| **Non invasive** | 1 | ≥10,000  CFU/ml | If uropathogen, ID and Sens (if appropriate) |
| **Non invasive** | 1 | <10,000  CFU/ml | Minimal work up Report ID |
| **Non invasive** | 2 | Both isolates are ≥10,000 CFU/ml | ID and Sens for uropathogens, minimal ID for nonpathogens  Report ID only for nonpathogens |
| **Non invasive** | 2 | Both isolates are <10,000 CFU/ml | Report minimal ID |
| **Non invasive** | 2 | One of the 2 isolates is  ≥10,000  CFU/ml | If uropathogen, ID and Sens.  For non- pathogens report with Minimal ID |
| **Non invasive** | 2 | One of the 2 isolates is  <10,000 CFU/ml | Report with minimal ID |
| **Non invasive** | >3 | If **ONE predominating** pathogen with a count of ≥100,000 and ≤20,000 total of other orgs: ID and Sens for predominating uropathogen and colony count with” Mixed Flora”, for the others.  No single predominating pathogen: Report amount with: “Multiple organisms, probable contamination, repeat collection is recommended.”: | |

**Table 1 (cont.)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Type of Specimen** | **# of Isolates** | **Colony Count** | **Extent of Workup and Reportin** |
| **Invasive** | 1 | >100 CFU/ml | If uropathogen, ID and Sens (if appropriate) |
| **Invasive** | 2 | >100 CFU/ml | If both are uropathogens, ID and Sens  Minimal ID for non pathogens |
| **Invasive** | >3 | For each, <1000 CFU/ml | Minimal ID |
| **Invasive** | >3 | For each, > 1000 | For each uropathogen, ID and Sens or contact physician to determine extent of workup |

**PROCEDURE NOTES:**

* When reporting colony counts, report the plate with the highest number of colonies.
* Do not report normal urogenital or skin flora to the genus or species level.
* Minimally ID: Alpha hemolytic streptococcus, Staphylococcus coagulase negative, lactobacillus, *Corynbacterium spp*, using colony morphology, Staph latex or Gram stain.
* If susceptibilities were performed, examine the purity plate prior to reporting results. Do not report ID and sensitivities on any mixed cultures.
* *Streptococcus agalactiae* should be reported from women in childbearing years regardless of the colony count.
* Hold all specimens 36 – 48 hours with the exception of grossly contaminated cultures containing >100,000 CFU/ml each of 3 or more organisms.

**REFERENCES:**

UPMC Microbiology Procedure Manual. Urine Cultures. 12/18/2023.

Leber, Amy L. Editor in Chief. Clinical Microbiology Procedures Handbook, 4th edition. 2016.