

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**PORTER HOSPITAL  
115 PORTER DRIVE  
MIDDLEBURY, VERMONT 05753**

**SECTION 3  
SPECIAL HANDLING**

**TABLE OF CONTENTS**

<b>AUTOPSY .....</b>	<b>4</b>
POLICY ON AUTOPSY .....	4
AUTOPSY PERMISSION FORMS .....	4
COLLEGE OF AMERICAN PATHOLOGISTS INDICATIONS FOR AUTOPSY .....	4
INSTRUCTIONS IN CASE OF AUTOPSY .....	5
<i>Instructions to Physicians</i> .....	5
<i>Instruction to Nurses</i> .....	7
<b>BLOOD BANK/TRANSFUSION SERVICES .....</b>	<b>8</b>
SERVICES AVAILABLE .....	8
RH IMMUNE GLOBULIN .....	8
AUTOLOGOUS (SELF-DONATED) DONATION AND TRANSFUSION .....	8
DIRECTED (DESIGNATED) DONORS .....	8
OUTPATIENT TRANSFUSIONS .....	8
EXPLANATION OF BLOOD BANK TESTS .....	9
<i>Hold Clot</i> .....	9
<i>Type and Hold (T&amp;H)</i> .....	9
<i>Type and Screen (T&amp;S)</i> .....	9
<i>Type and Crossmatch (T&amp;C)</i> .....	9
<i>30-Day Clot Protocol</i> .....	9
TYPENEX PROCEDURE .....	10
<b>CHEMISTRY .....</b>	<b>11</b>
ADRENAL CORTICOTROPIN STIMULATION TEST .....	11
DEXAMETHASONE SUPPRESSION TEST .....	11
DRUG TESTING .....	12
<i>Drugs Of Abuse: In-house Testing</i> .....	12
<i>Drug Screens/Drug Overdose</i> .....	12
ORAL GLUCOSE TOLERANCE TEST - GESTATIONAL .....	13
<i>Screening Glucose Tolerance Test (non-fasting)</i> .....	13
<i>Gestational 3 hour Glucose Tolerance Test (fasting)</i> .....	13
<i>Oral Glucose Tolerance Test [Non-Gestational]</i> .....	14
LACTOSE TOLERANCE .....	16
THYROID TESTING CASCADE.....	17
<b>CYTOGENETICS .....</b>	<b>18</b>
GENERAL INFORMATION.....	18
REPORT TIME .....	18
AUTOPSY TISSUES FOR CULTURE.....	18
PRODUCTS OF CONCEPTION .....	18
PROCUREMENT OF FETAL TISSUE FOR CHROMOSOME ANALYSIS .....	18

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

<b>CYTOPATHOLOGY .....</b>	<b>19</b>
GENERAL INFORMATION FOR SUBMITTING MATERIAL FOR CYTOLOGICAL EXAMINATION .....	19
BRONCHIAL BRUSHINGS FOR CYTOLOGY .....	19
BRONCHIAL WASHINGS FOR CYTOLOGY .....	19
CEREBROSPINAL FLUID FOR CYTOLOGY .....	19
ENDOSCOPIC BRUSHINGS FOR CYTOLOGY .....	19
ENDOSCOPIC WASHINGS FOR CYTOLOGY .....	20
FINE NEEDLE ASPIRATION CYTOLOGY: ALL BODY SITES .....	20
FLUIDS AND EFFUSIONS FOR CYTOLOGY .....	20
GYNECOLOGIC SPECIMENS .....	21
<i>Specimen Adequacy</i> .....	21
<i>Diagnostic PAP</i> .....	21
<i>Screening PAP – HIGH risk</i> .....	22
THINPREP PAP TEST .....	22
<i>ThinPrep Pap Test Sample Collection Utilizing the Broom Device</i> .....	22
<i>ThinPrep Pap Test Utilizing the Cytobrush/Plastic Spatula Combination</i> .....	22
<i>HPV Testing on Thin Prep Vials</i> .....	23
CONVENTIONAL PAP SMEAR .....	23
ENDOMETRIAL SMEARS FOR CYTOLOGY .....	23
NIPPLE DISCHARGES FOR CYTOLOGY .....	23
ORAL CAVITY FOR CYTOLOGY .....	23
RESPIRATORY SPECIMENS FOR PNEUMOCYSTIS CARINII .....	23
SPUTUM FOR CYTOLOGY .....	24
TZANK SMEAR TESTING .....	24
URINARY TRACT SPECIMENS FOR CYTOLOGY .....	24
<b>HEMATOLOGY.....</b>	<b>25</b>
BONE MARROW .....	25
CSF CELL COUNTS AND DIFFERENTIAL .....	25
SYNOVIAL FLUID AND OTHER BODY FLUID COUNTS .....	25
<b>RAPE SAMPLES.....</b>	<b>25</b>
SUBMISSION OF SAMPLES COLLECTED FOR VERIFICATION OF RAPE .....	25
<b>MICROBIOLOGY .....</b>	<b>26</b>
BILLING FOR MICROBIOLOGY .....	26
MICROBIOLOGY - INADEQUATE SPECIMENS .....	26
GENERAL INFORMATION.....	27
DIAGNOSIS OF BACTERIAL INFECTIONS .....	27
<i>DIAGNOSIS OF FUNGAL INFECTIONS</i> .....	28
ANTIBIOTIC SUSCEPTIBILITY TESTING .....	29
AFB SMEAR AND CULTURE – SEE MYCOBACTERIAL (AFB) CULTURE/SMEAR.....	30
ARTHROPOD ID – SEE TICK ID.....	30
BLOOD CULTURE COLLECTION AND TESTING .....	30
BORDETELLA BY RAPID PCR.....	31
CEREBROSPINAL FLUID .....	32
CHLAMYDIA TESTING.....	32
CLOSTRIDIUM DIFFICILE TESTING – SEE FECAL TESTING.....	33
CRYPTOSPORIDIUM ANTIGEN - SEE FECAL TESTING .....	33
CYCLOSPORA DETECTION – SEE FECAL TESTING .....	33
FECAL OCCULT BLOOD TESTING.....	33
FECAL TESTING .....	33
<i>Suggested Algorithm For Diagnosis Of Parasitic Gastroenteritis</i> .....	35
GC TESTING – SEE NEISSERIA GONORRHEA TESTING .....	36
GENITAL SPECIMENS .....	36

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

GENPROBE – SEE NEISSERIA GONORRHEA TESTING AND CHLAMYDIA TESTING .....	37
GIARDIA/CRYPTOSPORIDIUM AG – SEE FECAL TESTING.....	37
GROUP B STREP CULTURE.....	37
HERPES SIMPLEX BY PCR .....	37
HUMAN PAPILOMAVIRUS (HPV) PROBE – SEE GENITAL SPECIMENS .....	37
INFLUENZA TESTING.....	37
LEGIONELLA TESTING .....	37
MICROSPORIDIUM EXAM – SEE FECAL TESTING.....	38
MYCOLOGY – FUNGAL SPECIMENS.....	38
FUNGAL CULTURE/SMEAR .....	38
MYCOBACTERIAL (AFB) CULTURE/SMEAR.....	39
NASAL SPECIMENS .....	39
NEISSERIA GONORRHEA TESTING.....	40
<i>Handling of Culture Plates for GC</i> .....	40
OVA AND PARASITE EXAM – SEE FECAL TESTING.....	41
PARASITE EXAM, BLOOD.....	41
PARASITE EXAM, FECES - SEE FECAL TESTING .....	41
PINWORM .....	41
RAPID INFLUENZA TESTING – SEE INFLUENZA TESTING.....	41
RESPIRATORY SPECIMENS .....	42
ROTAVIRUS TESTING – SEE FECAL TESTING.....	42
RSV TESTING .....	43
SOLID OBJECTS AND CATHETER TIPS.....	43
THROAT SPECIMENS .....	43
TICK FOR IDENTIFICATION – SEE ARTHROPOD ID .....	44
URINE .....	44
VAGINAL SPECIMENS .....	45
VANCOMYCIN-RESISTANT ENTEROCOCCUS - VRE SCREEN .....	45
VIROLOGY .....	46
WET PREP FOR TRICHOMONAS AND YEAST – SEE VAGINAL SPECIMENS.....	46
WOUNDS AND STERILE SITES .....	47
<b>SURGICAL PATHOLOGY .....</b>	<b>48</b>
GENERAL INFORMATION.....	48
SURGICAL TISSUE EXAMINATION REQUIREMENTS .....	48
HANDLING OF TISSUE SPECIMENS.....	49
FROZEN SECTION AND/OR INTRA OPERATIVE CONSULT .....	49
TRANSPORT OF TISSUE SPECIMENS TO FAHC DEPARTMENT OF PATHOLOGY .....	50
HERCEPTEST REFLEX TESTING ON BREAST CANCER.....	50

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**AUTOPSY**

**Policy On Autopsy**

The attending physician will initiate the request for an autopsy. The authorization to perform an autopsy must have the written informed consent (this must be obtained by the attending physician) of the nearest surviving relative or legal guardian. The physician or an RN will obtain permits. These will be signed and witnessed. If an authorization is received by telephone, two witnesses will sign the consent form.

- If death occurs under unusual circumstances, the Medical Examiner should be notified.
- Only the Chief Medical Examiner or the State's Attorney may legally order an autopsy without family permission.

**Autopsy Permission Forms**

Copies of Porter Hospital Autopsy Permission forms can be obtained from any of the clinical floors or Emergency Department

Forms:

- Permission for Autopsy - Form #A2
- Permission for Autopsy (Post-Mortem) - Form #A3
- Report of Death to Pathologist - Form #A4
- Obstetrical Department Fetal Death Checklist - Form #AOB
- Hospital Disposition of Fetus - Form #AOB2

**College Of American Pathologists Indications For Autopsy<sup>1</sup>**

1. Deaths in which autopsy may help to explain unknown and unanticipated medical complications to the attending physician.
2. All deaths in which the cause of death is not known with certainty on clinical grounds.
3. Deaths in which autopsy may help to allay concerns of the family and/or the public regarding the death, and to provide reassurance to them regarding it.
4. Unexpected or unexplained deaths occurring during or following any dental, medical, or surgical diagnostic procedures or therapies.
5. Deaths of patients who have participated in clinical trials (protocols) approved by institutional review boards.
6. Unexpected or unexplained deaths which are apparently natural and not subject to a forensic medical jurisdiction.
7. Natural deaths, which are subject to, but waived by, a forensic medical jurisdiction such as:
  - (a) Persons dead on arrival at hospitals
  - (b) Deaths occurring in hospitals within 24 hours of admission
  - (c) Deaths in which the patient sustained or apparently sustained an injury while hospitalized.
8. Deaths resulting from high-risk infectious and contagious diseases.
9. All obstetric deaths.
10. All neonatal and pediatric deaths.
11. Deaths at any age in which it is believed that autopsy would disclose a known or suspected illness that also may have a bearing on survivors or recipients of transplant organs.
12. Deaths known or suspected to have resulted from environmental or occupational hazards.

---

<sup>1</sup>Reference: Joint Commission Perspectives, January/February, 1991.

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**Instructions In Case Of Autopsy**

**Instructions to Physicians**

- A. Include a final note in the chart documenting the death and providing clinical circumstances surrounding the death.
- B. BEFORE approaching family members to ask for permission, ascertain whether or not the death must be investigated by a **Medical Examiner**.
1. Vermont State law requires that the following deaths be reported to the Medical Examiner: deaths "...from violence, suddenly when in apparent good health, when unattended by a physician, by casualty, by suicide, as a result of injury, when in jail or prison or mental institution, in an unusual, unnatural or suspicious manner, in circumstances involving a hazard to public health, welfare and safety..."
  2. In short, if the death of the patient is in any way related, even remotely, to an accident, injury, homicide or suicide, or if the cause of death is undetermined, contact the Assistant Medical Examiner on call (pager number 250-3549)
  3. It is also common practice to report certain other cases to the Medical Examiner: deaths during surgery or other diagnostic or therapeutic procedures, or before recovering from anesthesia; deaths in suspicious or unknown circumstances, in which trauma may have played a role; and all emergency room deaths.
  4. Any trauma patient whose family wishes to donate kidneys or other organs should be reported to the Regional Medical Examiners before death and donation, to obtain legal clearance from the Chief Medical Examiner and from the State's Attorney.
  5. What to tell a family about Medical Examiner case: Reporting a case to the medical examiner does not mean that an autopsy will automatically be performed. In fact, most hospital cases reported to the medical examiner are not autopsied by the office of the Medical Examiner but are released back to the hospital after jurisdiction is waived. Therefore, in most cases reportable to the Medical Examiner, it is advisable to inform the patient's family that there will probably be a Medical Examiner's investigation, which may include an autopsy. However, if an autopsy is not performed by the Medical Examiner, the hospital should obtain permission for a hospital autopsy.
  6. Consultation with the Chief Medical Examiner by the Regional Medical Examiner if it is unclear whether the patient is a medical examiner's case. A telephone consultation takes only a few minutes and can assure that the case is handled smoothly. (Telephone 863-7320).
  7. Information to have available when reporting a case to the Regional Medical Examiner:
    - FULL NAME OF PATIENT
    - ADDRESS OF PATIENT
    - SEX, AGE AND DATE OF BIRTH
    - MARITAL STATUS AND OCCUPATION
    - A CLINICAL HISTORY INCLUDING
    - DATE AND TIME OF INJURY AND DATE AND TIME OF DEATH
    - RELEVANT THERAPY AND PROCEDURES
    - NAME OF FAMILY PHYSICIAN
    - NAME OF AMBULANCE SQUAD AND/OR POLICE INVESTIGATING UNIT.

**C. The Hospital Autopsy**

Definition: Any patient who has been admitted to and treated in the emergency room or hospital.

1. The autopsy procedure is not normally performed at Porter Medical Center. Rather, the body of the deceased is transported to Fletcher Allen Health Care morgue where a member of the Department of Pathology performs the procedure. A provisional gross diagnosis will be sent to the attending physician and medical records within 24 hours after the completion of the autopsy. A final report will follow in 2-4 weeks. If an autopsy is requested on a person who has expired outside of the hospital or emergency room, or is DOA, it is considered a private autopsy and is not served by the hospital autopsy service. Contact pathologist to arrange for private service.

**PORTER HOSPITAL**  
**LABORATORY SERVICES DIRECTORY**

---

D. Filling out the autopsy permit:

1. Next of kin: Permission must be obtained from the closest competent relative in this order: married or separated spouse, all adult children, parents, all adult siblings, guardian, or any person authorized or under obligation to dispose of the body. If there is no living relative, the executor of the person's estate can permit a post-mortem examination. (Note: A separated spouse qualifies as next of kin; a divorced spouse does not qualify.) If you have questions, consult the pathologist on call.
2. Telephone permits: telephone permission is legal if identification of relationship is certain. Read the permit verbatim to the next-of-kin. The telephone permit must be witnessed and signed by someone listening in on an extension. This person should be introduced to the next of kin prior to obtaining consent.
3. Witnesses: It is advisable that all autopsy permissions, whether obtained in person or by telephone, should be witnessed by a second person in addition to the person obtaining permission.
4. Complete versus restricted autopsy:
  - a) Complete Autopsy: An unrestricted or complete autopsy includes cranial, abdominal, thoracic and pelvic contents, and may include spinal cord or lower extremities when indicated. It does not include the eyes, face or distal upper extremities. Non-routine examinations should be specified explicitly on the permit (e.g., "Eyes may be removed for examination" or "Includes examination of facial tumor"). Consult with the pathologist (656-3570) if you have questions about wording of permits.
  - b) Restricted Autopsy: An unrestricted autopsy is always preferable. If the family wishes to restrict the extent of examination, determine exactly what parts of the body the family does not wish to have examined and state these restrictions as specifically as possible. For example, "No brain examination" is much less restrictive than "Chest and abdomen only". By wording the restriction in this way, one can reduce or eliminate a family's distress concerning the autopsy without unnecessarily limiting the information to be gained from the procedure.

E. Viewing of Bodies of Deceased Patients

Whenever possible, viewing of bodies of deceased patients is encouraged to take place on the clinical floor where the patient died. The personnel and surroundings there are familiar to the patient's family and the facilities in general are preferable to those in the autopsy service.

F. Fetal Deaths

1. Spontaneous Abortions or Ectopic Pregnancies - of less than 20 weeks or 400 grams do not have to be reported. Refer to Form AOB "Obstetrical Department Fetal Death Checklist". Complete Section I and III and Form AOB2 "Disposition of Fetal Remains".
2. Therapeutic or Induced Abortions - of any length or weight are to be reported to State Department of Health on Form DH-PHS-20A-76. The Medical Record Department is responsible for reporting these.
3. Fetal deaths over 20 weeks gestation or more than 400 grams shall be reported to the State Health Department. The Medical Records Department is responsible for completing this form. (Form DH-PHS-20-73).

G. Fetal Autopsy - Performed only if fetus is over 20 weeks gestation or more than 400 grams

1. Disposition of Body - Physician and parents will discuss and decide on the disposition of the body. See Form AOB2. Complete all appropriate sections of form.
2. If autopsy is requested:
  - a) Get permission signed by parents or guardian(s) - Form #A3.
  - b) Send the fetus to the Porter Hospital Laboratory packed in ice with appropriate paperwork [Forms AOB, AOB2, #A3, and #A4] and chart copies. Put in cooling unit in a plastic bag and pack in ice if transportation or delay is expected. It is important that the placenta is also sent packed in ice and labeled accompanied by a FAHC pathology form.

**PORTER HOSPITAL**  
**LABORATORY SERVICES DIRECTORY**

---

**Instruction to Nurses**

- A. Complete your data entries and final notes. Include the time of death and the physician making the pronouncement of death.
- B. Arrange for transport of the patient to the FAHC morgue. The family-designated funeral director generally performs this. If he is some distance away, a funeral director designated by the hospital administration will be employed. (Sanderson's Funeral Home - 388-2311.)
- C. Make photocopies of the following pages from the patient's medical records. These copies must be sent with the body via the funeral director, to the FAHC morgue.
  - 1. Face sheet
  - 2. Permission for autopsy form
  - 3. History
  - 4. Physical Examination
  - 5. Discharge summary sheet (if available)
  - 6. All observation and Progress sheets
  - 7. Front side (graph side) of all Graphic Chart and Medication record sheets
  - 8. Operative report (if any)
  - 9. Lab and Radiology reports
- D. Remove all valuables and give to the family or funeral director. Do not remove catheters or tubes. They may be tied off or clamped to prevent leakage.
- E. Infectious cases: Be certain that all infectious cases are properly labeled before transport to the morgue.
- F. Make sure the patient is clearly identified by bracelet.

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**BLOOD BANK/TRANSFUSION SERVICES**

**Services Available**

The hospital Blood Bank offers Pre-transfusion testing and other blood group related serological tests useful for pre-natal, newborns, hematological diseases, immune deficiencies and "disease" studies.

All blood and blood components available are from volunteer donors through the auspices of the VT-NH Regional Blood Services, American Red Cross. A Circular of Information for the Use of Human Blood and Blood Components, a publication of the American Red Cross and American Association of Blood Banks, is available from Porter Hospital Laboratory.

**Requisition**

- All requests for routine Blood Banking for blood type, pre-natal workups, and antibody screens, and out patient fetal screens and cord blood workups are made on routine outpatient requisition.
- Requests for inpatient blood banking are made on the Blood Bank I Requisition or via electronic order.
- All requests for blood or components to be transfused are made on the BLOOD TRANSFUSION ORDER FORM (copy on next page).

**Rh Immune Globulin**

Rh Immune Globulin is available for patients admitted to Porter Hospital, Porter Emergency Department, or Porter Surgical Unit. Outpatients need to obtain Rh immune from their health care provider.

**Autologous (Self-Donated) Donation And Transfusion**

The Porter Laboratory Blood Bank does not collect donor units. Patients wishing to donate blood for their own use during a scheduled surgery may be referred to Special Collections of the New England Regional Blood Services, American Red Cross at 1-800-843-3500 or (802) 658-6400. Donations should be scheduled within 3 to 5 weeks before the surgical date.

**Directed (Designated) Donors**

If a patient having elective surgery wishes to have blood donated by friends and relatives, arrangements may be made by contacting the Special Collections of the New England Regional Blood Services, American Red Cross at 1-800-843-3500 or (802) 658-6400. Donations should be scheduled for no closer than 1 week before the scheduled surgery date and may be scheduled for 5 weeks beforehand.

**Outpatient Transfusions**

Porter Hospital provides transfusion services for outpatients. An appointment for the transfusion should be scheduled directly with the Medical Surgical Floor, Charge Nurse, Monday through Friday. A BLOOD TRANSFUSION ORDER FORM is required and must be completed and faxed to Medical-Surgical Unit or completed via phone when appointment is made with charge nurse. The specimen for compatibility must be collected at Porter Hospital Laboratory within three days of or the day of (allow at least 3 hours for testing) the transfusion. It is highly suggested that the specimen is collected at least one day prior to transfusion to allow reasonable time to complete testing and secure units (see Positive Antibody Screens). If the patient is unable to come to the lab for collection of this specimen, arrangements for submitting the specimen may be made with the supervisor of the laboratory.

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**Explanation of Blood Bank Tests**

**Hold Clot**

- ☒ A member of the laboratory staff collects a blood sample from the patient that is suitable for performing a blood type, antibody screen, and compatibility testing. The patient is identified by stating name and date of birth to phlebotomist at time of blood collection, the hospital wristband information is verified against order, and a second unique band (commonly called Typenex or Blood Bank band) is placed on arm or leg of patient by the phlebotomist. This band has the patient's name, date of birth, date and time of collection of sample, and phlebotomist's initials on it as well as a unique number that is used on all specimen tubes and paperwork generated from this request. A matching label from this band is applied to the blood sample and a Blood Bank I requisition is completed documenting the collection and the band number used.
- ☒ Tests Performed: No laboratory testing is done. Documentation of specimen collection, that the sample is acceptable, and that the band was applied is maintained in the LIS and on patient report. ***The sample is held 48 hours for possible orders. The reason it is held only 48 hours is because the antibody screen test must be completed within 48 hours of blood collection.***
- ☒ ***If the patient band is removed, a new sample will need to be obtained.***

**Type and Hold (T&H)**

- ☒ This order is generated on every admitted Obstetrics patient. The lab collects a blood specimen as stated above.
- ☒ Tests Performed: ABO/Rh. ***The sample is held 48 hours for possible further testing including Antibody Screen and compatibility testing which can be added to this sample within the 48 hour time period without the need to redraw the patient.***

**Type and Screen (T&S)**

- ☒ This order is generated on a patient if there is a possibility of transfusion. The lab collects a blood specimen as stated above.
- ☒ Tests Performed: ABO/Rh and Antibody Screen. The lab tech checks blood bank inventory to ensure 2 units of ABO compatible blood are present. The units are required to ABO compatible, but may NOT be type specific.

**Type and Crossmatch (T&C)**

- ☒ This order is generated on a patient when a transfusion is highly likely. The lab collects a blood specimen as stated above. If a transfusion is planned, a ***Transfusion Order Form*** must also be completed.
- ☒ Tests Performed: ABO/Rh, Antibody Screen, and Compatibility testing for the number of units specified on the order. ***The units will be ABO compatible, but may NOT be type specific.***

**Positive Antibody Screens**

- ☒ If a patient has a positive antibody screen, the patient must have an ***Antibody Identification*** performed before any units will be available for transfusion. Porter's reference lab for this is the American Red Cross (ARC). Fresh samples (4 vials) must be collected from the patient and transferred via courier to ARC in Burlington for this identification to be completed. Once the antibody identification is complete, the ARC tries to find units negative for the antigen(s) the patient has antibodies for. When a patient has multiple antibodies, the difficulty of finding compatible units increases and locating compatible units can take several hours to several days.

**30-Day Clot Protocol**

If a patient is scheduled for surgery or transfusion and has not been pregnant or received blood or blood products in the last three months, s/he qualifies for 30-day clot protocol. This allows the blood clot to be utilized for 30 days as long as no blood or blood products are transfused. If blood is transfused, the initial blood sample can only be used for 72 hours for compatibility testing.

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**Typenex Procedure**

The Typenex Band is designed to serve as a patient sample identification system for patients that will or may be receiving blood or blood products. It may also be used for ID on unidentified emergency cases. It is the phlebotomist's responsibility to attach and assign the Typenex band to a potential transfusion candidate. The phlebotomist will positively identify the patient by asking the patient his complete name and date of birth, and if an admitted patient, verifying information from wristband. All information must correspond with Blood Bank I requisition. If the patient is not able to state name and date of birth, have someone who knows patient, identify patient. The phlebotomist must then obtain blood sample suitable for blood bank testing and do the following:

1. Using a pen and by pressing hard, print the patient's name, birth date, date & time of sample collection, and phlebotomist's initials onto the blank area on the Typenex band.
2. Pull the sticky name label off and place on the blood bank tube. Pull the first number sticker in the series off the band and place on the additional blood tubes that are drawn. For codes or unidentified patients, place a Typenex number on all tubes drawn.
3. Pull an additional Typenex number off and attach to area indicated for Typenex number on Blood Bank I. The phlebotomist will **sign** under the 'collection' statement with their **complete name, date, and time**.
4. Attach the Typenex band to the wrist along side the hospital band. This must be done or witnessed by the person collecting the sample. **If the collection information and/or signature are missing, or the phlebotomist does not apply the band, the laboratory will reject the sample.**
5. The band will stay on the patient for four days (96 hours). The nursing staff may call to request removal if there is no further indication of blood product transfusion or if it is in the way of a needed IV site. If the band is removed and the patient is still receiving blood products, a new band must be assigned by the laboratory staff before products can be transfused.

**PORTER HOSPITAL**  
**LABORATORY SERVICES DIRECTORY**

---

**CHEMISTRY**

**Cortisol Stimulation Test**

Cortisol (ACTH) stimulation tests the ability of the adrenal gland to produce cortisol upon administration of intravenous Cortrosyn, a synthetic ACTH analog. This test is used to assess adrenal function and can differentiate primary from secondary adrenal insufficiency. Adverse reactions are very rare. ACTH is contraindicated in patients with elevated intracranial pressure.

Outpatient tests are scheduled through the Medical-Surgical Nurse Manager. Testing is performed from 8 to 9 AM, Monday through Friday. Patients should fast overnight.

1. Obtain 0.25 mg of Cortrosyn from the pharmacy.
2. The nurse will place a butterfly needle and draw the baseline Cortisol sample (serum gel tube).
3. Remove the tourniquet and administer the reconstituted Cortrosyn slowly over 2 minutes. Then slowly flush the butterfly with 5 mL of saline and remove the needle.
4. The phlebotomist or nurse will collect by venipuncture at 30 and 60-minute samples. The requisition must indicate serum Cortisol levels (NOT ACTH) and the test tubes must indicate collection times.

**Reference Range**            Baseline: 7-25 µg/dl  
                                      Minimal Response: 7 µg/dl or greater increase  
                                      Usual Response: 30 to 50 µg/dl increase, peaks at 30-60 minutes

**Interpretation**            Patients with primary adrenal insufficiency have low baseline Cortisol levels and show little or no response to Cortrosyn. Patients receiving suppressive doses of steroids usually show an inadequate or absent response as well. Contact the Pathologist for further interpretation.

**Reference**                    FAHC Laboratory Services Directory, Tang, Mary, September 1998.

**Dexamethasone Suppression Test**

The overnight low-dose dexamethasone suppression test is a useful screening test for Cushing's syndrome. The test involves the administration of an evening dose of dexamethasone followed by a morning serum cortisol measurement. The dose of dexamethasone will suppress cortisol production in normal subjects but not in patients with Cushing's syndrome.

1. The patient should be given a 1 mg dose of dexamethasone to be taken at P.M.
2. The patient should fast overnight.
3. The patient should go to the laboratory the following morning and have a serum cortisol level drawn.
4. The test should be ordered as a Dexamethasone Suppression Test.

**Reference Range**            Normal Response = Cortisol < 5 µg/dL

**Interpretation**            Normal patients will have suppressed cortisol levels after administration of dexamethasone, indicating that the ACTH control of the adrenal gland is physiologically normal. Patients with Cushing's syndrome will not suppress. This is a screening test. Abnormal results should be confirmed by a more definitive test such as the 2-day low-dose dexamethasone suppression test. Contact the pathologist for further interpretation.

**References**                 FAHC Laboratory Services Directory, Tang, Mary, December 2004

## PORTER HOSPITAL LABORATORY SERVICES DIRECTORY

---

### **Drug Testing**

Porter offers testing to detect the presence of common drugs of abuse and to quantitate levels in blood of drugs frequently seen in overdose cases. Due to Porter's location, true STAT testing of comprehensive (OTC and prescription drugs and drug abuse panels with quantification) drug panels are not available, but these drug panels are available from Mayo Medical Laboratory generally within 48-72 hours. Ordering the appropriate test(s) can often be challenging; this information is intended to describe the various tests offered and to suggest some ordering options.

**ALL of the tests mentioned are for MEDICAL PURPOSES ONLY. Both federal and state regulations prohibit hospital laboratories from offering tests for pre-employment screening or for any situations arising from employment (such as "for cause" testing).**

For more information about drug testing go to the following website:

<http://mayomedicallaboratories.com/articles/drug-book/index.html>

### **Drugs Of Abuse: In-house Testing**

Porter Hospital Laboratory offers a drug triage (order DRUG TRIAGE) screening method that detects common members of a drug family (both the initial drug and its derivatives or metabolites), but low levels may be missed due to the sensitivity of the methods. False positives may result from interfering substances. Confirmatory testing is recommended for all positive reports. The patient is charged for all confirmatory testing. For list of drugs tested in the DRUG TRIAGE screen, see [www.PorterLaboratory.org](http://www.PorterLaboratory.org).

### **Drug Screens/Drug Overdose**

The need for STAT drug screens is controversial. Porter has limited the menu of STAT drug tests to those which have specific antidotes or treatment protocols. These include acetaminophen, acetylsalicylic acid (aspirin), lithium, and ethanol (ETOH), which are available at Porter laboratory. Tricyclic antidepressants are often included as well and the Drug Triage test will screen for this. If methanol or isopropyl alcohols are suspected, a VOLATILE SCREEN should be ordered and the sample will be referred to a reference laboratory. The remaining overdoses are treated with supportive measures only. We discourage the use of STAT tests for other drugs unless a specific drug is highly suspect.

A good general approach is to do STAT testing for acetaminophen (blood), salicylate (blood), ethanol (blood) and Drug Triage (urine). When suspected, a Volatile Screen should be ordered STAT. If further testing is required, a more comprehensive drug screen may be required. Refer to the Drug testing list available at [www.mayomedicallaboratories.com](http://www.mayomedicallaboratories.com). Tests from Mayo Medical Laboratory are not available STAT.

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**Oral Glucose Tolerance Test - Gestational**

**Principle**

Gestational Diabetes Mellitus is defined as variable severe carbohydrate intolerance first detected during pregnancy. It is associated with increased fetal morbidity and mortality. Pregnant women should be screened for gestational diabetes with a screening glucose tolerance test done between 24 and 28 weeks gestation. In this test an oral dose of glucose is given without regard to the time of the last meal. An abnormal screening test is an indication for a formal 3-hour oral glucose tolerance test. The three-hour test requires that the patient fast overnight (water is allowed).

**Screening Glucose Tolerance Test (non-fasting).**

1. Give an oral 50-gram dose of glucose. Instruct patient to wait in laboratory waiting area for 1 hour. (Exception: Allowed to go to doctor's appointment, if in Physician's building and then to report back to laboratory window.) Patient is instructed not to eat anything during this hour.
2. Measure plasma glucose in 1 hour.

**Gestational 3 hour Glucose Tolerance Test (fasting)**

1. Collect a fasting blood sample.
2. Give 100-gram glucose dose.
3. Collect blood glucose samples at 1 hour, 2 hours and 3 hours.
4. LABEL ALL SAMPLES WITH TIME OF COLLECTION (i.e. 1 HR. etc.).

**Reference Ranges**

**1 Hour Test**

1 hour plasma glucose <135 mg/dl

**3 Hour Test:**

Fasting plasma glucose	< 95 mg/dl
1 hour plasma glucose	<180 mg/dl
2 hour plasma glucose	<155 mg/dl
3 hour plasma glucose	<140 mg/dl

**Interpretation**

**Screening Gestational Glucose Tolerance Test - 1 Hour Test;** A 1-hour glucose  $\geq$  135 mg/dl indicates the need for a 3 hour glucose tolerance test.

**Gestational Glucose Tolerance Test 3-Hour Test (Reference: Carpenter Coustan):** The diagnosis of diabetes is made if two or more of the glucose values exceed the reference range.

**References**

1. Oral Glucose Tolerance Test - Gestational, Prepared by Mary E. Tang, MD, Fletcher Allen Health Care Laboratory Services Directory, December 2004.
2. Diabetes Care, Vol. 14, Suppl.2, Mar 1991. Official Guide to Diagnosis and Classification of Diabetes Mellitus and Other Categories of Glucose Intolerance.
3. Influences of Diagnostic Criteria on the Incidence of Gestational Diabetes and Perinatal Morbidity. M. Magee, et al. JAMA, 269 (5) pp. 609-615.

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**Oral Glucose Tolerance Test [Non-Gestational]**

Diabetes Mellitus is a metabolic disease characterized by insufficient insulin secretion or increased cellular resistance to insulin. Fasting glucose is the recommended screening test; however, a glucose challenge may be needed to confirm the diagnosis. Many other conditions can cause hyperglycemia so patients should be ambulatory and otherwise healthy to ensure meaningful results.

**Protocol**

Patients should be instructed to maintain normal activity and to consume a diet, which provides at least 150 grams of carbohydrate per day three days prior to testing. If possible all medications should be discontinued. Testing should be performed in the morning after a 10 to 12 hour fast (water is allowed). This test is not appropriate for the inpatient population.

**Non-pregnant Adults: 2-hour glucose tolerance test.**

1. Collect a fasting blood sample in gray top tube. A urine sample is unnecessary.
2. Give 75-gram dose of Glucola (10 fl. oz.).
3. Collect blood glucose sample at 2 hours. Collect in gray top tube.
4. LABEL BOTH SAMPLES WITH TIME OF COLLECTION.

**Children: 2-hour glucose tolerance test.**

1. Collect a fasting blood sample in gray top tube. A urine sample is unnecessary
2. Give glucose dose of 0.8 gram of glucose per lb. body weight (1.75 g/kg ideal weight) to a maximum of 75 grams. Children weighing more than 95 lbs receive 75 grams of glucose. Refer to the chart.
3. Collect blood glucose sample 2 hours. Collect in gray top tube.
4. LABEL BOTH SAMPLES WITH TIME OF COLLECTION.

**Reference Ranges**

	<b>Normal</b>	<b>Impaired Fasting Glucose</b>	<b>Diabetes Mellitus</b>
Fasting plasma glucose	<110 mg/dl	> 110 mg/dl and < 126 mg/dl	> or = 126 mg/dl with classic symptoms
Random plasma glucose	<140 mg/dl	-----	> or = 200 mg/dl with classic symptoms
OGTT-fasting	<110 mg/dl	-----	-----
OGTT- 2 hour	<140 mg/dl	> or = 140 mg/dl but < 200 mg/dl	> or = 200 mg/dl Requires confirmation on a subsequent day, see interpretation section.

**Interpretation:** Criteria for diagnosis according to the American Diabetes Association, revised 1997.

**Diabetes Mellitus (Non-Gestational):** The diagnosis may be made by any of the following three findings. All findings must be confirmed by documenting any one of the three findings on a subsequent day.

1. Fasting plasma glucose > or = 126 mg/dl, confirmed by repeat testing.
2. Random plasma glucose >or = 200 mg/dl and classic symptoms (polydipsia, polyuria, and weight loss).
3. Oral glucose tolerance test with 2-hour plasma glucose > or = 200 mg/dl.

**Impaired Fasting Glucose**

1. Fasting glucose > or = 110 mg/dl and less than 126 mg/dl. **OR**
2. Two-hour oral glucose tolerance test with 2-hour glucose > or = 140 mg/dl but < 200 mg/dl.

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**ORAL GLUCOSE TOLERANCE TEST DOSAGE CHART**

Patients receive a glucose dose of 75 grams for adults (1.75 gram/kg body weight or 0.8 grams/lb. body weight).  
Patients weighing more than 95 lbs. receive 75 grams of glucose (10 fl. oz.)

WEIGHT IN LBS	WEIGHT IN KG	GLUCOSE IN GMS	GLUCOSE IN FL. Oz	DOSE IN CC (ml)	DISCARD CC (ml)
95	43	75	10	300	0
90	41	72	9.6	288	12
85	38	68	9.1	273	27
80	36	64	8.5	255	45
75	34	60	8.0	240	60
70	32	56	7.4	222	78
65	30	52	6.9	207	93
60	27	48	6.4	192	108
55	25	44	5.9	177	123
50	23	40	5.3	159	141
45	20	36	4.8	144	156
40	18	32	4.3	129	171
35	16	28	3.7	111	189
30	14	24	3.2	96	204
25	12	20	2.7	81	219
20	9	16	2.1	63	237
15	7	12	1.6	48	252
10	5	8	1.0	30	270

**References**

1. Oral Glucose Tolerance Test (Non-Gestational), Prepared by Mary E. Tang, M.D., FAHC Laboratory Services Directory, December 2004.
2. American Diabetes Association: The Physician's Guide to Type II Diabetes (NIDDM), Diagnosis and Treatment, 1984.
3. Diabetes Care, Vol.20, No. 7, July 1997, pp. 1183-1197. Report of the Expert Committee on the Diagnosis and Classification of Diabetes Mellitus.

**PORTER HOSPITAL**  
**LABORATORY SERVICES DIRECTORY**

---

### **Lactose Tolerance**

Deficiency of disaccharide splitting enzymes (disaccharidases) in the intestinal mucosa may result in diarrhea, abdominal cramps, bloating and flatulence. Disaccharidase deficiency may accompany primary mucosal diseases such as gluten sensitive enteropathy and regional enteritis, but may also exist in the absence of recognizable small bowel pathology. Direct evidence of disaccharidase deficiency can be obtained by quantitative enzyme assay of intestinal mucosa obtained by oral biopsy, but excellent evidence of lactase deficiency is provided by failure of blood glucose to raise more than 20 mg/dl after ingestion of the lactose dose.

#### **Method**

1. Lactose tolerance tests must be scheduled at least 4 days in advance (inpatient – 24 hours) with the laboratory. The Pharmacy must also be given at least 48-hours notice to get the dose prepared. When you call the laboratory to order the testing please be prepared to answer the following questions.
  - a. Patients full name and Date of Birth
  - b. Patient weight
  - c. Does the patient have any allergies?
  - d. Ordering Physician full name
  - e. Date and time patient is available to come to the lab
2. Patients should be instructed to fast overnight prior to the test (fast after midnight).
3. One gram of lactose will be administered per kilogram of body weight dissolved in 500 mL of water.
4. Blood glucose levels are measured in fasting state and then at intervals of 15, 30, 60, 90 and 120 minutes after lactose administration. Please inform patients that this test takes several hours and they will be required to stay at the lab and not eat or drink anything besides water during the test.

#### **Protocol**

1. Overnight fast.
2. Draw fasting blood glucose. Administer prepared lactose drink. Serve chilled if possible.
3. Measure blood glucose levels in fasting state and then at intervals of 15, 30, 60, 90, and 120 minutes after lactose administration. **Draw samples in gray top tubes.**

#### **Reference Ranges**

Normal response: Blood glucose rise of more than 20 mg/dl above baseline level.

#### **Interpretation**

For Inpatients with severe mucosal disease, this test should be preceded by a glucose tolerance test to aid in interpretation. A few patients with pylorospasm and delayed gastric emptying will require intraduodenal administration of 30 g of lactose in 300 ml of water to circumvent the spurious effect of gastric retention. In children the disaccharide loading test may be performed with 50 g of lactose per square meter of body surface area diluted in water to make a 10% solution, measuring blood glucose levels in fasting state and at intervals of 15, 30, 60, 90, and 120 minutes.

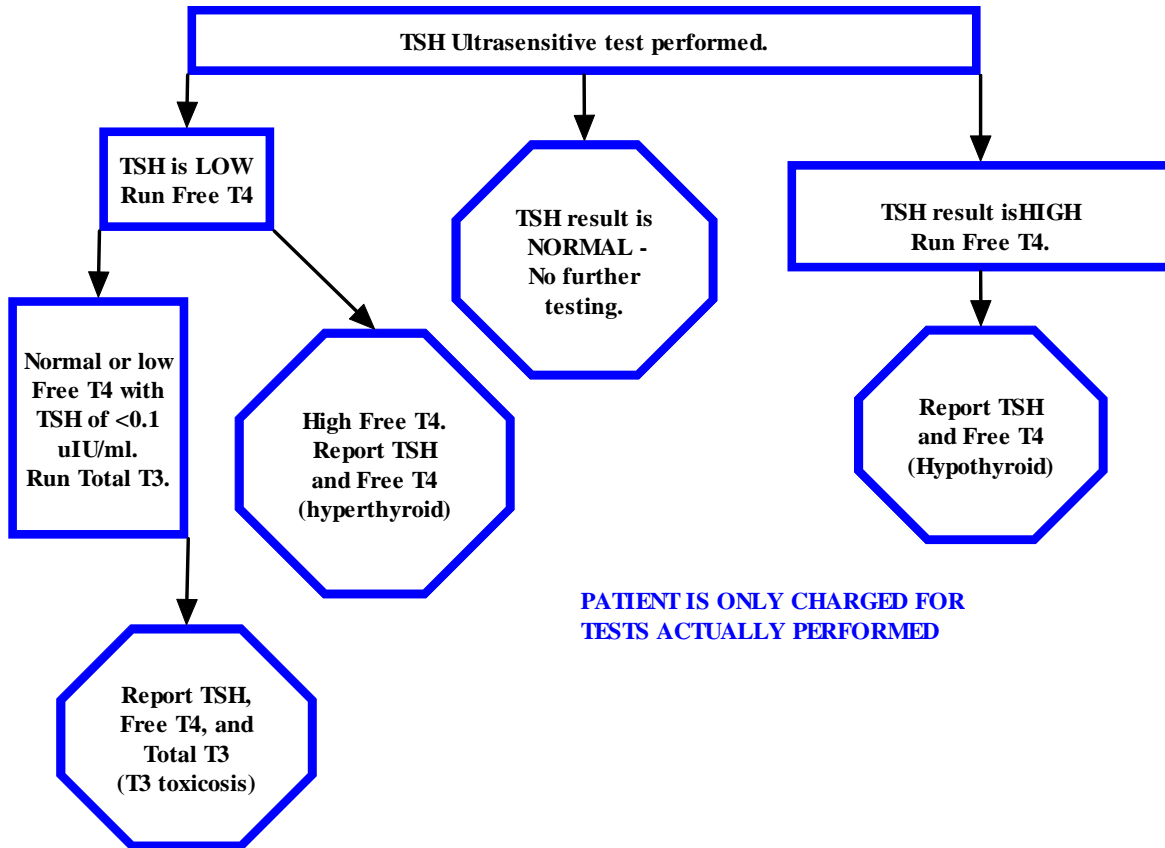
#### **Reference**

1. Lactose Tolerance, prepared by Gregory Sharp, MD, Ph.D., FAHC Laboratory Directory, October 2010.
2. Sleisenger, M.H. and Fordtran, J.S., Gastrointestinal Disease: Pathophysiology, Diagnosis, And Management. W.B. Saunders Co., Philadelphia, 1983.

PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY

---

Thyroid Testing Cascade



**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**CYTOGENETICS**

**General Information**

All chromosome studies are referred to Fletcher Allen Health Care. Special sodium heparin tubes or tube with Hank's Balanced Salt Solution (for tissue) are required. A Fletcher Allen Laboratory requisition must accompany samples for testing. Please include patient's first and last name, date of birth, specimen type and date of collection on form. Also include any pertinent clinical information. These forms are available for Porter Laboratory.

**Report Time**

- Peripheral Blood report available in 7 to 10 days.
- Bone Marrow report available in 7 to 10 days
- Amniotic Fluid report available in 10 to 14 days
- Tissue report available in 14 to 18 days
- Fragile X Study report available in 14 to 18 days

**Autopsy Tissues For Culture**

Hanks solution generally outdates approximately 60 days after preparation. This solution can be obtained from the Cytogenetics Department at FAHC. Although the last usable date of product may have been reached, if the solution is not purple, it is generally usable. (The purple is a pH indicator.) Contact Cytogenetics at FAHC if there is a question. Tubes of solution are stored at Porter Laboratory.

THYMUS LYMPH NODES SPLEEN	Using sterile technique, place a sample in a tube with Hanks Salt Solution or sterile saline. Optimally these tissues should be obtained within 6 hours post mortem. These tissues can be set up exactly like leukocyte cultures and harvested in 3-4 days since they are comprised of lymphocytes. Tissue is macerated and a cell suspension is made that is added to the culture medium.
BONE MARROW	Using sterile technique, obtain a sample with bone marrow puncture needle or with large bore sterile needle with syringe. Place sample in a sodium heparin tube containing media or HBSS. This sample is not good after <u>1-4 hours post mortem</u> .
BLOOD	Green top tube (sodium heparin).
SKIN OR FASCIA	Can be useful possibly up to several days post mortem provided body has been refrigerated and there is no gross contamination. Sterilize skin with acetone and/or 70% alcohol. Do <u>not</u> use iodine or mercurial compound. Cut segment down to dermis and place in <u>tube</u> containing Hanks Balanced Salt Solution.

**Products Of Conception**

PLACENTAL MEMBRANES, SKIN, FASCIA	Place into a tube of Hanks Balanced Salt Solution or sterile saline.
-----------------------------------	--

**Procurement Of Fetal Tissue For Chromosome Analysis**

Chromosome analysis may be performed on tissues from fetuses. This may be necessary in cases where there are obvious fetal anomalies or in situations where there is a maternal history of multiple miscarriages.

**Specimen Requirements** - Tissue specimens for these studies include portions of placental membranes, fetal skin and fetal fascia. Other tissue (e.g., from early POC) may be submitted, but may not yield the desired results.

**Procedure**

1. The attending physician will request the Hanks solution from the laboratory and will place the appropriate tissue into the solution.
2. The appropriately labeled tube, along with the appropriate requisition will then be returned to the laboratory to be sent to the reference laboratory.
3. The specimen should be sent to the reference laboratory as soon as possible but may be retained, refrigerated, up to 2 to 3 days. (e.g., if a specimen is obtained Friday evening, it may be sent Monday morning.)

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**CYTOPATHOLOGY**

**General Information For Submitting Material For Cytological Examination**

A requisition form completely filled out with pertinent clinical information must accompany all specimens submitted for examination. For Thin Prep pap Tests and conventional Pap Smears, please use the generic green/white FAHC Laboratory requisition. For non-gynecologic samples and Fine Needle Aspirations, please use the blue/white Surgical Pathology/Non-GYN Cytology form.

All slides submitted for cytological examination are required to have the patient's name (in pencil) on the frosted end of the slide. For non-gynecological specimens and Thin Prep Pap tests, label the specimen container (not the lid) with the patient's name and source of the material. In cases where specimens are taken from several sources at the same time (i.e., right ureter and left ureter) it is very important to label each specimen bottle and requisition accordingly.

Deliver all fresh unfixed specimens to the laboratory immediately after collection. When laboratory is closed, all non-gynecological cytology specimens need to be refrigerated. These include urines, sputum, bronchial washings, pleural fluid, abdominal fluid, gastric, and all miscellaneous fluids. If CSF specimens are collected on Friday after 2 p.m. or any time Saturday or Sunday, an equal amount of 50 % ethanol will need to be added to the specimen by Laboratory personnel prior to refrigeration. All cytology specimens should be handled following Universal Precautions.

**The collection procedures described in the following sections should be followed. If you have any questions, please call Porter Hospital Lab (388-4747) or FAHC Cytopathology Department (1-802-847-5121) before you collect the specimen.**

**Bronchial Brushings for Cytology**

For optimal cellular preservation, it is strongly recommended that the brush used to collect the specimen be rinsed immediately in a container of 50% alcohol or a container of liquid fixative (Cyto Lyt). Due to problems with air drying (which can distort cellular detail and render the specimen unsatisfactory for evaluation) the preparation of glass slides on-site is no longer recommended. Slide preparation is performed in the Cytopathology Department. The accompanying FAHC laboratory requisition should contain all pertinent clinical information.

**Bronchial Washings for Cytology**

Bronchial wash specimens submitted for cytological examination should be free of lidocaine. Deliver fresh specimens to the laboratory immediately after collection. Specimen containers (not the lid) need to be labeled with the patient's name and site of collection. Samples collected should be delivered to the laboratory immediately so the sample can be preserved with equal amounts of liquid preservative (Cyto Lyt or 50% alcohol) and then refrigerated. The accompanying FAHC laboratory requisition should contain all pertinent clinical information.

**Cerebrospinal Fluid for Cytology**

Deliver fresh specimens to the laboratory immediately after collection. Samples that cannot be delivered to FAHC the same day of collection must be fixed with equal amounts of 50% ethanol upon receipt in the laboratory and then refrigerated. The accompanying FAHC laboratory requisition should contain all pertinent clinical information.

**Endoscopic Brushings for Cytology**

For optimal cellular preservation, it is strongly recommended that the brush used to collect the specimen be rinsed immediately in a container of 50% alcohol or a container of liquid fixative (Cytolyt). Due to problems with air drying (which can distort cellular detail and render the specimen unsatisfactory for evaluation) the preparation of glass slides on-site is no longer recommended. Slide preparation is performed in the FAHC Cytopathology Department. The accompanying FAHC laboratory requisition should contain all pertinent clinical information.

**PORTER HOSPITAL**  
**LABORATORY SERVICES DIRECTORY**

---

**Endoscopic Washings for Cytology**

Deliver fresh specimens to the laboratory immediately after collection. Specimen containers (not the lid) need to be labeled with the patient's name and site of collection. Samples collected should be delivered to the laboratory immediately so the sample can be preserved with equal amounts of liquid preservative (Cytolyt or 50% alcohol) and then refrigerated. The accompanying FAHC laboratory requisition should contain all pertinent clinical information.

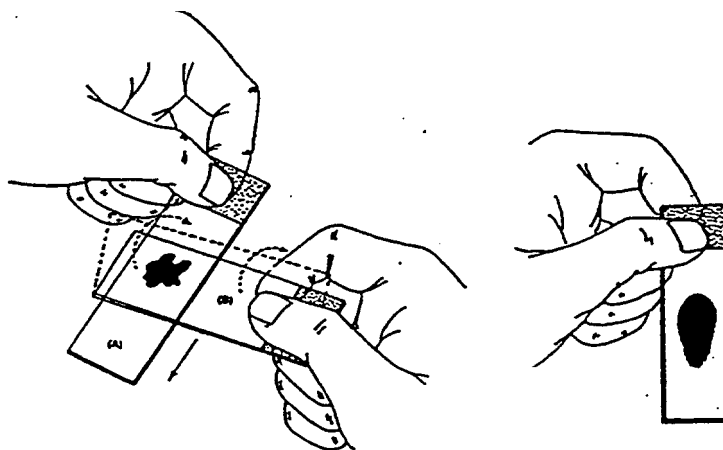
**Fine Needle Aspiration Cytology: All Body Sites**

Fine needle aspiration cytology is a relatively non-invasive procedure for the percutaneous collection of cells from a suspected tumor mass using a 25-gauge needle. Lesions of the lung, mediastinum, pancreas, liver, kidney, retroperitoneum, lymph nodes and bone are being done in the Porter Radiology Department using various localizing techniques. Palpable thyroid nodules, breast masses and head/neck lesions may be biopsied using fine needle aspiration.

Porter's pathologist also performs aspirations of palpable masses. Arrangements for Fine Needle Aspirations should be made through the above departments or by calling the laboratory at 388-4716 and speaking with the Laboratory Supervisor.

Fine needle aspirate samples should be collected and processed by one of the following two techniques:

1. For physicians who perform aspirate procedures less frequently the recommended procedure is: Express all of the aspirate material into a container of liquid cytology fixative (Cytolyt) or in a tube of 50% ethanol. Aspirating a small amount of the fixative into the barrel of the syringe and "rinsing the needle" into the specimen container is also recommended.
2. For physicians who perform frequent FNA procedures and are comfortable preparing fixed slides: Hold stationary slide firmly in one hand, rest edge of spreader that is closer to you on stationary slide and tilt spreader slide until the aspirated material begins to spread. Move the spreader slide toward you, applying slight pressure to aspirated material. Do not lift either end of spreader slide until smear is complete. Slides can either be fixed immediately with Cytology spray fixative or air-dried. Please label frosted end of the slide with patient name and whether slide is fixed or air-dried. Needle rinses can be submitted in Cytolyt as described below. The accompanying FAHC laboratory requisition should contain all pertinent clinical information.



**Fluids and Effusions for Cytology**

Deliver fresh specimens to the laboratory immediately after collection. Specimen containers (not the lid) need to be labeled with the patient's name. Specimens should be refrigerated upon receipt in laboratory. If evacuated glass plasma bottles are used for collection, 3 units of heparin per mL of anticipated fluid should be added to the bottle prior to collection. For safety reasons, no specimen should be submitted with a needle attached to the collection container or syringe. The samples should be refrigerated during storage and transport to FAHC Cytopathology Department. Do not preserve with Cytolyt or 50% alcohol. The accompanying FAHC laboratory requisition should contain all pertinent clinical information.

**PORTER HOSPITAL**  
**LABORATORY SERVICES DIRECTORY**

---

**Gynecologic Specimens**

- Sample collection during active menses should be avoided whenever possible.
- No lubricant should be used on the speculum prior to insertion.
- Copious cervical mucus should be discarded before sample collection (do not place in Thin Prep vial).
- Cellular material should represent an adequate sample of the ecto- and endocervix for the detection of cervical and endocervical abnormalities.
- Vaginal pool material, which occasionally collects cells shed from the endometrium, fallopian tubes and ovaries, may also be collected.

**Specimen Adequacy:**

Satisfactory for Evaluation – Sample must have appropriate labeling and identification, relevant clinical information (minimum of LMP, when clinically necessary for interpretation) and adequate numbers of well visualized, well-preserved squamous cells.

- Assessment of transformation zone component requires the presence of a total of 10 endocervical and/or metaplastic cells on either conventional Pap smears or ThinPrep slides.
- Assessment of cellularity requires well visualized, well preserved Squamous epithelium covering >10% of a conventional slide, or >40 squamous epithelial cells/10 HPF (or >600 squamous epithelial cells/10 LPF) on ThinPrep slides.
- Limiting factors are reported when the factor obscures 50-75% of the epithelial cells on conventional slides. A limiting factor is also reported when there is scant cellularity, which falls short of meeting the guidelines for unsatisfactory (as listed below).

Unsatisfactory for Evaluation – Unacceptable specimen identification, a slide broken beyond repair, obscuring factors which cover >75% of the epithelial cells or scant cellularity with squamous cells covering <10% of a conventional slide, or <40 squamous cells/10 HPF (or <600 squamous cells/10 LPF) on ThinPrep slides. If abnormal cells are detected, the specimen is NEVER categorized as Unsatisfactory, but is reported as Satisfactory (with limiting factors) along with the appropriate diagnostic interpretation.

**Diagnostic PAP**

Diagnostic PAP Is ordered by the referring physician when one or more of the following circumstances apply: Medicare covers Pap smears ordered as diagnostic with no time restrictions.

- The patient has been previously diagnosed with cancer of the vagina, cervix, or uterus that has been or is presently being treated.
- The patient has had a previously abnormal Pap smear.
- The patient presents any current abnormal findings of the vagina, cervix, uterus, ovaries, or adnexa.
- The patient presents any significant complaint referable to the female reproductive system
- The patient shows any sign or symptom that might, in the referring physician's judgment, reasonably be related to a gynecologic disorder.

**Use the diagnosis code(s) that best describes the patient's acute problem.**

**PORTER HOSPITAL**  
**LABORATORY SERVICES DIRECTORY**

---

**Screening PAP — HIGH risk**

Is based on the physician's recommendation and the patient's medical history or other findings, which indicate the Pap should be done on a more frequent basis. Medicare will cover a high risk screening Pap on an annual basis. An Advanced Beneficiary Notice must be completed if the patient has had a Pap smear within the last year. High risk patients are those who are at high risk to develop cervical or vaginal cancer due to risk factors below:

- Early onset of sexual activity (under 16 years)
- Multiple sexual partners (5 or more in a lifetime)
- History of sexually transmitted disease (including HIV)
- Fewer than 3 negative Pap smears within the last 7 years
- DES exposed daughters
- Is of childbearing age and has had a Pap smear during the preceding 3 years indicating the presence of cervical or vaginal cancer or other abnormalities.

Screening — high risk appropriate diagnosis codes:

- V72.6 (Laboratory examination) **AND** (Use Both)
- V15.89** (other specified personal history presenting hazards to health)

**ThinPrep Pap Test**

The FDA has approved the ThinPrep Pap test as significantly more effective than the conventional Pap smear. Currently there are two FDA approved methods for sample collection with the Thin Prep Pap test. Providers may select the method of their preference, or the one that is most suited to their individual patient. The first method utilizes a broom device; the second employs a cytobrush/plastic spatula combination. Both methods are described on the following page.

**ThinPrep Pap Test Sample Collection Utilizing the Broom Device**

1. Obtain an adequate sampling from the cervix using the broom like device. Insert the central bristles of the broom into the endocervical canal deep enough to allow the shorter bristles to fully contact the ectocervix. Push gently, and rotate the broom in a clockwise direction five times.
2. Rinse the broom into the PreservCyt Solution vial by pushing the broom into the bottom of the vial 10 times, forcing the bristles apart. As a final step, swirl the broom vigorously to further release material. Discard the collection device.
3. Tighten the cap of the PreservCyt vial so that the torque line on the cap passes the torque line on the vial.
4. Record the patient's full name on the vial. Place the vial and requisition in a specimen bag for transport to the laboratory.

**ThinPrep Pap Test Utilizing the Cytobrush/Plastic Spatula Combination**

1. Obtain an adequate sampling of the ectocervix using the plastic spatula.
2. Rinse the spatula into the PreservCyt Solution vial by swirling the spatula vigorously in the vial 10 times. Discard the spatula.
3. Obtain an adequate sampling from the endocervix using an endocervical brush device. Insert the brush into the cervix until only the bottommost fibers are exposed. Slowly rotate the brush ¼ or ½ turn in one direction. **DO NOT OVER ROTATE.**
4. Rinse the brush in the PreservCyt Solution vial by rotating the device in the solution 10 times while pushing against the PreservCyt vial wall. Swirl the brush vigorously to further release material. Discard the brush.
5. Tighten the cap of the PreservCyt vial so that the torque line on the cap passes the torque line on the vial.
6. Record the patient's full name on the vial. Place the vial and requisition in a specimen bag for transport to the laboratory.

**PORTER HOSPITAL**  
**LABORATORY SERVICES DIRECTORY**

---

**HPV Testing on Thin Prep Vials**

HPV testing may be performed on the same Thin Prep sample as is submitted for cytological evaluation. This testing may be ordered as reflex testing to a diagnosis of Atypical Squamous Cells of Undetermined Significance (ASCUS) or Atypical Glandular Cells of Undetermined Significance (AGUS). HPV testing may also be ordered up front, regardless of the diagnosis of the current Thin Prep cytology result. To order HPV testing on a Thin Prep Pap Test, simply check the appropriate box on the requisition form. If you have questions, please call Cytopathology at 656-5136.

**Conventional Pap smear**

Two separate slides, one from the ectocervix and one from the endocervix, may be submitted. The more popular one slide method is done by covering one half of the surface of a glass slide with a piece of paper. Place the endocervical sample on the uncovered surface and fix immediately. Next, remove the paper and use the second half of the surface of the slide for the ectocervical smear. Fix the entire slide.

Slides must be fixed immediately (within 5 seconds) by spraying with a cytology fixative (**DO NOT USE HAIR SPRAY**). The can of fixative should not be held any closer than 12 inches from the slide, making sure the entire specimen is flooded with spray fix. Air drying or improper fixation will result in distortion of cellular detail and may render the specimen unsatisfactory for evaluation. All slides submitted for cytological examination are required to have the patient's name (in pencil) on the frosted end of the slide.

**Pap smear kits, which include glass slides, cytobrushes, mailing folders and FAHC requisitions, are supplied to physicians by FAHC. All physicians' offices should complete an order form from FAHC Laboratory for these supplies.**

**Endometrial Smears for Cytology**

If an endometrial smear is desired, the sample should be prepared by smearing the collection device over a glass slide with immediate fixation (see conventional Pap smear above for fixation guidelines). The accompanying FAHC laboratory requisition should contain all pertinent clinical information.

**Nipple Discharges for Cytology**

Spontaneous nipple discharge should be collected by touching a glass slide to the fluid, spreading uniformly with immediate fixation. Slides must be fixed immediately (within 3 seconds) by spraying with a cytology fixative (Cyto Fix). The can of fixative should not be held any closer than 12 inches from the slide, making sure the entire specimen is flooded with spray fix. Drying or improper fixation cannot be permitted, as cellular detail is distorted and may render the specimen unsatisfactory for interpretation. All slides submitted for cytological examination are required to have the patient's name (in pencil) on the frosted end of the slide. The accompanying FAHC laboratory requisition should contain all pertinent clinical information.

**Oral Cavity for Cytology**

Scraping of the affected area should be spread on a slide and fixed immediately (within 3 seconds) by spraying with a cytology fixative Aerosol spray fixative should not be held any closer than 12 inches from the slide, making sure the entire sample is flooded with spray fix. Drying or improper fixation cannot be permitted as cellular detail is distorted which may render the specimen unsatisfactory for interpretation. The location of the lesion sampled must be indicated as the normal cytology differs from one area of the oral cavity to another. The accompanying FAHC laboratory requisition should contain all pertinent clinical information.

**Respiratory Specimens for Pneumocystis carinii**

Deliver fresh specimens to the laboratory immediately after collection. Specimen containers (not the lid) need to be labeled with the patient's name. The accompanying FAHC laboratory requisition should contain all pertinent clinical information.

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**Sputum for Cytology**

- ☒ Optimum sputum cytology is performed on fresh, unfixated material. It is strongly recommended that an early morning specimen be obtained in a wide mouth container without fixative. The patient should be instructed to produce a deep cough specimen. Saliva and mouth contaminants are to be avoided. A one-hour time period of collection (from 8:00 a.m. to 9:00 a.m.) in the morning is desirable. Avoid longer collection periods.
- ☒ Deliver fresh specimens to the laboratory immediately after collection. Specimen containers (not the lid) need to be labeled with the patient's name. Samples should be refrigerated. Samples not refrigerated and are greater than 1 hour old will not be accepted. Samples are stable overnight refrigerated, but if transport to FAHC is delayed over 24 hours, preserve with equal amounts of liquid preservative (Cytolyt or 50% alcohol).
- ☒ For patients undergoing bronchoscopy, an early morning sputum specimen should be routinely collected the morning following bronchoscopy.
- ☒ The pick-up rate for positive sputum cytology is approximately 50% when one specimen is submitted, 75% for 2, and 85% when 3 specimens are received. It is recommended that early morning specimens be submitted from 3 consecutive days.

**Tzank Smear Testing**

A scraping should be made from the base of the suspected vesicle using a plastic spatula. Immediately rinse the spatula in a PreservCyt Solution vial by swirling the spatula vigorously in the vial 10 times. Tighten the cap so that the torque line on the cap passes the torque line on the vial. Label the vial with the patient's name. The accompanying FAHC laboratory requisition should contain all pertinent clinical information.

**Urinary Tract Specimens for Cytology**

Cytological evaluation of urinary tract specimens requires a fresh specimen. The optimum urine specimen is one that is collected in the morning after good hydration. i.e. discard the first morning specimen, hydrate patient with 3-4 glasses of water, collect the next urine specimen (usually after 15-30 minutes) and submit to the laboratory for processing. Please indicate on requisition and sample whether sample is a voided or catheterized specimen. Deliver fresh specimens to the laboratory immediately after collection. Specimen containers (not the lid) need to be labeled with the patient's name. Samples should be refrigerated upon receipt in the laboratory.

**Urine specimens collected from physicians' offices must be refrigerated and transported to Porter Hospital within 24 hours of collection. 50% ethanol will be added to the sample at Porter Laboratory.**

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**HEMATOLOGY**

**Tests Requiring Special Instructions**

**Bone Marrow**

An attending physician generally collects Bone Marrow specimens with the assistance of a technologist. In such situations, an appointment should be made by calling the laboratory **at least one day before the examination**. A completed consultation sheet and requisition are required. An exam room to use while collecting the sample would also need to be scheduled.

**CSF Cell Counts and Differential**

**Specimen for Cell Count, Culture with Gram Stain, CSF Protein and Glucose**

CSF fluid should be placed in 4 sterile tubes provided in the lumbar puncture trays. Tube #1 is tube to fill first, #2 second, etc. The 4 tubes should be labeled and delivered to the laboratory immediately. Cells start to degenerate quickly. Hand specimens **directly** to laboratory personnel. Do not refrigerate. Fill out requisition completely. Indicate all tests needed on specimen, i.e. cell count, protein, glucose, gram stain, culture. Specify source as CSF.

**Routine Analysis**

Unless otherwise instructed on the requisition the following tubes will be used: #1 Hold; #2 Culture; #3 Gram stain; #4 Cell count and differential (if indicated). Supernatant of #2 and #3 pooled for glucose and protein tests. If additional tests are needed or tubes not collected in usual order, the physician should talk directly to technician about sample requirements and special needs.

**Synovial Fluid and other Body Fluid Counts, Chemistries, Crystals, and Culture**

**Specimen for Cell Count:**

Fluid should be placed in lavender (EDTA) tube to prevent clotting. This should be done immediately. A clotted specimen will be rejected. If other tests are needed (Chemistry or Microbiology), put aliquot of specimen in sterile tube, such as a red top. Do not send specimen to laboratory in syringe. Deliver to the laboratory immediately. Cells start to degenerate quickly. Fill out requisitions completely. Indicate all tests needed on specimen, i.e. cell count, chemistries, gram stain, crystals, culture, etc. Specify source.

**Routine Analysis**

A cell count and differential (if indicated) will be done.

**Crystals**

If crystals are ordered on synovial fluid, place specimen in lavender top tube. If a small amount of fluid is collected, place onto a slide. Label slide with last name, first initial. Place into labeled (last name, first name and Date of birth) slide container and submit. Polarizing light microscopy will be done to detect presence or absence of uric acid or calcium pyrophosphate crystals.

**RAPE SAMPLES**

**Submission of Samples Collected for Verification of Rape**

Chain of custody must be strictly adhered to. Laboratory involvement is limited to helping physician prepare slides for viewing for presence or absence of sperm. The laboratory technician WILL NOT read or reports the results of any slides.

**Laboratory personnel will not be responsible for collection, handling, transporting, or storing evidence in a rape case. This responsibility lies with the Emergency Room personnel and their established protocols.**

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**MICROBIOLOGY**

**Billing for Microbiology**

The price of a microbiology test includes processing of the sample, inoculation of the sample to media, incubation of the media and visual observation during the incubation period. Additional billing may be incurred for identification of pathogens. There is an additional charge for susceptibility testing, if that is indicated. The identification and susceptibility tests are associated with specific CPT4 billing codes and are not included as part of the price listed in the fee schedule, but the prices of tests that may be added are noted.

**Microbiology - Inadequate Specimens**

The following deficiencies are commonly encountered and significantly compromise the interpretation of culture results. Consult individual sections of the manual for proper collection techniques. Specimens may be rejected if they fit into any of the following categories.

**SPECIMENS THAT WILL BE REJECTED**

1. Specimens in uncapped or inadequately sealed containers.
2. Containers, which show evidence of external contamination by the specimen
3. Specimens submitted in syringes with needles still attached.

**INADEQUATE CONTAINERS**

1. Non-clean containers
2. Cracked containers
3. Closed systems (e.g. blood culture bottles), which have been opened.

**LABELS**

1. Patient name not on the container
2. Label on specimen and test requisition does not match.

**SWABS**

1. Dry swabs. Swabs with transport media should be used. Exception: Dry swabs for Group A Strep screen.
2. Swabs submitted for *Neisseria gonorrhoea* (GC) cultures (primary plates must be promptly brought to the laboratory for incubation within 20 minutes of collection).
3. Swab submitted for anaerobic culture.

**REFRIGERATION**

1. Blood cultures, CSF cultures and cultures for *Neisseria* that have been refrigerated.
2. Unrefrigerated urine specimens for culture, which are received greater than two hours after collection.

**ANAEROBES**

1. Specimens submitted in an aerobic atmosphere
2. Specimens potentially contaminated by indigenous anaerobic flora during the collection of the specimen.

**MYCOBACTERIUM**

1. Specimens of less than 2 ml volume (10 ml is the desired quantity)
2. Swabs.

**SPUTUM**

1. Specimens containing saliva only.

**URINE - FOLEY CATHETER TIPS**

1. Foley catheter tips are rejected, but urine collected through the Foley Catheter is acceptable.

# PORTER HOSPITAL LABORATORY SERVICES DIRECTORY

---

## **General Information**

The laboratory at Porter Hospital performs many routine microbiology tests as outlined on the following pages. For those tests performed by Fletcher Allen Health Care laboratory, information has been included from their Laboratory Services Directory.

- ❖ The following testing categories and/or tests are referred to FAHC:
  - Chlamydia and GC by probe
  - Mycobacterium (AFB), smears and cultures
  - Legionella antigen and culture
  - Ova and Parasites
  - Mycology
  - Virology
- ❖ The following testing is referred to Vermont State Laboratory for confirmation or serotyping:
  - Salmonella, Shigella, Campy, E. coli O157
- ❖ The following testing is referred to MAYO Medical Laboratories:
  - Bordetella by Rapid PCR
  - Rotavirus Antigen

## **Diagnosis of Bacterial Infections**

When a bacterial culture is ordered, the laboratory will also perform a Gram stain on all appropriate specimens (wounds, fluids (except urine), tissue, and respiratory secretions). If swabs must be used, two swabs should be submitted; Gram stain cannot be performed if a single swab is submitted. The extra expense of a Gram stain is more than offset by the additional information that enhances the interpretation of the culture result. If you do not wish to have a Gram stain performed, enter the test name in the box in the lower right corner of the requisition labeled "If you wish to decline reflex indicate tests here".

The diagnosis of bacterial infections requires documentation of both an inflammatory response (host response) and the presence of an etiologic bacteriologic agent. The Gram stain serves as a guarantor that the quality of the specimen is good because there is an associated inflammatory response. Without this information it is often difficult or impossible to determine the significance of the culture, particularly if multiple organisms have been isolated and the specimen is from a site that could be contaminated by indigenous flora. We do not routinely evaluate cultures with mixed organisms if a Gram stain is not available. In addition, the Gram stain may serve as a clue that bacteria are present, but have not been isolated in culture. The most common situation is the presence of anaerobic bacteria on the smear if an anaerobic culture was not ordered. In that situation, we will further examine the culture for anaerobic bacteria to the extent possible and appropriate.

The best specimens for culture are tissue, fluids, aspirates, or curettings. In the absence of those specimens, it is essential to submit two swabs to get the benefit of information from a Gram stain. Using a single swab will compromise the interpretation of results (with a few exceptions such as screens for specific bacteria).

**PORTER HOSPITAL**  
**LABORATORY SERVICES DIRECTORY**

---

***Diagnosis of Fungal Infections<sup>2</sup>***

- ☒ One of the first steps in diagnosing fungal infections is to perform a direct microscopic examination to observe the presence of fungal elements. A culture is performed regardless of whether fungal elements are present because the culture is more sensitive and allows for the specific identification of the organism present. Fungal cultures are plated on media that will support the growth of fungal organisms while inhibiting most bacteria.
- ☒ Fungal culture may be performed on many specimen types. Pus, fluid, tissue, scrapings, and clippings are optimal samples to submit to the laboratory. A swab is acceptable for the recovery of yeasts, but is not suitable for recovery of dimorphic fungi or molds. Smears are available for most types of specimens. A pathologist should be consulted for smears from sputum, feces, and urine. Types of fungal stains:
  - Calcofluor-any specimen Gram stain-any specimen
  - Modified Acid fast Stain-Suspect Nocardia
  - Wright's Stain-Suspect Histoplasma
  - Potassium Hydroxide with calcofluor-skin, hair, nails
  - Wet preparations- respiratory secretions, vaginal secretions, fluids
- ☒ The list of opportunistic fungal pathogens has increased due to the expanding population of immunocompromised patients. Organisms that were once thought to be contaminants may now cause infections in some hosts. Microscopic examination, growth characteristics and biochemical testing are used to aid in the identification of isolated fungal organisms.
- ☒ Once specimen reaches FAHC, specimens for fungal culture/smear are processed Monday through Friday 8:00 a.m. to midnight. Blood samples are processed 7 days a week. Cultures are incubated for 2-4 weeks dependent on anatomical site. During the first week of incubation, cultures are examined twice. For the remainder of the incubation, cultures are examined weekly. Reports are issued via the computer as soon as the cultures become positive. Final reports are sent upon the completion of the incubation period. Patient results are called to the clinician when indicated.

---

<sup>2</sup> Quoted directly from FAHC 2005 Laboratory Services Directory, Section 3, Special Instructions. All Fungal testing sent to FAHC.

**PORTER HOSPITAL**  
**LABORATORY SERVICES DIRECTORY**

---

**ANTIBIOTIC SUSCEPTIBILITY TESTING**

**A. TEST METHOD** - The Vitek automated susceptibility method is used routinely. Selected isolates are tested by the microbroth dilution or E-Test methods and are referred to FAHC.

**B. ORGANISMS TESTED**

1. Susceptibility testing is routinely done without special request on the following organisms when they are present in significant numbers or are isolated from a normally sterile site.
  - a) Gram-positive cocci
    - (1) Staphylococcus coagulase positive
    - (2) Staphylococcus, coagulase negative when isolated from:
      - (a) CSF
      - (b) Blood - performed on 2nd isolate recovered within 7 days or physician request
      - (c) Urine when present in pure culture and the colony count is greater than 100,000/ml.
      - (d) Other normally sterile sites
      - (e) In pure culture in moderate to heavy quantities from wounds
      - (f) Catheter tips
    - (3) Enterococcus sp.
    - (4) Streptococcus pneumoniae (Referred to FAHC)
  - b) Gram negative bacilli
    - (1) All enteric bacteria (from sterile site)
    - (2) All Pseudomonas
    - (3) All other non-fermenting gram negative bacilli
2. The following organisms are tested for Beta-lactamase production
  - a) Haemophilus influenzae when isolated from a normally sterile site
  - b) Neisseria gonorrhoea
  - c) Moraxella catarrhalis
  - d) Pasturella multacida

**C. REPORTING**

1. Antimicrobial susceptibility is related to the minimum inhibiting concentration or MIC. An organism is considered susceptible if its value is less than the known MIC for that antibiotic. Please refer to interpretation.

**D. INTERPRETATION - How to Use Antimicrobial Susceptibility Test Results**

Steps for selection of antimicrobial therapy:

1. Evaluate the patient, not the laboratory report. Assess critically the likelihood that the isolated bacterium is the cause of the clinical symptoms.
2. Select an antimicrobial agent or agents, using clinical experience with the bacterium isolated or with the type of infection the patient has.
3. Examine the susceptibility report to determine if chosen antibiotic is appropriate for use against organism identified.
  - a) S = susceptible; the bacterium should be inhibited or killed by the antibiotic when it is administered appropriately, unless the infection is in a site that is not penetrated by the antibiotic.
  - b) I = intermediate; the bacterium should be inhibited by the antibiotic; but it may be necessary to use maximal therapeutic doses parenterally to achieve the effect. The possibility of using another antibiotic should be considered.
  - c) R = resistant; the bacterium is unlikely to be killed by the antibiotic in vivo and other antimicrobials should be sought.
4. If the susceptibility test suggests that the first choice of antibiotic is not appropriate, go back to step 2 for a second choice.

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**AFB Smear and Culture – See Mycobacterial (AFB) Culture/Smear**

**Arthropod ID – See Tick ID**

TEST NAME	COLLECTION & STORAGE
ARTHROPOD IDENTIFICATION	❖ Submit bug, tick, or insect in a clean container. Submit in 70% alcohol if possible. This test does not include analysis of ticks for the presence of <i>Borrelia burgdorferi</i> , the agent of Lyme disease. Method Description: ❖ The submitted organism or material is examined grossly and microscopically, if indicated. Organisms are identified to the genus level.

**Blood Culture Collection and Testing**

**Specimen Collection & Handling**

- Peripheral sites are preferred. If a central line draw is done, it is recommended that a peripheral draw is also done to rule out catheter line contamination. When other lab work is needed, blood culture should be done first.
- **Maximum set of blood cultures to be collected in 24 hour period is 3.**
- Children and infants: Collect up to 4 ml of blood per venipuncture. If no Pediatric bottles are available, collect up to 4 mls in an Aerobic bottle only. Do not collect Anaerobic bottle.
- Adults: Collect 20 ml of blood per venipuncture divided into two bottles, aerobic and anaerobic
- Use the following guidelines to distribute blood collected into blood culture bottles:
  - Less than or equal to 4 ml blood: use one pediatric bottle. – For pediatric patients ONLY
  - 4 - 10 ml's of blood: place in one aerobic bottle.
  - 10 - 20 ml's of blood: divide evenly into both aerobic and anaerobic bottles.

**Tests Available**

- Bacterial Culture
- Fungus Culture
- AFB Culture
- Legionella Culture

**Culture Technique**

- The Bactec system of liquid culture media should be used for the isolation of aerobic, facultative, and anaerobic microorganisms and yeast.
- The Isolator Lysis-centrifugation system is reserved for the detection of dimorphic fungi and Mycobacteria and must be obtained from Fletcher Allen Health Center. Refer to their Laboratory Services Directory for additional information.

**Supplies**

- Routine Venipuncture Supplies
- Winged Needle Set or Syringe and Winged Needle Set
- Luer Adapter
- Transfer device
- One Aerobe and One Anaerobe Blood Culture Bottle for Adult Collection
- If no Aerobic Bottles are available, collect 2 Pediatric bottles (inoculate 4 mls into each bottle) and collect 1 Anaerobic bottle. These 3 bottles (will be considered as one set).
- If no Anaerobic Bottles are available, collect 2 Aerobic Bottles
- One Pediatric Blood Culture Bottle (aerobic/anaerobic) for Pediatric Collection
- Biohazardous Waste
- Sharps Disposal.

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**Procedure**

1. Verify Patient Identification.
2. Select a different body site for each culture drawn, if possible.
3. **Disinfect tops of blood culture bottles/tube.**
  - a. Remove plastic cap from each blood culture bottle and disinfect the top using an alcohol pad, discard pad and allow top of bottle to dry.
4. **Disinfect the arm.**
  - a. Using an approved antiseptic such as chloraprep (Chlorhexide gluconate) or iodine<sup>3</sup>.
  - b. Start the cleaning at the insertion site and working outward in a circular motion covering the area to be used. Scrub for 30 seconds.
5. Collect sample.
  - a. **Using luer adapter winged set**
    - i. Attach multiple sample luer adapter to winged set if not already attached. This may be used separately or a blood culture adapter may be attached to the winged set-up.
    - ii. Insert needle into the venipuncture site.
    - iii. While holding the adapter, insert adapter needle into the aerobic (10ml) culture bottle or pediatric (up to 4ml) culture bottle and allow to fill.
    - iv. If collecting an **anaerobic** culture bottle, remove adapter needle from the aerobic bottle and insert it into the anaerobic (10ml) bottle. Allow to fill.
    - v. If additional blood work is ordered, attach a tube holder or use culture adapter insert to the luer of the syringe and proceed with the blood draw.
  - b. Using **syringe and winged needle set or safety needle**
    - i. Attach syringe to the winged needle set or safety needle
    - ii. Insert needle into the venipuncture site.
    - iii. Draw one 20 ml syringe for an adult set or up to 4 ml for a pediatric set.
    - iv. Attach transfer device to syringe.
    - v. If collecting an anaerobic/aerobic set, first insert needle into the **anaerobic bottle** and allow to fill. Do not force blood into bottle. Remove and insert into the aerobic bottle.
    - vi. If collecting a pediatric set, insert needle into the pediatric (up to 4 ml) culture bottle and allow to fill.
    - vii. If additional blood work is required, draw additional syringes of blood, replacing the syringe with a luer adapter and holder, or re-sticking the patient.
6. Label each vial with patient's name, date, and time of collection.
7. DO NOT write or place any labels over the vial bar code, as this is used by the instrument to process the specimen.
8. Record date, time of collection, collector's initials and site of venipuncture on requisition.
9. Send all culture bottles to Laboratory without delay.
  - a. If collecting off site, keep at room temperature. Do Not allow bottles to get chilled.

**Bordetella by Rapid PCR**

TEST NAME	COLLECTION & STORAGE
<b>BORDETELLA BY RAPID PCR</b>	<ul style="list-style-type: none"> <li>❖ One nasopharyngeal (not throat) specimen collected on a rayon swab with an aluminum or plastic shaft should be placed in transport medium such as Stuart's or Amies with charcoal (Transwab Nasopharyngeal with Charcoal System (available from Porter Lab) for shipping. Calcium alginate or cotton-tipped swabs are not recommended as they may be inhibitory to the PCR.</li> <li>❖ Alternatively, a nasopharyngeal (not throat) aspirate can be collected and transported in a screw capped, sterile container within 24 hours of collection.</li> <li>❖ Send specimen refrigerated. (Sent to Mayo Medical Laboratories.)</li> </ul>

---

<sup>3</sup> Always assess patient for iodine allergy prior to using any iodine prep solution

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

**Cerebrospinal Fluid**

TEST NAME	COLLECTION & STORAGE
CSF CULTURE	<ul style="list-style-type: none"> <li>❖ Sterile tubes from lumbar tray</li> <li>❖ Deliver Immediately</li> <li>❖ <b><u>Routine Bacterial Culture:</u></b> Media are used that are capable of supporting the growth of bacteria, which commonly cause meningitis. Solid media are incubated for 72 hours and are examined daily. Broth cultures are incubated for 5 days. Any organism isolated is identified and susceptibility testing is done when appropriate.</li> <li>❖ <b><u>Gram Stain:</u></b> The presence or absence of white blood cells and bacteria will be reported. All positive Gram stains (i.e. those showing bacteria or yeast) are called to the physician immediately.</li> </ul>
AFB CULTURE, OTHER	See Mycobacterium section for additional information. Specify with or without Smear
FUNGUS CULTURE, OTHER	See Mycology section for additional information. Specify with or without Smear
VIRUS CULTURE, OTHER	See Virology section for additional information.

**Chlamydia Testing**

All testing for Chlamydia is referred to FAHC Microbiology Laboratory

TEST NAME	COLLECTION & STORAGE			
CHLAMYDIA TRACHOMATIS CULTURE	<ul style="list-style-type: none"> <li>❖ Use Dacron swab for collection from the following sites:  <u>Eye:</u> Evert eyelid, rotate swab directly on the conjunctival surface.  <u>Male Urethra:</u> Insert swab 3 to 5 cm into urethra and remove.  <u>Endocervix:</u> Clear cervix of excess discharges, place swab within endocervical canal and rub against the wall of the canal.  <u>Upper respiratory tract:</u> Collect deep posterior nasopharyngeal sample  <u>Upper genital tract:</u> Collect biopsy or aspiration by laparoscopy.</li> <li>❖ Rub swab vigorously against the surface of the site involved. Columnar epithelial cells must be collected as this is where the organism resides.</li> <li>❖ Place swab into M5 BROTH - Do not remove swab from vial - break it off in vial.</li> <li>❖ <b><u>Unacceptable specimens</u></b> - purulent discharge, urine, feces, specimen collected on calcium alginate swab or swab with a wooden shaft</li> <li>❖ Testing includes culture and identification (additional charge added for ID if suspect organism isolated).</li> <li>❖ Negative report available in 5 days.</li> </ul>			
CHLAMYDIA TRACH. AMP PROBE	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; vertical-align: top;">                     Aptima Swab collecting from one of the following genital sites:                     <ul style="list-style-type: none"> <li>❖ Cervix</li> <li>❖ Vagina</li> <li>❖ Endocervix</li> <li>❖ Urethral.</li> </ul>                     See Aptima Swab for directions on collection.                     <ul style="list-style-type: none"> <li>❖ Storage: Ambient</li> </ul> </td> <td style="width: 33%; vertical-align: top; text-align: center;"> <u>Ocular collection:</u>                      Moisten swab with saline and rotate directly on conjunctival surface.                 </td> <td style="width: 33%; vertical-align: top;">                     Aptima Urine Specimen Transport Tube or Urine in clean container  <u>Urine collection:</u> The patient should not have urinated for at least 1 hour prior to specimen. Do not cleanse area prior to collection; this is a first void, NOT a clean catch, mid stream sample. Collect 2-30 mL.                     <ul style="list-style-type: none"> <li>❖ If the sample can be delivered to the lab within 24 hours, it may be held in original container at 2-30° C.</li> <li>❖ If delivery will be delayed place sample in Aptima urine specimen transport tubes (available with instructions from Lab).</li> </ul> </td> </tr> </table>	Aptima Swab collecting from one of the following genital sites: <ul style="list-style-type: none"> <li>❖ Cervix</li> <li>❖ Vagina</li> <li>❖ Endocervix</li> <li>❖ Urethral.</li> </ul> See Aptima Swab for directions on collection. <ul style="list-style-type: none"> <li>❖ Storage: Ambient</li> </ul>	<u>Ocular collection:</u> Moisten swab with saline and rotate directly on conjunctival surface.	Aptima Urine Specimen Transport Tube or Urine in clean container <u>Urine collection:</u> The patient should not have urinated for at least 1 hour prior to specimen. Do not cleanse area prior to collection; this is a first void, NOT a clean catch, mid stream sample. Collect 2-30 mL. <ul style="list-style-type: none"> <li>❖ If the sample can be delivered to the lab within 24 hours, it may be held in original container at 2-30° C.</li> <li>❖ If delivery will be delayed place sample in Aptima urine specimen transport tubes (available with instructions from Lab).</li> </ul>
Aptima Swab collecting from one of the following genital sites: <ul style="list-style-type: none"> <li>❖ Cervix</li> <li>❖ Vagina</li> <li>❖ Endocervix</li> <li>❖ Urethral.</li> </ul> See Aptima Swab for directions on collection. <ul style="list-style-type: none"> <li>❖ Storage: Ambient</li> </ul>	<u>Ocular collection:</u> Moisten swab with saline and rotate directly on conjunctival surface.	Aptima Urine Specimen Transport Tube or Urine in clean container <u>Urine collection:</u> The patient should not have urinated for at least 1 hour prior to specimen. Do not cleanse area prior to collection; this is a first void, NOT a clean catch, mid stream sample. Collect 2-30 mL. <ul style="list-style-type: none"> <li>❖ If the sample can be delivered to the lab within 24 hours, it may be held in original container at 2-30° C.</li> <li>❖ If delivery will be delayed place sample in Aptima urine specimen transport tubes (available with instructions from Lab).</li> </ul>		
	<ul style="list-style-type: none"> <li>❖ Culture is recommended for sexual abuse cases.</li> <li>❖ Report available in 48-72 hrs from receipt of specimen</li> <li>❖ If results fall in the indeterminate range, it is suggested to the clinician that a culture be submitted at no additional charge.</li> </ul>			

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**Clostridium Difficile Testing – See Fecal Testing**

**Cryptosporidium Antigen - See Fecal Testing**

**Cyclospora Detection – See Fecal Testing**

**Fecal Occult Blood Testing**

TEST NAME	COLLECTION & STORAGE
<p><b>FECAL OCCULT BLOOD, I-3 SAMPLES</b></p> <p>Indicate on requisition whether screening or diagnostic testing.</p>	<ul style="list-style-type: none"> <li>❖ Collect sample in a bedpan, avoiding contamination with urine.</li> <li>❖ If patient is at home, place a piece of plastic wrap over the toilet opening and collect passed stool sample (avoid contamination with toilet bowl water).</li> <li>❖ Submit a small amount of fresh feces in a clean container.</li> <li>❖ A rectal swab may also be submitted, but specimen should be visible on the swab. Feces are the specimen of choice.</li> <li>❖ Occult blood cards may be inoculated following the manufacturer's instructions (on package). Once the cards are inoculated, testing should be performed within 7 days.</li> <li>❖ A high bulk diet, two days prior to the sample collection, may help to uncover "silent" lesions that may bleed only intermittently.</li> <li>❖ Since GI lesions may bleed intermittently, 3 consecutive stool samples should be collected.</li> </ul> <p><b><u>Procedure and Reporting:</u></b></p> <ul style="list-style-type: none"> <li>❖ The presence of blood is detected using the gum guaiac method. If blood is present, the test is reported as positive.</li> </ul>

**Fecal Testing**

TEST NAME	COLLECTION & STORAGE
<p><b>C. DIFFICILE TOXIN A OR B</b></p>	<ul style="list-style-type: none"> <li>❖ Collect sample in a bedpan, avoiding contamination with urine.</li> <li>❖ If patient is at home, place a piece of plastic wrap over the toilet opening and collect passed stool sample (avoid contamination with toilet water).</li> <li>❖ Place feces in clean container (walnut size piece of stool). Keep refrigerated.</li> </ul>
<p><b>CRYPTOSPORIDIUM ANTIGEN</b></p>	<ul style="list-style-type: none"> <li>❖ SEE GIARDIA/CRYPTOSPORIDIUM AG for information.</li> </ul>
<p><b>CYCLOSPORA DETECTION</b></p> <p>This is an acid fast stain for Cyclospora.</p>	<ul style="list-style-type: none"> <li>❖ Collect sample in a bedpan, avoiding contamination with urine.</li> <li>❖ If patient is at home, place a piece of plastic wrap over the toilet opening and collect passed stool sample (avoid contamination with toilet water).</li> <li>❖ Place feces in clean container (walnut size piece of stool).</li> <li>❖ Specimen should be free of contaminants such as barium and chemicals. Submit at room temp.</li> <li>❖ If unable to transport specimen to the lab within <u>2 hours</u> of collection, use the UNIFIX O&amp;P kit which are available from Porter Lab. Submit at room temperature.</li> <li>❖ Sent to FAHC.</li> </ul>

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

**Fecal Testing (cont.)**

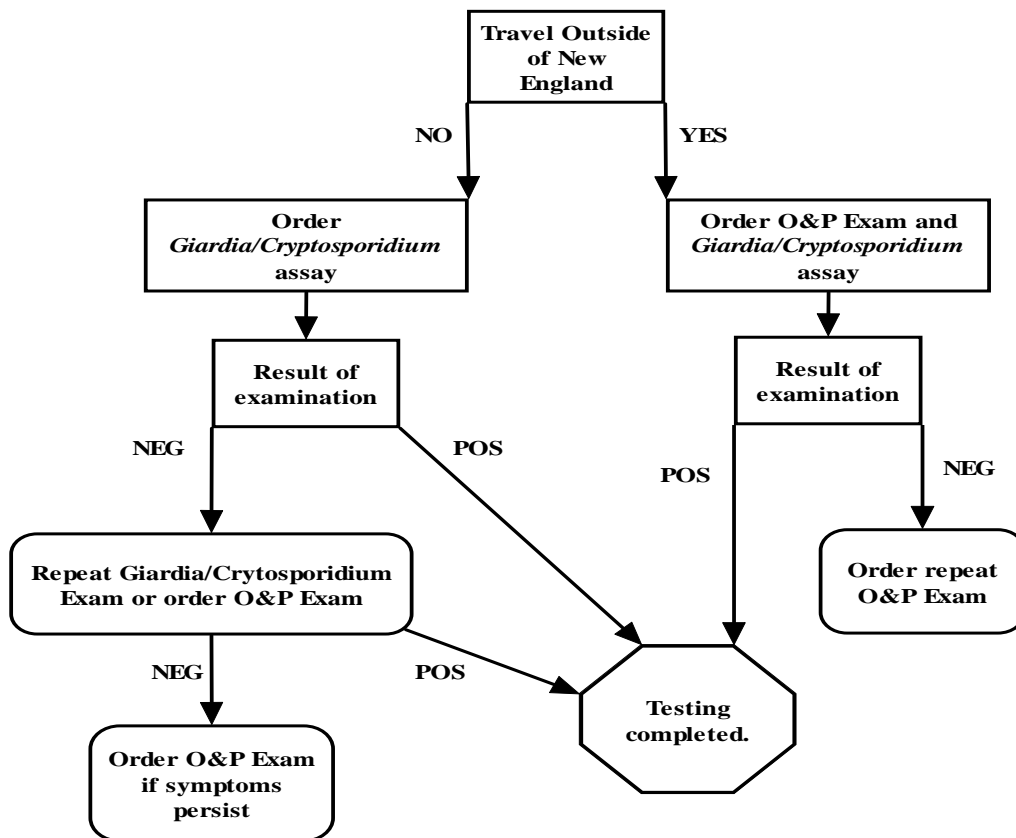
TEST NAME	COLLECTION & STORAGE
<p><b>FECAL CULTURE STOOL CULTURE</b></p> <p>Routinely cultured for these pathogens: Salmonella, Shigella, E. coli O157:H7 and Campylobacter. If Yersinia suspected specify on requisition.</p>	<p><i>Feces:</i> Submit a small amount of fresh feces in a clean specimen container. A walnut sized specimen is sufficient for culture. If the specimen cannot be transported to the lab <u>within 2 hours</u>, place stool into transport vials which can be obtained from Porter laboratory. Para-Pak C&amp;S vial for bacterial culture. Specimen collection kits with directions are available in the Porter laboratory. Fecal specimen is the specimen of choice for routine culture.</p> <ul style="list-style-type: none"> <li>❖ <i>Rectal Swabs:</i> Some fecal material should be visible on the swab.</li> <li>❖ <u>Samples are not accepted from inpatient after the third hospital day, without prior consultation.</u></li> </ul> <ul style="list-style-type: none"> <li>❖ <i>Timing of specimen for suspected Bacterial Infection:</i> One specimen is sufficient for diagnosis of bacterial gastroenteritis and antibiotic associated diarrhea/pseudomembranous enterocolitis (Clostridium difficile infection).</li> <li>❖ Selective and enrichment media is inoculated to isolate the organism specified by type of culture ordered. Campylobacter, Salmonella, Shigella, and E. coli O157:H7 isolates are sent to the Vermont State Laboratory for confirmation and/or serological typing. All positive results are called to the patient's physician as soon as an organism is identified or suspected.</li> <li>❖ Final results are usually available in 48-72 hours. Identification and sensitivities are an additional charge.</li> </ul>
<p><b>FECAL SAMPLE FOR POLYS</b></p> <p>(GRAM STAIN) Gram stain will be done</p>	<ul style="list-style-type: none"> <li>❖ Collection: Same as Culture, Fecal/Stool. Deliver to lab as soon as possible.</li> <li>❖ The presence of large numbers of white blood cells is suggestive of infection by an invasive organism. Large numbers of monocytes are associated with infections caused by <i>Salmonella typhi</i>. The presence or absence of white blood cells (leukocytes) is noted.</li> <li>❖ Final results are usually available in 4 hours.</li> </ul>
<p><b>FUNGAL CULTURE</b></p>	<ul style="list-style-type: none"> <li>❖ See Fungal Infections.</li> <li>❖ Candida overgrowth will be detected on routine culture.</li> <li>❖ Consult Pathologist if other fungi are suspected. Pathologist approval required.</li> </ul>
<p><b>GIARDIA/ CRYPTOSPORIDIUM AG</b></p>	<ul style="list-style-type: none"> <li>❖ Collect sample in a bedpan, avoiding contamination with urine. <u>Samples are not accepted from inpatient after the third hospital day, without prior consultation.</u></li> <li>❖ If patient is at home, place a piece of plastic wrap over the toilet opening and collect passed stool sample (avoid contamination with toilet water).</li> <li>❖ Place feces in clean container (walnut size piece of stool).</li> <li>❖ Specimen should be free of contaminants such as barium and chemicals.</li> <li>❖ Submit at room temperature.</li> <li>❖ If unable to transport specimen to the lab <u>within 24 hours</u> of collection, use the Orange capped Stool Vial which are available from Porter Lab. Submit refrigerated.</li> </ul>
<p><b>MICROSPORIDIUM EXAM</b></p>	<ul style="list-style-type: none"> <li>❖ Collect sample in a bedpan, avoiding contamination with urine.</li> <li>❖ If patient is at home, place a piece of plastic wrap over the toilet opening and collect passed stool sample (avoid contamination with toilet water).</li> <li>❖ Place feces in clean container (walnut size piece of stool).</li> <li>❖ Specimen should be free of contaminants such as barium and chemicals. Submit at room temperature.</li> <li>❖ If unable to transport specimen to the lab <u>within 2 hours</u> of collection, use the UNIFIX O&amp;P kit which are available from Porter Lab. Submit at room temperature. Sent to FAHC.</li> </ul>
<p><b>MYCOBACTERIAL (AFB) CULTURE</b></p>	<p>A pathologist must approve requests for mycobacterial culture.</p>
<p><b>OCCULT BLOOD, FECES</b></p>	<p>See Fecal Occult Blood, 1-3 Specimens</p>
<p><b>OVA/PARASITE EXAM</b></p>	<ul style="list-style-type: none"> <li>❖ Collect sample in a bedpan, avoiding contamination with urine. <u>Samples are not accepted from inpatient after the third hospital day, without prior consultation.</u></li> <li>❖ If patient is at home, place a piece of plastic wrap over the toilet opening and collect passed stool sample (avoid contamination with toilet water).</li> <li>❖ Place feces in clean container (walnut size piece of stool).</li> <li>❖ If unable to transport specimen to the lab <u>within 24 hours</u> of collection, use the UNIFIX O&amp;P kit which are available from Porter Lab.</li> <li>❖ Specimen should be free of contaminants such as barium and chemicals. Sent to FAHC.</li> </ul>

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

**Fecal Testing (cont.)**

TEST NAME	COLLECTION & STORAGE
PINWORM TEST	<ul style="list-style-type: none"> <li>❖ Scotch tape preparation or send organism in clean container. Use only clear tape.</li> <li>❖ Sent to FAHC.</li> </ul>
ROTAVIRUS ANTI-GEN, FECES	<ul style="list-style-type: none"> <li>❖ 5-10 g (minimum volume: 5 g) of feces. Place in a screw-capped, sterile container in a tightly-sealed plastic bag and send frozen to lab.</li> <li>❖ Testing performed at Mayo Medical Laboratories</li> <li>❖ Results in 3-5 days.</li> </ul>
SALMONELLA SCREEN CULTURE	<ul style="list-style-type: none"> <li>❖ Collection: Same as Culture, Fecal/Stool, BUT cultured for Salmonella sp. ONLY.</li> <li>❖ Final results are usually available in 48-72 hours. Identification and sensitivities are an additional charge.</li> </ul>
VIRUS CULTURE, OTHER	See Virology and Rotavirus testing
VRE SCREEN CULTURE	<ul style="list-style-type: none"> <li>❖ Rectal swab is preferred specimen, but fecal samples are accepted.</li> <li>❖ Sample will be screened for Vancomycin Resistant Enterococcus only.</li> <li>❖ Final results are usually available in 48-72 hours. Identification and sensitivities are an additional charge.</li> </ul>
WORM ID	See Worm Identification

**Suggested Algorithm For Diagnosis Of Parasitic Gastroenteritis**



The sensitivity of the direct immunofluorescence assay for the detection of *Giardia lamblia* and *Cryptosporidium parvum* is equal to or exceeds the microscopic O&P examination. Most intestinal parasites are excreted sporadically. Three specimens collected every other day over a period not to exceed 10 days are recommended, if the initial examinations are negative. Many parasites can be detected with fewer specimens, and the immunoassays may decrease the number of specimens required for *Giardia lamblia*.

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**GC Testing – See Neisseria Gonorrhoea Testing**

**Genital Specimens**

TEST NAME	COLLECTION & STORAGE
<b>ROUTINE CULTURE (BACTERIA)</b>	<ul style="list-style-type: none"> <li>❖ Dual swab in transport media</li> <li>❖ Do not refrigerate specimen.</li> <li>❖ Gram stain done routinely on most sources. Indicate the source on Porter requisition form.</li> <li>❖ Does not include detection of N. gonorrhoea.</li> <li>❖ Potential pathogens are identified and sensitivities done when appropriate.</li> <li>❖ Final reports are usually complete in 72 hours.</li> </ul>
<b>ANA &amp; AEROBIC (ROUTINE) CULTURE</b>	<ul style="list-style-type: none"> <li>❖ Swab specimens are unacceptable,</li> <li>❖ Please submit tissue, fluid or pus collected and transported anaerobically. Available only for specimens from normally sterile sites.</li> <li>❖ Specimens must be submitted to the laboratory in an anaerobic environment i.e. in an air-free syringe (needle removed and syringe capped) immediately.</li> <li>❖ Gram stain done routinely on most sources.</li> <li>❖ Does not include detection of N. gonorrhoea.</li> <li>❖ Potential pathogens are identified and sensitivities done when appropriate.</li> <li>❖ Final reports are usually complete in 5 days with preliminary released in 72 hours.</li> </ul>
<b>GROUP B STREP CULTURE</b>	See Group B Strep Culture.
<b>FUNGUS CULTURE/SMEAR</b>	See Mycology – Fungal Specimens
<b>GC CULTURE</b>	See Neisseria Gonorrhoea Testing
<b>GRAM STAIN</b>	<ul style="list-style-type: none"> <li>❖ Same as in routine culture above</li> <li>❖ Gram stains are done when requested, provided two or three swabs are obtained.</li> <li>❖ Gram stains are always done on anaerobic culture requests. The presence or absence of polynuclear cells and bacteria (including gram negative intra-cellular diplococci) will be reported.</li> </ul>
<b>HERPES SIMPLEX (HSV) by PCR</b>	See Herpes Simplex by PCR under Viral Testing
<b>HUMAN PAPILOMAVIRUS (HPV) PROBE ON CERVICAL SAMPLES</b>	<ul style="list-style-type: none"> <li>❖ Certain genotypes of Human Papillomavirus (HPV) play a major role in the pathogenesis of epithelial cancers of the male and female genital tract. Other genotypes are the cause of genital warts.</li> </ul> <p>Sample Collection</p> <ul style="list-style-type: none"> <li>❖ A ThinPrep vial used when collecting specimen for a PAP smear can be used for detection of HPV.</li> <li>❖ The sample can also be submitted in an Thin Prep vial .</li> </ul> <p>Testing and Reporting</p> <ul style="list-style-type: none"> <li>❖ HPV cannot be cultured. A DNA hybridization technique is performed.</li> <li>❖ If positive for HPV DNA, high and low risk types are reported on the day of testing.</li> </ul>
<b>N. GONORRHEA</b>	❖ See Neisseria Gonorrhoea Testing
<b>STREPSCREEN</b>	❖ See Group B Strep Culture
<b>TZANK (HERPES) SMEAR</b>	<ul style="list-style-type: none"> <li>❖ See Tzank (Herpes) Smear in Cytology section.</li> <li>❖ Sent to FAHC.</li> </ul>
<b>VIRUS CULTURE, OTHER</b>	<ul style="list-style-type: none"> <li>❖ Viral culture on cervical samples</li> <li>❖ Rarely other viruses such as cytomegalovirus are suspected. Collect and submit as for herpes simplex culture. Order a full viral culture specifying virus(s) to be tested. See FAHC Lab website for more information.</li> </ul>
<b>WET SMEAR (SALINE)</b>	<ul style="list-style-type: none"> <li>❖ Tube with 0.5 mL Sterile saline</li> <li>❖ Deliver to Laboratory immediately</li> <li>❖ Preparation must remain moist.</li> <li>❖ Checked for Trichomonas, yeast, and clue cells as appropriate for source of specimen.</li> </ul>
<b>YEAST CULTURE</b>	❖ See Diagnosis of Fungal Infections

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**Genprobe – See Neisseria gonorrhoea testing and Chlamydia testing**

**Giardia/Cryptosporidium AG – See Fecal Testing**

**Group B Strep Culture**

TEST NAME	COLLECTION & STORAGE
<b>GROUP B STREP CULTURE</b>  Reported In : 48-72 hours	<ul style="list-style-type: none"> <li>❖ <b>Maternal genital cultures:</b> Submit two separate swabs (dual swab) in transport media; one from the vagina, the second from the rectum.</li> <li>❖ <b>Infant cultures:</b> Submit a double swab in transport media from each site. Break the ampule in the swab holder to release the holding media. Submit a completed requisition for <b>each</b> site tested.</li> <li>❖ Break the ampule in the swab holder to release holding media.</li> <li>❖ Transport at Room Temperature</li> <li>❖ This test should be requested only for maternal genital cultures or for any culture taken from the infant at risk.</li> <li>❖ If an organism other than <i>Group A</i> or <i>B streptococcus</i> or <i>Streptococcus pneumoniae</i> is suspected, a <b>CULTURE, ROUTINE</b> should be ordered.</li> </ul>

**Herpes Simplex by PCR**

TEST NAME	COLLECTION & STORAGE
<b>HERPES SIMPLEX (HSV) by PCR</b>	<ul style="list-style-type: none"> <li>❖ Place swab from genital, sites, lesions, vesicular fluid or tissue in M5 Broth</li> <li>❖ Dacron swabs should be used for lesions. Recovery of HSV is directly related to the volume of vesicular fluid obtained.</li> <li>❖ M5 broth must be stored refrigerated. Transport inoculated broth, refrigerated.</li> <li>❖ Culture examined for Herpes Simplex. To rule out Herpes Zoster virus, order Viral Culture. (Herpes Simplex included in Virus Culture.)</li> <li>❖ Results available in 24-72 hours.</li> </ul>
<b>HERPES ZOSTER</b>	See Virology
<b>TZANK (HERPES) SMEAR</b>	Cytology Section for additional information on collection, submission, and reporting of specimen.

**Human Papillomavirus (HPV) probe – See Genital Specimens**

**Influenza Testing**

TEST NAME	COLLECTION & STORAGE
<b>INFLUENZA A &amp; B AG (Rapid)</b>	Collect sample from one of the following sites: <ul style="list-style-type: none"> <li>❖ Dual Swab of Throat</li> <li>❖ NP Swab of Nasal Pharyngeal</li> <li>❖ Nasal Aspirate Note: Nasopharyngeal swabs and throat swabs must be DACRON.</li> <li>❖ Results available STAT.</li> <li>❖ Results called.</li> <li>❖ This test is not recommended for diagnosis of H1N1 respiratory illnesses.</li> </ul>

**Legionella Testing**

TEST NAME	COLLECTION & STORAGE
<b>LEGIONELLA ANTIGEN, URINE</b>	<ul style="list-style-type: none"> <li>❖ 20 mL of clean catch urine (minimum volume 1.5 mL) in sterile container if culture also needed. First morning voided urine preferred.</li> <li>❖ Sent to FAHC. Result in 24-48 hours.</li> </ul>
<b>LEGIONELLA CULTURE, OTHER</b>	<ul style="list-style-type: none"> <li>❖ <b>WHOLE BLOOD</b> – Collect in Isolator tube following blood culture procedure.</li> <li>❖ Respiratory and tissue – Collection and storage same as for bacterial culture.</li> <li>❖ Sent to FAHC. Negative result final in 10 days.</li> </ul>

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**Microsporidium Exam – See Fecal Testing**

**Mycology – Fungal Specimens**

**Fungal Culture/Smear**

All testing for Fungus Cultures are referred to FAHC Microbiology Laboratory

- Testing includes culture, identification (additional charges)
- If Fungal smear is required, be sure to specify Smear and Culture

**Procedure and Reporting of Fungal Cultures on Wounds and Sterile Sites**

- Fungal smears are performed when requested.
- Tissue samples are finely macerated and plated on media.
- All specimens are plated on media that support the growth of fungal organisms (both yeast and mold) while inhibiting bacterial flora.
- Plates are read twice during the first week of incubation and weekly thereafter.
- Cultures are incubated for 4 weeks. Final reports in 4 weeks.
- Negative: No fungi isolated
- Plates are kept in the laboratory 30 days after finalization in case further testing is required.

TEST NAME	COLLECTION & STORAGE
FUNGUS CULTURE OTHER – With or Without Smear	<ul style="list-style-type: none"> <li>❖ <b>Body fluids including CSF</b> should be aseptically collected into a sterile tube, or sent in a capped, (no needle) syringe.</li> <li>❖ <b>Bronchial Washings, Tracheal Aspirates:</b> Aseptic technique should be used to collect the specimen. Place the specimen in a clean container.</li> <li>❖ <b>Eye, Ear, Nasal Sinuses and Buccal Mucosa:</b> Scrapings of the lesions are the specimens of choice. Place the scrapings in a clean container. Swabs are acceptable for recovery of true yeasts.</li> <li>❖ <b>Urine:</b> The first, early morning specimen is preferred. The specimen should be collected through a catheter or by clean-catch technique and placed in a clean, screw-capped specimen container. Twenty-four hour collections are not appropriate.</li> <li>❖ <b>Vaginal Secretions:</b> Aspirates of cervical or purulent vaginal secretions are preferred. A swab is adequate for yeast only. Two swabs are needed if a smear is also requested.</li> <li>❖ <b>Wound and Miscellaneous Specimens:</b> Specimens should be collected from the periphery of open abscesses and ulcers by tissue biopsy or scraping. Closed lesions should be aspirated with a syringe. A swab may be adequate for yeast only. Two swabs are needed if a smear is also requested.</li> <li>❖ Refrigerate specimen</li> </ul>
FUNGUS CULTURE RESPIRATORY/ SPUTUM - With or Without Smear	<ul style="list-style-type: none"> <li>❖ <b>Sputum:</b> Collect in sterile container. The first, early-morning specimen is preferred. Care should be taken that the specimen contains sputum from the lungs and does not represent saliva or nasopharyngeal secretions.</li> <li>❖ Refrigerate specimen</li> </ul>
FUNGUS CULTURE SKIN,HAIR OR NAIL	<ul style="list-style-type: none"> <li>❖ <b>Hair:</b> Infected hairs should be plucked and placed in a clean tube.</li> <li>❖ <b>Nails:</b> The area should be thoroughly cleaned with 70% alcohol to remove surface contaminants and medication. After the alcohol has dried, the active edge of the lesion or top of the vesicle should be scraped with a sterile scalpel. The scrapings should be placed in a sterile tube. A portion of the infected nail should be excised and placed in a sterile tube.</li> <li>❖ Refrigerate specimen</li> </ul>
FUNGUS CULTURE TISSUE	<ul style="list-style-type: none"> <li>❖ <b>Bone Marrow:</b> At least 0.5ml of specimen should be collected and injected into a sterile vacuum tube containing 0.5ml of Grobax anticoagulant (available from Porter Laboratory).</li> <li>❖ <b>Tissues:</b> Aseptic technique should be used to collect the specimen. It should be placed in a sterile transport vial. Tissue may range in size from 1-20 mm. A 10 mm biopsy is preferred.</li> <li>❖ Refrigerate specimen</li> </ul>
FUNGUS CULTURE, BLOOD	<ul style="list-style-type: none"> <li>❖ Use Isolator tube, available form lab.</li> <li>❖ Most yeasts are recovered by usual blood culture method.</li> <li>❖ Store and Transport at Room Temperature</li> </ul>
WET SMEAR (SALINE)	<ul style="list-style-type: none"> <li>❖ See Vaginal Specimens</li> </ul>
YEAST	See FUNGUS CULTURE

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**Mycobacterial (AFB) Culture/Smear**

- All testing for AFB is referred to FAHC Microbiology Laboratory
- Testing includes culture, identification (additional charges) and if culture results warrant, susceptibility testing (at additional charge) of all indicated organisms.
- If AFB smear is required, be sure to specify Smear and Culture

**Procedure and Reporting of Mycobacterial culture on wounds and sterile sites**

- Smears are performed when requested.
- Swab samples are not acceptable
- Sample decontamination and processing is performed Monday, Wednesday and Friday at FAHC.
- Samples are inoculated to plate media and a liquid medium as well. The liquid medium is monitored on a continuous read instrument.
- Cultures are incubated for 6 weeks.
- Negative: No acid-fast bacilli isolated.
- Positive: When organisms are detected the clinician is also called with a verbal report.
- Cultures with organisms growing are maintained in the laboratory for 30 days after finalization.

TEST NAME	COLLECTION & STORAGE
AFB CULTURE, BLOOD	<ul style="list-style-type: none"> <li>❖ WHOLE BLOOD collected in ISOLATOR TUBE. Use Isolator tube, available form lab.</li> <li>❖ Store and Transport at Room Temperature</li> <li>❖ Use for isolation of M. Avium/ M. Intracellulare/MAI complex, and other Mycobacteria.</li> </ul>
AFB CULTURE, OTHER With or without smear	<ul style="list-style-type: none"> <li>❖ FLUID, CSF, ASPIRATED PUS, TISSUE collected in sterile container</li> <li>❖ Store and Transport at Room Temperature</li> </ul>
AFB CULTURE, RESPIRATORY with or without smear	<ul style="list-style-type: none"> <li>❖ SPUTUM, LUNG TISSUE, ASPIRATES FROM RESP. SITES collected in sterile container</li> <li>❖ Store and Transport at Room Temperature</li> <li>❖ Sputum: 2-3 early morning specimens recommended for sputum samples.</li> </ul>
AFB SMEAR ONLY, OTHER	<ul style="list-style-type: none"> <li>❖ SPUTUM, LUNG TISSUE, ASPIRATES FROM RESP. SITES collected in sterile container</li> <li>❖ Due to the low sensitivity of the AFB smear, smear only requests are not accepted except for follow-up respiratory specimens in patients being treated for tuberculosis.</li> </ul>

**Nasal Specimens**

**Note: The Outpatient Laboratory is not staffed with personnel who are trained to collect a specimen from the nasopharynx and/or nasal aspirates or washings.**

TEST NAME	COLLECTION & STORAGE
BORDETELLA BY RAPID PCR	See Bordetella By Rapid PCR
MRSA CULTURE	Using a flexible wire swab (calcium alginate or Dacron) obtain a specimen from the posterior nasopharynx. If resistance is met, use the opposite nares. Leave the swab in place 20-30 seconds if possible. Plates will only be examined for MRSA. Additional charges for identification and sensitivity if MRSA isolated.
ROUTINE CULTURE	Using a flexible wire swab (calcium alginate or Dacron) obtain a specimen from the posterior nasopharynx. If resistance is met, use the opposite nares. Leave the swab in place 20-30 seconds if possible. Additional charges for identification and sensitivity.
FUNGUS CULTURE	See Fungal Infections
INFLUENZA	See Influenza testing
RSV ANTIGEN	See RSV Testing
VIRUS CULTURE	See Virology

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**Neisseria Gonorrhoea Testing**

**Handling of Culture Plates for GC**

**A. Storage** instructions for GC Selective Media Kits

1. Store the plates at 2 - 8° C. Freezing or overheating must be avoided.
2. The CO<sub>2</sub> tablets and bags may be stored with the plates at 2 - 8° C or separately at room temperature.
3. The expiration date applies to unopened packages of plates stored as directed. Open packages should be re-sealed with masking tape to insure proper storage conditions.
4. Please observe outdate on the packages of media. Discard any outdated plates.
5. Examine plates to make sure agar surfaces are smooth and moist, but without excessive moisture. **DO NOT** use plates that show evidence of bacterial contamination, drying or cracking.
6. **DO NOT** use bags if perforated or defective.
7. Tablets should not be used if damaged (broken tablet or foil torn).

**B. Inoculation**

1. Bring the GC Selective Media plate and Chocolate agar plate to room temperature prior to use (approximately 15 - 20 minutes). Label plate with patient's name and date.
2. Roll the swab directly on the GC Selective Media plate in a large "Z" to provide adequate exposure of the swab to the medium and transfer of organisms. Roll the swab in an area the size of a quarter at the edge of the round chocolate plate.
3. **Deliver to Porter laboratory within 20 minutes. If delivery is delayed over 20 minutes, inoculate only the GC Selective Media plate and do the following:**
  - a) Cross streak the "Z" with a sterile bacteriologic loop or fresh swab.
  - b) With alcohol sterilized forceps, remove a CO<sub>2</sub> generating tablet from its foil wrapper. Place the tablet in the specially designed well in the plate. **DO NOT** add water to the tablet, moisture within the system is adequate to activate the tablet.
  - c) Place inoculated plate in the polyethylene bag provided (one plate per bag). Seal the bag by pressing down on the "zipper" at one end of the bag with one's fingers and slide along to the opposite side. Be sure the bag is sealed completely.
  - d) The sealed GC Selective Media system should be delivered to the laboratory as soon as possible after collection. Care should be taken to protect the culture from extreme heat or cold during transportation.

TEST NAME	COLLECTION & STORAGE
<p><b>GC SCREEN CULTURE</b></p> <p>Report in: 72 hours</p>	<ul style="list-style-type: none"> <li>❖ GC Selective Media Kit or Swab. Obtain GC Media Kit from lab. Deliver immediately (less than 15 minutes) to laboratory.</li> <li>❖ N. gonorrhoea AMP Probe is recommended test for genital sources</li> </ul> <p><b><u>Genital Sites:</u></b> Avoid use of lubricants or disinfectants, which may be toxic to and inhibit growth of organisms. Use only warm water or sterile saline.</p> <ul style="list-style-type: none"> <li>❖ <b><u>Females:</u></b> the cervix is the optimal site for culture when GC is suspected.               <ul style="list-style-type: none"> <li>➢ Excess mucus should be removed from the cervix prior to obtaining the specimen.</li> <li>➢ Insert the culture swab into the endocervical canal, move from side to side and leave in place for 10-20 seconds to allow organisms to absorb onto the swab.</li> <li>➢ Avoid contact with the vaginal mucosa. Note: If present, purulent discharge from the urethra or Bartholin's duct should be sampled as well.</li> <li>➢ Vaginal specimens: may be obtained from pre-pubertal female patients by swabbing the vaginal mucosa.</li> </ul> </li> <li>❖ <b><u>Males:</u></b> purulent urethral discharge may be expressed and collected on a swab inserted 2 - 3 cm into the urethra and gently rolled as it is withdrawn.               <ul style="list-style-type: none"> <li>➢ <b><u>Rectal specimens</u></b> may be obtained to increase the yield in females (especially previously treated or asymptomatic patients) and when anal intercourse is suspected. A rectal specimen is obtained by inserting a swab 4 - 5 cm into the anal canal, move gently from side to side and then leave in place for approximately 20 seconds to allow for absorption of organisms onto the swab. If the first swab is heavily contaminated with feces, a second swab should be used for the culture specimen.</li> </ul> </li> </ul> <p><b><u>Oropharyngeal Specimens</u></b> should be obtained when oral intercourse is suspected. The oropharynx is sampled by swabbing the posterior pharynx and peritonsillar crypts.</p>

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**Neisseria Gonorrhoea Testing (cont.)**

<p><b>N. GONORRHEA AMP PROBE</b></p> <p>Report in: 48 to 72 hours</p>	<ul style="list-style-type: none"> <li>❖ Aptima Swab (Genprobe) from: Cervix, vagina, endocervix, urethral, urine samples only. Swab Collection: See collection kit.</li> <li>❖ See Aptima Swab for directions on collection.</li> <li>❖ Storage: Ambient Transport – Ambient for Aptima specimen transport tubes, urine or swab.</li> </ul>	<p>Aptima Urine Specimen Transport Tube or Urine in clean container</p> <p><b>Urine collection:</b> The patient should not have urinated for at least 1 hour prior to specimen. Do not cleanse area prior to collection; this is a first void, NOT a clean catch, mid stream sample. Collect 2-30 mL.</p> <ul style="list-style-type: none"> <li>❖ If the sample can be delivered to the lab within 24 hours, it may be held in original container at 2-30° C. If delivery will be delayed place sample in Aptima urine specimen transport tubes (available with instructions from Lab).</li> </ul>
---	--	---

**Ova and Parasite Exam – See Fecal Testing**

**Parasite Exam, Blood**

TEST NAME	COLLECTION & STORAGE
<p><b>PARASITE EXAM, BLOOD</b></p>	<ul style="list-style-type: none"> <li>❖ Whole blood collected in lavender (EDTA) top tube</li> <li>❖ Transport: To laboratory as soon as possible – refrigerated               <ul style="list-style-type: none"> <li>➢ The timing of blood collection is not as important as collecting multiple samples on consecutive days. Samples should be collected at the time of the fever spike.</li> </ul> </li> <li>❖ Fresh sample is critical. If blood is not expected to arrive in lab with 1-2 hours of collection, it is best to prepare 4 thin film slides from specimen. Send slides along with original specimen.               <ul style="list-style-type: none"> <li>➢ Whenever possible, two thin smears should be made from the sample shortly after collection and submitted along with the blood.</li> </ul> </li> <li>❖ Examined for Malaria, Trypanosomes, Microfilaria, Borrelia, and Babesia.</li> <li>❖ Procedure and Reporting               <ul style="list-style-type: none"> <li>➢ Thick and thin smears are stained to increase the likelihood of detecting organisms.</li> <li>➢ The presence or absence of blood parasites is reported.</li> </ul> </li> </ul>

**Parasite Exam, Feces - See Fecal Testing**

**Pinworm**

TEST NAME	COLLECTION & STORAGE
<p><b>PINWORM EXAM</b></p>	<ul style="list-style-type: none"> <li>❖ Patient Preparation: Collect specimen after a period of rest, prior to bathing.</li> <li>❖ Specimen: Perianal</li> <li>❖ Container: Clear cellulose tape and glass slide</li> <li>❖ Collection: With a clear cellulose tape, collect a perianal specimen by placing the tape against the perianal area and pressing the tape. Place the tape, adhesive side down on an unfrosted glass microscope slide.</li> <li>❖ Storage instructions: Room temperature</li> <li>❖ Causes for Rejection: Submission of feces</li> <li>❖ Turnaround Time: 1 day; test performed Monday-Friday</li> <li>❖ Special Instructions: Before a patient is considered negative, preparations should be taken for at least 4-6 consecutive days with negative results.</li> </ul>

**Rapid Influenza Testing – See Influenza Testing**

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

**Respiratory Specimens**

SOURCE	COLLECTION & STORAGE
AFB SMEAR	❖ Due to the relatively low sensitivity of the "AFB Smear", smear only requests are not offered.
AFB CULTURE - With or Without Smear	❖ See Mycobacterium section for additional information. ❖ Sputum specimens for AFB should contain 10 ml of specimen. ❖ Smear results are available daily. Culture results are available in 6 to 7 weeks.
SPUTUM CULTURE	❖ Indicate method of collection on requisition ❖ Specimens should originate from the lungs or bronchial tree. Saliva and postnasal drip material are not suitable. Specimens may be obtained by expectoration, bronchoscopy, or transtracheal aspiration. Submit the specimens in a clean screw capped container, syringe, or Leukens tube. Make sure all containers are leak proof before sending. ❖ Deliver to the laboratory as soon as possible. Refrigerate, if delay in delivery. ❖ Any normal oropharyngeal flora is reported as usual throat flora. Susceptibility tests are routinely performed on potential pathogens when appropriate. ❖ Results are usually completed after 48 hours.
ROUTINE CULTURE	❖ Indicate specimen source on requisition ❖ Deliver to the laboratory as soon as possible. Refrigerate, if delay in delivery.
ANA/AEROBIC CULTURE	❖ Protected catheter brush, lung biopsy, transtracheal aspirate, and normally sterile sites. ❖ Not available for sputum, bronchoscopy samples, bronchoalveolar lavage, or tracheal aspirations. ❖ Specimens must be submitted to the laboratory in an anaerobic environment i.e. in an air-free syringe. ❖ Deliver to the laboratory STAT
FUNGUS CULTURE RESPIRATORY/ SPUTUM	❖ See Fungal Infections for additional information. ❖ The first early-morning sample is preferred. Care should be taken that the specimen contains sputa from the lungs and does not represent saliva or nasopharyngeal secretions. ❖ Fungus Smear is done when requested for transtracheal, bronchoscopy, and lung biopsy specimens. Fungus cultures on expectorated sputum samples should meet at least one of the following criteria: 1. Suspected fungal pneumonia in an immunocompromised host 2. Suspected allergic bronchopulmonary aspergillosis 3. Suspected mycetoma 4. Suspicion of dimorphic mold infection with exposure history ❖ Smear results are available daily. Culture results are available in 4 weeks.
GRAM STAIN	❖ Gram stains are done routinely when Routine or Anaerobic culture is ordered ❖ The presence or absence of white blood cells (polys), alveolar macrophages, and bacteria will be reported. If present, the following are also reported: squamous and respiratory epithelial cells, and mucus. Stat stains are reported via computer as soon as testing is complete. <ul style="list-style-type: none"> <li>• If the smear contains more than 25 squamous epithelial cells per LPF the report will read "specimen contaminated with saliva, suggest repeat" and no further workup will be performed.</li> <li>• If the smear contains less than 5 polys per LPF the report will read "Sputum shows no inflammatory exudates" and no further workup will be performed.</li> </ul> ❖ In both instances the physician/nursing unit will be notified so that another specimen can be obtained if indicated.
INFLUENZA	❖ See Influenza testing
LEGIONELLA CULTURE	❖ See Legionella Testing. ❖ Referred to FAHC Lab.
RSV ANTIGEN	❖ See RSV Testing

**Rotavirus Testing – See Fecal Testing**

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**RSV Testing**

TEST NAME	COLLECTION & STORAGE
RSV ANTIGEN	<ul style="list-style-type: none"> <li>❖ Obtain nasal washing as follows: Instill a small amount of sterile saline into the nares, wait for up to 30-60 seconds, and aspirate the material into a trap. (3 ml if possible).</li> <li>❖ Nasal swabs or aspirates are acceptable.</li> <li>❖ Throat swabs are not acceptable for RSV cultures or smears; they are sub-optimal for all respiratory viruses.</li> <li>❖ Transport on wet ice as quickly as possible to the laboratory.</li> <li>❖ Results available STAT.</li> </ul>
RSV CULTURE	<ul style="list-style-type: none"> <li>❖ Referred to FAHC Laboratory.</li> <li>❖ To order check "Virus culture" under Culture heading and indicate source of the specimen and write RSV culture under comments.</li> </ul>

**Solid Objects And Catheter Tips**

TEST NAME	COLLECTION & STORAGE
ROUTINE CULTURE	<ul style="list-style-type: none"> <li>❖ Specimens include intravascular catheter tips, orthopedic screws and nails. Foley catheter tips are <u>not</u> acceptable for culture.</li> <li>❖ Submit the specimen in a sterile tube or other sterile container. Deliver to the laboratory as soon as possible. Refrigerate, if delay in delivery to laboratory</li> <li>❖ <u>Intravascular catheter tips:</u> All isolated organisms are identified and susceptibility tests are done when appropriate.</li> <li>❖ <u>Solid objects such as screws, nails:</u> These solid objects are placed directly into liquid growth medium. The broth is incubated for 5 days. All isolated organisms are identified and susceptibility tests are done when appropriate.</li> </ul>

**Throat Specimens**

TEST NAME	COLLECTION & STORAGE
GROUP A RAPID STREP	<ul style="list-style-type: none"> <li>❖ Collection: A bright light from over the shoulder should be directed toward the oral cavity to aid in guiding the swab to the back of the pharynx. The patient should tilt the head back. Using a tongue blade, depress the tongue to visualize the tonsillar area and the pharynx. Asking the patient to say "ah" will lift the uvula and help to prevent the patient from gagging. Care should be taken not to touch the tongue or walls of the mouth to minimize contamination with usual oropharyngeal flora. The swab is rubbed between and over the tonsillar area and posterior pharynx, If there is purulent exudate present, this should also be sampled.</li> <li>❖ Submit sample at room temperature.</li> <li>❖ This is a rapid antigen test for Strep A. This test does not differentiate between colonization and acute infection.</li> <li>❖ Only acceptable source is "Throat".</li> <li>❖ Results available STAT.</li> </ul>
GROUP A STREP CULTURE	<ul style="list-style-type: none"> <li>❖ From Throat – Same as above. Dry swab is also acceptable from throat.</li> <li>❖ Collection from other sites: See collection information for routine culture of site.</li> <li>❖ Specimens are inoculated to a blood agar plate that is incubated for 48 hours.</li> <li>❖ The presence or absence of Group A beta hemolytic streptococci is reported.</li> </ul>
RAPID STREP NEG, DO CULTURE	<ul style="list-style-type: none"> <li>❖ This is a reflex test. The Rapid test is done first. If the Rapid test is negative, a culture is done (additional charge)</li> </ul>
ROUTINE CULTURE	<ul style="list-style-type: none"> <li>❖ <u>For abscesses of the throat. Specify "Throat" as source on requisition.</u></li> <li>❖ The laboratory will look for <i>Haemophilus influenzae</i>, <i>Neisseria meningitidis</i>, <i>Streptococcus pneumoniae</i> and <i>Staphylococcus aureus</i> (Coagulase positive) in addition to Group A Beta Hemolytic Streptococci when routine culture is requested. Other potential pathogens will be reported after consultation with a pathologist.</li> <li>❖ Final results are available in 2 days.</li> </ul>
GC SCREEN CULTURE	<ul style="list-style-type: none"> <li>❖ Specify throat as source on requisition. See Neisseria gonorrhoea tests for more information.</li> </ul>

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**Tick for Identification – See Arthropod ID**

**Urine**

- ☒ Transport samples to the laboratory as soon as possible. If the specimen cannot be processed within one hour, refrigerate the specimen at 4°C. Bacterial counts will remain stable at 4°C for 24 hours.
- ☒ If the sample is received after a delay or unrefrigerated, a disclaimer will be included in the patient report.
- ☒ Specify METHOD OF COLLECTION on request.
- ☒ Specimens may be obtained by clean midstream voided urine collection technique (See Section 2 for instructions), catheterization, suprapubic tap, or by cystoscopy. Please indicate whether catheter was "mini-cath" or in-dwelling.

TEST NAME	COLLECTION & STORAGE
CYTOMEGALOVIRUS (CMV)	❖ See Virology
FUNGAL CULTURE	❖ See Mycology for additional information. ❖ Special media to support the growth of fungal organisms (and inhibit bacteria) are used.
GC PROBE	❖ See Neisseria gonorrhoea testing
GRAM STAIN	❖ Performed on an unspun urine sample. The presence of bacteria, yeast, and polys are reported with an approximate quantity. More than one bacterium/OIF correlates generally with colony counts > 100,000 CFU/ml.
N. GONORRHEA	❖ See Neisseria gonorrhoea testing
LEGIONELLA ANTIGEN	❖ See Legionella testing.
UA. DO CULTURE IF POSITIVE (UAPOS):	This is a reflex test. A UA will first be performed. If the following criteria are met, a Urine Culture is performed. ❖ Positive leukocyte esterase or Positive nitrate or Positive protein or blood on dipstick <u>and</u> 4 or more WBC/HPF <u>AND</u> specimen does not contain many epithelia cells.
URINE CULTURE, ID & SENS	<ul style="list-style-type: none"> <li>❖ Colony count will be reported and identification/susceptibility performed according to colony count and number of organism types on culture.</li> <li>❖ Colony counts are done by the calibrated loop method. The two quantitation numbers used are 10,000 CFU/ml and 100,000 CFU/ml. (CFU is colony-forming units.) All colony counts are reported using these two reference points.</li> <li>❖ Organisms are identified and susceptibility testing (see susceptibility testing) is done when more than 10,000 CFU/ml are present and not more than two different species of organisms are present.</li> <li>❖ A specimen with more than two different organisms is considered to be an unsatisfactory specimen. The floor or office will be notified through the final report and a repeat specimen will be suggested. The test will be reported as "Mixed organisms. Unable to interpret. Second Sample suggested, if indicated."</li> <li>❖ Multiple Gram Positive organisms representing skin flora or vaginal contamination will be reported as "Mixed Gram Positive Growth" regardless of colony count, without further work-up.</li> <li>❖ <u>Cystoscopy specimens</u>: Any organisms isolated will be identified, regardless of colony count.</li> <li>❖ Results are usually available in 48 hours. Organism identification and susceptibility tests are usually completed within 48 hours. Preliminary results for routine cultures received before 4PM are usually available in 24 hours.</li> </ul>
URINE ID FROM PLATE	<ul style="list-style-type: none"> <li>❖ Identification/susceptibility of organism submitted on plate performed.</li> <li>❖ Organism must be in pure culture.</li> <li>❖ The isolated organism present on the plate will be identified and sensitivities performed. If multiple organisms are present, sample will be reported as contaminated.</li> </ul>

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

**Vaginal Specimens**

SOURCE	COLLECTION & STORAGE
ROUTINE CULTURE	<ul style="list-style-type: none"> <li>❖ <u>Limited Bacterial Culture on Vaginal Specimens - Normal vaginal flora varies with age and infections are caused by a limited number of organisms. The clinician should specify the suspected pathogen.</u></li> </ul> <p>Specimen Collection - Wipe away excess secretions and obtain the sample using a swab.</p> <p>Procedure and Reporting</p> <ul style="list-style-type: none"> <li>❖ A variety of culture media, both non-inhibitory and selective, will be used to isolate indicated pathogens. Pathogens are identified and susceptibilities done if indicated.</li> <li>❖ The absence of <i>Neisseria gonorrhoeae</i>, Group A streptococci, Group B streptococci, <i>Staphylococcus coagulase positive</i>, <i>Listeria monocytogenes</i>, and yeast is reported if no infectious agent is specified.</li> </ul>
WET PREP FOR TRICHOMONAS, YEAST, AND CLUE CELLS	<p>Specimen Collection for Wet Prep</p> <ul style="list-style-type: none"> <li>❖ Submit vaginal secretions in a tube containing 0.5 mL of saline. To view the motile trophs of Trichomonas the sample should be delivered to the laboratory immediately. If immediate delivery is not possible, consider submission of material for cytological examination, or for greatest sensitivity, <i>Trichomonas</i> culture.</li> </ul> <p>Laboratory Procedure and Reporting</p> <ul style="list-style-type: none"> <li>❖ Preparations are examined microscopically for the presence of yeast and/or motile trichomonads. The presence or absence of trichomonads and yeast is reported.</li> </ul>
TRICHOMONAS VAGINALIS CULTURE	<p>Culture for Trichomonas is indicated in 2 situations:</p> <ul style="list-style-type: none"> <li>❖ If Trichomonas is suspected and the direct preparation is not available or negative. If the clinical situation is not suggestive of this diagnosis but Trichomonas was reported in cytologic exam or wet prep. Culture has been shown to be more sensitive than direct exam.</li> </ul> <p>Sample Collection for Trichomonas Vaginalis Culture</p> <ul style="list-style-type: none"> <li>❖ <u>Females:</u> Use a cotton or dacron swab and collect the sample from the posterior fornix.</li> <li>❖ <u>Males:</u> Urethral specimens are collected with a calcium alginate swab. Urine-minimum of 10 ml.</li> </ul> <p>Procedure and Reporting for Trichomonas Vaginalis</p> <ul style="list-style-type: none"> <li>❖ Swab samples or urine are introduced into the upper chamber of the InPouch TV culture system (available from FAHC Customer Service) and examined microscopically for trichomonads. If the direct exam is negative, the sample is expressed to the lower chamber and the culture is examined for 5 days, for the motile trichomonads.</li> <li>❖ The presence or absence of <i>Trichomonas vaginalis</i> is noted.</li> </ul>

**Vancomycin-Resistant Enterococcus - VRE Screen**

TEST	COLLECTION & STORAGE
VRE SCREEN CULTURE	<ul style="list-style-type: none"> <li>❖ Rectal swab is preferred specimen, but fecal samples are accepted.</li> <li>❖ Sample will be screened for Vancomycin Resistant Enterococcus only.</li> <li>❖ Final results are usually available in 48-72 hours. Identification and sensitivities are an additional charge.</li> </ul>

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**Virology**

- ☒ **RSV Antigen test is performed at Porter Hospital Laboratory**
- ☒ **All other virology testing with the exception of Rotavirus is referred to FAHC Microbiology Laboratory**
- ☒ Testing includes PCR, culture and identification (additional charges).
- ☒ Please indicate on requisition (along with demographic information), presumptive clinical diagnosis, source of specimen, and virus suspected.
- ☒ Obtain specimens as early in the patient's illness as possible.
- ☒ **Transport and storage**
  - Specimens should be delivered to the lab as soon as possible after collection.
  - If delays are unavoidable, specimens should be refrigerated during transport and storage.
  - Specimens that must be held longer than 4 days before processing should be frozen at -70°C (not -20° C). Delays in processing may result in sub-optimal results.

TEST NAME	COLLECTION & STORAGE
CMV ANTIGENIA	❖ Call Porter Laboratory to schedule. FAHC Microbiology needs to have scheduled 24-48 hours in advance. Must collect 2 green top tubes of whole blood. Must be transported so testing can be done at FAHC within 48 hours of testing.
CYTOMEGALOVIRUS	❖ PCR testing available from Mayo Medical Laboratory.
HERPES SIMPLEX VIRUS (HSV)	❖ See Herpes Testing
HUMAN PAPILLOMAVIRUS (HPV) PROBE	❖ See Genital Specimens
RSV ANTIGEN	❖ See RSV Testing
TZANK (HERPES) SMEAR	❖ See Cytology Section
VIRUS CULTURE or PCR TESTING, OTHER	❖ Place swab (copan) from genital, sites, lesions, vesicular fluid or tissue in M5 Broth ❖ M5 broth must be stored refrigerated. Transport inoculated specimen refrigerated. ❖ Indicate on requisition Virus(s) suspected. ❖ Specimens are processed only during routine working hours at FAHC. PCR testing is available in 24-72 hours. Cultures are incubated for 14 days, at which time a report is issued through the computer. Positive cultures are reported and called to the physician as detected. Preliminary reports are issued at 7 days.

SOURCE	COLLECTION
Blood	Heparinized blood (5-10 ml) is collected using sterile technique
Cerebrospinal fluid (CSF), pleural, or pericardial effusions -	At least 1 - 2 mL are collected in a sterile tube
Cutaneous and mucocutaneous swabs	Collect fluid from an open vesicle (vesicle may need to be opened aseptically). Use copan swabs. Place copan swab in M5 transport vial. Alternatively, 0.5 mL of fluid may be aspirated into a tuberculin syringe and then put in M5 transport vial.
Throat, nasopharyngeal swabs	Copan swabs are placed in Viral/Chlamydia (M5) transport vials.
Throat washings	Have patient gargle several times with sterile saline (5-10 ml) and submit specimen in sterile screw top container.
Urine	Freshly voided urine, preferably the first morning specimen (10-20 ml) is collected in a clean container (a minimum of one ml urine may be processed if necessary).

**Wet Prep for Trichomonas and Yeast – See Vaginal Specimens**

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**Wounds and Sterile Sites**

TEST	COLLECTION & STORAGE
ROUTINE CULTURE	<ul style="list-style-type: none"> <li>❖ Indicate the source of the specimen on the requisition form.</li> <li>❖ Gram stains are done routinely. The presence or absence of polys and bacteria will be reported.</li> <li>❖ Enrichment and differential media, which will support the growth of common bacterial pathogens, are used. In addition to agar plates, a broth culture is inoculated. This will detect small numbers of aerobic organisms, which are not present in high enough numbers to be detected on the plated media. The presence of the less fastidious anaerobic organisms may also be detected in this medium. Plates are incubated for two days. All media are examined daily. All isolated organisms are identified and susceptibility tests are done when appropriate.</li> </ul>
ANA/AEROBIC CULTURE	<ul style="list-style-type: none"> <li>❖ Indicate the source of the specimen on the requisition. Gram stains are done routinely when anaerobic culture(s) are ordered for these specimens. Special instructions: Specimens must be submitted to the laboratory in anaerobic environment, i.e. in an air-free syringe. Swab specimens are not accepted.</li> <li>❖ <u>Syringe</u>: This is the only acceptable method of collection for anaerobic cultures, with the exception of tissue. Specimens collected in a syringe should be sent to the laboratory in the syringe. Expel any air bubbles, and cap the syringe. Remove the needle and replace it with the plastic syringe cap. Deliver to the laboratory promptly. If delivery is to be delayed, refrigerate. <u>Anaerobic cultures must be delivered STAT and handed directly to laboratory personnel.</u></li> <li>❖ Potential pathogens are identified and sensitivities done when appropriate.</li> <li>❖ Final reports are usually complete in 5 days with preliminary released in 72 hours.</li> </ul>
LEGIONELLA CULTURE	<ul style="list-style-type: none"> <li>❖ Referred to FAHC Laboratory. Indicate the source of the specimen on the requisition</li> </ul>
AFB CULTURE/ SMEAR	<ul style="list-style-type: none"> <li>❖ Referred to FAHC Laboratory. Indicate the source of the specimen on requisition. AFB Smear is done only when requested on these specimens</li> </ul>
FUNGAL CULTURE	<ul style="list-style-type: none"> <li>❖ Referred to FAHC Laboratory. Indicate the source of the specimen on requisition. Fungus Smear is done only when requested on these specimens.</li> </ul>

SOURCE	COLLECTION & STORAGE
Body Fluid	<ul style="list-style-type: none"> <li>❖ Collect aseptically. Send to the laboratory in a capped syringe (needle removed), sterile tube, or other sterile container.</li> <li>❖ <u>Sterile Tubes and Containers</u>: Secure the cap or lid so that the specimen will not leak. Deliver to the lab promptly. If delivery to be delayed, refrigerate.</li> </ul>
Pus and Exudates	<ul style="list-style-type: none"> <li>❖ Whenever possible the specimen should be aspirated into a syringe. Care should be taken to avoid contamination of the specimen by contact with normally colonized surfaces e.g. skin, mucus membranes, and intestinal contents. Surfaces should be thoroughly cleansed before aspirating through them. Send the specimen to the laboratory in a capped syringe (needle removed), sterile tube or other sterile container.</li> </ul>
Tissue	<ul style="list-style-type: none"> <li>❖ Collect aseptically and place in a sterile container.</li> </ul>
Wound	<ul style="list-style-type: none"> <li>❖ If tissue or exudates cannot be obtained, swabs may be used. Submit a minimum of two swabs or at least one swab for each test ordered. Swabs may not be used for anaerobic cultures</li> </ul>

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**SURGICAL PATHOLOGY**

**General Information**

1. Specimens of tissue removed during most operative or biopsy procedures are sent to Fletcher Allen Health Care, MCHV Campus, and Department of Pathology for gross dissection, histological processing, and microscopic examination. Completed reports of tissue examination are sent from FAHC via remote printer or via courier back to Porter Hospital Laboratory. A copy of the report is sent to Porter Hospital Medical Records Department for inclusion in the patient's chart, another to the attending physician, and another are maintained in the laboratory.
2. The preparation of the final report usually requires a minimum of 24 hours. When results of the examination are required urgently, you may request the FAHC pathologist to call as soon as an interpretation is made. Please write the name and telephone number of the individual who should be called on the Pathology request slip. Questions concerning tissue examinations can be quickly resolved by calling the Pathology Hot Seat at FAHC 802-656-3795.

**Surgical Tissue Examination Requirements**

The following specimens DO NOT need to be sent for pathologic exam. They may be disposed of directly. A notation as to the removal should be a part of the clinical record or operating room operative record by the Physician. Documentation shall also be done on INTRAOPERATIVE FLOW SHEET.

1. Newborn foreskin
2. Ocular lens removed for cataract
3. Skin and subcutaneous tissue removed during debridement
4. Orthopedic hardware
5. Traumatically amputated members (assuming the exam is not needed for medical or legal purposes).
6. Foreign bodies (Note: bullets are given directly to the investigating law enforcement officer).
7. Teeth - document total number, including fragments, in the medical records.
8. Placentas.
9. Hernia sac tissues
10. Tonsils and/or adenoids of patients less than 18 years
11. Varicose veins
12. Bone from hammertoe or bunion corrections
13. Corneal button
14. Meniscus
15. Grossly normal Vas deferens
16. Nasal Cartilage.
17. Inclusion cysts.
18. Bone and cast fragments from total joint replacement and ORIF.

**PORTER HOSPITAL**  
**LABORATORY SERVICES DIRECTORY**

---

**Handling Of Tissue Specimens**

- A. All specimens must be accompanied by a FAHC pathology requisition that includes all pertinent patient and clinical information. All specimens will be packaged in compliance with universal precautions by using a bio-hazard bag with pathology requisition in pocket. Large specimens and specimens from the operating room suite will be transported in a cooler designated for transport of pathology tissues.
- B. With the exception of specimens for which a frozen section examination is desired, all tissues should be immersed in a 7 times volume solution of 10% neutral buffered formalin. **Gastrointestinal and testicular biopsies are put in Hollandes' Solution.**
1. Plastic containers, small containers of formalin and Hollandes' Solution are available in the Operating Suite, in the Emergency Department, and in the Laboratory. The size of the container should be such that a volume of formalin, which is 7 to 10 times the volume of the tissue specimen, can be contained in addition to the specimen. A gummed label containing the date, name of the patient, and the nature of the specimen should be attached to the side of the container (not ONLY the LID).
- C. Large Specimens - To avoid autolysis, all specimens should be immersed in formalin as soon as possible after removal. Transport large specimens ASAP to the laboratory in a container large enough to add formalin to and maintain a 10/1 formalin/tissue ratio. Upon delivery to laboratory, notify laboratory personnel of the need to add formalin. The following should be done before the specimen is sent to the laboratory:
1. **Bowel segments** should be carefully opened longitudinally, along the antimesenteric aspect. Fecal material should be gently rinsed away with tap water, and the specimen immersed in formalin.
  2. A **uterus** should be opened to expose the endometrium. This can be done by opening the uterus like a clam using a knife to cut and a probe inserted into the os to act as a guide for the knife.
  3. Large fluid filled **ovarian cysts** should be opened and drained. A note describing the cyst prior to opening should be on the requisition. Do not turn inside out.
  4. **Large breast specimens** should be transported to the laboratory ASAP for placement in formalin.
  5. **Amputated extremities** may be kept wrapped in moist saline in a double red plastic bag and kept in a refrigerator prior to transport. No formalin is necessary.
- D. **Cervical cone biopsies:** These should be opened prior to fixation and pinned flat on corkboard, mucosal side up. **DO NOT PLACE PINS THROUGH THE MUCOSA.** The pinned specimen is then immersed in formalin. The location of the cut opening the cervix should be noted on the requisition slip (i.e. opened at 12 o'clock).
- E. **Needle biopsies of the kidney, small bowel biopsies, muscle biopsies, and tissue touch preparations** (tissue imprints) are procedures that should be closely coordinated with the Pathology Laboratory at FAHC. The technique for handling these specimens varies depending on the type of information desired by the attending physician. The Pathology Office should be contacted prior to these procedures so that the tissue is handled in the proper manner.

**Frozen Section and/or Intra operative Consult**

1. The Pathologist is available to perform frozen sections and intra operative consults, two days per week. It is the responsibility of the surgeon to notify the pathologist to arrange a mutually convenient time. This may be scheduled by calling 802-847-3566, 802-847-3736 (Dr. Harmon's office) or 802-847-2700 (PAS).
2. The Operating Room personnel are responsible for calling Ext. 414 and speaking with the pathologist to inform her/him that a frozen section is in route and for transporting the specimen to the laboratory in the FROZEN SECTION cooler. **Upon arrival in the laboratory, the cooler with the specimen must be handed directly to the pathologist or the laboratory supervisor.**
3. The frozen section report is phoned directly to Operating Room by the pathologist.

**PORTER HOSPITAL  
LABORATORY SERVICES DIRECTORY**

---

**Transport Of Tissue Specimens To FAHC Department of Pathology**

1. Tissues removed in the Operating Suite should be handled as described above and sent to the lab for transport. The specimen, along with a completed Surgical Pathology request form, should be sent to the laboratory for processing and transport.
2. Tissues removed in the Emergency Department or during procedures on nursing units should be handled as described above. The specimen, a completed Surgical Pathology request form, should be sent to the laboratory for processing and transport.
3. Specimens are packaged according to established procedures and sent to FAHC via courier. Samples that arrive in the laboratory by 1 PM will be sent out the same day (exception: Saturday and Sunday).

**HercepTest Reflex Testing On Breast Cancer**

**HercepTest™ (IER2/ c-erb-B2 immunoperoxidase stain) Reflex Testing on Breast Cancers**

HercepTest™ (Dako Corp) is a FDA approved standardized immunohistochemical assay which measures HER2 protein over expression in tumors. FAHC has been offering this assay for several months and has been performing the assay upon written request from the patient's provider. The HercepTest™ is an excellent first line HER2 assay that is scored as 0-3+ with 0 and 1+ considered a negative result for protein overexpression and 3+ considered as positive for protein overexpression. A 3+ HercepTest™ result has an approximate 95% correlation with gene amplification studies. A 2+ result is also considered positive; however 2+ tumors have much lower correlation with gene amplification studies and may not respond to Trastuzumab (Herceptin). As such, 2+ tumors are automatically referred for fluorescence in situ hybridization (FISH) to evaluate for HER2 gene amplification in the tumor.

The Division of Surgical Pathology will now be automatically performing the HercepTest™ on invasive breast adenocarcinomas that meet the reflex testing criteria outlined below. Providers may decline the reflex testing by checking the box on the new surgical pathology outpatient requisitions. The test may be ordered on cases which do not fulfill the below criteria if the provider feels the test is medically necessary. Under these circumstances, the provider must still submit a written order for the HercepTest™ to Surgical Pathology via fax (847-4155) or mail (Smith 2, MCHV Campus, FAHC).

Criteria for reflex performance of the HercepTest on Breast carcinomas:

- 1). Tumor present in a resection specimen so that the grade of the tumor can be accurately established (this test will not be performed automatically on core biopsies unless there is no residual tumor in the resection specimen. The test may be requested on a core biopsy of locally advanced cancer by an attending clinician)
- 2). All invasive adenocarcinomas are included except well-differentiated tumors (combined Nottingham grading score of 3, 4, or 5) that are less than 1 cm (pT1a and pT1b).

If there are questions or concerns relating to whether the test has been ordered, please contact the Surgical Pathology office at 847-3566. If there are questions concerning the application of the assay or interpretation of the assay, please contact Dr. Donald Weaver or Dr. Adiy Ambaye through provider access or 847-2700.