

## COORDINATION OF SPECIMENS, RESULTS, AND REPORTING

### I. SPECIMEN COLLECTION:

Proper specimen collection, container labeling, and culture requests are the responsibility of the ordering physician. Technologists in the Clinical Mycology Laboratory will be familiar with specimens of choice and proper collection techniques. (See Clinical Specimens).

The technologist in the MMRC will directly handle specimens of environmental or veterinary source which are received from the Postal Service or hand carried to the laboratory. Other specimens worked in the laboratory will be referred in pure culture to the laboratory for testing. Specimens of a clinical nature will be handled by the Clinical Mycology Laboratory. Exceptions are special studies for outside sources where the MMRC will handle the clinical specimens completely by the following procedure.

### II. SPECIMEN HANDLING AND STORAGE:

Specimen containers and requisitions will be delivered to the Clinical Microbiology Central Processing Area (CPA) within two hours of collection. Upon receipt, the CPA staff will check requisitions for completeness. Specimens will be refrigerated until they are picked-up by the mycology staff. The CPA staff will print labels for the specimens and attach them to the original requisitions. When STAT requests are received, the CPA staff will immediately notify the mycology supervisor and arrange for the immediate delivery of the specimen. Refer to the specimen collection procedure for the CPA specifics involving that section.

### III. SPECIMEN DELIVERY:

The Clinical Mycology Laboratory recommends that a maximum of three specimens of the same type, one each on three separate days, be initially submitted for culture for the optimal recovery of fungi. When more than one specimen of a given type is received on the same day or if more than three specimens of the same type are received within 72 hours, the Processing Area staff will note on the requisition "Duplicate Specimen" in red ink. When duplicate specimens are received, the Clinical Mycology staff will check the active file to verify the number of specimens received for culture. If possible, specimens from the same day should be combined. If the cumulative maximum is exceeded, notify the physician of how many cultures are in process and allow the physician to decide if the specimen should be cultured. When a procedure is not performed, complete a credit slip and return it to patient finance.

### IV. LABELING, LOGBOOK, WORKCARDS, AND FILES:

Upon receiving the specimen and requisition with its assigned computer Label, place one copy of the label in the mycology log book in numerical order. The label having the work number is placed in the log book, on the requisition, culture media containers, and culture media plates. Labels will be assigned in consecutive numerical order on the day the specimens are processed. A work list for each workstation should be made for every day before 11:00 a.m.

### V. RESULTS AND REPORTING:

#### A. Schedule

#### 1. Smears - *applies to the Clinical Microbiology Laboratory*

Each day, Monday through Saturday, specimens will be processed. A direct examination (KOH prep) will be performed on every specimen submitted for culture except for

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specimens of insufficient quantity. When quantity is insufficient to do both, the culture

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### V. RESULTS AND REPORTING: (cont'd)

always takes priority over the smear since cultures are more sensitive procedures. The preparation and reading of smears will be timed such that results can be entered, checked and released by 2:30 p.m. The results should be recorded on the worklist and log book.

#### 2. Cultures - *applies to the Clinical Microbiology Laboratory*

All routine fungus cultures will be read on Tuesdays. The most recent two weeks of cultures will be read again on Friday. This is to ensure early detection of isolates for optimum patient care and to reduce cross-contamination of media by moulds. Final reports will be issued for negative routine cultures after four weeks of incubation. Final reports for positive cultures will be issued after a total of 4 weeks incubation and when all identification work is completed. Preliminary reports will be issued as new information is obtained. Refer to the Isolator Blood Culture Procedure for specifics about culture reading for blood.

#### 3. Serologies - *applies to the Clinical Microbiology Laboratory*

- a. All *Cryptococcus* antigens should be performed and reported daily. Labeling and specimen should be the same as with the cultures. The technologist is responsible for all *Cryptococcus* antigens received until 3:00 p.m. Monday through Saturday. The technologist should check the refrigerator for specimens received before 3:00 p.m. Any positive result will be called to the physician in charge of the patient.
- b. Fungal immunodiffusions will only be set up 3 times a week. All specimens are to be centrifuged and separated the day of arrival to the laboratory by the mycology technologist.

#### B. Written Reports:

1. Preliminary reports will be issued each time a piece of information is obtained. Results will be recorded on the computer using the result codes and modifiers. Results will be entered into the computer by the mycology staff, indicating whether the results are preliminary or final. Final results will also be recorded in the log book.
2. Either the supervisor or the director will verify that all controls are in-range and documented, and that all other quality control information is recorded.

#### C. Telephone Reports:

1. Telephone reports are to be issued for:
  - a. True hyphae seen in a direct exam.
  - b. Fungi seen in any normally sterile body specimen.
  - c. Bacteria resembling an actinomycete:
    - (1) from sterile sites
    - (2) from pulmonary specimens only if acid-fast

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### V. RESULTS AND REPORTING: (cont'd)

- d. Cultures positive for:
    - (1) moulds associated with positive KOH preps
    - (2) dermatophytes
    - (3) a mould isolated 3 or more times from specimens collected at different times from the same patient
    - (4) yeasts and moulds in normally sterile body fluids or tissues.
    - (5) *Cryptococcus neoformans*
    - (6) *Nocardia* species
    - (7) bacteria from normally sterile body fluids or tissues where the bacteriology culture showed no growth
  - e. Antifungal susceptibility tests when requested by Infectious Disease or the physician
  - f. Aerobic actinomycete susceptibility tests when requested by Infectious Disease or the physician
  - g. Bioassays
2. All preliminary reports are to be issued by the responsible technologist.
  3. Telephone reports should be issued only to physicians and nurses, but not to ward clerks. Ideally, such reports should be given to the physician whose name appears on the requisition.
    - a. If the physician's name is not on the requisition or it is illegible, call the nursing station where the patient is located and ask for the name of the physician responsible for the patient.
    - b. If under certain circumstances the technologist is unable to reach the physician, the technologist should contact the chief resident of the service.
  4. When giving a telephone report, clearly state the:
    - a. patient's name
    - b. unit number
    - c. the type of culture
    - d. the date of the culture
    - e. the findings or results
  5. Record on the work card the following information regarding the telephone report:
    - a. the date and time
    - b. the physician's name
    - c. the technologist's initials
  6. When responding to telephone requests for culture results, use the following protocol:
    - a. The caller must give the patient's name and unit number.
    - b. The caller must identify himself/herself. Reports will not be issued to the patient. Telephone reports should be issued to a physician, however a nurse or secretary may receive the report only if the individual is able to comprehend the report without difficulty.

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### V. RESULTS AND REPORTING: (cont'd)

7. When issuing reports, the technologist should:
  - a. repeat the patient's name
  - b. repeat the unit number
  - c. state the type of culture or test

### VI. SIGNIFICANT FINDINGS:

By flagging significant results, physicians are alerted to potentially life-threatening or serious infections which require immediate attention. It is also important, in some cases, to notify other lab sections so they can take special precaution or notice of particular specimens. Use the following table to determine the criteria necessary for indicating significant findings and notifying the physician and/or other laboratory sections. If there is a question about whether a result is significant or not, consult the supervisor.

### VII. REFERRED ISOLATES: - from Bacteriology to Clinical Mycology

Often micro-organisms are recovered in the Bacteriology Laboratory which must be identified in the Clinical Mycology Laboratory. Such isolates will be handled using the following protocol.

#### A. Criteria for Referring Fungi to Mycology for Further Identification:

1. Urine - catheterized or obtained by sterile procedure (regardless of colony count)
2. Bronchial washings and tracheal aspirates when Murex CA test is negative and UREA test is positive
3. Sputum - when Murex CA test is negative and UREA test is positive
4. All yeast from sterile body fluids, tissue, etc.
5. Any mould isolated from any site regardless of quantity.

#### B. Cultures Submitted to Clinical Mycology:

1. Yeasts - Subculture a well isolated yeast colony to a Sabouraud agar (Sab) slant. Label the slant with the patient's last name, specimen site abbreviation, date of culture and Bacteriology accession number.
2. Mould
  - a. Do not transfer the mould to another culture plate.
  - b. The original culture plate (sealed with scotch tape) will be transferred.

#### C. Requisitions:

1. Before sending an isolate to the Clinical Mycology Laboratory, record the preliminary results in the computer.
2. If the isolate is from a sterile site, or is urease positive, notify the technologist on the Mycology bench so that work may be started without delay.

#### D. Reporting:

1. If the fungal isolate is one that is not referred to Clinical Mycology for further identification, Bacteriology should report the isolate as a yeast not *Candida albicans* or *Cryptococcus* with semiquantitation.

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Table 1

Significant Findings: Mycology and Aerobic Actinomycetes

Procedure	Notify Supervisor	Significant Findings	Phone Physician
KOH Prep:			
True hyphae (hyaline, dematiaceous, zygomyceteous) in any specimen	X	X	X
True hyphae resembling a dermatophyte in hair, skin, or nail specimens	X		X
Fungi in any normally sterile body fluid or tissue	X	X	X
Yeasts or spherules suggesting <i>Blastomyces</i> , <i>Coccidioides</i> , <i>Histoplasma</i> , or <i>Paracoccidioides</i>	X	X	X
Modified Acid-Fast Smear:			
Acid Fast bacteria resembling <i>Nocardia</i>	X	X	X
Non-acid-fast filamentous branching bacteria resembling an Actinomycete	X	X	X
Cultures positive for:			
Moulds associated with a positive KOH prep result	X	X	X
Dermatophytes	X		X
Moulds isolated 3 or more times from specimens collected at different times from the patient	X	X	X
Dimorphic fungi	X	X	X
Fungi in normally sterile body fluids or tissues	X	X	X
<i>Cryptococcus neoformans</i> in any specimen	X	X	X
<i>Nocardia</i> species		X	X
Fungal:			
Positive fungal immunodiffusion for any mould	X	X	X
Positive <i>Cryptococcus</i> antigen from any specimen	X	X	X

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### VII. **REFERRED ISOLATES:** - from Bacteriology to Clinical Mycology (cont'd)

2. If the isolate has been referred to Clinical Mycology, report the presence of the yeast or mould with semiquantitation and the comment: "Isolate referred to mycology."

### VIII. **REFERRED ISOLATES FROM THE CLINICAL MYCOLOGY LABORATORY TO THE MMRC**

Often, fungi will be isolated in the Clinical Mycology Laboratory which must be identified to species level or tested against antifungal drugs.

#### A. Criteria for Referral to the MMRC

1. Requisitions must be clearly labeled with the physician's name that requested the test and the test ordered.
2. The Clinical Mycology Laboratory must process the specimen accordingly and be sure that the submitted isolate is free of contaminants.
3. The Clinical Mycology Laboratory must enter proper preliminary results in the computer and request the desired test in the computer.
4. Clinical Mycology should print a worklist of test ordering to the MMRC printer.

#### B. Responsibility of the MMRC

1. The MMRC technologist will pick up samples and process accordingly, based upon the computer printout.
2. The MMRC technologist will notify the Clinical Mycology Laboratory if any problem arises with the specimen(s).
3. The MMRC technologist will enter preliminary results in the computer once the test is performed and notify requesting physician if any result is significant.
4. The MMRC will notify the Clinical Mycology Laboratory that the result has been entered so that the Clinical Mycology Laboratory can finalize the result.

### IX. **PROCESSING OF BACTERIA OR MYCOBACTERIA RECOVERED FROM FUNGAL CULTURES:**

#### A. Criteria for Referring Isolates to Bacteriology or Mycobacteriology for Further Characterization:

1. Bacteria or mycobacteria recovered from a normally sterile tissue or body fluid:
  - a. Prepare and examine a Gram or Acid Fast stained smear to confirm organism is a bacterium or mycobacterium.
  - b. Refer isolate to Bacteriology technologist or AFB Laboratory working up this patient's culture.
2. Bacteria or mycobacteria recovered from culture sites that are not normally sterile: Note the presence of bacteria in the Mycology log book. Do not refer these isolates to the Bacteriology laboratory. For colonies that look like a mycobacterium, confirm with a Kinyoun stain and consult with the AFB technologist for referral and further instructions.

- #### B. Referred Culture Preparation:
- Give a sealed plate to the technologist with instructions to return the plate once subculturing to the proper media needed for identification has been finished.

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### IX. **PROCESSING OF BACTERIA OR MYCOBACTERIA RECOVERED FROM FUNGAL CULTURES:** (cont'd)

#### C. Reporting:

1. Only report bacteria that are referred at the physician's request. Using the proper result code, indicate the presence of bacteria in the culture.
2. All reports of referred work will be performed using the mycology accession number but the culture will not be finalized until the mycology technologist has checked it.
3. Delivery to Bacteriology: Give the plate to the Bacteriology supervisor.