

APPENDICES

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Last revision: 06/21/2016 prc

Reviewed: 06/21/2016 prc

APPENDIX A

SPECIMEN REQUISITIONS

All specimens submitted to the Laboratory must be accompanied by a requisition. The requisition must be legible and include the following information:

Patient's Last Name, First Name
Identification Number - Required for TMH patients, may not apply to outside referrals
Patient's Location - Bed number or referring clinic, office
Ordering Physician - Or other person authorized by State Law to order laboratory tests
Location and Telephone Number of Person Ordering Test - if not previously on file in Laboratory
Time and Date of Collection
Test(s) to be Performed
Clinical Information - if pertinent

LABELING OF LABORATORY SPECIMENS

The primary specimen container must be labeled with the following information:

Inpatient:

Patient's Last Name, First Name
Identification Number – FIN number
Date and Time of Collection
Colleague's ID code

Outpatient:

Patient's Last Name, First Name
Date of Birth or Social Security Number

Inpatients must have patient identification verified using an identification bracelet, and confirmed verbally (if possible) with the patient.

Blood Bank specimens must be hand-labeled, and the patient must have a "pre-printed" hospital identification bracelet or a special red "Typenex" bracelet attached to their person.

See Patient care Policy 40-68 (<https://intranet.tmh.org/Policies/AdminPolicies/documents/40-68.pdf>) for complete blood bank identification protocol.

LABORATORY PRIORITIES

STAT: The STAT priority should be used in emergency/life or death situations only. The list that follows designates those tests which can be performed on a STAT basis. Most of these tests can be completed within one hour following receipt of the specimen in the Laboratory. The Laboratory does experience unpredictable peak workload periods, during which it may be impossible to meet this one hour turnaround time unless special communication is received. Therefore cases of extreme urgency should be brought to the attention of a Laboratory Supervisor.

PROMPT: Prompt requests are generally completed within two hours following receipt of request. Only those tests listed on the STAT list (which follows) can be performed on a Prompt basis. Again, a two-hour turnaround may be impossible to meet during peak periods.

TIMED: Tests to be drawn at specific times should be designated as "Timed". Generally, results for these tests will be available following the next "run" of that particular test in the Laboratory.

ROUTINE: Tests ordered as "**Routine**" will be run at the Laboratory's convenience. Results will generally be available within eight hours.

NOTE: Some tests are only run on a scheduled basis. These scheduled tests may be ordered under any of the above priorities, but the specimen will only be collected. Results will not be available until the next scheduled run is complete. Special requests can be referred to the Clinical Pathologist, or Pathologist on call.

CRITICAL VALUES

All critical values are called no later than thirty (30) minutes after the completion of testing to the ordering location.

TEST SET UP SCHEDULE

Each tests' individual information sheet states the scheduled setup time. The specimens must be received by the indicated time in order to qualify for testing. Specimens received after the cut-off time will be held for the next scheduled test run.

REPORTING SCHEDULE - TURN AROUND TIMES

Each tests' individual information sheet states the scheduled reporting time.

Tests that are referred to an reference laboratory must be in the TMH Laboratory by 11:00 am Monday through Friday and 10:00 AM on Saturday and Sunday to insure being sent out on the same day. Please contact the Laboratory if an emergency situation exists. A Laboratory Supervisor can request the Reference Laboratory to phone results as soon as the test is completed.

Last revision, 10/28/2016 prc

Reviewed, 10/28/2016 prc

APPENDIX B

SERUM YIELD FROM RED or GOLD TOP TUBES

One full red (filled to the second line) capillary collection vessel will yield approximately 0.15 mL serum.

One full 7.0 mL gold or red-top tube will yield approximately 2.3 mL serum.

One full 10.0 mL red-top tube will yield approximately 3.3 mL serum.

One full 15.0 mL red-top tube will yield approximately 5.0 mL serum.

TUBE STOPPER COLOR CODING

STOPPER COLOR	ADDITIVE	MINIMUM BLOOD VOLUME FOR ACCURATE RESULTS
GOLD	Gel separator and clot activator for collection of serum.	no minimum
LAVENDER/PURPLE	EDTA	At least 1.0 ml
LIGHT GREEN	PST Gel and Lithium Heparin	no minimum
DARK GREEN	Sodium Heparin	no minimum
LIGHT BLUE	Sodium Citrate	*MUST BE FULL DRAW*
ROYAL BLUE (with Lav. Label)	Trace element free EDTA (used primarily for heavy metals testing)	no minimum
ROYAL BLUE (with Red Label)	Sterile, no additive	no minimum
GRAY	Sodium Fluoride Potassium Oxalate	no minimum
YELLOW	ACD	Must be at least half-filled

***Tubes are evacuated to draw a given volume of fluid. Anticoagulant tubes contain the appropriate amount of anticoagulant for the amount of blood drawn by vacuum. Each tube must be filled completely by vacuum to ensure a correct blood-to-anticoagulant ratio. Over or under filling may affect laboratory results.**

Last Revision Date: ,08/27/08 kc, 05/19/2015 prc

Last Review Date: ,08/25/11 kc, 08/21/2013, 05/19/2015 prc, 06/21/2016 prc

APPENDIX C

URINE COLLECTION PROCEDURES

Urine specimens for Culture or Routine Urinalysis must be delivered to the Laboratory within 2 hours of collection, or be refrigerated.

TYPES AND CONTAINERS:

RANDOM - Collected at any time of the day or night into a chemically clean 6 oz. plastic container with lid.

FASTING - Void four or more hours following the ingestion of food and discard specimen. Collect the next voided specimen into a chemically clean 6 oz. container with lid.

FIRST MORNING SPECIMEN - Void before retiring and discard specimen. On arising in the morning, collect the first voided urine in a chemically clean container.

24 HOUR SPECIMEN - On arising in the morning, void urine, discard it and record time. Collect all urine excreted during the next 24 hours - day and night- and pour it into a large wide-mouth container. Keep the container refrigerated. Exactly 24 hours after first voided discarded specimen, void urine, save it, and add to the container.

MIDSTREAM- Have a chemically clean collection vessel at hand. Initiate urination with first portion going in toilet. When approximately half of the voiding is completed, without interrupting the process of urination, a portion of urine is collected in the vessel and the latter portion of the urine flow is passed into the toilet.

CLEAN CATCH SPECIMEN- Several different kits for these are provided for inpatients from CSR. Supplies for outpatients are available from the laboratory. Sterile containers are required for routine cultures. Directions are in the kits. The patient must be instructed to properly clean the area surrounding the urethra. Cleansing pads are provided in the kits.

NOTE: All specimens must be clearly labeled with the patient's name, Medical Record Number/FIN number, and date and time of collection. This information must be on the side of the container, not on the top.

All requisition slips must be clearly labeled with the patient's name, Medical Record Number/FIN number, room number, date and time of collection, doctor's name and test(s) to be performed.

Last Revision Date: 12/01/2005, hs

Last Review Date: 08/25/2011kc, 08/21/2013 kc, 05/19/2015 prc, 06/21/2016 prc

APPENDIX D

STOOL COLLECTION PROCEDURE

Stool specimens must be collected in clean, wide mouthed containers, a bed pan, on clean newspaper or commercial stool catch device. Stool specimens must not be taken from toilet bowls or be contaminated with urine.

STOOL FOR PARASITE ANALYSIS

The patient should avoid using antacids, antidiarrheal medication, antibiotics or oily laxatives. Ova and parasite examinations should be performed before barium studies or the patient must wait 7-10 days after barium or bismuth studies before collecting the stool specimens. Presence of barium or bismuth in the stool specimen is cause for rejection of the specimen, and arrangements must be made to recollect the specimen after seven days.

Due to the intermittent passage of certain parasitic elements, examination of three specimens spaced several days apart is recommended. In-house patient specimens must be spaced at least 12 hours apart. If the time interval is less than 12 hours, an additional specimen will be requested.

USE OF SAF VIALS FOR OVA AND PARASITE EXAMINATION AND PARA-PAK ENTERIC PLUS VIAL FOR ROUTINE CULTURE

If unable to deliver to the Laboratory within two hours the stool specimen should be placed in the appropriate transport media. The SAF VIAL system is used for Ova and Parasite specimens. The PARA-PAK ENTERIC PLUS VIAL is used for specimens for routine culture. An appropriate (i.e. bloody, mucoid, watery) area of stool should be selected and sampled with the collection spoons provided in the caps of the containers. Sufficient stool is added to each container to bring the liquid level up to the "Fill to Here" line. This will result in approximately 5.0 mL of sample. To insure adequate sampling of a formed stool, material should be removed from the sides, ends and middle of the bolus. Agitate the specimen with the spoon along the sides of the container, tighten the cap and shake firmly to ensure that the specimen is adequately mixed. When mixing is completed, the specimen should appear homogeneous. Label the vials appropriately with the patient name, date and time of collection. Also indicate the consistency of the stool from which the sample was taken. Vials containing stool should be transported at room temperature and must be received in the Laboratory within 96 hours.

Last Revision Date: 8/28/07 csl

Last Review Date: 8/14/09, csl; 08/27/10, csl; 8/5/11 csl; 8/1/13 csl; 05/19/2015 csl

APPENDIX E**COLLECTION AND TRANSPORT OF MICROBIOLOGY CULTURE SPECIMENS**

TEST	SPECIMEN SOURCE	COMMENTS
ROUTINE CULTURE	Ear, Nose, Throat – BBL Culture Swab (white cap)	Transport to Lab within 2 hours, or store at room temperature for up to 24 hours
	Urine - sterile double tube collection system	Transport to Lab within 2 hours, or refrigerate for up to 24 hours See APPENDIX C
	Wound or Genital Cultures - place swab in BBL Culture Swab (white cap)	Transport to Lab within 2 hours, or store at room temperature for up to 24 hours
	Body Fluids (CSF, Pleural, etc.) place specimen in sterile container	TRANSPORT TO LAB IMMEDIATELY AT ROOM TEMPERATURE
	Feces - sterile container	If unable to deliver to the Lab within 2 hours, place stool in Para-Pak Enteric plus vial. Do not refrigerate. See APPENDIX D for instructions.
	Sputum - sterile container	Transport to Lab within 2 hours, or store at room temperature for up to 24 hours
	Surgical Swab – BBL Culture Swab (white cap) Surgical Tissue – sterile container	TRANSPORT TO LAB IMMEDIATELY AT ROOM TEMPERATURE TRANSPORT TO LAB IMMEDIATELY AT ROOM TEMPERATURE
LEGIONELLA CULTURE	Sputum - sterile container	Transport to Lab within 2 hours, or store at room temperature for up to 24 hours.
	Body Fluid (Pleural) or Tissue specimen - place in sterile container	TRANSPORT TO LAB IMMEDIATELY AT ROOM TEMPERATURE
AFB CULTURE WITH STAIN	All specimens - sterile container	Transport to Lab within 2 hours or refrigerate for up to 24 hours. Outreach/outpatient areas may hold specimen refrigerated over weekend.

COLLECTION AND TRANSPORT OF MICROBIOLOGY CULTURE SPECIMENS

TEST	SPECIMEN SOURCE	COMMENTS
FUNGUS CULTURE	All Specimens require sterile containers. Tissue or body fluids – sterile container. Swab - BBL Culture Swab.	Transport to Lab within 2 hours or refrigerate for up to 24 hours. IF A SYSTEMIC FUNGUS IS SUSPECTED, STORE AT ROOM TEMPERATURE AND TRANSPORT IMMEDIATELY.
STREP THROAT CULTURE (Beta Group A Culture)	Throat – BBL Culture Swab (white cap)	Transport to Lab within 2 hours or refrigerate for up to 24 hours. Outreach/outpatient areas may hold specimen refrigerated over weekend.
BETA STREP GROUP B SCREEN (CULTURE)	Vaginal/Rectal swab in BBL Culture Swab (white cap).	Transport to Lab within 2 hours or refrigerate for up to 24 hours. Outreach/outpatient areas may hold specimen refrigerated over weekend.
GC SCREEN (CULTURE)	Varied sources - GC Media Obtain media from laboratory, inoculate at bedside, tape plate shut and deliver to laboratory immediately. If cannot be delivered within 2 hours, collect on swab and transport swab.	Transport to Lab within 2 hours. Outreach/outpatient areas may hold specimen at room temperature over weekend. See APPENDIX G.
BLOOD CULTURE	See APPENDIX S	Deliver immediately to Lab. Outreach/outpatient areas may store at room temperature and transport within 24 hours. Isolator tubes must be transported within 2 hours.

Last Revision Date: 8/1/13 csl

Last Review Date: 8/1/13 csl; 05/19/2015 csl, 06/21/2016 prec

APPENDIX F**COLLECTION PROCEDURES FOR CHLAMYDIA TESTING****SUMMARY of CHLAMYDIA TESTING PROCEDURES**

TEST NAME	TEST CODE	ACCEPTABLE SPECIMEN SOURCES	COLLECTION MEDIA/CONTAINER
Chlamydia trachomatis, PCR Performed Monday-Sunday	PCRCHG	MALE: URINE FEMALE: URINE, ENDOCERVICAL, VAGINAL	Xpect CT/NG Vaginal / Endocervical Specimen Collection Kit – see detailed procedures
Chlamydia trachomatis, MICROTRAK SLIDE	CMTRAK	NASOPHARYNGEAL, RECTAL, CONJUNCTIVAL	Micro Trak(R) Chlamydia Trachomatis Direct Specimen Collection kit slide.
Chlamydia trachomatis CULTURE	CTRCUL	ANY SOURCE	M4 Multi use Transport Media tube
Chlamydia pneumoniae, PCR	MISLCL (Quest 16003X)	BRONCHIAL LAVAGE, THROAT SWAB	M4 Multi-use Transport Media tube

Note: If Chlamydia results are for legal purposes, a culture should be performed.

SPECIMEN COLLECTION PROCEDURES
ARE ON THE PAGES THAT FOLLOW

Last Revision Date: 08/27/08 bc, kc;8/5/11 csl, 10/17/2012 hs 7/12/13csl

Last Review Date: 8/13/09, csl; 08/27/10, csl; 8/5/11 csl,kc 7/12/13 csl; 8/1/13 csl,08/21/2013 kc; 05/19/2015 prc;
10/30/2017 prc



CHLAMYDIA TRACHOMATIS PCR BY GENEXPERT *(Female: Endocervical and vaginal specimens)*

COLLECTION PROCEDURE FOR ENDOCERVICAL/VAGINAL SPECIMENS

1. The Xpect CT/NG Vaginal/Endocervical specimen Collection Kit is the only device that can be used to collect female endocervical /vaginal swab specimens for pcr testing on the Cepheid GeneXpert instrument.
2. The large swab is for removing excess mucus from the cervix and surrounding area. Remove excess mucus from the cervix and surrounding area and then discard swab.
3. Insert the smaller swab into the endocervical canal. rotate the swab clockwise for 10-30 seconds in the endocervical canal. Withdraw the swab carefully.
4. Loosen cap from the transport tube. Immediately place specimen collection swab into the transport reagent tube. Break swab at scoreline against the side of the tube. Discard top portion of the swab shaft.
5. Make sure the cap is tightly secured to the tube.
6. Label the tube with patient information and date/time collected.
7. Store and transport to the laboratory at 2-30° C within 5 days.

Note: If the large swab is left in the transport tube rather than the smaller swab, or if there is no swab in the transport tube, the specimen is unacceptable for testing and the floor will be notified to recollect.

Chlamydia trachomatis and Neisseria gonorrhoeae pcr tests will be run on endocervical / vaginal swabs. Two separate collection swabs are not required.

CHLAMYDIA TRACHOMATIS PCR BY GENEXPERT
(Male and Female: Urine Specimens)

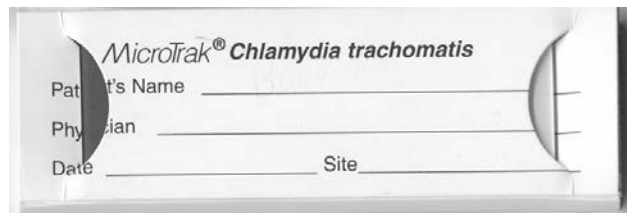
COLLECTION PROCEDURE FOR MALE OR FEMALE URINE SPECIMENS

1. Use the BD Vacutainer Urine Complete Cup Kit to collect urine. The yellow stoppered tube contains no preservatives and the vacuum draws 8 mls of urine into the tube. The specimen volume required for the CHLAMYDIA TRACHOMATIS PCR BY GENEXPERT test is 7 mls. If other urine tests are required, a separate collection/tube will have to be sent for testing. If less than 7 mls of urine are received, the floor will be notified and the test credited.
2. Label the tube with patient information and date/time collected.
5. Store and transport to the laboratory at 2-30° C within 3 days.

Note: Testing for both Chlamydia trachomatis and Neisseria gonorrhoeae can be performed on 7 mls of urine. Two separate tubes are not required.

CHLAMYDIA MICROTRAK SLIDE

(Conjunctival, Nasopharyngeal, Rectal Specimens)



MicroTrak *Chlamydia trachomatis* Specimen Collection Kit for collection of specimens for analysis of *Chlamydia trachomatis* by direct specimen testing (Direct Immunofluorescence Assay). Kit contains- one single-well glass slide, two sterile Dacron swabs (one large, one small), One vial methanol fixative with plastic vial crusher ring, One cytology brush.

COLLECTION PROCEDURE FOR CONJUNCTIVAL SPECIMENS

1. Samples should be collected only from symptomatic patients.
2. Apply a topical, ophthalmological proparacaine-based anesthetic solution to the eye or eyes (optional).
3. Using the small swab, thoroughly swab the inner surface of the lower, then the upper eyelid. If samples are taken from both, swab the less affected eye first to avoid further contamination of that eye.
4. Smear specimen on slide and allow to air dry.
5. Dispense entire vial of fixative over slide.
6. Transport to Laboratory at room temperature when dry.

COLLECTION PROCEDURE FOR NASOPHARYNGEAL SPECIMENS

1. Samples should be collected only from symptomatic patients.
2. Collect specimen from the posterior nasopharynx by nasal swab provided or nasal aspirate using standard collection method. Nasal aspirates should be vortexed before applying to slide.
3. Smear specimen on slide and allow to air dry.
4. Dispense entire vial of fixative over slide.
5. Transport to Laboratory at room temperature when dry.

COLLECTION PROCEDURE FOR RECTAL SPECIMENS

1. Insert Microtrak swab approximately 3 cm into anal canal.
2. Move swab from side to side to sample crypts.
3. Withdraw swab. If fecal contamination occurs, discard swab and obtain another specimen.
4. Roll swab over top half of well, then roll other side over bottom half of well. Allow specimen to air dry.
5. Dispense entire vial of fixative over slide.
6. Transport to Laboratory at room temperature when dry.

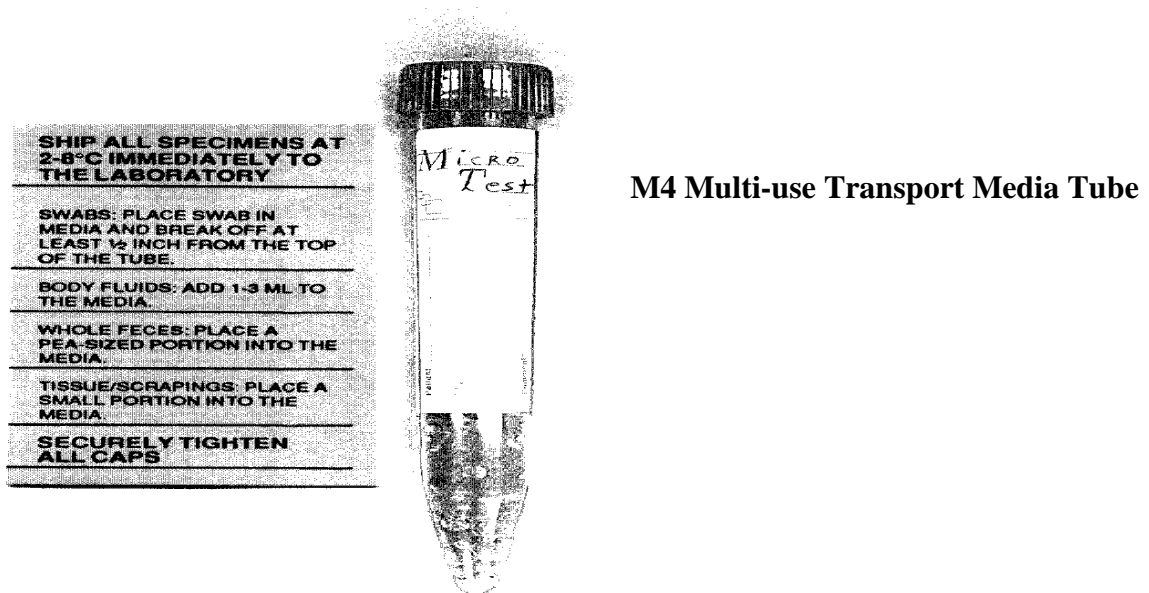
CHLAMYDIA PNEUMONIAE, PCR (Bronchial Lavage or Throat Swab)

Throat swabs and bronchial lavage fluid specimens must be placed in M4 Multi-use Transport Media and transported immediately to the laboratory.

For throat swab, place throat swab in tube containing M4 media and break off at least ½ inch from the top of the tube.

Replace cap securely and send to laboratory immediately.

For bronchial lavage fluid, send sterile screw top container.



CHLAMYDIA CULTURE - All Specimens

Please contact Pathology for consult before collecting specimen for culture.

Place specimen in M4 Multi-use Transport Media tube and send to laboratory immediately.

Last Revision Date: 08/27/08 kc

Last Review Date: 8/13/09, csl; 08/27/10, csl; 08/26/11, kc; 8/1/13 csl, 05/19/2015 prc



APPENDIX G

COLLECTION PROCEDURES FOR NEISSERIA GONORRHOEAE

NEISSERIA GONORRHOEAE PCR BY GENEXPERT *(Female: Endocervical and vaginal specimens)*

COLLECTION PROCEDURE FOR ENDOCERVICAL/VAGINAL SPECIMENS

1. The Xpect CT/NG Vaginal/Endocervical specimen Collection Kit is the only device that can be used to collect female endocervical /vaginal swab specimens for pcr testing on the Cepheid GeneXpert instrument.
2. The large swab is for removing excess mucus from the cervix and surrounding area. Remove excess mucus from the cervix and surrounding area and then discard swab.
3. Insert the smaller swab into the endocervical canal. rotate the swab clockwise for 10-30 seconds in the endocervical canal. Withdraw the swab carefully.
4. Loosen cap from the transport tube. Immediately place specimen collection swab into the transport reagent tube. Break swab at scoreline against the side of the tube. Discard top portion of the swab shaft.
5. Make sure the cap is tightly secured to the tube.
6. Label the tube with patient information and date/time collected.
7. Store and transport to the laboratory at 2-30° C within 5 days.

Note: If the large swab is left in the transport tube rather than the smaller swab, or if there is no swab in the transport tube, the specimen is unacceptable for testing and the floor will be notified to recollect.

Chlamydia trachomatis and Neisseria gonorrhoeae pcr tests will be run on endocervical / vaginal swabs. Two separate collection swabs are not required.

If Neisseria gonorrhoeae results are for legal purposes, a culture should be performed.

NEISSERIA GONORRHOEAE PCR BY GENEXPERT

(Male and Female: Urine Specimens)

COLLECTION PROCEDURE FOR MALE OR FEMALE URINE SPECIMENS

1. Use the BD Vacutainer Urine Complete cup Kit to collect urine. The yellow stoppered tube contains no preservatives and the vacuum draws 8 mls of urine into the tube. The urine required for the GC PCR BY GENEXPERT test is 7 mls. If there are other urine tests that are required, a separate collection will be needed for any additional tests.
2. Label the tube with patient information and date/time collected.
3. Store and transport to the laboratory at 2-30° C within 3 days.

Note: Testing for both Neisseria gonorrhoeae and Chlamydia can be performed on 7 mls of urine. Two separate tubes are not required.

If Neisseria gonorrhoeae results are for legal purposes, a culture should be performed.

NEISSERIA GONORRHOEAE CULTURE

Media Needed:

Thayer-Martin Agar Plate

Media Storage:

Obtain media from Microbiology in the Clinical Laboratory.

Media should be stored at 2-8 degrees centigrade. Plates that are stored at room temperature in examination rooms are only good for 24 hours. Discard all media left out at room temperature for more than 24 hours.

IF MEDIA STORED IN THE REFRIGERATOR, ALLOW MEDIA TO WARM TO ROOM TEMPERATURE BEFORE USING.

PRODEDURE:

1. After specimen has been obtained, inoculate media surface, being careful not to cut agar surface.
2. Tape plate shut.
3. Send specimen to the Clinical Laboratory-Microbiology within 2 hours of collection. If unable to deliver within 2 hours, collect on swab and submit swab for testing.

Last Revision Date: 04/13/06, bs,csl; 08/27/10, hs; 8/5/11 csl 7/18/13 csl

Last Review Date: 8/13/09,kc,csl; 08/27/10, csl; 8/5/11 csl,kc; 8/1/13 csl, 08/21/2013 kc; 05/19/2015 csl

APPENDIX H

TALLAHASSEE MEMORIAL HEALTHCARE CLINICAL LABORATORY MATERNAL SCREEN - TRISCREEN

Please complete the following information and attach to the test request.

PATIENT NAME: _____

PHYSICIAN: _____

1. AFPDIA - Is patient an insulin dependent diabetic? (Yes or No) _____

2. AFPDOB - Patient's date of birth (MM/DD/YYYY) _____

3. AFPDR - Date of specimen collection (MM/DD/YYYY) _____

4. AFPEDD - Estimated date of delivery (MM/DD/YYYY) _____

5. AFPNTH - Is there a history of neural tube defects? (Yes or No) _____

6. AFPNUM - Number of fetuses (1,2,3 etc) _____

7. AFPRAC - Please circle patients race. BLACK (BLK) WHITE ASIAN OTHER (OTH)

8. AFPPRE - Is this a repeat specimen? (Yes or No) _____

9. AFPUS - Please circle how the estimated date of delivery was determined:

LMP2 - Determined by last menstrual period

ULS2 - Determined by Ultrasound

PELEX - Determined by Pelvic Exam

10. AFPWGT - Patients weight _____

Last Revision Date: 12/01/2005, hs

Last Review Date: 08/25/11 kc, 08/21/2013 kc, 05/19/2015 prc, 06/21/2016 prc

APPENDIX I

PATIENT PREPARATION for Glucose Absorption Tests; Fecal Occult Blood

GLUCOSE TOLERANCE TEST

Patient Dietary Instructions: The patient must be fasting 8 hours prior to beginning the test. This includes any food, candy, gum or fluids, except water.

During the test the patient must remain fasting, refrain from smoking, and drink only water.

The patient should remain in his room until the test is completed so that blood samples can be drawn at the specified time.

To assure accurate results, specimens for glucose tolerance tests should be collected in lithium heparin (light green) tubes.

FECES OCCULT BLOOD

Dietary Instructions: In general, patients should be carefully instructed to not ingest foods and vitamins, which can cause false-positive or false-negative test results, for at least 72 hours before and through the test period.

Substances which can cause false-positive results: red meat (beef, lamb, and liver); aspirin (greater than 325 mg per day) and other non-steroidal anti-inflammatory drugs such as ibuprofen, indomethacin and naproxen; corticosteroids, phenylbutazone, reserpine, anticoagulants, antimetabolites, and cancer chemotherapeutic drugs; alcohol in excess; the application of antiseptic preparations containing iodine (povidone/iodine mixture).

Substances which can cause false-negative results: Ascorbic acid (vitamin C) in excess of 250 mg per day; excessive amounts of vitamin C enriched foods, citrus fruits and juices; iron supplements which contain quantities of vitamin C in excess of 250 mg per day.

Dietary iron supplements **will not** produce false-positive test results with Hemocult SENSE tests. Acetaminophen is not expected to affect the results.

Last revision, 06/21/2016 prc

Reviewed, 06/21/2016 prc

APPENDIX J

REFERENCE RANGES and CRITICAL VALUES**CHEMISTRY PANEL ANALYTES**

ANALYTE	REFERENCE RANGE	CRITICAL VALUES
SODIUM	136 -144 mEq/L	<120 mEq/L and > 160 mEq/l
POTASSIUM	3 months of age or greater: 3.6-5.1 mEq/L 15 days to 2 months of age: 4.0-6.2 mEq/L 3 days to 14 days of age: 4.0-6.4 mEq/L Newborn to 2 days of age: 4.5-7.7 mEq/L	3 days of age or greater: <2.5 and >6.5 mEq/L Less than 3 days of age: <2.5 and >7.7 mEq/L
CHLORIDE	101 - 111 mEq/L	< 80 mEq/L and > 125 mEq/L
CARBON DIOXIDE	22 - 32 mEq/L	<10 mEq/L and > 40 mEq/L
ANION GAP	3 - 11 mEq/L	>25
BUN	8 - 20 mg/dL	
CREATININE	Female, 10 years of age or greater: 0.6 -1.0 mg/dL. Male, 10 years of age or greater: 0.6-1.1 mg/dL. Male and female, less than 10 years of age: 0.2-1.0 mg/dL	
GLUCOSE	70 - 99 mg/dL	< 40 mg/dL and > 500 mg/dL
BUN/CREATININE RATIO	5 - 24	
OSMOLALITY (calculated)	280 - 290 mOsm/kg	<250 mOsm/kg and > 320 mOsm/kg
CALCIUM	1 year of age or greater: 8.2 - 10.0 mg/dL Less than one year of age: 7.8 – 11.2 mg/dL	< 6.0 mg/dL and > 14.0 mg/dL
TOTAL PROTEIN	6.5 – 8.1 g/dL	
ALBUMIN	3.5 - 4.8 g/dL	
TOTAL BILIRUBIN	1 month of age or greater: 0.0-2.0 mg/dL. Less than 1 month of age: 0.0-15.0 mg/dL	> 15 mg/dL
CONJUGATED (DIRECT) BILIRUBIN	0.1 - 0.5 mg/dL	
UNCONJUGATED (INDIRECT) BILIRUBIN	1 month of age or greater: 0-1.5 mg/dL. Less than one month of age: 0.0-15.0 mg/dL.	
SGOT (AST)	16 years of age or greater: 0-41 U/L	
ALK PHOS	18 years of age or greater: 32 - 91 U/L	

CHEMISTRY PANEL ANALYTES

ANALYTE	REFERENCE RANGE	CRITICAL VALUES
SGPT (ALT)	Females: 0-54 U/L Males: 0-63 U/L.	
AMYLASE	0-100 U/L.	
ALCOHOL, ETHYL	Less than 10 mg/dL.	Greater than 350 mg/dL.

ADA GLUCOSE TOLERANCE GUIDELINES FOR GESTATIONAL DIABETES ARE AS FOLLOWS:

FASTING BLOOD GLUCOSE: LESS THAN 95 MG/DL.
 1 HOUR BLOOD GLUCOSE: LESS THAN 180 MG/DL.
 2 HOUR BLOOD GLUCOSE: LESS THAN 155 MG/DL.
 3 HOUR BLOOD GLUCOSE: LESS THAN 140 MG/DL.

MODIFIED OSULLIVAN IS ABNORMAL IF THE 1 HOUR GLUCOSE LEVEL IS GREATER THAN 130 MG/DL.**CKMB and TNI REFERENCE RANGES and/or INTERPRETIVE CRITERIA**

Assay	Units of Measure	Reference Range
Total CPK	U/L	Female: 0-234 ; Male: 0-397
CKMB	ng/ml	0.6-6.3
CKMB INTERPRETATION CRITERIA		POSITIVE: MB more than 4% of total and more than 25 ng/ml. TRACE: MB more than 4% of total and 10-25 ng/ml. NEGATIVE: MB less than 4% of total or less than 10 ng/ml.
TROPONIN I	ng/ml	Less than 0.06

HGBA1C AND LIPID PANEL REFERENCE RANGES

Assay	Units of Measure	Reference Range
HGBA1C	%	4.5-6.2
TRIGLYCERIDE	mg/dL	Less than 150 Normal 150-199 Borderline High 200-500 High Greater than 500 High
CHOLESTEROL	mg/dL	Less than 200 Desirable 200-239 Borderline High Greater than 239 High
HDL	mg/dL	Less than 40 Low Greater than 59 High
CHOLESTEROL, LDL	mg/dL	Less than 100 Optimal 100-129 Near or above Optimal 130-159 Borderline High 160-189 High Greater than 189 Very High
VLDL	mg/dL	0-77
TOTAL CHOL/HDL RATIO		Total/ HDL (Male) Total/HDL (female) Risk 3.43 3.27 Half Average 4.97 4.44 Average 9.55 7.05 2 times Average

Last Revision Date: 08/13/2009, ds 05/30/2016, ds

Last Review Date: 08/25/2011, kc, 08/21/2013 kc, 05/19/2015 prc 05/30/2016, ds

APPENDIX K**REFERENCE RANGES and CRITICAL VALUES****ARTERIAL BLOOD GASES**

ANALYTE	REFERENCE RANGE	CRITICAL VALUE
pH	Arterial: 7.35 - 7.45 Capillary: 7.25 - 7.35	age > 1 month: < 7.20 or > 7.60 Neonate: < 7.25 or > 7.55 Capillary: < 7.10 or > 7.50
pCO ₂	35 mmHg - 45 mmHg	Neonate: < 25 mmHg or > 65 mmHg
pO ₂	Arterial: 80 mmHg - 90 mmHg Capillary: 45 mmHg - 55 mmHg	age > 1 month: < 50 mmHg Neonate: < 40 mmHg
HCO ₃	22 mEq/L - 26 mEq/L	
CO ₂ (Total)	21 mEq/L - 30 mEq/L	<10 or >40
Base Excess	no reference range	
O ₂ Saturation	no reference range	
Potassium (Performed on ABG analyzer)	3 months of age or greater: 3.6-5.1 mEq/L 15 days to 2 months of age: 4.0-6.2 mEq/L 3 days to 14 days of age: 4.0-6.4 mEq/L Newborn to 2 days of age: 4.5-7.7 mEq/L	3 days of age or greater: <2.5 or >6.5 mEq/L Less than 3 days of age: <2.5 or >7.7 mEq/L

Last Revision Date: 8/13/2009, ds

Last Review Date: 8/25/2011, kc, 08/21/2013 kc, 05/19/2015 prc

APPENDIX L

HEMATOLOGY REFERENCE RANGES and CRITICAL VALUES

HEMOGRAM

PARAMETER	AGE	NORMAL REFERENCE RANGE		CRITICAL VALUES
		MALE	FEMALE	
WBC	10 years and older	4.0 - 10.5 K/mm ³	4.0 - 10.5 K/mm ³	All ages: < 1.0 K/mm ³ and > 50 K/mm ³
	2 - 9 years	4.0 - 12.0 K/mm ³	4.0 - 12.0 K/mm ³	
	1 - 23 months	6.0 - 14.0 K/mm ³	6.0 - 14.0 K/mm ³	
	7 days to 1 month	5.0 - 20.0 K/mm ³	5.0 - 20.0 K/mm ³	
	2 - 6 days	5.0 - 21.0 K/mm ³	5.0 - 21.0 K/mm ³	
	0 - 1 day	9.4 - 38.0 K/mm ³	9.4 - 38.0 K/mm ³	
RBC	18 years and older	4.7 - 6.1 M/mm ³	4.2 - 5.4 M/mm ³	
	10 - 17 years	4.2 - 5.6 M/mm ³	4.1 - 5.3 M/mm ³	
	2 - 9 years	4.0 - 5.3 M/mm ³	4.0 - 5.3 M/mm ³	
	1 - 23 months	3.8 - 5.4 M/mm ³	3.8 - 5.4 M/mm ³	
	0 - 1 month	4.1 - 6.7 M/mm ³	4.1 - 6.7 M/mm ³	
HGB	18 years and older	13.5 - 18.0 g/dL	12.5 - 16.0 g/dL	Greater than 6 months < 6.0 g/dL or > 21.0 g/dL Age 8 days – 6 months: < 8.0 g/dL or > 21.0 g/dL Age 4-7 days: < 9.0 g/dL or > 21.5 g/dL Newborn to 3 days: < 9.0 g/dL or > 22.5 g/dL
	10 - 17 years	12.5 - 16.1 g/dL	12.0 - 15.0 g/dL	
	2 - 9 years	11.5 - 14.5 g/dL	11.5 - 14.5 g/dL	
	6 - 23 months	10.5 - 13.5 g/dL	10.5 - 13.5 g/dL	
	3 - 5 months	9.5 - 13.5 g/dL	9.5 - 13.5 g/dL	
	2 months	9.0 - 14.0 g/dL	9.0 - 14.0 g/dL	
	1 month	10.0 - 18.0 g/dL	10.0 - 18.0 g/dL	
	8 days to 1 month	12.5 - 20.5 g/dL	12.5 - 20.5 g/dL	
	4 - 8 days	13.5 - 21.5 g/dL	13.5 - 21.5 g/dL	
	0 - 3 days	14.5 - 22.5 g/dL	14.5 - 22.5 g/dL	
HEMATOCRIT	18 years and greater	42 - 52 %	37 - 47 %	Age 8 days and greater: < 15% or > 65% Newborn to 7 days: < 15% or > 70%
	10 - 17 years	36 - 47 %	35 - 45 %	
	2 - 9 years	33 - 43 %	33 - 43 %	
	6 - 23 months	33 - 39 %	33 - 39 %	
	3 - 5 months	29 - 41 %	29 - 41 %	
	2 months	28 - 42 %	28 - 42 %	
	1 month	31 - 55 %	31 - 55 %	
	14 days to 1 month	39 - 63 %	39 - 63 %	
	7 - 13 days	42 - 66 %	42 - 66 %	
MCV	18 years and greater	78 - 100 μm ³	78 - 100 μm ³	
	10 - 17 years	78 - 95 μm ³	78 - 95 μm ³	
	2 - 9 years	76 - 90 μm ³	76 - 90 μm ³	
	6 - 23 months	70 - 86 μm ³	70 - 86 μm ³	
	3 - 5 months	74 - 108 μm ³	74 - 108 μm ³	
	1 - 2 months	77 - 115 μm ³	77 - 115 μm ³	
	4 days to 1 month	88 - 116 μm ³	88 - 116 μm ³	
	0 - 3 days	95 - 121 μm ³	95 - 121 μm ³	
MCH	18 years and greater	26 - 34 μg	26 - 34 μg	
	12 - 17 years	25 - 35 μg	25 - 35 μg	
	6 - 11 years	25 - 33 μg	25 - 33 μg	
	2 - 5 years	24 - 30 μg	24 - 30 μg	
	6 - 23 months	23 - 31 μg	23 - 31 μg	
	1 - 5 months	25 - 35 μg	25 - 35 μg	
	4 days to 1 month	28 - 40 μg	28 - 40 μg	
	0 - 3 days	31 - 37 μg	31 - 37 μg	
MCHC	2 years and greater	31 - 37 %	31 - 37 %	
	2 - 23 months	30 - 36 %	30 - 36 %	
	0 - 1 month	29 - 37 %	29 - 37 %	
PLT	all ages	140 - 440 K/mm ³	140 - 440 K/mm ³	Less than 30 K/mm ³ .
RDW	10 years and greater	11.5 - 14 %	11.5 - 14 %	
	2 - 9 years	11.5 - 15 %	11.5 - 15 %	
	1 - 23 months	11.5 - 16 %	11.5 - 16 %	
	Up to 1 month of age	13 - 18 %	13 - 18 %	

K = thousand; M = million

RETICULOCYTE COUNT

	Percent	Absolute Count (K/mm3)
Automated Reticulocyte Count	0.3 – 2.8 %	12-128 K/mm3

K = thousand; M= million

DIFFERENTIAL – Cell Percents

CELL TYPE	AGE	REFERENCE RANGE (%)
Segmented Neutrophils (SEGS)	12 years and greater	44-80 %
	Less than 12 years	28-68 %
Lymphocytes (LYMPHS)	12 years and greater	13-43 %
	Less than 12 years	20-59 %
Monocytes (MONOS)	all	2-11 %
Eosinophils (EOS)	12 years and greater	0-8 %
	Less than 12 years	1-11 %
Basophils (BASOS)	12 years and greater	0-2 %
	Less than 12 years	0-3 %
Stabs (BANDS)	all	0-5 %
Metamyelocytes (METAS)	all	0 %
Myelocytes (MYELOS)	all	0 %
Promyelocytes (PROS)	all	0 %
Blasts	all	0 %

DIFFERENTIAL – Absolute Counts

CELL TYPE	AGE	REFERENCE RANGE (K/mm3)
Segmented Neutrophils (SEGS)	10 years and greater	1.8-7.8
	1-9 years	1.5- 8.5
	1-11 months	1.0-9.0
	14 – 31 days	1.0-9.5
	7-13 days	1.5-10.0
	newborn – 6 days	6.0- 26.0
Lymphocytes (LYMPHS)	21 years and greater	1.0-4.8
	16-20 years	1.2-5.2
	6-15 years	1.5-6.8
	4-5 years	2.0-8.0
	2-3 years	3.0-9.5
	1 year	4.0-10.5
	6-11 months	4.0-13.5
	1-5 months	2.5-16.5
	7-31 days	2.0-17.0
	newborn-6 days	2.0-11.0
Monocytes (MONOS)	6 years and greater	0.0-0.8
	6 months – 5 years	0.1-1.2
	14 days – 5 months	0.2-2.4
	7-13 days	0.3-2.7
	newborn – 6 days	0.4-3.1
Eosinophils (EOS)	all	0.0-0.5
Basophils (BASO)	all	0.0-0.2

K = thousand

Last Revision Date: 08/13/09, ds 5/30/2016 ds

Last Review Date: 08/25/11, kc, 08/21/2013 kc, 05/19/2015, prc 05/30/2016, ds

APPENDIX M

ORDER CATALOGUE

INDIVIDUAL INFORMATION SHEETS

The individual information sheets are arranged in alphabetical order. Test names beginning with numbers are listed first. If you do not find the test you are looking for you may:

- (1) Refer to the Alternate Test Name List. It will refer you to the appropriate individual information sheet.
- (2) If the test name is not referenced in the Alternate Test Name List, please contact accessioning (431-5805) for assistance.

The following is a guide to what is included under each category listing:

Test Name	Primary name of test.
Alternate Name:	Alternate name(s) for the primary test name.
CPT Code:	Current Procedural Terminology Code.
Lab Order Code:	Laboratory Test Code.
Specimen Type Required:	Type of specimen to collect.
Container or Tube Type:	Sample container or blood tube type to use.
Nursing: Volume to Draw:	Volume of blood to draw, in the appropriate tube.
Nursing: Collection Requirements:	Specific collection, transport, and storage requirements.
Nursing: Patient Preparation:	Any patient preparation required, prior to sample collection
Lab: Normal Testing Volume:	The normal volume (or weight) of sample required for testing.
Lab: Min. Testing:	The minimum volume (or weight) of sample required for testing.
Unacceptable Specimen:	Any reason(s) why a specimen would be unacceptable for testing.
Other:	Miscellaneous information specific for the test.
Analysis Method:	Type of laboratory test methodology performed.
Reference Range:	The reference range for the test result. Reference ranges for tests not performed at TMH will be found on the reference lab report (IE. See report).
Critical Value:	Test result value at which immediate clinical action may be required.
Schedule Setup:	The day(s) and time(s) the test is routinely performed.
Schedule Report:	The turn around time (TAT) or range of days required for result reporting.
Available STAT:	Indicates if the test is available STAT.
Lab Performing:	The TMH laboratory and/or section performing the testing.

Last revision, 06/21/2016 prc
Reviewed, 06/21/2016 prc

APPENDIX N

IStat POC Analyzer Expected Values, Critical Values, Reportable Ranges

TEST	UNITS	Expected Values ARTERIAL	Expected Values VENOUS	Critical Values	Reportable Range
pH		7.35 – 7.45	7.31 – 7.41	<7.25 or >7.55	6.5-8.0
pCO ₂	mmHg	35 - 45	41 - 51	<20 or >55	5 – 130
pO ₂	mmHg	80 - 90	n/a	<50	5 – 800
TCO ₂	mEq/L	21-30	22-32	<10 or >40	1 – 85
HCO ₃	mEq/L	22 – 26	23 - 28		1 – 85
BE	mEq/L	(-2) – (+3)	(-2) – (+3)		(-30) – (+30)
sO ₂	%	95 - 98	95 - 98		n/a
Sodium (Na)	mEq/L	136-144	136-144	<120 or >160	100 – 180
Potassium (K)	mEq/L	3.6-5.1	3.6-5.1	<2.5 or >6.5	2.0 - 9.0
Hematocrit (Hct)	%PCV	Male: 42-52 Female: 37-47	Male: 42-52 Female: 37-47	<15 - >65	10 – 75
Hemoglobin (Hb)	g/dL	Male: 13.5-18.0 Female: 12.5-16.0	Male: 13.5-18.0 Female: 12.5-16.0	<6 or >21.5	3 – 26
Ionized Calcium (iCa)	mg/dL	4.5 – 5.4	4.5 – 5.3		1.0 – 10.0
Glucose	mg/dL	70 - 99	70 - 99	<40 or >500	20 – 700
BUN	mg/dL		5-24		3 – 140
Creatinine	mg/dL		Male: 0.64 – 1.27 Female: 0.44 – 1.03		0.02 – 20
Lactate	mmol/L	0.36-1.25	0.90-1.70		0.30-20.0

ISTAT TROPONIN Interpretation

** ISTAT TNI INTERPRETATION IS AS FOLLOWS: **

<0.08 NG/ML - NEGATIVE

>0.07 NG/ML - SUGGESTIVE OF MYOCARDIAL
NECROSIS THAT MAY BE ASSOCIATED WITH ACUTE
CORONARY SYNDROME AND POSSIBLE PROGNOSTIC
SIGNIFICANCE, OR MAY BE ASSOCIATED WITH NON-
ISCHEMIC SOURCES OR MYOCARDIAL INJURY
INCLUDING OTHER CARDIAC CONDITIONS
(CONGESTIVE HEART FAILURE, MYOCARDITIS,
TRAUMA, ETC)

Last revision 05/21/2015 ds

Reviewed 05/21/2016 ds, 06/21/2016 prc

APPENDIX O

COLON BIOPSY FROM IMMUNOSUPPRESSED PATIENTS

The Endoscopy Unit will deliver the following specimens to the Laboratory:

1. Specimen in 10% formalin for routine histology
2. Specimen in Trumps Solution for possible Electron Microscopy
3. Fresh specimen for AFB smear and culture and for CMV and Adenovirus Culture

Last Revision Date: 05/31/06, st

Last Review Date: 08/26/08, rt; 08/13/10, rt; 08/24/11, rt; 08/28/13 rt; 5/14/15 rt

APPENDIX P

HISTOLOGY AND CYTOLOGY SPECIMEN HANDLING

Extreme care should be taken when handling tissue specimens. The specimen is usually necessary for diagnosis and often can not be obtained again.

If a frozen section is needed on a specimen, contact the Histology Department at ext. 2775. After hours, call the Pathology Associates answering service at 877-5915.

Preservative is never used with specimens for Frozen sections or Fresh examination.

Any questions regarding specimens for histology or cytology should be addressed to the Histology Department at ext. 2775. After hours call the Main Laboratory and ask for a Laboratory Supervisor.

HISTOLOGY

Supplies

1. Preservative (tissue specimens only) - 10% formalin. When preservative is used the entire specimen should be completely covered with the formalin.
2. Specimen container - depending on specimen size.
3. Labels - must have patient's name, Date of birth, Hospital Medical Record Number, Hospital Account Number, date and time of collection, specimen type, and any special instructions.
4. Pathology request slips/Requisitions, MUST be filled out COMPLETELY, including Pre-Op information, specimen and body site, clinical history, operation performed, Post-Op diagnosis, previous surgery, surgeon, etc.
5. The SURGICAL PATHOLOGY REQUISITION is a two part form; top page white, second page pink; Form #223102, Lawson #13480.

SPECIMEN REQUIREMENTS FOR CYTOGENETICS

General

1. Pathology request slips/Requisitions, **MUST** be filled out **COMPLETELY**, including Pre-Op information, specimen and body site, clinical history, operation performed, Post-Op diagnosis, previous surgery, surgeon, etc.
2. The specimen must be sent to the laboratory fresh (no preservative). Specimens should never be frozen.
3. The specimen must be sent to the laboratory immediately.

Amniotic Fluid

15-20 ml of sterile amniotic fluid is required. The first few mls drawn should be discarded to reduce the chance of maternal cell contamination. Order any additional testing and complete the necessary requisition. If additional tests are required, please contact the laboratory for test-specific amniotic fluid volume requirements.

Peripheral Blood

Use a sodium-heparin tube (dark green) and mix well. **DO NOT USE EDTA, lithium, or ammonium-heparin.** Sample size: 2-5 ml for routine, family, and mosaicism studies, 5-10 ml is required for high-resolution chromosome analysis. If additional tests are required, please contact the laboratory for test-specific peripheral blood volume requirements.

In cases of fetal demise or stillbirth, blood (peripheral heart puncture, or cord blood) if time of death is 2 days or less. Aseptically draw into sodium heparin tube.

Tissue Requirements for Spontaneous Abortion or Fetal Demise

The samples must be taken before fixative (formalin) is added. Samples should never be frozen or placed on ice.

Fresh tissue must be placed in sterile cell culture media (RPMI) located in the laboratory/Histology Department. Fresh tissue should be brought immediately to the laboratory for tissue selection and placement in the transport media.

Products of Conception: 5 mm of placenta from near the umbilical cord insertion site containing chorionic villi or 1-2 cm. of skin if autopsy is not ordered. If autopsy is performed, chest wall cartilage, gonad, spleen, kidney, or other internal organs can be submitted in addition to placental tissue.

Please include the clinical information, approximate gestational age, and fetal gender, if known. If additional tests are required, please contact the laboratory for test-specific volume requirements.

Skin or Other Tissue from Children or Adults

1-2 mm full thickness skin punch biopsy. Send fresh to the laboratory for immediate placement in transport media (RPMI). If additional tests are required, please contact the laboratory for test-specific volume requirements.

Bone Marrow

1-3 ml sodium-heparin (dark green) only. Send specimen to laboratory immediately. If additional tests are required, please contact the laboratory for test-specific volume requirements.

Solid Tumors / Lymph Nodes

Send fresh solid tumor tissue or lymph node to the laboratory for immediate placement in transport media (RPMI). No minimum specimen size is requested, but submission of at least 1-3 mm is desirable and will increase the likelihood of obtaining a meaningful result. A completed Surgical Pathology Requisition must accompany the specimen. . If additional tests are required, please contact the laboratory for test-specific volume requirements.

SPECIMEN REQUIREMENTS FOR FLOW CYTOMETRY

Peripheral Blood

5-10 ml Sodium Heparin tube (dark green) preferred. EDTA tube (lavender) is acceptable. Send specimen to the laboratory at room temperature. If additional tests are required, please contact the laboratory for test-specific peripheral blood volume requirements.

Bone Marrow Aspirate

1-2 ml bone marrow in Sodium Heparin tube (dark green) preferred. . EDTA tube (lavender) is acceptable. Send specimen to the laboratory at room temperature. If additional tests are required, please contact the laboratory for test-specific bone marrow volume requirements.

Bone Marrow Core Biopsy

Bone marrow core biopsy specimens for flow cytometry must be sent fresh to the laboratory for immediate placement in transport media (RPMI). RPMI is kept in the refrigerator in the Histology Department of the Laboratory. Send specimens to the lab at room temperature. . If additional tests are required, please contact the laboratory for test-specific bone marrow core biopsy volume requirements.

Solid Tumors / Lymph Nodes

Send fresh solid tumor tissue or lymph node to the laboratory for immediate placement in transport media (RPMI). No minimum specimen size is requested, but submission of at least 1-3 mm is desirable and will increase the likelihood of obtaining a meaningful result. A completed Surgical Pathology Requisition must accompany the specimen. . If additional tests are required, please contact the laboratory for test-specific volume requirements.

CSF

1 ml or greater of CSF sent fresh to the Laboratory for immediate placement in transport media (RPMI). . If additional tests are required, please contact the laboratory for test-specific CSF volume requirements.

TMH CYTOLOGY

GENERAL CYTOLOGY INFORMATION

Specimen containers are obtained from Central Supply. Microscopic slides, fixatives (50% alcohol), Pap kits, yellow cytology request forms are obtained from the Histology department. Cytolyt fixative is supplied by Pathology Associates,
(850) 877-5143.

Cytology Request forms – (single page yellow form, REV.06/05)

Federal regulations (CLIA '88) require that laboratory test request forms contain the following information upon receipt in the laboratory:

Patient name	Patient D.O.B.
Patient identification number	Date collected
Physician name	Specimen source
Sex	Basic clinical information (LMP, relevant history, diagnosis, symptoms, etc.)

Specimen information on the request form should include fixative added and volume.

RUSH cases should be clearly marked on the form.

Labeling Specimens

Specimens must be labeled with two identifiers (patient name and hospital FIN number), along with the specimen description. The hospital patient label is preferred. The label must be placed on the side of the container. Prepared slides may be labeled with the patient's name, but two identifiers are preferred. A completed cytology requisition must accompany the labeled specimen.

UNIDENTIFIED SPECIMENS CANNOT BE ACCEPTED.

Delivery to Laboratory

Cytology specimens are to be delivered to the accessioning area of the laboratory as soon as possible. If the accessioning area is closed, deliver to the front desk of the main laboratory. The clerk will route the specimens from that point.

If the specimen is a STAT, the floor should inform histology that the specimen is coming by calling 431-2775.

Specimens for Pneumocystis are not routinely rushed. If a report is desired the same day, the specimen must be in the lab as early as possible, no later than 1 pm., Monday through Friday.

Specimen Rejection

Specimens will be rejected by the laboratory when:

They are not properly identified.
Slides are received broken beyond repair.
Specimens are received from unauthorized sources.

Report Availability

Slides are diagnosed and signed out in the Pathology Department by a pathologist Monday through Friday, 8 a.m. to 5 p.m. Inquiries for results during these hours should be made to the surgical secretaries at 431-5888. The pathologist on call may be reached after hours, if necessary, through our answering service at 877-5915.

Proper Precautions for Handling Body Fluid Specimens

All laboratory specimens are considered to be hazardous. Gloves should be worn when handling all specimens. Use screw top containers. Wash hands immediately after handling.

Questions

Technical questions may be directed to the pathologist on duty at 431-5888. The pathologist may be reached after hours through our answering service, 877-5915.

CYTOLOGY SPECIMEN FIXATION

Proper fixation of cellular material is critical for an accurate diagnosis. When slides are made they must be fixed immediately after the cellular material is spread on them. The fixative must be ready to use and the slide must be placed immediately into 95% alcohol or sprayed as quickly as possible with spray fixative. All specimens must be brought to the Pathology Department immediately.

Container and Fixative for Individual Cytology Preparations

Pap Smears:

Pap kit as supplied, containing:
Slide with frosted end
Spray fixative or 95% alcohol
Cardboard holder
ThinPrep Pap Kit (see Pap Test Collection)

Maturation Index:

See Pap Smears

Buccal and Direct Smears:

See Pap Smears

Breast Nipple Smears:

See Pap Smears

Breast Cyst Aspirate:

Smear made by physician. See Pap Smears.
Fluid tube or plastic cup

Urine:

Plastic cup container

Sputum for Cytology:

Plastic cup container

Washings:

Plastic cup container
Equal volume of CytoLyt fixative

Brushings:

Smear made by physician. See Pap Smear.
Wire cut above brush. Submit to lab in container containing 10 ml. of CytoLyt fixative.

Body Fluid: (pleural, peritoneal, pericardial, joint)

Plastic cup container (or larger)
Heparin (optional) - 3 units per ml. of fluid

Cerebrospinal Fluid: (CSF)

Tube or plastic cup container

Deliver immediately to lab without fixation.

Sputum for Pneumocystis:

Fresh sputum specimen must be submitted.

Plastic cup container

Fine Needle Aspiration:

Frosted end slides

95% alcohol or spray fixative

Plastic slide holder or cardboard holder

14. Tzank Prep:

Smear made by physician. See Pap smears.

15. Wang Needle Aspirate:

Plastic cup container

Deliver immediately to lab without fixation

PAP TEST COLLECTION

Cervical/vaginal cytology testing can be accomplished by utilizing the conventional smear or the liquid based technique (ThinPrep Pap Test).

Materials for Conventional Pap Smear

Microscope slides with patient's name written on the frosted end with lead pencil.

Collection devices appropriate for site: cervical scraper, endocervical brush, cotton swab, endometrial cannula.

Fixative: spray fixative, 95% alcohol or fixative tear packet

General Guidelines for Pap Smear Specimen Collection

Prior to taking smear, have fixative ready to use immediately.

Transfer the initial sample to the slide and spread only if there is to be any significant delay. Protect the spread area with cardboard or paper after spraying.

A single uniform spreading motion is desirable. Avoid circular, to and fro, and rubbing or irregular motion that results in uneven spreads, ridging, massing or damage. A uniform rolling motion should apply the endocervical brush sample.

Fix the slide immediately after it is made. If packet fixative is used, flood the slide with fixative. If spray fixative is used, hold container 6 to 8 inches from the slide and spray entire smear using two to three pumps. If 95% alcohol is used, the smear should be placed immediately into a plastic slide holder or small jar filled with alcohol.

The speculum must be introduced without lubricant. If necessary, normal saline or vaginal fluid may be used to moisten the speculum and assist introduction.

Bleeding and douching within 24 hours are not absolute contraindications to the taking of specimens. These conditions do yield a higher percentage of unsatisfactory specimens, however, and the patient should be advised that it might be necessary to repeat the study in order to ward off anxiety in the event a repeat is needed.

Endocervical brush manufacturers indicate that the brush should not be used on pregnant patients.

Types of Specimens

When indicated, more than one type of preparation may be made from the same patient.

Cervical Scraping Smear - This is the best single specimen for abnormalities of the cervix.

Technique - The small end of the cervical scraper is placed through the external os and rotated 360 degrees.

Endocervical Brush Smear - The endocervical brush is more efficient than a scraper for sampling the transformation zone. It is best used in combination with a cervical scraping smear to avoid missing lesions of the endocervix.

Technique - Gently insert the endocervical brush into the endocervix until only the bristles closest to the handle are exposed. Slowly rotate one-quarter turn. This is sufficient because the entire surface of the device is in contact with the mucosa. Over-rotation may damage cells, and often induces capillary bleeding. Prepare the endocervical smear by rolling and twisting the brush with moderate pressure across the slide.

Lateral Wall Scraping Smear - This is necessary for cyto hormonal evaluation.

Technique - Scrape the lateral vaginal wall at the level of the tip of the cervix; quickly spread the material on the slide and fix.

Endocervical Aspiration Smear - This is used when endocervical lesions are suggested or the squamocolumnar junction lies above the reach of the cervical scraping spatula.

Technique - An aspirating cannula is inserted gently into the endocervical canal and all available material is aspirated. The material is expelled onto a clean slide and spread using a second clean slide. Both are fixed immediately.

Endocervical Swab Smear - Used on pregnant patients or when no material can be aspirated. The swab usually yields less abundant material than most other sampling techniques. It absorbs some of the pertinent cells and mucus, and transfer of material to the glass slide is not as optimal as with other methods.

Technique- Moisten the swab with saline to lessen cell absorption. Place into the endocervical canal and rotate. Roll the swab across the slide and fix immediately.

Endometrial Aspiration Smear - May be used when an endometrial lesion is suspected.

Technique - Aspirate endometrium with an endometrial cannula; expel material onto a clean slide; spread using a second clean slide and fix both slides immediately.

Direct Sampling Smear - Used to sample a visible lesion.

Technique - If the lesion is clean and moist, scrape it firmly with a tongue blade or spatula. Spread the material onto a glass slide and fix immediately. If the lesion is dry and necrotic, clean it with a saline swab before scraping. Spread the material onto a clean slide and fix.

Smear From a Child - For cyto hormonal evaluation, infectious agents or signs of abuse.

Technique - Use a nasal speculum if necessary to introduce a saline moistened cotton swab into the vaginal vault and posterior pool area. Quickly smear the material onto a slide and fix.

ThinPrep Pap Test (liquid-based technique)

Materials: Preservcyt vial
Endocervical brush and plastic cervical scraper

Collection instructions:

Collect endocervical specimen with endocervical brush and place into vial.
Collect ectocervical specimen with plastic scraper and place into vial.
Swish both devices ten times to assure that all cells are in the Preservcyt solution.
Discard brush and scraper.
Cap vial tightly.
Write patient name on vial.
Place into specimen bag.
Place completed yellow cytology requisition into pocket of specimen bag.
Send to Pathology Lab.

Pap tests are picked up and processed by Pathology Associates.

NIPPLE SECRETION SMEARS

Smears of nipple secretions may detect breast cancers that involve larger ducts. The breast should not be massaged or squeezed vigorously because cancer cells could be dislodged and spread.

Technique

Gently compress only the nipple and subareolar area to express any secretions which may be lying in the collecting ducts. If no secretion appears at the nipple with this gently compression, do not manipulate further. Allow a “pea size” drop of fluid to collect upon the nipple tip. Draw a glass slide through the drop, spreading the material. Fix immediately. Make several slides if possible. Allow one or two slides to air dry without fixative and label them as “air dried”.

DIRECT SCRAPING SMEARS

Smears for malignancy or viral changes can be made from any accessible lesion.

Technique

If the lesion is clean and moist:

- Scrape it firmly with a tongue blade or spatula.
- Spread material onto a glass slide.
- Fix immediately.

If the lesion is dry and necrotic:

- Clean it with a saline-moistened swab.
- Use a second saline swab to rub the growing margins of the lesion.
- Roll or spread the material onto a clean slide.
- Fix immediately.

**BODY CAVITY/CEREBROSPINAL FLUID
COLLECTION**

Body Cavity Fluids - Pleural, Peritoneal, Pericardial, Pelvic, Joint, etc.

Move the patient into various positions to resuspend cellular material. Obtain fluid by suitable technique. It may be necessary to use 3 units of heparin per cc. of fluid removed to prevent clotting. Clots trap cells of possible interest and may cause false negative results. Immediately deliver the fluid specimen to the accessioning area of the lab, or the front desk if after hours.

Cerebrospinal (Central Nervous System) Fluid (CSF)

Take as much specimen as possible into a clean tube. If a hematologic malignancy is suspected, air-dried smears for Wright stain must be made. Bring the tube to the Pathology lab for immediate processing.

URINE COLLECTION

Urine may contain cells exfoliated from malignancies of the bladder, ureter, renal pelvis or kidney.

Technique - Instruct patient on clean catch procedure for collecting 4 to 6 ounces of urine. If the patient has partial urinary tract obstruction with a significant residual, the test will have to be aided by catheterization after 2 hours. Selected sites may be sampled by ureteral catheterization. Label and indicate the collection process appropriately. Send to the Laboratory immediately.

SPUTUM COLLECTION

When a pulmonary lesion is suspected, a complete sputum series should be examined. The series consists of a fresh early morning specimen each day for three to five days. A post bronchoscopy specimen may be included in the series and is particularly valuable. Send to the laboratory immediately after each collection.

Technique - Give the patient a specimen cup in the evening. Instruct him to cough deeply (from the diaphragm) upon awakening and expectorate deep sputum but not saliva. The patient continues the deep coughing and expectoration until several mls. is collected. The cup should be capped tightly and gently shaken to expose the cellular material uniformly to the fixative.

As mentioned above, a post bronchoscopy specimen is particularly valuable. Give the patient a sputum cup before the bronchoscope is withdrawn. He should cough deeply and expectorate all sputum into the cup for one to two hours. Send to the laboratory immediately

Sputum for Pneumocystis must be sent to the laboratory immediately after collection (fresh specimen).

ENDOSCOPIC SPECIMENS

BRONCHOSCOPY, GASTROSCOPY, COLONOSCOPY, ETC.

The material obtained will depend upon the clinical setting, the anatomic location and the endoscopic findings. The usual sequence of specimens obtained is aspiration of sections, washings, brushings, biopsy and post bronchoscopy sputum (if applicable). Biopsies are placed into formalin. If a hematologic neoplasm is suspected, air-dried smears for Wright stain should be prepared from some part of the specimen if possible. Consult the pathology department (431-5888) about the best way to make air-dried smears.

Washings and Lavage

These are obtained from many different body sites approached by catheter or endoscope. Washings may yield diagnostic malignant cells which cannot be obtained by brushing or biopsy.

Technique - Isotonic saline is instilled into the region to be washed and left momentarily, washed back and forth, or distributed by patient movement. The washings are retrieved by aspiration and fixed immediately with an equal volume or not more than 30 ml. of CytoLyt fixative. If the specimen is of very large volume (greater than 50 ml.) or high protein content, 50% alcohol should be added.

Brushings

These are taken from any of the same areas that are examined by washing and biopsy. A brushing has some advantage over biopsy in that the brush may reach some areas that cannot be effectively biopsied.

Technique - Material collected on the brush may be spread or rolled onto a frosted slide which is fixed immediately in 95% alcohol or spray fixed. Alternatively, the brush may be cut off from the wire and placed entirely in CytoLyt fixative. The cells will be removed in the cytology lab and placed onto slides for microscopic examination.

FINE NEEDLE ASPIRATION COLLECTION

Fine needle aspiration cytology has developed into an increasingly important diagnostic technique. Proper training is required to obtain optimum specimens. The pathologist is available for assistance and/or consultation for those wishing to perform the procedure. Pathologists are also available to perform FNA's.

Anesthesia is not needed as the needle is small and the push of the anesthetic needle is more painful than the procedure. More importantly, however, local anesthetic distorts localization of the mass, especially in small lesions, and may cause severe tissue artifacts, preventing accurate interpretation of the material.

ADVANTAGES: A small bore needle causes minimal pain or trauma and rare complications. No anesthesia is needed. The technique is performed on an outpatient basis. Rapid diagnosis can be made and it is more cost effective and less traumatic than surgical biopsy.

Sampling

Sampling error is a common problem and multiple aspirates are essential to ensure a representative sample. In general, several passes are performed for each lesion. The only exemption is a cyst that is completely collapsed after the initial aspiration. Re-aspirate any residual mass.

Large lesions may have a necrotic center requiring sampling at the periphery. Some organs or lesions (thyroid, desmoplastic neoplasms, small lesions) require experience and adjustment of technique to obtain an adequate specimen.

Processing

The aspirated material is fragile, small in quantity, and must be handled correctly to prevent artifacts. Never throw away any material. Cyst fluid or abundant aspirated material can be evacuated into a plastic specimen container.

Materials and Equipment

Disposable plastic 10 ml. syringe with Luer-lok tip
Syringe holder (allows free use of one hand to immobilize the lesion)
Disposable clear hub needles (25 g and 26 g, 1 inch and 1.5 inch)
Alcohol swabs and gauze pads
Glass frosted end slides labeled with patient name

Procedure for Needle Aspiration

Cleanse the skin with alcohol and dry the area with gauze.
Immobilize the mass with the fingers of one hand.
Insert the needle through the skin and into the mass.
Apply suction when the needle has entered the mass.
Move the needle back and forth in the mass.
Release the suction before withdrawing the needle. Never withdraw the needle with any suction in the syringe.
Stop the aspiration as soon as blood or any material is present in the hub of the needle. Do not dilute the specimen with blood or fluid.
Cysts should be completely drained before stopping.
Apply local pressure for several minutes or until bleeding stops completely.
Re-aspirate the mass in a slightly different location using a new needle. Sampling error is the most common pitfall.

Slide Preparation of Fine Needle Aspirations

Label slide with patient's name and one additional patient identifier (MRN, FIN, patient date of birth)
Remove the needle from the syringe. A hemostat may be needed to remove the needle quickly and easily.
Fill the syringe with air and re-attach the needle.
Express material near the frosted end of the slide with the beveled edge of the needle down. Material should be expressed gently at first to allow only one drop of material per slide.
Spread the material quickly using another slide, pulling the cellular material in the manner used in hematology.
Spray fix immediately at least half of the slides as they are prepared. Air dry the remaining slides. Label the slides with the number of the pass and "F" for fixed and "A.D" for air dried.

Rev. 5/15/2015

TZANK PREP SMEAR

The Tzank smear is specifically requested when a DNA virus such as Herpes or chicken pox is suspected. A differentiation can be made between a viral disease and a bullous skin disease like pimphigus. Skin or mucous membrane lesions can be sampled.

Technique

- Unroof the vesicle.
- Scrape the lesion firmly with a tongue blade or spatula.
- Spread the material onto a glass slide.
- Fix immediately with spray fixative or immerse into 95% alcohol.
- Indicate on requisition if slide is fixed. Unfixed (air dried) slides are less satisfactory.

Last Revision Date: 05/31/06, sw, 8/2/10 rt, 12/20/10 rt.

Last Review Date: 08/26/08, rt, 8/13//09 rt, 8/2/10 rt, 12/20/10 rt, 8/23/2011 RT; 8/28/13 rt ; 5/14/15 rt

APPENDIX Q

LABORATORY REPORT DISTRIBUTION PROTOCOL

Laboratory Report Distribution

The Laboratory Information System, (LIS), commonly referred to as Sunquest, sends copies of all inpatient results, updates on discharged inpatient encounters, copies of results for outpatients presenting to the main hospital facility for service, and any updates to these encounters, to the Hospital Information System, (HIS), via electronic interface. CoPath Anatomic Pathology reports are also transmitted to the HIS through the Sunquest system. The HIS is commonly referred to as Cerner, or Cerner Millennium, and is the data repository of the electronic medical record. Clinicians, other Tallahassee Memorial Hospital (TMH) staff members, and appropriate employees, may display these laboratory results using “Power Chart” views appropriate to their position and relationship to the patient. These views are maintained by the TMH Information Technology (IT) department as part of enterprise information security.

For referred laboratory work received from outside facilities, contracted clients, and for outpatients not presenting to TMH for service, hardcopy reports are printed daily and routed to the facility or physician client, or they are faxed.

Additional Laboratory Reports:

Physician Copy of New Data on Discharged Inpatients:

In addition to transmission to the HIS through the Sunquest system, hardcopy laboratory reports are printed daily for new or updated laboratory results released on discharged inpatients. These reports are routed to the attending physician or referring facility.

Last Revised Date: 09/29/2010 rk 06/20/2016 rk

Last Review Date: 09/29/2010 rk; 08/29/2011 rk; 08/28/13 rk; 2/19/14 rk; 9/28/14 rk;
05/19/2015 rk; 06/20/2016 rk

APPENDIX R

Please access the following link for blood bank sample phlebotomy information and instructions:

<https://intranet.tmh.org/policies/AdminPolicies/documents/40-68.pdf>

Last revision 06/21/2016 prc

Reviewed 06/21/2016 prc

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APPENDIX S

TALLAHASSEE MEMORIAL HOSPITAL LABORATORY - MICROBIOLOGY

PROCEDURE		BLOOD CULTURE COLLECTION PROTOCOL	
INITIAL PROCEDURE PREPARED BY		Carolyn S. Lewis, Microbiology Section Head	
DATE		SIGNATURE	
10/5/92			
INITIAL MEDICAL DIRECTOR REVIEW		Original procedure signed off by Dr. J. L. Harris. Any additional significant technical updates signed off by Dr. J.L. Harris	
DATE		SIGNATURE	
10/5/92; evisions:1/7/93,1/14/95,1/29/95, 10/15/97, 11/24/97, 2/10/99, 10/22/01, 5/2/05,5/31/06,9/19/08, 8/22/11, 9/30/11		Dr.J.L.Harris has signed off this procedure	
SIGNIFICANT TECHNICAL CHANGES / MEDICAL DIRECTOR REVIEW ANNUAL / MINOR TECHNICAL CHANGES / SECTION HEAD OR DESIGNEE REVIEW			
DATE	SIGNIFICANT TECHNICAL CHANGES (√)	ANNUAL / MINOR TECHNICAL CHANGES (√)	SIGNATURE
7/18/13		√	
05/19/2015			C. S. Lewis
PROCEDURE DISTRIBUTION: MICROBIOLOGY, Client Services, Infection Prevention			

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BLOOD CULTURE COLLECTION PROTOCOL
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PRINCIPLE:

Detection of bacteria, fungi or mycobacteria in the blood prompts therapeutic measures. The etiological determination of septicemia is important for quality patient care. Varied blood culture media should be available to ensure this detection.

SPECIMEN: BLOOD

MEDIA TYPES

1. BacTAlert Aerobic Fan Bottle - green cap, plastic bottle
2. BacTAlert Anaerobic Bottle - purple cap, plastic bottle
3. BacTAlert Pediatric Fan Bottle - yellow cap, plastic bottle
4. Adult Isolator

MEDIA STORAGE

1. All blood culture media is stored in the Clinical Microbiology Dept. Quality Control is performed by the Clinical Microbiology Dept. The BacTAlert bottles are stored at room temperature in Microbiology and need to be protected from light. The adult isolators are stored at room temperature.
2. Generally the floors obtain blood culture media as needed. This allows for an efficient flow of inventory. Examine the bottles before using: Make sure the liquid media is clear - DO NOT use a bottle containing turbid medium. Inspect sensor on bottom of bottle; sensor should be intact and a green color: DO NOT use bottles if the sensor is off-color, not intact or is broken.

PROCEDURE - STEPWISE:

Frequency of Collection

A VENIPUNCTURE AND ARM PREP PROCEDURE IS PERFORMED EACH TIME A BLOOD CULTURE BOTTLE SET IS DRAWN – BOTTLE LABELING INCLUDES TIME OF COLLECTION AND TECH ID

1. Blood cultures ordered “x2” or “x3”
 - a. If a time is specified, draw blood culture at indicated time.
 - b. If physician needs multiple blood cultures sets drawn one right after the other, **use separate sites or same site, performing a separate arm prep procedure and venipuncture with each set.**
 - c. Blood cultures ordered “x2”, or “x3” without specified time to be drawn can be collected at the floor’s/laboratory’s convenience within a 24 hour period.

PLEASE REFER ORDERS FOR BLOOD CULTURES "X3" TO MICROBIOLOGY BEFORE DRAWING BLOOD CULTURES

BLOOD CULTURE COLLECTION PROTOCOL
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What media to collect, volume of blood to draw

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1. When a blood culture order is placed several questions are asked. The reply to these questions help to provide the guidelines for what blood culture media is needed for a specific patient. Volume of blood is very important. Optimal volume should be obtained if possible. This ensures us the best opportunity to grow the bacteria that is causing the problem for the patient. Please refer to the chart below:

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BLOOD CULTURE COLLECTION PROTOCOL

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TEST NAME	DRAW	WEIGHT/AGE	OPTIMAL VOLUME	MINIMUM VOLUME	COMPUTER CODES USED IN LAB	COMMENTS
BLOOD CULTURE ADULT QUESTION: IS THE PATIENT IMMUNOCOMPROMISED -NO; IS THE PATIENT SUSPECTED OF HAVING AFB/TUBERCULOSIS - NO; IS THE PATIENT SUSPECTED OF HAVING SUBACUTE BACTERIAL ENDOCARDITIS-NO	AEROBIC (FAN) AND ANAEROBIC BLOOD CULTURE BOTTLES	ADULT	10 MLS PER BOTTLE	5 MLS PER BOTTLE	BCADLT	IF THE BLOOD VOLUME DRAWN IS OVER 5 MLS, BUT LESS THAN 10 MLS, PUT BLOOD IN AEROBIC (FAN)A BOTTLE. THERE MUST BE A MINIMUM OF 5 MLS IN EACH BOTTLE.
BLOOD CULTURE ADULT QUESTION: IS THE PATIENT IMMUNOCOMPROMISED -YES; IS THE PATIENT SUSPECTED OF HAVING AFB/TUBERCULOSIS - NO; IS THE PATIENT SUSPECTED OF HAVING SUBACUTE BACTERIAL ENDOCARDITIS-NO	AEROBIC (FAN) AND ANAEROBIC BLOOD CULTURE BOTTLES ADULT ISOLATOR TUBE	ADULT ADULT	10 MLS PER BOTTLE 10 MLS	5 MLS PER BOTTLE 7.5 MLS	BCADLT, BCAF, BCFC	IF YOU UNABLE TO DRAW 13 MLS OF BLOOD (7.5 ML FOR THE ADULT ISOLATOR AND 5 MLS FOR THE AEROBIC FAN BOTTLE). DRAW AN ADULT ISOLATOR AND A PEDIATRIC FAN BOTTLE.
BLOOD CULTURE ADULT QUESTION: IS THE PATIENT IMMUNOCOMPROMISED -NO; IS THE PATIENT SUSPECTED OF HAVING AFB/TUBERCULOSIS - NO; IS THE PATIENT SUSPECTED OF HAVING SUBACUTE BACTERIAL ENDOCARDITIS-YES	AEROBIC (FAN) AND ANAEROBIC BLOOD CULTURE BOTTLES ADULT ISOLATOR TUBE	ADULT ADULT	10 MLS PER BOTTLE 10 MLS	5 MLS PER BOTTLE 7.5 MLS	BCADLT, BCAF, BCFC	IF YOU UNABLE TO DRAW 13 MLS OF BLOOD (7.5 ML FOR THE ADULT ISOLATOR AND 5. MLS FOR THE AEROBIC FAN BOTTLE). DRAW AN ADULT ISOLATOR AND A PEDIATRIC FAN BOTTLE.

BLOOD CULTURE COLLECTION PROTOCOL

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TEST NAME	DRAW	WEIGHT/AGE	OPTIMAL VOLUME	MINIMUM VOLUME	COMPUTER CODES USED IN LAB	COMMENTS
BLOOD CULTURE ADULT QUESTION: IS THE PATIENT IMMUNOCOMPROMISED - NO ; IS THE PATIENT SUSPECTED OF HAVING AFB/TUBERCULOSIS - YES ; IS THE PATIENT SUSPECTED OF HAVING SUBACUTE BACTERIAL ENDOCARDITIS- NO	AEROBIC (FAN) AND ANAEROBIC BLOOD CULTURE BOTTLES ADULT ISOLATOR TUBE	ADULT ADULT	10 MLS PER BOTTLE 10 MLS	5 MLS PER BOTTLE 7.5 MLS	BCADLT AND BCAF B	IF YOU UNABLE TO DRAW 13 MLS OF BLOOD (7.5 ML FOR THE ADULT ISOLATOR AND 5 MLS FOR THE AEROBIC FAN BOTTLE). DRAW AN ADULT ISOLATOR AND A PEDIATRIC FAN BOTTLE.
BLOOD CULTURE BCPED	PEDIATRIC FAN BLOOD CULTURE BOTTLE	PEDIATRIC POPULATION	4 MLS	0.5 MLS	BCPED	NURSING PROCEDURES COVER THE AGE/WEIGHT ISSUES FOR COLLECTION.
BLOOD CULTURE BCPED	PEDIATRIC FAN BLOOD CULTURE BOTTLE	NEWBORN NURSERIES	1.5 MLS	0.5 MLS	BCPED	

PLEASE NOTE:

FOR OUTREACH LOCATIONS, DRAW ONLY WHAT IS SPECIFICALLY ORDERED. THE ABOVE CHART REFERS ONLY TO INPATIENT LOCATIONS, BIXLER EMERGENCY CENTER, TMH REHAB AND BEHAVIORAL HEALTH CENTER.

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BLOOD CULTURE COLLECTION PROTOCOL

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Arm Preparation Procedure For Drawing Blood Cultures

Adult Patient: Use ChloroPrep (contains 2% Chlorhexidine Gluconate and 70% Isopropyl Alcohol) and the **BacTAlert Blood Collection Adapter (refer to adapter procedure located in the phlebotomy manual) with a butterfly. A syringe can be used instead of the adapter/butterfly combination. Bottle Type: Aerobic Fan Bottle (green cap) and Anaerobic Bottle (purple cap)**

1. Palpate arm and be sure of area you intend to use before starting. After prep of this area, you must not touch the area again.
2. Hold applicator with sponge facing downward and gently squeeze wings, releasing solution for a controlled flow.
3. Press sponge against skin and apply ChloroPrep solution using back-and-forth friction scrub for 30 seconds. Use sufficient friction to ensure the solution reaches into the cracks and fissures of the skin. Allow area to dry for at least 30 seconds.
4. Disinfect tops of AEROBIC FAN BOTTLE, ANAEROBIC BOTTLE or adult isolator tube with a 70% isopropyl alcohol wipe. Let dry.
5. Refer to the chart above to determine the quantity of blood needed. Monitor the draw process at all times during collection to assure proper flow is obtained and to avoid backflow of the culture bottle contents into the patient. Due to the presence of chemical additives in the culture bottle, it is important to prevent possible backflow and subsequent adverse reaction. Obtain blood from the patient and immediately transfer the blood into the proper bottle/tube type. Inoculate the bottles through the center ring on the rubber stopper. **Fill AEROBIC FAN BOTTLE first, ANAEROBIC BOTTLE second. Mix gently.**
6. Labeling bottles: For the AEROBIC FAN AND ANAEROBIC BOTTLES, place the lab specimen label on the bottle being careful not to cover the bottle type bar code label. Please use the barcode portion of the label on one of the bottles. Indicate on the bottle if the specimen is drawn from a central line, PICC line. For the adult isolator, place the specimen bar code label on the tube. Each tube/bottle should be labeled with lab label, date and time of collection, and tech ID #.

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Pediatric Patient Preparation: Use the ChloroPrep (contains 2% Chlorhexidine Gluconate and 70% Isopropyl Alcohol)

Bottle Type: Pediatric Fan Bottle (yellow cap)

1. Palpate arm and be sure of area you intend to use before starting. After prep of this area, you must not touch the area again.
2. **Hold** applicator with sponge tip facing downward and gently squeeze, releasing solution for a controlled flow. Press tip against skin and apply ChloroPrep solution using back-and-forth friction scrub for 30 seconds. Allow area to dry at least 30 seconds. **If you are using the Medi-Flex 1.5 ml**, hold applicator with sponge facing downward and gently squeeze wings, releasing solution for a controlled flow. Press sponge against skin and apply ChloroPrep solution using back-and-forth friction scrub for 30 seconds. Use sufficient friction to ensure the solution reaches into the cracks and fissures of the skin. Allow area to dry for at least 30 seconds.
3. Disinfect top of PEDIATRIC FAN BOTTLE with a 70% isopropyl alcohol wipe. Let dry.
4. Refer to the chart above to determine the quantity of blood needed. Monitor the draw process at all times during collection to assure proper flow is obtained and to avoid backflow of the culture bottle contents into the patient. Due to the presence of chemical additives in the culture bottle, it is important to prevent possible backflow and subsequent adverse reaction. Obtain blood from the patient and immediately transfer the blood into the proper bottle. Inoculate the bottles through the center ring on the rubber stopper. **Mix gently.**
5. Labeling bottles: For the PEDIATRIC FAN BOTTLE, place the lab specimen label on the bottle being careful not to cover the bottle type bar code label. Please use the barcode portion of the label on the bottle. Indicate on the bottle if the specimen is drawn from a central line, PICC line. Each tube/bottle should be labeled with lab label, date and time of collection, and tech ID #.

BLOOD CULTURE COLLECTION PROTOCOL PAGE 8 OF 8

Nursery Patient: Use ChloroPrep (2% Chlorhexidine Gluconate/70% Isopropyl Alcohol), except for infants <28 week gestation or <1000 grams. In these cases, betadine/alcohol prep

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process is used.

Bottle Type: Pediatric Fan Bottle (yellow cap)

1. Palpate arm and be sure of area you intend to use before starting. After prep of this area you must not touch the area again.
2. Swab site for 30 seconds with Chloraprep or betadine. Allow area to dry for 30 seconds.
3. Disinfectant top of PEDIATRIC FAN BOTTLE with 70% isopropyl. Let dry.
4. Refer to the chart above to determine the quantity of blood needed. Monitor the draw process at all times during collection to assure proper flow is obtained and to avoid backflow of the culture bottle contents into the patient. Due to the presence of chemical additives in the culture bottle, it is important to prevent possible backflow and subsequent adverse reaction.
5. Obtain blood from the patient and immediately transfer the blood into the proper bottle type. If betadine has been used for the arm prep, once the blood has been drawn, wipe the patient's arm with alcohol prep. Inoculate the bottles through the center ring on the rubber stopper. **Mix gently.**
6. Labeling bottles: For the PEDIATRIC FAN BOTTLE, place the lab specimen label on the bottle being careful not to cover the bottle type bar code label. Please use the barcode portion of the label on the bottle. Indicate on the bottle if the specimen is drawn from a central line, PICC line. Each tube/bottle should be labeled with lab label, date and time of collection, and tech ID #.

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