

Pocket Guide

# Urine Specimen Contamination

## Clean Specimens are Needed to Diagnose a True Urinary Tract Infection (UTI)

**Bacteriuria:** Bacteria in the urine

**UTI: Clinical Symptoms** + Bacteriuria with one bacterium  $\geq 10^5$  Colony Forming Units (CFU)/ml

**Pyuria:** > 10 White Blood Cells (WBC) per High Power Field (HPF) of unspun urine

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## PREVENTING ERRORS AT THE OUTSET

### Ensure that all fields on the lab requisition slip are completed

- Specify the collection technique, i.e., clean catch vs. catheterized.
- Laboratory reporting criteria differ for clean catch vs. catheterized specimens.
- Specify the collection date and time.
- Specify if the patient is on an antimicrobial and identify the antimicrobial.
- Ensure that the name on the requisition slip and the specimen are identical.

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## SPECIMEN INTEGRITY

### Specimen Collection

#### Clean Catch Mid-stream Voided Specimens

- ▶ Improper instruction or patient impatience can lead to a contaminated specimen.
- ▶ Can be contaminated with skin flora from the anterior urethra and peri-anal area.

#### Straight Catheterization Specimens

- ▶ You must disinfect the peri-urethral area prior to inserting the catheter.

#### Foley Catheter

- ▶ Only collect specimen on insertion.

### Specimen Handling and Transport

- Highly recommended to use urine transport tubes that contain a preservative (check expiration date).

- Unpreserved specimens must be refrigerated until processing.
- Unpreserved, unrefrigerated urine is worthless unless processed within 2 hours of collection<sup>4</sup>.

## Specimen Stability

### Urine Culture Stability

**PRESERVED:** Bacterial counts stable for 48 hours at room temperature (RT)<sup>1</sup>

**UNPRESERVED:** Bacterial counts stable for 2 hours at RT<sup>1</sup>

### Urinalysis Stability

**PRESERVED:** Stable for 72 hours at RT<sup>2</sup>

**UNPRESERVED:** Stable for 2 hours at RT<sup>3</sup>

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## WHEN TO SUSPECT A CONTAMINATED SPECIMEN

### Contaminated Urinalysis

- ▶ Epithelial cells on microscopy

### Contaminated Urine Cultures

- ▶ Clean catch specimens suspect contamination:<sup>4</sup>
  - $\geq 2$  species of bacteria each  $< 10^5$  CFU/mL
  - $\geq 3$  species of bacteria each  $> 10^5$  CFU/mL
- ▶ Straight catheter specimens suspect contamination:<sup>4</sup>
  - $\geq 3$  types of bacteria each  $\geq 10^5$

### Organisms Suggesting Contamination

- ▶ Diphtheroids
- ▶ *Staphylococcus spp.* (exceptions: *S. saprophyticus*, *S. lugdunensis*)
- ▶ *Lactobacilli spp.*
- ▶ Viridans streptococci
- ▶ Reports indicating skin flora or urethral flora

## References:

1. *American Journal of Clinical Pathology*, Volume 140, Issue 3, 1 September 2013, pages 306–313, <https://doi.org/10.1309/AJCP5ON9JHXVNQOD>
  2. Ecran M., et al, Stability of Urine Specimens Stored With and Without Preservatives at Room Temperature and on Ice Prior to Urinalysis, *Clin Biochem* (2015), <http://dx.doi.org/10.2026/j.clinbiochem.2015.05.016>
  3. Manoni SV F et al., Stability of common analytes and urine particles stored at room temperature before automated analysis. *RIMel/IJLaM* 2008:192-8.
  4. Laboratory Diagnosis of Urinary Tract Infections in Adult Patients *Clinical Infectious Diseases*, Volume 38, Issue 8, 15 April 2004, pages 1150–1158, <https://doi.org/10.1086/383029>
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