ZRL Microbiology– Specimen Collection, Handling & Transport

Introduction

The diagnosis of infectious diseases is a multifactorial process that is not confined to the microbiology laboratory. However, once a decision has been made to submit clinical specimens to the microbiology laboratory, following basic principles can help ensure that results will be accurate and rapid.

Collection, Handling & Transport of Specimens

Specimens should be collected during the acute phase of illness and before the administration of antimicrobials, if possible. Most specimens will be collected using Culture Swabs or sterile containers and tubes provided by ZRL. Collect specimens as aseptically as possible; otherwise, relevant pathogens may be overgrown by normal flora. Interpretation of results always depends on the quality of the specimens received for analysis, and the accurate diagnosis of microbial infections requires proper sample selection, collection, and preservation. Specimens of poor or questionable quality where results could be compromised may be rejected.

At minimum, specimens must be labeled with the patient's first and last name, the source/site, and date and time of collection. Enough information should be provided on the specimen label to match with the test requisition form. Clinical information should also be included, as this helps the laboratory ensure that the specimen is handled and tested appropriately.

The specimen collection details for the most common specimens submitted to microbiology labs are shown below.

Urine Collection in a Sterile Tube

- **Do not use expired tubes.**
- **Label tube with the patient's first and last name, specimen source, and date and time of collection.**
- **Aseptically remove the lid and place urine inside tube. Do not overfill.**
- **Replace lid and seal securely. Leaking specimens will be rejected by the lab.**
- **Urine should be refrigerated immediately after collection and should be shipped to the lab on ice.**

Submit >1 ml of urine in a WTT (white top tube), or other sterile tube, and **always indicate the method of collection, e.g., cystocentesis, catheter, free-catch, on the tube and requisition form**. Urine should be processed for culture as soon as possible, and ideally within 48h of collection. If submitting for urinalysis and culture, two tubes are recommended. If reviewing urinalysis results before deciding to culture, the add-on culture request should done be as quickly as possible.

Specimen Collection Using Sterile Culture Swab

- **Do not use expired swabs.**
- **Label tube with patient's first and last name, date and time of collection, and specimen source (e.g., skin, ear, wound, incision).**
- **Prepare the site for specimen collection and decontaminate as necessary. Do not remove the swab from the packaging until ready to use.**
- **Collect the specimen using the sterile swab.**
- **Insert swab into the tube, pushing in cap to secure.**
- **Do not refrigerate culture swabs. They should be stored and shipped at room temperature.**

Culture swabs provided by ZRL contain a transport medium that ensures specimen integrity during shipping. Collect specimens from the edge of lesions using the sterile swab and insert the swab into the transport medium in the tube. Culture swabs are used to collect specimens for aerobic and anaerobic culture and should be processed for culture as soon as possible, ideally within 48h of collection. Culture swabs can be used to collect specimens from a variety of sites such as abscesses, ears, eyes, skin, etc. They can also be used to transport fluid specimens, pus, and aspirates that do not require quantitative culture. They should not be used to transport tissue specimens or punch biopsies for culture.

Collecting Feces in a Fecal Container

- **Do not use expired sterile containers.**
- **Label container with patient's first and last name, specimen source, and date and time of collection. It's not always apparent that it's a fecal specimen.**
- **Remove lid and place feces inside container. Do not overfill.**
- **Replace lid and seal securely. Leaking specimens will be rejected by the lab.**
- **Fecal specimens should be refrigerated prior to shipping, but can be shipped at room temperature.**

The fecal specimen submitted should be representative of the voided feces. If blood or mucus is present, a small amount should be submitted with the feces. Liquid feces can be collected on a sterile gauze pad and placed inside the fecal container. Contamination from the ground should be avoided if possible. Do not smear feces on the inside of the container because it will dry rapidly and not be suitable for testing.

Rectal swabs are not a good specimen for fecal analysis unless a sufficient amount of feces is visible on the swab. A culture swab can be used to collect the feces from the rectum.

What to Expect

Please provide any information that may be relevant to helping you make a diagnosis. At the very least, please provide the specimen source on the specimen container and the requisition form.

At ZRL, we use standard lab protocols and guidelines from the American Society for Microbiology and others to interpret results from cultures.

- We use state-of-the-art technologies, such as MALDI-ToF, and can identify organisms to the species level in most cases.
- Antimicrobial susceptibility testing (AST) is performed on organisms from aerobic and urine cultures using Clinical and Laboratory Standards Institute (CLSI) performance standards.
- Minimum Inhibitory Concentration (MIC) testing is performed using preconfigured veterinary cards on a VITEK© system (BioMerieux), and results are interpreted when possible using clinical breakpoints set by CLSI.
- Reporting every single organism that grows from an aerobic culture and/or providing AST results for every organism identified is not always appropriate and can sometimes obfuscate diagnostic and treatment decisions.
- Clinical microbiology is a science of interpretative judgement and clinicians need to be confident that the results reported from the specimen submitted are accurate and clinically relevant.
- Our technicians are highly trained and proficient in microbiology laboratory techniques. The interpretation of culture results is supervised by lab managers and, ultimately, a clinical microbiologist.
- Expert rules for reporting AST results have been developed in clinical microbiology to guide the interpretation of the results of MIC testing. The rules are based on current clinical breakpoints and known resistance mechanisms in the most common pathogenic organisms.
- AST results for a particular organism are compared to a phenotypic database using an Advanced Expert System™ from BioMerieux before being approved and reported. Antimicrobial phenotypes that are not in the database are manually reviewed before being released to the clinician.
- The presence, or absence, of a particular drug on an AST report depends on many things, most notably the organism, intrinsic antimicrobial resistance phenotypes, the MIC observed during testing, the host species, and the source of the specimen.

Please provide as much clinical information as possible, as it helps the laboratory provide you with the most clinically relevant results.

Please contact **Zoetis Reference Laboratories**
for any additional information or to order supplies.

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