

Diagnostic and Clinical Microbiology Service

Sample Submission Guidelines and Recommendations

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Introduction

Diagnostic stewardship is the use of appropriate diagnostic procedures to guide therapeutic decisions and patient management. The goal is to prevent delays within the diagnostic process to improve patient outcomes and reduce unnecessary testing. Ideal clinical practices of diagnostic stewardship include but are not limited to: ordering the most appropriate test, properly collecting the specimen, and correctly interpreting the results.

Sample collection technique is critical for assuring accurate results when performing microbiological cultures. Improper sample collection may be associated with misdiagnosis, the identification of normal flora, contaminants, or pathogen overgrowth. Therefore, attention must be given to the specimen type, collection technique and transport media selected. The guidelines in this document will assist in performing such procedures.

Patient specimens can be infectious to you and lab personnel:

- If suspecting organisms associated with zoonoses (e.g., *Brucella* spp., *Leptospira* spp.), **call the laboratory first**
- Use appropriate personal protective equipment while collecting and handling these samples and submit them to the laboratory in an appropriate secondary biohazard transport container (e.g., bags)
- Always wear gloves to prevent infectious disease spread. Please refer to the Infection Control Manual for specific PPE recommendations
- Protect yourself and help us protect our team!

Critical Information for the Laboratory

- When ordering a test in ezyVet, utilize the shorthand “Micro” to generate a sample information template
 - In the history box of the diagnostic request, type “Micro” and press “Enter”
 - Fill in the highlighted field and press “Tab” to move to the next section
 - Please answer all applicable fields with the necessary information
- Provide details regarding the sample collected (e.g., anatomic location, collection method)
- Ensure relevant patient history is available, searching records takes time away from case workup
- Please include (if applicable):
 - Reason for culture request (e.g., rule-out infection, identify pathogen, high-order bacteria)
 - Objective findings of the issue related to culture (e.g., fever, inflammation, sores, draining tract)
 - Duration of the problem (e.g. acute, chronic)
 - Gross appearance (e.g., size, consistency, color)
 - Differential diagnoses (e.g., surgical site infection, abscess)
- ***If we don't know what you're looking for, we may not inoculate the proper media to find it – specify the test(s) you want done and the pathogens (diseases) you suspect***

Sample Transport Media

Sterile Leak-proof Container without Additives

- French square, Red top tubes (RTT), White top tube (WTT)
- Recommended for urine, feces, milk, and other fluids for **aerobic culture** (ensure lids are on tight to prevent spills)

Sterile Leak-proof Container with Additives

- A.C.T® II tubes (Figure 1)
- Recommended for tissues and sterile fluids when aerobic, **anaerobic, fungal, mycobacterial, or mycoplasma culture** is required
- Embed tissues and swabs in agar of tubes, place fluids on top of media using needle friendly cap

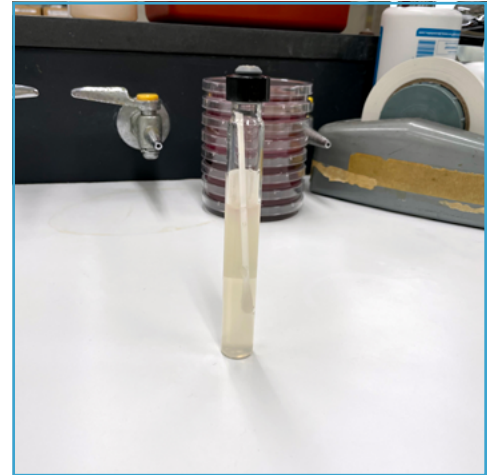


Figure 1. A.C.T® II Tube

Blood Culture Bottle (BCB)

- Recommended when culturing blood, CSF or joint fluid (Figure 2)
- **DO NOT** refrigerate
- Provided by the Microbiology Laboratory

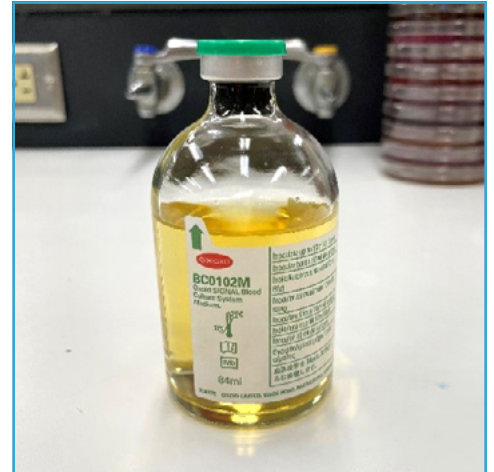


Figure 2. Blood Culture Bottle

Sterile Plastic Bags

- Whirlpak®
- Recommended only for necropsy tissues and environmental Swiffer® samples

Envelopes

- Recommended only for hair samples to reduce static

Viral Transport Media (Figure 3)

- Recommended when suspecting *Mycoplasma* spp. or referral lab testing for viral, *Chlamydia* or *Ureaplasma* spp.



Figure 3. Viral Transport Media

Sample Transport Media - continued

Swab Culturette

- Collect swabs only when tissues, fluid, or feces are unavailable
 - If required, submit one swab per culture type requested
 - Recommended only for ears, eyes, uterine, and deep infection specimens where tissue excision is not possible
- Swab **must** have a transport media such as AMIES (Figure 4), LQ Stuart (Figure 5), A.C.T[®] II Tubes (Figure 1)

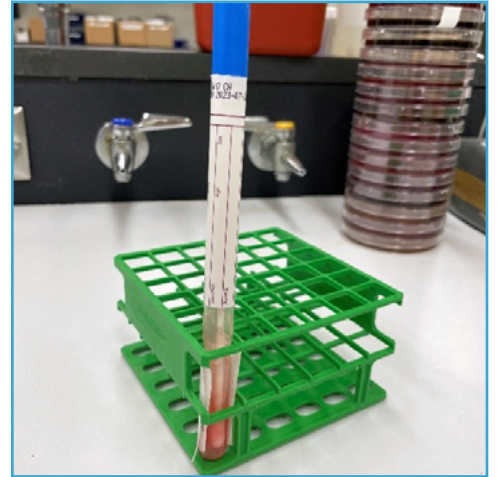


Figure 4. AMIES without charcoal swab



Figure 5. LQ Stuart Swab

Specimen Types

As a rule, tissues and fluids are always preferred over swabs. Fluids should never be transported in syringes. Instead, transfer fluids to the correct transport container. All samples should be refrigerated except for blood culture bottles and dermatophyte cultures.

Tissues

- Minimum amount required is 1 g (e.g., size of a pea) (Figure 6)
- For transport containers without additives, add 1 mL sterile saline to prevent drying
- If collecting tissue and surgical hardware, submit in separate containers (Figure 7)
- Tissues smaller than 1 g are acceptable but not ideal

Fluids

- Minimum amount required is 1 mL (Figure 8)
- Syringe with needle should **never** be submitted for culture
- Remove needle used for collection prior to dispensing into transport container
- Fluids smaller than 1 mL are acceptable but not ideal
- Urine – Preferred collection method is cystocentesis
- Cerebrospinal fluid (CSF), Joint Fluids – Collect and submit to laboratory in a timely manner to increase chances of pathogen recovery
 - The use of Blood Culture Bottles (Figure 2) is recommended, especially if samples are collected after business hours or during the weekend and/or holidays
 - Do not use Purple Top Tubes (PTT) for collection – EDTA is bactericidal



Figure 6. Ideal tissue size



Figure 7. Surgical hardware

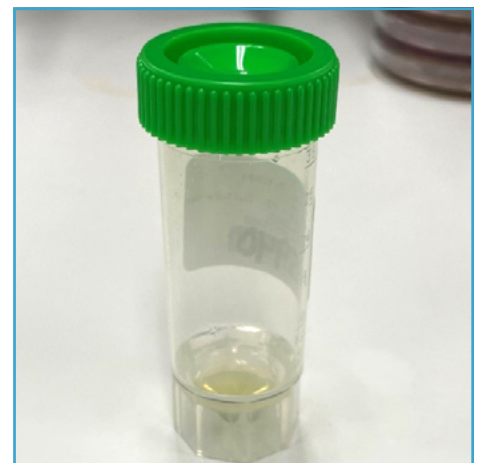


Figure 8. Ideal fluid amount

Specimen Types - continued

Fine Needle Aspirates

- Minimum amount required is 0.5 mL
- During business hours, you can call the laboratory before you initiate sample collection and the laboratory will provide culture media to you
- Prepare the site surgically prior to collection
- Remove needle from collection before dispensing into transport container
- If the amount of aspirate is minimal, submit needle used for collection in a separate container

Hair

- Must include root and hair shaft (Figure 9)
- Collection via toothbrush is acceptable (Figure 10)
- It is recommended to use paper envelopes to transport the samples
- For dermatophytes, the collection of crusts (Figure 11) and nails is recommended

Necropsy Samples

- Collect non-GI tissue samples BEFORE opening the gastrointestinal tract
- Tissue samples (e.g., lung, liver, spleen, kidney) should be 5 g or larger (e.g., size of a golf ball)
- Place each tissue in a separate container or bag to prevent cross-contamination
- If the intestine is to be cultured, tie off both ends of a segment and place in a separate container
- Freezing tissues may be a good alternative if samples will not be delivered to the lab within 72 hours of collection
- Contact the lab if there are concerns or if there is a need to discuss alternatives

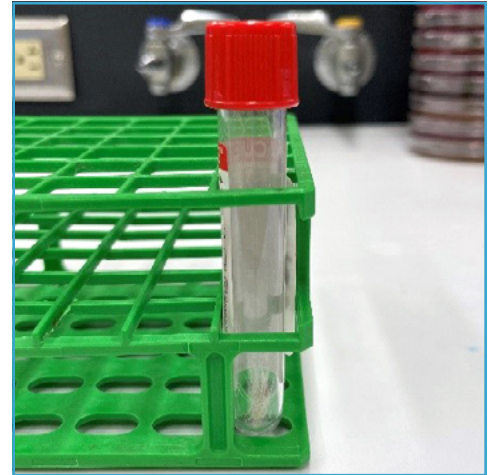


Figure 9. Hair with root



Figure 10. Toothbrush for hair collection

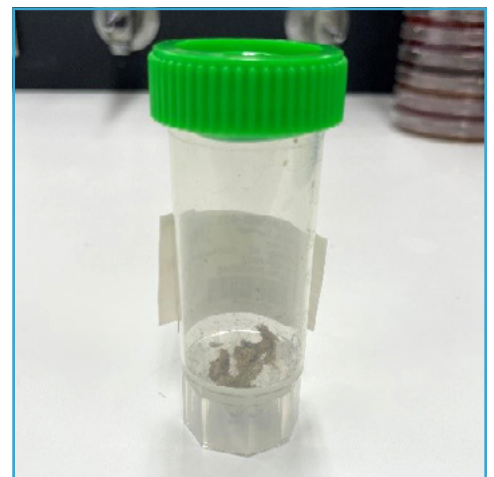


Figure 11. Crusts for dermatophyte culture

Specimen Types - continued

Feces

- Minimum amount required is 3 g (e.g., size of a lima-bean)
- Do not wrap in glove as this complicates culture setup
- Use a sterile leak-proof container without additives (e.g., Fecal container - [Figure 12](#), French square, Conical vial - [Figure 13](#))
- If collection of feces is not possible due to patient condition, **use at least three swabs per test** for sample collection

Environmental Samples

- Collect sample using electrostatic cloths and place in a sterile plastic bag (e.g., Whirlpak® - [Figure 14](#))



Figure 12. Styrofoam fecal container

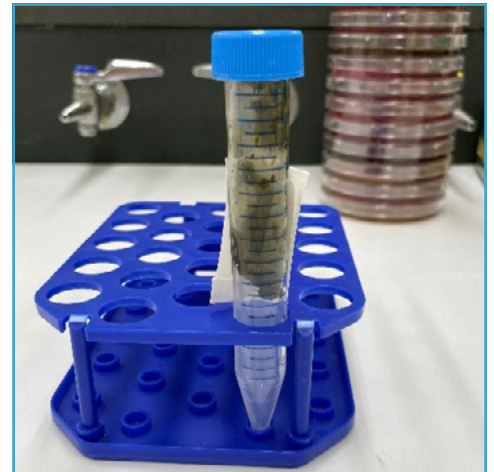


Figure 13. Conical vial

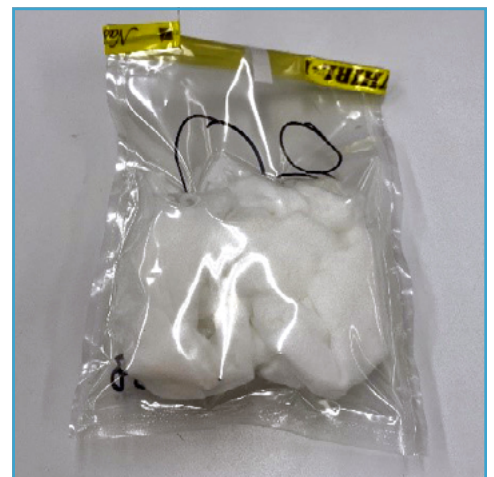


Figure 14. Environmental swab in Whirlpak®

Collection Technique

- Avoid contaminants – Use aseptic technique to collect samples
 - This will prevent misdiagnosis of normal microflora or environmental contaminants

Additional Recommendations

- Keep most specimens cold from the time they are collected until they arrive at the laboratory
 - Samples transported in blood culture bottles (e.g., blood, CSF, joint fluids) and specimens collected for dermatophyte culture should be held **at room temperature**
- Keep in mind that some microorganisms require special transportation media, refer to the test catalog for more information
- If there is any doubt as to what samples to collect and how to transport them, **call the laboratory first**

Culture Turnaround Times

- Aerobic – Preliminary report: 24-48 hours, Final report: 7 days
- Anaerobic – Preliminary report: 24-48 hours, Final report: 7 days
- Fungal – Preliminary report: 15 days, Final report: 30 days
- Mycobacterium – Preliminary report: 15 days, Final report: 30 days
- Mycoplasma – Preliminary report: 7 days, Final report: 15 days

Laboratory Hours*

Monday-Friday: 8 a.m. to 5 p.m.

Saturday: 8 a.m. to 12 p.m.

* Hours may vary during holiday schedules

Contact Information

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