1 CLINICAL MICROBIOLOGY LABORATORY WORKING HOURS

Clinical Microbiology Laboratory is divided into two sections which have different staffing hours as listed below.

SECTION	HOURS
Bacteriology	24 hours a day
Mycobacteriology (AFB) Mycology and Parasitology	8:00 AM to 4:30 PM, Monday thru Friday

Please note that although there are technologists available in the bacteriology laboratory 24 hours a day, the laboratory is fully staffed only from 8:00 AM until 4:30 PM on week days. Staffing is limited on weekends, evenings, night shifts, and holidays. If problems occur at any time please call the laboratory, ext. 55703.

2 ORDERING OF TESTS

Order Entry: There are two computer systems currently in use in the hospital, the hospital information system (INVISION) and the Misys (Sunquest) Laboratory Information System. **All requests for laboratory tests are entered into Invision at the ordering location.**

Label each specimen with either the computer-printed label or addressograph label as appropriate. Computer-printed labels are used by inpatient units with laboratory bar code printers. Addressograph labels used routinely by Nursing Service without laboratory bar code printers and during computer down-time must contain the patient's name, hospital number, location, date and time of collection, source, and specimen control number.

Order Response: Once a test has been ordered in Invision. It is received by SQ and goes into a holding file. The specimen is taken to the Microbiology laboratory. It will not appear in SQ inquiry files until it has been accepted for processing by the Microbiology Laboratory. The patient's data will be included with the information transmitted from Invision to Sunquest.

Invision Not Functioning: When the hospital computer is inoperative, a single copy Manual Test Request Form is to be used and submitted with Microbiology specimens. When using the form, all of the same information currently required for normal computer ordering noted above must be provided with the specimen. **Specimens cannot be accepted for processing without proper documentation and transport.**

Tests Available:
All orderable microbiology tests are on next two pages

LIS Item	Page #	HIS – ORDER BY TEST NAME	LIS Item	Page #		HIS – ORDER BY TEST NAME
UBC	**M17**	Urine Culture: Clean catch, I & O cath., indwelling cath., etc. Not used for AFB or Fungal urine culture.	**ADSP**	**M20**		Antigen detection, Streptococcus pneumonia e(CSF ONLY)
UBCG	**M17**	Urine Culture, Gram Stain	**ADSB**	**M20**		Antigen detection, Group B Streptococcus (CSF ONLY)
USP	**M17**	Urine Culture, Suprapubic Aspirate	**ADMA**	**M20**		Antigen detection, Neisseria meningitidis, Groups A & Y (CSF ONLY)
USC	**M17**	Urine Culture, Surgically collected	**ADMB**	**M20**		Antigen detection, Neisseria meningitidis, Group B/E. coli K1 (CSF ONLY)
UPM	**M17**	Urine Culture, Pre/Post Prostatic Massage, Call 5-5703	**ADMC**	**M20**		Antigen detection, Neisseria meningitidis, Groups C & W135 (CSF ONLY)
SEP	**M16**	Stool Enteric Pathogens, includes Shiga Toxin Test	**ADHI**	**M20**		Antigen detection, Haemophilus influenzae Type B (CSF ONLY)
FBC	**M13**	Fluid Culture, Aerobic, includes Gram Stain: CSF ONLY	**CAGA**	**M20**		Cryptococcal antigen detection, (CSF - 1 mL, Serum - 5 mL red top)
FBCN	**M13**	Fluid Culture, Aerobic/Anaerobic, includes Gram Stain, for sterile fluids such as joint, ascitic, pleural fluid, and peritoneal fluid, etc.	**AFB/Fungal Cultures all include an appropriate slide/smear exam.**			
SBC	**M14**	Sputum Culture including bronchial washings, includes Gram Stain	**AFBR**	**M14**		AFB Culture, AFB Smear, Respiratory: Sputum, bronchial washing, Endotracheal aspirates, etc.
EBC	**M14**	Endotracheal Culture, includes Gram Stain	**AFBAL**	**M14**		AFB Culture, Bronchial Alveolar Lavage
CTQ	**M19**	Catheter Tip Quantitative Culture	**AFBN**	**M6**		AFB Culture, AFB Smear, Nonsterile: Urine, wound exudates
GBS	**M16**	Group B Streptococcal Screen (Anogenital, skin surface) for infants	**AFBS**	**M13**		AFB Culture, Sterile Fluids, includes AFB Smear
GBCG	**M15**	Genital Culture, includes Gram Stain, also prostate massage secretions	**AFBBM**	**M9**		Fungal and/or AFB Culture, Blood/Bone Marrow
GASC	**M15**	Group A Streptococcal Culture	**AFBT**	**M7**		AFB Culture, Tissue, includes AFB Smear
RAGA	**M15**	Group A Streptococcal Screen: Rapid test (Dacron Swab ONLY)				
TBCN	**M6**	Tissue, Aerobic/Anaerobic Culture, includes Gram Stain (Tissue ONLY)				
EXBG	**M6**	Exudate Aerobic Bacterial Culture, includes Gram Stain: Swabs from abscess or wounds etc.	**FRCW**	**M14**		Fungal Respiratory Culture, Calcofluor white Exam: Sputum, etc.
ECBN	**M6**	Exudate Culture, Aerobic/Anaerobic, includes Gram Stains: aspirates from abscess drainages, traumatic or surgical wound, etc.	**FNCW**	**M6**		Fungal Culture, Calcofluor white Exam, Nonsterile: Urine, wound exudates
			FSCW	**M13**		Fungal Culture, Sterile Fluids, Calcofluor white Exam, excluding CSF
			FBALCW	**M14**		Fungal Culture, Bronchial Alveolar Lavage, Calcofluor white Exam

LIS Item	Page #	HIS – ORDER BY TEST NAME	LIS Item	Page #		HIS – ORDER BY TEST NAME
GCS	**M16**	Gonococcal Screen	**GCAA**	**M22**		Giardia / Cryptosporidium Antigen Assay
BSV	**M8**	Blood Culture Single Bottle	**PINP**	**M22**		Pin Worm, Preparation
BCS	**M8**	Blood Culture Set	**FCSFCA**	**M13**		Fungal Culture, Spinal Fluid, includes cryptococcal antigen test
RWQ	**M21**	Renal Water Quantitative Culture, Dialysis Units Only	**FTCW**	**M7**		Fungal Culture, Tissue, includes Calcofluor white Exam
BBQ	**M14**	Bronchial Brush Quantitative, includes Gram Stain	**CISO**	**M23**		Cyclospora and Isospora Screen
BAL	**M14**	Bronchial Alveolar Lavage Culture	**OCP**	**M22**		OCP: Ova, Cysts & Parasites, Stool: Formalin & PVA tubes
SOF	**M21**	Surveillance Culture, Oral Flora (Bone Marrow Transplant ONLY)	**OCPD**	**M22**		OCP: Wet Mount for Amoeba, **Call 55722**
SSF	**M21**	Surveillance Stool Flora (Bone Marrow Transplant ONLY)	**OCLT**	**M22**		Occult Blood, Stool: Diagnostic Submit on Test Card
CDTAB	**M17**	Clostridium Difficile toxin A and B	**FFAT**	**M23**		Fecal Fat Screen, Sudan III
SDA	**M19**	Fungal Culture, Eye	**RSUB**	**M23**		Reducing Substance, Stool
DTMC	**M8**	Dermatophyte Culture	**GOCLT**	**M23**		Gastroccult test (Gastric Contents ONLY)
			OCLTS	**M22**		Occult Blood Screen (Submit on Test Card)
			TRICP	**M23**		Wet Preparation for Trichomonas

3 PROCESSING OF SPECIMENS:

Bacteriology: Specimens are processed as received 24 hours a day. STAT requests should be limited to Gram staining of certain critical specimens such as cerebrospinal fluids or some surgically collected specimens. Call 5-5703 for STAT requests.

Mycobacteriology/Mycology: Specimens are processed on weekdays in batches, since the timing and stepwise sequence of procedures required for each batch requires more than half a day. Specimens that are received after 8 am are processed the next working day. Respiratory specimens are processed 6 days a week.

4 REPORTING PROCEDURES:

Results are available on any hospital **Invision** terminal as they are entered into the computer by the technologist. Incomplete reports have a ***PENDING*** status attached and a ***FINAL*** status is placed on completed tests.

5 PROCESSING TIMES

Bacteriology: Final culture and sensitivity results are usually available 48 hours after the initial processing. Stool cultures require an additional 24 hours. Blood cultures are held for 5 days before finalized as "No growth" unless special instructions are received from the ordering physician. The physician/designee is notified by telephone of any critical results (blood culture, CSF, etc.). Smear results on critical specimens are also called to the physician/designee as soon as they are obtained.

Mycobacteriology/Mycology: Smear results, acid fast stains, fungal calcaflour, are available the day the specimen is processed. Mycobacterial cultures are incubated six (6) weeks before finalized as negative. Fungal cultures are incubated four (4) weeks and DTM for 3 weeks. The first positive mycobacterial finding (smear or culture) on a patient is reported immediately to the physician by phone, **Social Services, Occupational Health, Infection Control, and to the State Public Health Department**. Positive results on additional specimens are also reported by phone if from a different body site or if an unusual species is recognized.

6 GENERAL COLLECTION AND HANDLING INFORMATION REGARDING MICROBIOLOGY SPECIMENS

Principle: The purpose of the Microbiology Laboratory is to accurately and rapidly provide the clinician with information regarding the presence or absence of infectious agents. Microbiology results are only as good as the specimen obtained for examination. In order to provide the clinician with the best available information, the laboratory must receive an adequate and timely sample, accompanied by pertinent clinical information. Proper handling of the specimen will insure the viability of organisms and the correct interpretation of culture and smear results as related to the organisms in the original sample.

Important Considerations Regarding Specimens:

1. Most microbiology specimens are collected during or shortly after patient examination by the physician or nursing staff. Close cooperation between the specimen collector and the clinical laboratory staff is required. Microbiology personnel are always available to advise and assist the medical staff in selecting, collecting and submitting a specimen.

2. **Whenever possible, specimens for culture should be obtained prior to the administration of antimicrobial agents/therapy.**

3. The culture material must be representative of the infected site. The site selected must also be the least likely to contain external contamination from the patient's indigenous bacterial flora. **Proper preparation of the selection site must be performed**.

4. **Specimens must be properly collected and labeled with the patient name, patient location, identifying number, control number (if available), source, date and time of collection and collector's initials**.

5. **Ordering information should also include in addition to the demographic information noted above, the patient age, the ordering physician, and any pertinent clinical or therapeutic information available. It is important that the laboratory is informed if the patient is on antibiotics, steroids, leukopenic or immunosuppressed.**

6. All specimens should be submitted in the correct sterile container.

7. Transport media and aerobic/anaerobic blood culture vials are ordered from Central Supply. If any doubt exists as to the proper container or transport medium, call the laboratory at 5-5703 or 5-7938**.** AFB/Fungal blood culture vials are available in Mycology Rm E-2-14 due to short expiration dates. **The Microbiology Laboratory does not provide transport media.**

8. Specimens should be delivered to the Microbiology Laboratory, E-2-30, as soon as possible after collection. As a general rule, if delivery is to be delayed for

more than an hour a suitable transport medium should be used**. Urine specimens should be refrigerated if delivery will exceed one hour.**

9. **Specimens arriving in an unsanitary condition, with material spilled on the outside of the specimen container will not be accepted in any section of the laboratory for processing.** The submitting service will be notified and resubmission of a proper specimen will be requested.

7 SPECIFIC COLLECTION TECHNIQUES

Aerobic and anaerobic exudates, tissues, abscess, drainage and wound specimens:

Abscess fluid and exudates: Exudates which include wound drainage, pus from abscesses or tissues may be cultured. Tissue and liquid material obtained by aspiration should be submitted in a sterile container. If swab is used (swab is the least optimal specimen) only aerobic culture will be perform unless inside anaerobic transport media.

Anaerobic bacterial culture ordering codes are available for certain specimens: exudates, sterile fluids, tissues. An **aerobic culture and Gram stain** are always set up and performed as part of the anaerobe culture procedure. **They should not be ordered separately.** The list below contains the ordering possibilities for such specimens:

Exudate Aerobic Bacterial Culture, includes Gram Stain: **Swab** in Amies Transport Media from abscess, drainages, etc.
Exudate Culture, Aerobic/Anaerobic, includes Gram Stain: Exudates from abscess, traumatic or surgical wounds in sterile container
AFB Culture, AFB Smear, Nonsterile source: Urine, wound exudates
Fungal Culture, Calcofluor white Exam, Nonsterile source: Urine, wound and exudates

If material is aspirated by needle and syringe, the area of needle insertion must be disinfected prior to collection. Obtain as much material as possible by using the largest appropriate syringe size and aspirate into a sterile container.

Swab specimens: Specimens obtained on swabs are the least desirable for processing particularly when anaerobes are considered. The wound should be thoroughly cleansed on the surface and applying gentle pressure from the periphery of the wound to express as much purulent material as possible collected on the swab, and the swab should be placed immediately in a screw capped anaerobic transport tube for anaerobic culture.

If culture for anaerobic bacteria is not needed, Amies transport medium should be used.

The followings are appropriate specimens for anaerobic culture

1. Abscesses
2. Deep wound drainage
3. Normally sterile body fluids
4. Intraocular fluid
5. Percutaneous, transtracheal aspirates
6. Sinus aspirates and tissues
7. Suprapubic urine aspirates
8. Surgical tissue specimens
9. Deep wounds

The following specimens are not suitable for anaerobic culture because of normal anaerobic flora present at the site of collection.

1. Vaginal, cervical, and urethral swabs
2. Expectorated sputum, lavages, bronchoscopy or nasotracheal or orotracheal suctions.
3. Throat swabs, nasopharyngeal swabs
4. Urine voided or catheterized (Supra Pubic Urine accepted if submitted in tightly capped container immediately after collection.)
5. Gastric and small bowel contents. Large bowel contents, ileostome or colostomy effluents
6. Gingival swabs or other oral cavity exudates obtained under conditions which do not exclude the normal oral flora.
7. **Surface material (swabs) from decubitis ulcers, diabetic extremity ulcers, wounds eschars, and sinus tracts.**
8. **Any material adjacent to a mucus membrane that has not been adequately decontaminated**

Tissues

Tissue specimens will not be accepted for processing if they have been placed in formalin solution.

A list of tests available for handling tissues is provided below:

Tissue, Aerobic/Anaerobic Culture, includes Gram Stain
AFB Culture, Tissue, includes AFB Smear
Fungal Culture, Tissue, includes Calcofluor Exam

Small samples of biopsied skin, surgical tissue or mucous lesions obtained by sterile surgical techniques should be placed in sterile container (no transport media required).

Large tissue specimens may be sent to the laboratory in a large sterile specimen container **immediately** after collection.

Dermatophytes

1. Fungi that which primarily infect the skin, hair, and nails.

2. The laboratory provides special media, **Dermatophyte Test Medium (DTM)**, for collection and direct inoculation of the specimen.

3. Skin scrapings are best obtained from the peripheral active borders of skin lesions and from obviously infected hair and nail sites.

8 BLOOD CULTURES

Blood cultures are performed in order to detect bacteremia. The most important criteria for blood culture is the volume inoculated into the bottle. For adults 8-9 mL/bottle is the best, any volume less that 8mL/bottle decreases the sensitivity to detect the pathogen.

Criteria used for determining the number and timing of blood cultures:

Acute febrile illness - Two or three sets of bottles collected over 24 hours from different sites.

Pediatric patients - One or two sets of bottles are optimal for most patients. The PEDS PLUS/F aerobic bottle can optimally hold from 1 to 3 ml. Since aerobic organisms are suspected in most pediatric bacteremias, two PEDS PLUS aerobic bottles collected from different sites or at different times are suggested. If anaerobes are suspected then the BACTEC PLUS Anaerobic/F, Anaerobic (gold label) bottle, which requires at least 3 ml inoculum should be collected.

Timing of sets - The clinical presentation, the presumptive diagnosis and the need to start the patient on antimicrobial therapy will determine the timing of collection. **For patients already on antimicrobial therapy it is best to collect the blood culture just prior to the next administration of antibiotic.**

A single draw of blood obtained by venipuncture from one site inoculated into a pair of aerobic and anaerobic bottles is considered a set. NEVER collect only one set of blood culture, because that will make interpretation very difficult. Always 2 to 3 sets drawn from different sites.

BLOOD CULTURE BOTTLES AVAILABLE:

ADULT PATIENT AEROBIC/ANAEROBIC SET - Each bottle requires 8 to 10 ml.

BACTEC PLUS Aerobic/F, aerobic (silver label) bottle.
BACTEC PLUS Anaerobic/F, anaerobic (gold label) bottle.

PEDIATRIC PATIENT AEROBIC BOTTLE - Primary bottle for pediatric patients.
BACTEC PEDS PLUS/F, aerobic (pink label) bottle - Requires 1 to 3 ml.

AEROBIC BOTTLE FOR MYCOBACTERIA OR SYSTEMIC FUNGI - Detection of mycobacterium and slow growing systemic fungi from blood or bone marrow aspirates.

BACTEC MYCO/F LYTIC BOTTLE, (red label). Requires 1 to 5 ml. (Bottles are available in E-2-14 and are not stocked on floors due to short expiration date and limited usage.)

SPECIMEN COLLECTION

In order to obtain meaningful results, meticulous care should be observed in preparing the venipuncture site. Arterial lines (A lines) and intravenous lines (IV lines) are not suitable sites for obtaining specimens nor are the umbilical vessels.

Blood cultures obtained from indwelling intravascular access devices, such as intravenous catheters and ports, are associated with greater contamination rates than are blood cultures obtained by venipuncture. Blood cultures obtained from such a device must be paired with another culture of blood obtained by peripheral draw to assist in interpretation in the event of a positive result.

If blood cultures for bacteria or fungi are collected through an intravenous line, it is not necessary to discard the initial volume of blood or flush the line with saline to eliminate residual heparin or other anticoagulants. The antimicrobial activity heparin is effectively eliminated in protein-rich culture media.

1. Select and label blood culture bottles as you would any other material for culture. Take care to place label on bottle in a top-bottom orientation **without covering the bottle bar code label or the bottom of the bottle. Collector's initials, time of collection and collection site** should be placed on the bottle.

2. Remove the seal protecting the rubber septum (the septum is not sterile) and swab the septum with 70% alcohol swab. Use new alcohol swab for each septum. Allow the septum to completely dry before injecting a sample.

3. Prepare the site of venipuncture following Hospital Infection Control Guidelines.
Refer to IC Policy "Skin Preparation for Invasive Procedures".

4. Using an appropriate size needle and syringe perform the venipuncture and withdraw the amount of blood required to inoculate a bottle set. Do not remove the needle from the syringe

- **a.** PLUS Aerobic/F, PLUS Anaerobic/F set; **16 to 20 ml**, ideal collection volume (8-10 mL/bottle).
- **b.** Single PLUS Aerobic/F or PLUS Anaerobic/F; **8 to 10 ml**, ideal collection volume.
- **c.** Single Peds Plus/F bottle; **1 to 3 ml.**
- **d.** Single MycoF/Lytic bottle; **1 to 5 ml.**

e. If different volumes are used to make a set, be sure to obtain the proper volume of blood to inoculate each bottle with the appropriate volumes.

5. Be sure the rubber septum is dry before proceeding. Remove any excess air from the syringe and inoculate each bottle, anaerobic bottle first with the appropriate amount of blood. Do not put air into bottles.

Do not attempt to inject more than the maximum nor less than the minimum amount of blood recommended for the bottle type. Do not leave the syringe needle in the bottle.

Inoculated bottle/s should be sent to the laboratory within two (2) hours; a delay in entering blood culture bottles into a continuous-monitoring blood culture machine may delay or impede detection of growth and appropriate therapy.

SPECIAL PRECAUTIONS FOR LOW VOLUME SPECIMENS:

The BACTEC PEDS PLUS/F, **aerobic** (pink label) bottle may be used for adult patients when 1-3 ml of blood is available. If an anaerobic blood culture is requested, 3 ml of blood may be inoculated into the BACTEC PLUS Anaerobic/F, (gold label) bottle.

Mycobacterial , Yeast, and/or Fungal Blood Cultures:

Culture for yeasts. The PLUS Aerobic/F or PEDS PLUS/F aerobic media readily supports the growth of most yeast. If blood cultures for bacterial agents have been ordered then another blood culture will not be needed.

Malassezia species. Submit a purple top of blood and order a fungal sterile culture, or FS. Contact the mycology lab at 5-5722 for further information.

Culture for mycobacteria (AFB such as TB & MAI) and/or slow growing systemic fungi such as *Histoplasma capsulatum.*

Only one bottle, the Bactec Myco/F Lytic bottle, is needed for fungal and/or mycobacterial blood cultures.

It is not necessary to order separate cultures when both groups of organisms are suspect. The laboratory will identify any organism that grows in the bottle.

The bottle may be obtained from the Mycology laboratory, **Room E2-14**. The bottle requires **1 ml to 5 ml.**

Bone marrow aspirates culture. Bone marrow aspirates may be submitted as above when slow growing fungal or mycobacterial etiology is suspected. Make sure the specimen is properly described in the ordering computer. If a

smear is requested for the bone marrow specimen it must be ordered separately. **Please call the laboratory at extension 5-5722 for special instructions and ordering information. A heparinized specimen is needed for smear.**

Other blood culture bottle uses:

In some instances the clinician may wish to inoculate the blood culture bottle with some of the fluids obtained from normally sterile sources such as ascitic fluid, synovial fluid or peritoneal fluid.

The site and source should be clearly indicated on the ordering computer. **A routine fluid culture, which includes a Gram stain, should always be ordered and submitted separately at the same time.** This will allow the rapid identification of organisms present in large numbers. It is important not to inoculate all the fluid into blood culture bottles. Several ml of the original specimen should be submitted together with the inoculated blood culture bottle for Gram stain and culture.

Handling and Safety: If an uninoculated bottle is dropped and broken, handle the disposal carefully as you would any other non-contaminated item or spill. If the bottle has been inoculated, handle the waste as infectious and notify Environmental Services (See the Spill Policy of the Infection Control B.I.T. Manual)

Outdated bottles: Blood culture media have additives which lose potency with time; therefore all bottles have an expiration date printed on the label. Check all bottles before use and return expired bottles to (**CMS) Central Supply.** Older stocks should be used first, do not overstock media for future use.

Blood culture problems. Occasionally it may be necessary to obtain additional information regarding the collection and submission of blood cultures.

Please call 5-7938 (bacteriology) or 5-5722 (AFB and Fungus) and ask for a supervisor or contact an Infectious Disease physician.

Invision Entry Information

Special coded abbreviations may be used when entering information into Invision at the SPECIMEN, METHOD OF COLLECTION, and BODY SITE prompts. The codes for terms commonly used with blood cultures are listed in the table

CODE	TRANSLATES TO	CODE	TRANSLATES TO
ANCU	Anticubital	PICCL	Peripherally inserted central catheter line
ARM	Arm	PIV	Peripherally inserted venous line
ALINE	Arterial line	BRPT	Brown port
BLD	Blood	REDP	Red port
FEVA	Femoral artery	FML	Femoral
HAND	Hand	PMLP	Proximal Port
JOFL	Joint fluid	BROV	Broviac -Central venous line
LEFT	Left (Do not use L)	MEDI	Medial
FEVA	Femoral vein	PBSC	Peripheral Stem Cells
PRPL	Peripheral	CVL	Central venous line
PDF	Peritoneal dialysis fluid	INJU	Internal jugular
RT	Right (Do not use R)	BLPT	Blue port
CSF	Spinal fluid	WHPT	White port
THOR	Thoracentesis fluid	TLCA	Triple lumen catheter
UMB	Umbilical artery	CHW	Chest wall
UAC	Umbilical artery catheter	DTL	Distal
UVC	Umbilical venous catheter	PMLL	Proximal line
UMBL	Umbilicus	UMBL	Umbilicus
VEN	Vein	PML	Proximal
VP	Venipuncture	DTLL	Distal Line
WRIST	Wrist	MEDIL	Medial Line

When more than one entry is required to describe the SPECIMEN, METHOD OF COLLECTION or BODY SITE, the codes shown in the table should be strung together using a hyphen. For example, if the source is "femoral artery, left" the correct ETC is **FEMA-LEFT**. Using the codes will assist the laboratory in recording the information accurately in the laboratory computer.

9 BODY FLUIDS

Cerebrospinal Fluid (CSF): CSF is usually collected in three sterile tubes. It is preferable to reserve tube 3 for microbiology studies. Suggested volumes for CSF culture are as follows:

Fluid Bacterial culture and Gram Stain	1 - 2 ml
Mycobacterial culture (AFB) Sterile Fluids	2 ml
Fungal culture, including Cryptococcal Antigen Test	3 ml
Antigen detection	1 ml

A volume of 7 ml would be required to process a specimen for all of the above tests. If a smaller volume of material is submitted the results may be compromised and the laboratory may call the sender to prioritize the test orders.

If only one tube is available for all clinical laboratory tests the microbiology portion should be processed first in order to eliminate the danger of contamination. Gram stains are done on a STAT basis on all CSF specimens submitted for bacterial culture. Specimens should be sent to the laboratory as soon as they are collected. If there is a delay in sending the specimen to the laboratory it should be held at room temperature. **NEVER** refrigerate CSF specimens before bacterial culture is performed (*refrigeration temperatures may inhibit the recovery of Neisseria meningitidis).*

Other Normally Sterile Body Fluids: Examples include ascitic, joint, peritoneal, peritoneal dialysate, and thoracentesis fluid. Collect as much material as is possible; submit it promptly to the laboratory in a sterile screw-capped container **Never place fluid specimens in Amies transport media**, **or submit fluid specimens on swabs**. Appropriate direct examinations are included in each culture request, it is not necessary to request these separately.

Fluid Bacterial culture, aerobic and anaerobic
Mycobacterial (AFB) culture, sterile fluid
Fungal culture, sterile fluid, calcofluor white

CAPD fluid should be collected with a syringe using aseptic technique from a closed dialysate bag or by drainage from an alcohol wiped port. It is important to submit a large volume of fluid, sterile 50 ml containers are available from CMS and may be used for transport. It is acceptable to place 10 ml of CAPD fluid into each of a pair of adult blood culture bottles (gold and silver labels) and identify the specimen as CAPD fluid.

10 RESPIRATORY SPECIMENS

Bacterial culture of sputum or bronchial washings
Bacterial endotracheal culture
Bronchial brush quantitative culture

Bronchoalveolar lavage AFB
Bronchoalveolar lavage Fungal
Respiratory AFB culture, all collection methods
Respiratory Fungal culture, all collection methods
Bacterial culture, bronchial alveolar lavage

All of the cultures above include an appropriate smear for organism detection. **Do not order Gram stain, AFB smear or Calcofluor white stains separately when ordering the tests listed above.**

SPUTUM

The best specimen is an early morning expectorated specimen that results from a deep cough and is collected in a sterile container with a tight fitting lid. When the patient is unable to produce a sputum specimen in may be necessary to induce a specimen by nebulization. This is frequently required for AFB specimens which may be collected as a series on several successive mornings. Be sure that **induced specimen** is noted on the culture order.

Multiple culture requests may be entered for a single specimen (for example bacterial, fungal and mycobacterial cultures on a single sputum specimen). The laboratory will call if the amount of specimen submitted is not sufficient to process all of the orders.

BRONCHIAL WASHINGS (SBC)

Submitted as a sputum culture in a tightly capped sterile container. Identify as a bronchial washing at method of collection.

PROTECTED BRONCHIAL BRUSHES FOR QUANTITATIVE BACTERIAL CULTURE (BBQ)

This procedure is performed to isolate and identify those isolates present in large numbers in the area of the lung sampled by the brush.

To submit the specimen, aseptically remove the protected brush from the shaft and place the brush in a screw-capped tube containing 0.5 ml of non-bacteriostatic saline (available in Room E-2-32). **The specimen must be transported to the laboratory immediately.**

BRONCHIAL ALVEOLAR LAVAGE (BAL)

This special procedure is performed to aid in determining the causative agent/s in lower respiratory tract infections when the causative agent/s can also be part of the normal flora of the upper respiratory tract.

Isolates present at 10^4 CFU/ml of lavage fluid are thought to be significant. Bacterial culture of the lavage fluid includes quantitative counts.

The lavage fluid should be collected in a sterile screw-capped container and transported to the laboratory immediately. It is important to identify the specimen as a BAL fluid.

11 THROAT CULTURES:

Throat cultures for Group A Streptococci:

Best to use two dacron swabs to sample the throat.

The first swab for antigen detection should be placed into a sterile screw cap tube

The second swab should be placed in Amies transport medium.

Order both a Group A streptococcal screen and a culture. If the rapid screen test is positive, then the culture will be cancelled.

Sensitivity studies are not performed on positive cultures as penicillin is the drug of choice and Group A streptococci have not developed resistance to this agent. If the clinician wishes to use erythromycin in a penicillin hypersensitive patient, the laboratory should be notified by calling 5-5703 to request sensitivity testing.

Throat cultures for agents other than Group A beta-hemolytic streptococci:
Notify microbiology laboratory by telephone (ext. 5-7938). Special collection techniques or the use of special media may be required.

12 GENITAL CULTURES, includes a Gram stain.

Gram stains in males are examined for the presence or absence of Gram negative diplococci suggestive of Neisseria gonorrhoeae.

Gram stains in females are examined for the presence or absence of bacterial vaginosus (BV) ONLY. It is never appropriate to examine female genital specimens for N. gonorrhoeae due to the presence of other normal flora bacteria that may resemble N. gonorrhoeae.

Urethral cultures, male: The patient should not have urinated for at least an hour prior to the collection of the specimen. After cleansing the external tissue, a fine wire calcium alginate swab is inserted 3 to 4 cm into the urethra and rotated gently, then removed and placed in Amies transport media.

Cervical cultures, female: Using a speculum and visually observing the scervix, a cotton or dacron swab should be used to remove any excess mucous from the exocervix. The tip of a fresh sterile swab is then inserted into the endocervical canal

until the tip has just disappeared. Rotate the swab several times in position, and withdraw without touching any vaginal surfaces. Place in Amies transport medium and send to the laboratory for processing.

Gonococcal screens, Modified Thayer-Martin agar (MTM) plates that are obtained in the laboratory (E-2-32) are used for gonococcal screen cultures. The specimen is obtained as noted above and the swab is rolled across the surface of the agar in a **Z** pattern. The swab is discarded and **the MTM plate is sent immediately to the laboratory for processing.** Those areas of the hospital and clinics that obtain the MTM plates should hold them in the refrigerator until needed. When needed, an MTM plate should be removed from the refrigerator examined to determine that it is not contaminated or has not expired and is in good physical condition before use. It must be allowed to come to room temperature prior to inoculating.

Rectal cultures for *Neisseria* gonorrhoeae, order gonococcal screen: A sterile swab should be inserted approximately 3 cm into the anal canal, rotated for about 5 second and removed. The swab is then used to inoculate a MTM plate as noted above and immediately sent to the laboratory.

Culture Screen for Group B Streptococci Vaginal introitus (distal vaginal, no speculum) and anorectal specimen collected by one or two swabs, should be transported to the laboratory in Amies transport media as soon as possible. Both swabs should be placed in one Amies' transport medium tube and submitted as an anovaginal (one specimen) to the laboratory . A single combined vaginal and rectal swab in Amies' transport medium is acceptable too.

In the case of neonatal infection, a single specimen from a newborn infant, collected by swabbing from multiple sites (nares, umbilicus, and ear) may also be submitted for culture. Results of GBS cultures should be available 48 to 72 hours after specimen submission.

13 STOOL-- culture for enteric pathogens

Patient with diarrhea should submit stool specimens for culture. Stool collected 2-3 days after onset of diarrhea are most productive. Unless there are unusual circumstances, stool cultures on patients that have developed diarrhea after being in the hospital for more that 3 days are discouraged because such cultures are usually negative for bacterial, viral or parasitic pathogens, a test for C. difficile is recommended

Adult patients--The specimen should be collected in a clean bed pan and transferred to a sterile specimen cup or collected directly into the cup if possible. Rectal swab is not acceptable.

Pediatric patients—Stool should be submitted similar as adult. However, some times rectal swab is used if stool is not able to obtain. The sterile swab should be inserted approximately 3 cm into the anal canal, rotated for about 5 second and removed as much fecal material as possible. The swab is then placed in Amies' transport media and sent immediately to the laboratory for processing.

If the patient history suggests recent consumption of seafood, request culture for *Vibrio* species in comments. Please call the laboratory at 5-5703.

All stool specimens submitted in sterile specimen cups are further tested for the Shiga toxins. The Shiga toxins test cannot be performed on stool specimens submitted on swabs.

If other unusual isolates are suspected please call the microbiology lab at 5-5703 so that any special media required for culture may be included in the processing.

Clostridium difficile toxin A/B in Stool Specimens

1. *C.difficile* is the major cause of antibiotic-associated diarrhea and pseudomembranous colitis. 2 toxins; toxin A and toxin B are associated with disease caused by C. difficle.

2. **Specimen requirements:** Liquid or semi-solid stool 1ml to 3ml collected in clean, airtight containers with no preservative.

3. Specimen are batched and done on the 11- 7 shift every night or by upon special request by calling 5-5703.

14 URINE CULTURES:

The most commonly obtained urine sample is a "clean catch - mid stream" (CCMS) specimen. Other urine samples may be obtained by "in - out" catheterization, removal from an indwelling catheter port or suprapubic aspiration. In addition, samples may be obtained surgically or pre and post prostatic massage.

Urine Culture: Clean catch, I & O catheter indwelling catheter Percutaneous tube, bag etc. Do not used for AFB or Fungal urine culture.
Urine Culture, Gram Stain.
Urine Culture, Suprapubic Aspirate.
Urine Culture, Surgically ,collected, renal pelvis, from kidney
Urine Culture, Pre/Post Prostatic Massage, Call 5-5703
AFB Culture, AFB Smear, Nonsterile source
Fungal Culture, Calcofluor white Exam, Nonsterile source:

A volume of 10 mL of urine is generally recommended for all urine specimens.
All specimens should be collected in a sterile tightly capped container for transport to the laboratory. Specimens should be sent to the laboratory as soon as possible after collection. Specimens must be refrigerated if they are to be held more than one (1) hour. Methods of collection are given below:

CCMS Instructions for females:

1. After washing and drying hands, sit comfortably on a toilet seat and swing one knee aside as far as possible.
2. Using one hand spread the genital area (labia) and hold it in that position while cleaning and until the specimen is collected.
3. With the other hand uses a sponge moistened with cleansing solution and wipe the area going from front to back cleansing the folds of the skins as carefully as possible. This step is repeated three more times using a freshly prepared sponge each time.
4. Use a dry sponge to dry the area, again using only a front to back motion.
5. Hold the collection container so that contact with the body is avoided and do not touch the inside or the rim of the container.
6. Allow the first stream of urine to pass into the toilet. Then collect the rest of the urine into the container.
7. Replace the container lid carefully and return to attendant.

CCMS Instructions for males:

1. After washing and drying the hands, with the foreskin held completely retracted clean the glans penis with a sponge moistened with cleansing solution. Repeat this procedure three more times using a fresh sponge each time.
2. Use a dry sponge to dry the area.
3. Hold the collection container so that contact with the body is avoided and do not touch the inside or the rim of the container.
4. Allow the first stream of urine to pass into the toilet. Then collect the rest of the urine into the container.
5. Replace the container lid carefully and return to attendant.

Instructions for other specimens:

1. The Nursing procedure manual contains detailed instructions for obtaining catheterized urine specimens.
2. Suprapubic urine aspirate withdrawal sites must be prepared in the same manner as a blood culture venipuncture site or a surgical procedure entrance site.
3. Prostatitis evaluations should include several clean catch specimens preceded by cleaning as above. The specimens are obtained before and after prostatic massage. The "pre" specimens will include the initial 5 to 10 ml voided urine and a midstream collected specimen. Expressed prostatic secretions may be submitted for microscopic examination. The first 5 to 10 ml of urine obtained after massage should be obtained for a final urine culture. Colony counts on the post massage specimen will greatly exceed the pre-massage specimen in true cases of bacterial prostatitis.

15 CATHETERS, INTRAVENOUS: Order catheter tips semi quantitative culture. **A peripheral draw blood culture should be ordered together with catheter tip culture for proper interpretation of results.**

Site preparation: In order to reduce contamination with skin flora and remove any residual antimicrobial ointment, the skin around the insertion site should be cleansed with 70% alcohol. After the alcohol dries the catheter is removed.

Short catheters and steel needle specimens: Using sterile technique, the entire internalized length of the catheter or steel needle is cut off at the former skin surface-catheter junction and placed in a sterile container for transport to the laboratory. Do not place in any transport media.

For longer catheters, a two inch portion of the tip and a two inch section of the terminal intracutaneous portion of the catheter are cut off using sterile technique and sent to the laboratory as separate specimens in sterile screw-capped tubes.

16 EAR AND EYE CULTURES

These specimens are usually collected on cotton or dacron swabs. The specimen is placed in Amies' transport medium and sent to the laboratory for processing.

Occasionally the clinician will collect material and plate it directly onto media provided by the clinical laboratory, usually blood agar, chocolate agar and Sabouraud's dextrose agar (SDA). Fungal culture is ordered for the SDA plate, and bacterial exudate culture for the other two (blood & chocolate) plates. **THESE SPECIMENS MUST BE SENT IMMEDIATELY TO THE LABORATORY FOR PROCESSING**. If any additional material (smears and/or swab in transport media or sterile tube), is available it should also be sent to the laboratory along with the inoculated media. Be sure the plates are completely labeled.

17 GASTRIC CULTURES FOR HELICOBACTER PYLORI

This is a reference test. Consult the Referral Testing section or contact the Reference Lab for additional information.

18 BORDETELLA CULTURES (OR MOLECULAR DETECTION), for the diagnosis of Whooping cough

This is a reference test. Consult the Referral Testing section or contact the Reference Lab for additional information.

19 SPECIAL CULTURE OR BIOTERRORISM ORGANISM REQUESTS:

The microbiology lab must be alerted by calling 5-5703 on any of the suspected diagnoses below.

This would allow the laboratory to review the culture requirements with the clinician and further alert the laboratory staff of any special handling required for the impending specimen.

Organisms to be specifically cited in the ordering comments are listed below:

1. ***Corynebacterium diphtheriae (Diphtheria)***
2. ***Neisseria meningitidis (Acute or epidemic bacterial meningitis)***
3. ***Bioterrorism organisms such as Bacillus anthracis, Brucella species (Brucellosis), Francisella tularensis (Tularemia), Yersinia pestis (Bubonic, pneumonic or septicemic plague)***

20 ANTIGEN DETECTION TESTS: (CSF ONLY)

Specific tests for the direct detection of bacterial antigens in CSF. Specimens should be submitted in sterile tightly capped tubes. Appropriate cultures should also be ordered and the minimum volume required for complete antigen detection, 1 ml, must be taken into consideration. The currently available antigen detection tests are listed below. This test is offered 24 hours a day.

Antigen detection, *Streptococcus pneumoniae* -
Antigen detection, *Haemophilus influenzae* Group B -
Antigen detection, Group B *Streptococcus* -
Antigen detection, *Neisseria meningitidis*, Groups A & Y -
Antigen detection, *Neisseria meningitidis*, Group B/E. coli K1 -
Antigen detection, *Neisseria meningitidis*, Groups C & W135 -

21 CRYPTOCOCCAL ANTIGEN DETECTION

Cerebrospinal Fluid Specimens (CSF) or Serum:

Cryptococcal Antigen Latex Agglutination (**CAGA**) tests are performed 24 hours a day. If the test is positive the laboratory will order and perform tests to determine a titer. Positive titers are repeated only every 4 weeks. Cryptococcal antigen is included in all the CSF fungal cultures, there is no need to order separately.

22 EPIDEMIOLOGY, SURVEILLANCE CULTURE, RENAL WATER REQUESTS:

Epidemiology Cultures: Ordering of cultures taken for epidemiological purposes must be initiated by the Infection Control Department or an Infectious Disease physician. If a problem occurs which is thought to have epidemiological significance call Infection Control, extension 55110, immediately. The Infection Control Nurse and/or the Infections Disease physician will determine the type of cultures required and will consult with the laboratory before obtaining such cultures. Such cultures frequently require unusual processing, may involve large numbers of specimens and will require an active review by the supervisors and the director in the laboratory.

Bone marrow transplant (oncology) Surveillance Cultures: Bone marrow transplant patients are severely immunosuppressed and are receiving prophylactic antibiotic therapy. The patients in most instances will develop infections due to their treatment regimen. When clinical findings indicate that the patient may be septic, specific antibiotic therapy is instituted.

Surveillance cultures of these patients are some times performed in order to detect the presence of organisms resistant to the treatment protocol being used or anticipated and to detect overgrowth of normal flora by unusually resistant bacteria or fungi. Contact the Microbiology Lab at 5-7938 before submitting requests for surveillance cultures.

Blood **C**ulture **S**et, aerobic (Peds Plus/F) and anaerobic vials
Blood **S**ingle **V**ial, aerobic **or** anaerobic vial
Surveillance Culture, **O**ral **F**lora
Surveillance Culture, **S**tool **F**lora (Bacterial)

Collection of Specimens: Instructions for collecting specimens have been established by the director of the Bone Marrow Transplant Unit.

Renal Water Cultures

Cultures done for Dialysis Unit only. Cultures are done monthly to check the renal dialysis machines for bacterial contamination. Colony counts over 50 CFU/ml are reported to the dialysis unit and also infection control.

23 PARASITOLOGY TESTING

Fecal Specimens: The majority of tests required determining the presence of protozoan and metazoan parasites are performed on stool specimens. CMS provides two tubes containing different preservatives, formalin and polyvinyl alcohol, for the submission of stool samples. A 5 ml sample of stool, the amount required to bring the fluid level up to the line marked on the tube label, is placed in the preservative. The tube is tightly capped and then mixed vigorously and sent to the laboratory for testing. These specimens are processed on weekdays only.

For the initial assessment of a patient who may have a parasitic infection and has not traveled abroad, the Fecal Immunoassay Screen for Giardia and Cryptosporidium will be the most sensitive and cost effective test. This should be ordered as GCAA: Giardia & Cryptosporidium Antigen Assay.

For the patient who has recent travel history or is a resident of a developing country, routine O&P should be ordered. Two to three stool samples over a period of 10 days is recommended. This should be ordered as OPC Ova, Cysts and Parasites, Stool.

The selection for each of these tests is as follows:

1. - Giardia & Cryptosporidium Antigen Assay

GCAA: Giardia & Cryptosporidium Antigen Assay

Giardia lamblia and Cryptosporidium spp are the two most common parasitic infections in United States. The majority of the positive stool samples for parasitology are Giardia. Cryptosporidium also causes diarrhea in sporadic cases as well as outbreak situations, such as the large outbreak in Milwaukee many years ago. Cryptosporidium is also a common cause of diarrhea in HIV patients.

Based on published literature, fecal immunoassays are more sensitive and specific than routine O&P examination for these two parasites. Usually a single stool sample is sufficient for detection.

2. - Ova, Cysts and Parasites

OCP: Ova, Cysts and Parasites, Stool.
Submit Formalin & PVA tubes

This test is best for the diarrheal patient with relevant travel history; patient with diarrhea who is a past or present resident of a developing country; or a patient who is negative twice with fecal immunoassay but parasitic infection is high on the list.

Stool collection kits for both tests are the same and are available on request.

For further information, call the Parasitology Laboratory 5-5722

Other Specimens: Blood samples may be examined for parasites using special stains. Abscess material or intestinal or tissue contents may be examined in wet mounts for the presence of amoeba and other parasites. Additional information is listed below regarding all tests performed in the Parasitology area of microbiology.

OCP: Wet Mount for Amoeba, Call 5-5722
GCAA: Giardia & Cryptosporidium Antigen Assay
Occult Blood, Stool: Submit on Test Card -
Pin Worm, Preparation -
Wet Preparation for *Trichomonas*, Call 5-5722
Cyclospora and Isospora Screen

Occult blood diagnostic and for occult blood screen are performed in order to detect blood due to intestinal bleeding. Specimen collection and test cards are available from Hospital Supply. The card contains two (2) test areas where a thick and thin smear of stool specimen is to be placed with an applicator. Directions for collection and submission of the test are contained in the Nursing Manual. While the same test procedure is used for both indications, different order codes are provided for test utilization purposes.

Gastroccult test is qualitative method for detecting blood in gastric aspirate or vomitus. Specimen should not be collected until 10 to 15 minutes after the insertion

of a gastric tube. Directions for collection and submission of the test are contained in the Nursing Manual. Test available 24 hours per day.

Pinworm preparations consist of a transparent tape impression smear obtained from the perianal area of the patient. About 2 inches of tape is applied to a tongue depress with the sticky portion of the tape exposed.
This is accomplished by folding the tape back on itself at both ends. The tape is placed against the perirectal area and gentle pressure is applied. Several sites may be sampled with one piece of tape. The tape is then applied to a clean labeled microscope slide, sticky side against the glass. It may be transported to the laboratory in a petri dish. Test processed week days only.

Trichomonas examination of wet preparations should be **examined immediately after collection**. Samples may be submitted on a swab or as discharge in a sterile tube. Under no circumstance should the specimen be refrigerated since a positive test requires the presence of active motile organisms. Test available 24 hours per day.

Cyclospora and **Isospora** in stool processing done week days only.

24 Specimen collection/timing for Parasites:

Multiple specimens: A single specimen reveals only 1/3 to 1/2 of the species present. At least 2 or 3 normally passed stool specimens spaced several days apart before using cathartics or sigmoidoscopy. Collection at 2 to 3 day intervals is preferable to successive days.

Additional tests performed in the Parasitology section: The tests listed below are not considered routine for a microbiology laboratory but are nevertheless performed in the section.

Fecal Fat Screen, Sudan III
Reducing Substance, Stool

1. **Fecal fat stain** is performed in order to determine the presence of neutral fats in the stool, an indication of steatorrhea. The stool specimen is submitted in a sterile well-sealed container. At least 5 to 10 grams of a representative sample is required. Testing done week days only.

2. **Reducing substances**, usually glucose, are detected by this test. The stool specimen is submitted in a sterile well sealed container. At least 5 to 10 grams of a representative sample is required. Test available 24 hours per day.

25 MAXIMUM TRANSPORT AND PRESERVATION TIMES.

Specimens on swabs which have been placed in Amies transport media may be held at room temperature and should be brought to the laboratory within an hour of collection.

Urine specimens should be processed within an hour of collection. They should be sent to the laboratory immediately after collection, or refrigerated if being held without processing for more than an hour.

Blood cultures bottles and anaerobic specimen transport tubes or vials should be brought to the laboratory as soon as collected. If unable to bring to the laboratory right away, **DO NOT REFRIGERATE**.

Specimens collected without the use of transport media must be sent immediately to the laboratory for processing.

Modified Thayer-Martin (MTM) plates inoculated for the isolation of Neisseria gonorrhoeae, **must be delivered to the laboratory immediately** after specimen collection and plating.

The following specimens must be sent to the laboratory immediately after collection.

DO NOT REFRIGERATE.

1. Normally sterile fluids such as CSF
2. Syringe containing aspirates
3. Specimens suspected of containing any Neisseria species.
4. Swab suspected to contain anaerobes
6. Surgically obtained specimens.
7. Vaginal specimens for "wet preps".

26 SPECIMEN REJECTION

Principle: It is the responsibility of the Clinical Microbiology Laboratory to establish collection and transportation requirements that will provide optimal recovery and identification of pathogens.

The specimen received must also be acceptable for examination according to established criteria in order that results are clinically relevant to the clinician.

Misleading results may delay the course of recovery and affect patient care. Therefore, when a specimen fails the accepted criteria, the physician will be notified immediately in order that clarification or a corrective action may be taken

Common problems: Many problems can be avoided by making every effort to determine the following with respect to the specimen.

1. The specimen should be representative of the suspected infection site.
2. The specimen should be properly collected and placed in the proper container for submission to the laboratory.
3. Normal flora related to the site of specimen collection should be avoided.
4. The specimen must be sent to the laboratory immediately after collection to preserve the viability of the pathogens.

Rejection Criteria and Courses of Action: When considering a specimen for rejection, several specimen categories can be identified. Some specimens may be altogether impossible to process. Others may be processed in an alternate manner if a minor correction or clarification will allow processing. The list below contains rejection criteria and possible courses of action for several specimen categories.

1. Identification problems:

CRITERIA FOR REJECTION	COURSE OF ACTION (Notes to follow)
Discrepancy between patient identification on computer request, specimen labeling and no specimen identification.	**Contact ordering location service to resolve problem. Hold specimen under proper conditions until resolved.**
Incomplete ordering information, lacking: **1. Specimen source** **2. Collection time** **3. Type of specimen** **4. Collection mode** **5. Ordering physician** **6. Required demographic information, i.e. age or sex, etc. missing.** **7. Ordering information is not consistent with previous known patient data.**	**Contact ordering location service to obtain additional information. This type of error is most frequent when Invision (Hospital System) is down and the manual request form is used.**

2. Container associated problems:

CRITERIA FOR REJECTION	COURSE OF ACTION (Notes to follow)
Container not properly used, e.g. Container with inappropriate transport medium used.	**Contact ordering location service to resolve problem. Hold specimen under proper conditions until resolved. Usually requires submission of another specimen.**
Leaking container or exterior of container obviously contaminated.	**Contact ordering location service to resolve problem. Resubmit another specimen if possible.**

3. Order not consistent with specimen collection guidelines:

CRITERIA FOR REJECTION	COURSE OF ACTION (Notes to follow)

Anaerobic cultures: Specimen source not appropriate	**Contact ordering location service to resolve problem. Specimens that are inappropriate for anaerobic culture will not be processed for anaerobic culture. Aerobic cultures will be performed as an alternative. The clinician will be notified if a specimen is not processed as requested or if rejected.**

4. Inappropriate or improper specimen:

CRITERIA FOR REJECTION	COURSE OF ACTION (Notes to follow)
Material submitted in formalin or other fixative/preservative.	**Contact ordering location service recollect another specimen. Explain preservative kills all pathogens**
24-hour sputum or urine submitted for AFB or fungal culture.	**Contact ordering location service**
Feces or rectal swabs submitted for pinworm prep.	**Contact ordering location service recommending that early morning cellophane tape specimen be submitted. Specimen rejected**

4. Inappropriate or improper specimen (continued):

CRITERIA FOR REJECTION	COURSE OF ACTION (Notes to follow)
Specimen received in extended transport time without transport media or refrigeration.	**Contact ordering location service and ask to resubmit another specimen. Specimen rejected**
Multiple specimens submitted from the same site on the same day	**Contact ordering location service. Hold specimens for 24 hours or until resolved.**
Barium or oil in stool specimen submitted for ova, cyst	**Contact ordering location service and ask for resubmission**
Quantity of specimen insufficient (QNS).	**Contact ordering location service and ask to prioritize the order of tests requested.**
Sputum that do not pass sputum screen	**Gram stains are recorded in the computer and that the specimen was unacceptable for culture and that the physician or RN was notified with a request for resubmission of another specimen. Specimen rejected**

Sputum submitted in tissue paper or gauze	**Physician or RN of the patient's location notified with a request for resubmission of another specimen. Specimen rejected.**
Broken, damaged, and leaking vials	**Notify ordering location service to recollect**
Incorrectly labeled or unlabeled bottles	**Notify ordering location service to recollect**