DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE

Chester County Hospital
Penn Medicine
West Chester, PA

LABORATORY SERVICES
&
SPECIMEN COLLECTION MANUAL

Revised: December 19, 2024

LABORATORY SERVICES MANUAL

Contents

GENERAL LABORATORY

Inpatient/Emergency Department Services – Hours of Operation

Laboratory services for inpatients and the Emergency Department are available 24 hours a day, seven days a week. Contact number for laboratory inquiries: 610-431-5161.

Outpatient Services – Locations and Hours of Operation

Outpatient services are offered though the satellite campus locations. Additional information and directions are available at www.chestercountyhospital.org

SATELLITE CAMPUS	HOURS OF OPERATION
Fern Hill Outpatient Laboratory (no testing performed) Fern Hill Medical Campus 915 Old Fern Hill Road Suite 502, Building D West Chester, PA 19380 Phone: 610-431-5160 Fax: 610-430-2918	Monday through Friday – 6:00 AM to 4:45 PM Appointments required 6:00 AM to 1:45 PM and Walk-ins 2:00 PM – 4:45 PM Saturday – 7:00 AM to 11:45 AM, appointments only All patient age groups Appointments required for glucose tolerance testing.
Penn Medicine Southern Chester County (no testing performed) 455 Woodview Rd, Suite 110 West Grove, PA 19390 Phone:610-345-1960 Fax: 610-345-1961	Monday through Friday – 6:00 AM to 4:45 PM Appointments required 6:00 AM to 1:45 PM and Walk-ins 2:00 PM – 4:45 PM Saturday – 7:00 AM to 11:45 AM, appointments only All patient age groups. Appointments required for glucose tolerance testing.
Pre-Admission Testing Laboratory 701 East Marshall Street West Chester, PA 19380 Phone: 610-431-5455	Monday through Friday, by appointment only. Phlebotomy dept. within the hospital for pre-admission blood collection

General Information

The Department of Pathology and Laboratory Medicine is a pathologist directed, fully accredited, and licensed medical laboratory. The hospital laboratory services all patient types and age groups. Accrediting bodies include the College of American Pathologists (CAP), and the Association for the Advancement of Blood and Biotherapies (AABB). The Commonwealth of Pennsylvania, Department of Health, licenses the laboratory, and certified under Clinical Laboratory Improvement Amendments (CLIA) as a provider of laboratory services for beneficiaries of the Centers for Medicare and Medicaid Services (CMS). Laboratory sections include Chemistry, Hematology Microbiology (includes Parasitology and Urinalysis), Blood Bank (includes Serology), Point of Care, Support Services, Surgical Pathology, and Cytology. The Laboratory staff consists of Pathologists, Administrative Directors, Operations Manager, Laboratory Section Supervisors and Manager, Medical Laboratory Scientists, Medical Laboratory Technicians, Laboratory Assistants, Technical Coordinator, Cytotechnologists, Histotechnologists, Pathologists Assistants, Phlebotomists, and Pathology Secretaries.

Outpatient collection facilities collect blood for testing at Chester County Hospital and for processing specimens to be tested at the Hospital of the University of Pennsylvania (HUP). Patients

who present with requests from Clinical Care Associates (CCA) practice will have the laboratory work sent to HUP for testing unless otherwise instructed. Outreach specimens are delivered to the Chester Country Hospital laboratory from various clients in the community.

Major clients served are medical staff, physician offices, outpatients, outreach facilities and free-standing health care facilities.

Ordering Laboratory Testing – General Guidelines

Outpatients

- All requests for laboratory services must be ordered by a physician or authorized caregiver on an order, such as a script or laboratory requisition form. Authorized caregivers are defined as members of the medical staff, physician extended staff, and licensed members of the medical community. The Laboratory does not accept direct-to-consumer testing. Orders can be faxed to 215-893-4122. Whenever possible, Chester County Hospital Department of Pathology and Laboratory Medicine requisition form should be used for outpatient laboratory orders. An electronic version of the requisition form is available on the Hospital's website.
- Outpatients have the capability to schedule an appointment. Walk-ins are accepted Monday through Friday between the hours of 2:00 pm and 4:45 pm. Appointments are necessary for glucose tolerance testing. Appointments for glucose tolerance testing can be made by calling the scheduler at 267-758-4410.
- Not all outpatient orders can be ordered as STAT priority. Please check services guide for STAT availability.
- Patients requiring pre-admission testing will be contacted by ACC staff to schedule appointments. Patients requiring invasive cardiac procedures will be contacted by The Cardiovascular Center to secure appointments.
- Reference Testing: The Department of Pathology and Laboratory Medicine reserves the right to select the reference laboratory used to perform testing. Patient's requiring special testing not performed by the Laboratory or by approved vendors may be referred to another institution or laboratory.

Inpatients

- All requests for laboratory testing, except for anatomic pathology, should be entered in the Hospital Information System (HIS).
- Requests on each patient should be ordered to minimize duplication of venipuncture. All pending orders should be reviewed before ordering new or additional testing.
- Personnel must contact the ordering caregiver, not laboratory staff, for clarification of an order prior to ordering the test.
- Orders for specimens other than blood should not be entered in the HIS until the specimen has been collected.
- Nursing personnel may contact the inpatient phlebotomist by texting the Phlebotomy group via the hospital texting application.
- Staff with questions or concerns with the HIS must contact the IT Help Desk.

Anatomic Pathology:

- Specimens must be submitted with a completed requisition to the Surgical Pathology Section. STAT intraoperative consultations represent a consultation with the pathologist. They are assessed by the pathologist and discussed with the ordering physician.
- Note specimens from the OR must be logged in the OR log book in the dumb waiter. Specimens/drop offs not from the OR must be logged in the specimen log in Pathology lab.

Ordering Priorities for Inpatients

- PennChart ordering tests is a 2 step process:
  - Select the Priority: Routine, Stat or Today.
  - Choose the Frequency: Once, Scheduled, AM Draw or Provider Draw
- AM Draw - (Inpatients only) - any tests ordered (prior to midnight) for 0500 morning rounds.
- TODAY - (Inpatients only) - tests that are ordered throughout the day for the current date. <u>These pick-ups will occur on the very next round the phlebotomist makes to the nursing areas.</u>
- STAT - any test requiring STAT results. Must be ordered at the time needed. Cannot be ordered in advance (use scheduled-see below).
- SCHEDULED - (Inpatients only) - tests that need to be precisely scheduled and cannot wait for the next pick-up. Use this ONLY when necessary.

Laboratory Rounds for Inpatients

- Morning laboratory rounds commence at 05:30 and last until approximately 09:30. Timed rounds after the main 05:30 rounding are follows: 10:00, noon, 14:00, 16:00, 20:00, and 22:00. Caregivers should not order any scheduled testing that can be collected on lab rounds. Only those orders that are absolutely necessary to be collected at a specific time can be ordered as a scheduled priority.
- Nursing staff are responsible for maintaining the patient in a fasting state, keeping the patient in the room if possible until test specimens are collected, and informing the phlebotomist of any unusual conditions concerning the patient, i.e. lines, physical impairment.
- There are not phlebotomists to collect samples on the overnight shift.

General Principles of Specimen Collection

- Blood collection is performed in accordance with the Phlebotomy and Capillary Blood Collection Procedure.
- Blood collection tubes must be drawn in a specific order to avoid cross-contamination of additives between tubes. The recommended order of draw for plastic vacutainer tubes is:
  - Blood culture bottles
  - Sodium Citrate (light blue top) for coagulation testing; must draw a "discard tube" (clear top) before drawing the light blue top. This applies to direct venipunctures and butterfly draws.
  - Non-additive tube (red top)
  - Last to be drawn – additive tubes in this order:
    - SST (gold top); contains a gel separator and clot activator
    - Sodium heparin (dark green top)

    - PST (light green top); contains lithium heparin anticoagulant and a gel separator
    - EDTA (lavender and pink top)
    - ACDA or ACDB (pale yellow top); contains acid citrate dextrose
    - Oxalate/fluoride (light gray top)

- All specimens must have their primary specimen container properly labeled. Unlabeled specimens will not be processed by the Laboratory. All labeling requirements of the Department of Pathology and Laboratory Medicine mandate that at a minimum two patient identifiers must be used to identify specimens such as name, medical record number, and date of birth. **Note**: Room number, location, or bed assignment are not an acceptable identifier. **Note**: Blood Bank specimens require a collector identification (tech code or collector initials) from the collecting staff member.
- Personal Protective Equipment must be worn when collecting specimens.
- The outside of the specimen container should be kept clean to protect personnel. Specimen containers must have a tight fitting lid. Specimens that are leaking or grossly contaminated will be rejected.
- Read and follow instructions if collection kits are used.
- All specimens must be properly labeled and placed in a sealed plastic biohazard bag before being sent to the Laboratory. Transmittal forms or other accompanying documentation must be placed in the separate pocket of the plastic biohazard bag and should never be separated from the specimen. Specimens must be delivered to the Laboratory as soon as possible. Care must be taken to assure that the minimum volume of blood is drawn from the patient. Personnel must consult the appropriate documentation (found elsewhere in this manual) or contact the Lab directly for guidance.

Anatomic Pathology Specimen Collection

1. Prepare the patient for collection of Surgical Pathology and Cytopathology specimens according to the clinical nursing and perioperative procedures at CCH Online Policy & Procedure, Laboratory Folder: "Specimen Management". Instructions are available for specific source tissue sites for biopsies, resections, cytology fluids and smear specimens. No other specific patient preparation is needed for collection of surgical pathology specimens.
2. Un-dissected tissue for routine pathologic diagnostic exam is placed in a properly labeled, clean dry water tight container with patient's name, unique identifying number, specimen source/anatomic site of tissue, and physician/surgeon (electronic demographic label preferred), which contains an ample amount of 10% neutral buffered formalin fixative (10% NBF). The optimal tissue to formalin fixative ratio is at least 1:10 and sufficient to submerge specimens. Collection time and time in fixative must be recorded. Information on specimen container must match accompanying specimen requisition.
3. Special collection is required for the following tissue: muscle, bone marrow, lymph nodes, flow cytometry, immunofluorescence, frozen section consultation, electron microscopy, immune-phenotyping, breast biopsy, and nerve biopsy. Advance scheduling may be required for special studies associated with special collection (example: muscle biopsy). Special testing may require collections timed for transportation to a reference facility (example: renal biopsy, flow cytometry). Special testing may require time dependent techniques (example: fixation for Her2neu). Sterile collection is required for additional studies. (i.e. flow cytometry and microbiology). Specimens for lymphoma workup which includes flow cytometry testing is sent in sterile saline; lab staff is responsible for

transferring a portion of the specimen to RPMI media. Requisition must indicate lymphoma workup. Special collection media is required for electron microscopy and immunofluorescence and this is available from the laboratory. Special collections should be refrigerated during holding. Always telephone the laboratory prior to collection if there is question regarding specimen handling.

4. During routine service hours, when a tissue specimen has orders for Clinical Pathology and Anatomic Pathology testing, a "shared" label should be affixed to the container and both sets of orders are to appear on the requisition. Outside of day shift, tissue is divided peri-operatively as sterile for microbiology and formalin fixed for histology.
5. Deliver surgical specimens, with a properly completed requisition that includes clinical information, to the Surgical Pathology (Histology) section of the Laboratory located on the ground floor of the Pavilion. Deliver breast specimens and other non-routine collections STAT. The Emergency Department will deliver specimens to the Clinical Lab located on the 2nd floor of the East building. These will be transported to Surgical Pathology by the lab staff. Collection and Fixation times are required for the calculation of cold ischemia time compliance required for molecular studies on select tissue disorders and malignancy. Limb amputation specimens after hours will be dropped off in the Pathology Suite. Staff will reach out to Security to grant them access to PG220, sign the specimen drop off log at the door, leave specimen requisition at the computer counter, and place limb amputation specimen in PG208 refrigerator on the OR drop off shelf. The refrigerator door will need to be tightly secured.
6. Deliver cytology specimens, including slides, to the Cytology section also with a properly "completed" requisition. After hours, deliver cytology specimens to Central Receiving.
7. A designated courier will round the off-site tissue collection sites and deliver specimens to the laboratory on a day shift schedule.
8. Deliver properly signed and completed requests for postmortem examination (Referred Autopsy Document Packet) with patient's chart, to the Medical Records Department who will review and then contact the Pathology laboratory to schedule the autopsy with the appropriate referral institution.
9. Criteria for Rejection include: improper handling, deficient label, deficient requisition, inadequate fixation, quantity not sufficient (QNS) for analysis, and specimen/requisition information discordance, empty specimen container, specimens where material damaged slides for evaluation, improperly submitted specimen where diagnostic integrity has been sufficiently compromise that will affect evaluation; specimen container/bag with exterior surface biohazardous contamination.

Criteria for Specimen Acceptance/Rejection

- All specimens submitted to the Laboratory must meet the following criteria or be rejected for analysis. When a specimen fails to meet one or more of the criteria listed below, the Laboratory will contact the submitting caregiver. **Note**: Blood Bank specimens require a collector identification (tech code or collector initials) from the collecting staff member.
    1. Specimens must be properly ordered, labeled, and identified. No exceptions.
    2. Specimens must be collected in the appropriate tube, container, or collection device. Blood collected in tubes with additives should be gently inverted and not shaken to avoid hemolysis and ensure adequate admixture with the additive.
    3. Specimens must be delivered to the Laboratory undamaged.
    4. Specimens must be properly preserved (ice, frozen, chemically preserved, fresh, etc.).
    5. Quantity of the specimen must be adequate for analysis

6. The laboratory cannot accept Intraosseous samples for routine lab analysis. Intraosseous samples cannot be run in most lab instruments due to fat and bone fragments and the test results have not been validated on this specimen type.

Note: On rare occasions an unlabeled specimen that cannot be readily re-collected, i.e., spinal fluid, or other body fluid, may be processed if the collecting caregiver completes an "Improperly Labeled Collection Form." It will be noted that the caregiver completing the form will take full responsibility for the identification and labeling of the specimen. A comment will be added to the specimen result acknowledging the use of the form.

Patient Results

Inpatient/Emergency Department/ACC

Laboratory results for inpatient floors, the ED and ACC are transmitted directly to the HIS for viewing. Certain results may be printed.

Note: All reports (electronic or hard copy) contain the collection time and date, the description of the test, units of measure, reference ranges, and the name of the performing laboratory in the case of reference testing.

Outpatients

The majority of outpatient results are faxed to the ordering caregiver or transmitted electronically to the physician or practice Electronic Medical Record (EMR). All results are available electronically providing the caregiver has access to the information systems.

Point of Care Testing (POCT)

The Laboratory oversees certain areas that utilize point of care testing. Testing modalities and their locations are listed below:

POINT OF CARE TEST	TEST SYSTEM/ METHOD	LOCATION(S)
Activated Clotting Time (ACT+)	ITC Hemochron Signature Elite	CVOR
Activated Clotting Time Low Range (ACT-LR)	ITC Hemochron Signature Elite	Cardiac Cath Lab
Blood Gas, Electrolytes, Ionized Calcium, Hematocrit, Glucose, Lactate	Siemens epoc Blood Analysis System	CVOR, OR, Critical Care and Progressive Care, NICU, Cath Lab, Respiratory (performs testing for multiple units)
Oxygen Saturation/Blood Oximetry	IL AVOXimeter 1000E	Cardiac Cath Lab
pH Determination – Gastric Contents for NG Tube Placement	pHydrion Paper (pH 1-11)	Peds, NICU
Urinalysis, Protein and Glucose (Visual Dipstick)	Siemens Uristix	OB/GYN Clinic
Urine Pregnancy, Qualitative	Alere -20 hCG Test	ACC/Prep Recovery, OB/GYN Clinic, Radiation Oncology, Cardiac Cath Lab
Whole Blood Glucose	Nova Biomedical StatStrip Hospital Glucose Meter	All Nursing Units, Cardiac Cath Lab, ACC/Prep Recovery, ED, Dialysis

Point of Care Testing glucose supplies can be obtained directly from the Laboratory 24/7 by calling 610-431-5161. Other testing supplies can be obtained by the POCT Department in the Lab from 07:30-17:00, Monday through Friday. Please call 610-431-5360.

Critical Values Definition and List of Tests

- The Laboratory has designated certain abnormal test findings to indicate a serious or life threatening situation. When a critical value is encountered, laboratory staff will attempt to notify a licensed provider within 30 minutes of obtaining and confirming the critical result. When the critical value is called to a licensed provider, it is required to have the provider read back the critical value to confirm accuracy. The read back will be documented in the Laboratory Information System (LIS) with provider's name and title and laboratory staff members name and time. Date stamps are included in the system. Notification to ED, and Med/Surg units is done through the hospital secure chat application, and documented in the LIS.
- Critical tests require immediate action by laboratory staff no matter the result. They include:
    - Frozen Section
    - Intraoperative PTH
    - Stroke Panel
- Positive blood culture Gram stains are called to the Pharmacist within 30 minutes.

Chemistry

ANALYTE	at or below	at or above
ACETAMINOPHEN		150 µg/mL
CALCIUM, IONIZED, WHOLE BLOOD **(in mmol/L)**	0.8 mmol/L	1.6 mmol/L
CALCIUM, TOTAL	6.0 mg/dL	14.0 mg/dL
CARBAMAZEPINE		13 µg/mL
CHLORIDE	70 mmol/L	120 mmol/L
CO2	5 mmol/L	45 mmol/L
CREATININE **(0-18 YEARS OF AGE)**		2.0 mg/dL
DIGOXIN		3.0 ng/mL
GENTAMICIN, PEAK		12.0 µg/mL
GENTAMICIN, TROUGH		2.0 µg/mL
GLUCOSE	40 mg/dL	500 mg/dL
GLUCOSE, CSF	37 mg/dL	
LACTIC ACID, WHOLE BLOOD		2.1 mmol/L
LITHIUM		2.0 mmol/L
MAGNESIUM	1.0 mg/dL	4.7 mg/dL
OSMOLALITY, SERUM	250 mOsm/kg	600 mOsm/kg
pH	7.20	7.60
PCO2	20 mmHg	70 mmHg
PO2 (ARTERIAL ONLY)	40 mmHg	
PHENOBARBITAL, PEAK		60 µg/mL
PHENYTOIN		40 µg/mL
PHOSPHORUS	1.1 mg/dL	

POTASSIUM	2.5 mmol/L	6.5 mmol/L
SALICYLATE		40 mg/dL
SODIUM	115 mmol/L	165 mmol/L
TOBRAMYCIN, PEAK		12.0 mg/L
TOBRAMYCIN, TROUGH		2.0 µg/mL
TROPONIN I		400 ng/L
VALPROIC ACID		150 µg/mL
VANCOMYCIN, RANDOM		60 µg/mL
VANCOMYCIN, TROUGH		25 µg/mL

Chemistry Neonatal

ANALYTE	at or below	at or above
BILIRUBIN, TOTAL **(OUTPATIENT)**		12 mg/dL
BILIRUBIN, TOTAL **(INPATIENT)**		17 mg/dL
CALCIUM, IONIZED	0.8 mmol/L	1.6 mmol/L
CALCIUM, TOTAL	7.0 mg/dL	11.0 mg/dL
GLUCOSE ○ 0-1 MOS. ○ 1MOS – 2 YR.	40 mg/dL 40 mg/dL	200 mg/dL
pH (VENOUS)	7.25	7.55
PCO2	20 mmHg	70 mmHg
CPH (CORD BLOOD)	6.9	7.60
CBDEF		16 mmol/L
POTASSIUM	3.0 mmol/L	6.5 mmol/L
SODIUM	128 mmol/L	150 mmol/L

Hematology

ANALYTE	at or below	at or above
FIBRINOGEN	60 mg/dL	
FIBRIN DEGRADATION PRODUCTS (FSP)		21 µg/mL
HEMOGLOBIN	6.0 .0 gm/dL	20 gm/dL
HEMATOCRIT	17%	60%
INR		5.01
PLATELET COUNT (NON-ONCOLOGY)	30 x 10^3 / µL	1000 x 10^3 / µL
PLATELET COUNT (ONCOLOGY)	10 x 10^3 / µL	1000 x 10^3 / µL
PTT		100 sec.
SERUM VISCOSITY		4.0 relative viscosity
WBC	1.0 x 10^3 / µL	30 x 10^3 / µL

Hematology Pediatric

ANALYTE	AGE	at or below	at or above
HEMOGLOBIN	0-14 days	7.0 gm/dL	22 gm/dL
HEMOGLOBIN	>14 days-18 years	7.0 gm/dL	20 gm/dL
HEMATOCRIT	0 – 14 days		65%
HEMATOCRIT	14 days – 18 years		60%
PLATELET COUNT	0-14 days	50 x 10^3 /µL	1000 x 10^3/µL
PLATELET COUNT	>14 days-18 years	50 x 10^3 /µL	1000 x 10^3/µL
WBC	0-28 days	4.0 x 10^3 /µL	40 x 10^3/µL
WBC	>28 days-18 years	2.0 x 10^3 /µL	30 x 10^3/µL

Point of Care Testing

ANALYTE	Age	at or below	at or above
CALCIUM, IONIZED, WHOLE BLOOD	All	0.82 mmol/L	1.55 mmol/L
pH	3M to Adult	7.20	7.60
pH	0 days up to 3M	7.25	7.55
PCO2	All	20 mmHg	70 mmHg
PO2	All	40 mmHg	
POTASSIUM	0 days up to 1M	3.0 mmol/L	6.5 mmol/L
POTASSIUM	1M to Adult	2.5 mmol/L	6.5 mmol/L
SODIUM	0 days up to 1M	128 mmol/L	150 mmol/L
SODIUM	1M to Adult	115 mmol/L	165 mmol/L
GLUCOSE	2Y to Adult	40 mg/dL	500 mg/dL
GLUCOSE	1M up to 2Y	40 mg/dL	200 mg/dL
GLUCOSE	0 days up to 1M	40 mg/dL	200 mg/dL
LACTATE	All		2.1 mmol/L

Blood Bank

Evidence of a hemolytic transfusion reaction

Serology Testing

Reactive RPR in a newborn

Microbiology

CSF Specimens:

- Positive Gram Stain
- Positive Culture
- Positive Meningitis Panel
- Positive Cryptococcal Antigen

Cultures positive for MTB
Positive AFB Smears
Positive blood cultures

Critical Diagnoses in Anatomic Pathology

Intra-operative diagnoses are the only critical diagnoses in anatomic pathology.

- Specimens must be sent down to pathology lab with STAT sticker and announced over intercom as "STAT" specimen. These specimens must be sent without fixative. Specimens for intraoperative consultation from Turks Head must be pre-registered, with provision of pertinent information to Pathology Office.
- Intra-operative diagnoses must be orally communicated directly with the submitting provider in person, by telephone or other audio-visual technology as soon as the diagnosis is made.
- Results of intra-operative consultations must be verified by the submitting provider using a read back process.
- Intra-operative diagnosis, date and time of communication, and read-back confirmation should be documented on the intraoperative consultation form and signed by the intraoperative consultation pathologist.

Urgent Diagnoses in Anatomic Pathology

Urgent diagnoses are defined as medical conditions that in most cases should be addressed as soon as possible. Because the diagnosis may directly affect patient care in the near term, communication timeline occurs at the discretion of the pathologist as needed; most likely within the same day a diagnosis is made. Documentation of the communication can be either in the original pathology report or as an addendum. Documentation should include the individual's name whom the case was discussed with, the time and date, and when appropriate, the means of communication. These cases will be flagged during daily consensus conferences to monitor compliance with the policy.

Examples of cases with immediate clinical consequences:
Potential life threatening vasculitis

- Absence of chorionic villi/trophoblastic tissue/fetal tissue in cases with suspected products of conception
- Evidence of perforation of a viscus (i.e., adipose tissue in endometrial curettings, mesothelium on cardiac biopsies)
- Malignancy associated with superior vena caval syndrome

Significant Unexpected Diagnoses in Anatomic Pathology

Significant unexpected diagnoses are defined as: medical conditions that are clinically unusual or unforeseen and should be addressed at some point in the patient's course. Determination of what constitutes a significant unexpected diagnosis is heavily dependent on pathologist's judgment (see examples given below). The daily consensus case conference is a good platform to determine if a diagnosis qualifies as a "significant unexpected diagnosis."

Communication should occur as soon as it is practical, but pathologists may exercise their judgment as to the appropriate timing of communication. Documentation of the communication can be either in the original pathology report or as an addendum. Documentation should include the individual's name whom the case was discussed with, the time and date, and when appropriate, the means of communication. The cases marked as "significant unexpected diagnoses" during the consensus conference will be monitored for compliance with the policy.

Examples of unexpected or discrepant findings:

- Significant disagreement between intra-operative and final diagnosis.
- Significant disagreement between immediate interpretation and final fine-needle aspiration diagnosis.
- Significant disagreement and/or change between diagnoses of primary pathologist and outside pathologist.
- Amended report with clinically significant changes from the original final diagnosis.
- Unexpected malignancy/high grade dysplasia.
- Unsuspected pneumocystis, non-saprophytic fungi, viral cytopathic changes, or acid-fast bacilli.
- Herpesvirus cytopathic effect in Papanicolaou/Thin prep Pap test specimens in near term pregnant patients.
- Bacteria, fungus, or viral cytopathic changes in heart valve, bone marrow, cerebrospinal fluid, or solid viscera.
- Any invasive micro-organisms in immune compromised patients.

General Test Turn-around Times

Many routine test results are available within the same business day. However, not every test is performed every day. In addition, some testing is performed by outside reference laboratories and turnaround times can vary. Target Turnaround Times:

PATIENT TYPE	TURNAROUND TIME
Inpatient Critical Care Units	45-60 minutes
Emergency Department	45-60 minutes
Inpatient STAT Tests	45-60 minutes
Outpatient STAT Tests	5 hours

Note: The Laboratory attempts to maintain the shortest turnaround times possible and constantly tracks testing to ensure compliance. However, unforeseen events, such as instrument failures, may delay or interfere with testing. In such cases, the Laboratory will notify caregivers and make every effort to rectify the situation as soon as possible.

Customer Concerns/Complaints

Customer concerns and complaints about laboratory services should be forwarded to the Administrative Director of Laboratory Services at 610-431-5398 or the Assistant Administrative Director of Laboratory Services at 610-732-6710.

Supply Distribution

Certain specimen collection supplies are made available to outside physician offices for specimens that will be sent to the Department of Pathology and Laboratory Medicine for processing and testing. Physician offices needing supplies should call the Laboratory during normal business hours. Offices may be required to complete an internal lab supply requisition.

Performance Specifications

Performance specifications are available upon request. Detailed information may be obtained from each laboratory section.

General Test Menu-Refer to Microbiology Section for Infectious Disease Tests

TEST NAME	DEPARTMENT	SPECIMEN REQUIREMENTS	TURNAROUND TIME
ACETAMINOPHEN (TYLENOL)	CHEMISTRY	7 ML RED TOP MINIMUM REQUIREMENT = 2 ML BLOOD	ROUTINE - 4 HOURS, STAT 45-60 MIN
ALBUMIN, SERUM	CHEMISTRY	7 ML SST MINIMUM REQUIREMENT = 2 ML BLOOD	ROUTINE - 4 HOURS
ALCOHOL SERUM ETHANOL (ETOH)	CHEMISTRY	RED TOP TUBE 7 ML DO NOT REMOVE CAP, MINIMUM REQUIREMENT = 2 ML BLOOD	ROUTINE - 4 HOURS, STAT 45-60 MIN
ALDOLASE	REFERENCE LAB	7 ML SST TUBE	TEST SENT MON-FRI AT 2 PM - RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
ALKALINE PHOSPHATASE	CHEMISTRY	7 ML SST MINIMUM REQUIREMENT = 2 ML BLOOD	ROUTINE - 4 HOURS, STAT 45-60 MIN
ALPHA - FETOPROTEIN QUAD SCREEN	REFERENCE LAB	7 ML SST TUBE SPECIAL FORM MUST BE COMPLETED BY PATIENT	TEST SENT MON-FRI AT 2 PM - RESULTED 2-3 DAYS AFTER RECEIPT AT REFERENCE LAB
ALPHA FETOPROTEIN TUMOR MARKER	REFERENCE LAB	7 ML SST TUBE	TEST SENT MON-FRI AT 2 PM - RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
ALT (SGPT)	CHEMISTRY	7 mL SST MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE - 4 HOURS, STAT 45-60 MIN
AMMONIA	CHEMISTRY	VENOUS SPECIMEN RECOMMENDED 7 ML GREEN TUBE/ICE MINIMUM REQUIREMENT = 3 mL LITHIUM HEPARINIZED BLOOD	ROUTINE - 4 HOURS, STAT 45-60 MIN
AMYLASE, SERUM	CHEMISTRY	7 mL SST MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE - 4 HOURS, STAT 45-60 MIN
ANA (ANTI NUCLEAR ANTIBODY)	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
ANGIOTENSIN CONVERTING ENZYME (ACE)	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM - RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
ANTI-NEUTROPHIL CYTO AB, IGG (ANCA)	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER RECEIPT AT REFERENCE LAB
ANTITHROMBIN, ENZYMATIC (ACTIVITY)	REFERENCE LAB	5 mL BLUE TOP TUBE	TEST SENT MON-FRI AT 2 PM - RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
aPTT (ACTIVATED PARTIAL THROMBOPLASTIN TIME)	HEMATOLOGY	2.7 mL OR 1.8 mL FULL BLUE TOP TUBE	ROUTINE - 4 HOURS, STAT 45-60 MIN
AST (SGOT)	CHEMISTRY	7 mL SST MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE - 4 HOURS, STAT 45-60 MIN
BASIC METABOLIC PANEL	CHEMISTRY	7 mL SST MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE - 4 HOURS, STAT 45-60 MIN

BENCE-JONES PROTEIN, QUANT, URINE	REFERENCE LAB	24 HR URINE W NO PRESERVATIVE- REFRIGERATE DURING COLLECTION	TEST SENT MON-FRI AT 2 PM - RESULTED 1-5 DAYS AFTER RECEIPT AT REFERENCE LAB
BETAHYDROXYBUTYRATE	CHEMISTRY	7mL SST TUBE	ROUTINE-4HOURS STAT 45-60 MIN
BETA-2-MICROGLOBULIN (SERUM)	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
BILIRUBIN, DIRECT	CHEMISTRY	7 mL SST PROTECT FROM LIGHT MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
BILIRUBIN, TOTAL	CHEMISTRY	AGE 22 DAYS & OVER 7 mL SST MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
BLOOD PARASITE SCREEN	HEMATOLOGY	WHOLE BLOOD EDTA ANY SIZE LAV TUBE	ROUTINE – 4 HOURS CONFIRMATORY 24 HOURS
BNP	CHEMISTRY	5 mL LAVENDER	ROUTINE – 4 HOURS
BODY FLUID CELL COUNT	HEMATOLOGY	ANTI-COAGULATED SPECIMEN, EDTA OR HEPARIN	ROUTINE – 4 HOURS, STAT 45-60 MIN
BUN	CHEMISTRY	7 mL SST MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
C1-ESTERASE INHIBITOR	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-4 DAYS AFTER RECEIPT AT REFERENCE LAB
C3, SERUM	CHEMISTRY	7 mL RED TOP TUBE MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS
C4, SERUM	CHEMISTRY	7 mL RED TOP TUBE MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS
CA 125	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS MON-FRI DAYSHIFT ONLY
CA 15-3	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
CA 19-9	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
CA 27-29	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
CALCITONIN	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
CALCIUM TOTAL, SERUM	CHEMISTRY	7 mL SST MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
CALCIUM, IONIZED	CHEMISTRY	7 mL GREEN TUBE COLLECTED AND PLACED ON ICE	ROUTINE – 4 HOURS, STAT 45-60 MIN
CALCULI (STONE) ANALYSIS	REFERENCE LAB	SUBMIT STONE IN A CLEAN DRY CONTAINER. STATE ANATOMIC SOURCE OF CALCULI AND ANY SPECIAL INFORMATION.	TEST SENT MON-FRI @ 2PM. RESULTED 1-4 DAYS AFTER RECEIPT AT REFERENCE LAB

CARBAMAZEPINE (TEGRETOL)	CHEMISTRY	TROUGH – ½ HOUR BEFORE NEXT DOSE 7 ML RED TOP TUBE MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
CARBON DIOXIDE (CO2)	CHEMISTRY	7 mL SST MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
CARBOXY-HEMOGLOBIN	CHEMISTRY	7 mL HEPARINIZED GREEN TOP TUBE PLACED ON ICE. ASSAY MUST OCCUR W/IN 30 MINUTES OF COLLECTION	ROUTINE – 4 HOURS, STAT 45-60 MIN
CARDIOLIPIN ANTIBODIES	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
CATECHOLAMINES PLASMA	REFERENCE LAB	GREEN TOP TUBE ON ICE. BLOOD MUST BE COLLECTED AFTER PATIENT HAS BEEN IN THE SUPINE POSITION FOR 30 MINUTES	TEST SENT MON-FRI AT 2 PM RESULTED 1-4 DAYS AFTER RECEIPT AT REFERENCE LAB
CATECHOLAMINES, 24 HR URINE	REFERENCE LAB	24 HR URINE W NO PRESERVATIVE- REFRIGERATE DURING COLLECTION	TEST SENT MON-FRI AT 2 PM RESULTED 1-4 DAYS AFTER RECEIPT AT REFERENCE LAB
CBC COMPLETE BLOOD COUNT INCLUDES: BLOOD CELL PROFILE AND WBC DIFFERENTIAL	HEMATOLOGY	WHOLE BLOOD EDTA LAV TOP PED: LAV MICROTAINER MINIMUM REQUIREMENTS: 5 mL TUBE-MIN. DRAW 3.75 mL 4 mL TUBE-MIN. DRAW 3.0 mL 3 mL (PED)-MIN. DRAW 2.25 mL LAV MICRO-MIN. DRAW 300 µL	ROUTINE – 4 HOURS, STAT 45-60 MIN
CEA	CHEMISTRY	7 ML SST TUBE	ROUTINE – 4 HOURS MON-FRI DAYSHIFT ONLY
CELIAC DISEASE REFLEX CASCADE (antibodies performed per algorithm)	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 2-6 DAYS AFTER RECEIPT AT REFERENCE LAB
CHLORIDE, SERUM	CHEMISTRY	7 mL SST TUBE MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
CHOLESTEROL, SERUM TOTAL	CHEMISTRY	SUGGEST FASTING 7 mL SST TUBE MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS
CHROMOSOME ANALYSIS (GENETIC DISORDER)	REFERENCE LAB	CONTACT LABORATORY 610 431 5519	TEST SENT MON-FRI AT 2 PM RESULTED 3-10 DAYS AFTER RECEIPT AT REFERENCE LAB
CHROMOSOME ANALYSIS (PRODUCTS OF CONCEPTION)	REFERENCE LAB	CONTACT LABORATORY 610 431 5519	TEST SENT MON-FRI AT 2 PM, RESULT TIME VARIES WITH TYPE OF SAMPLE
CK, TOTAL	CHEMISTRY	7 mL SST TUBE MINIMUM REQUIREMENT = 2 mL BLOOD OR GREEN TOP	ROUTINE – 4 HOURS, STAT 45-60 MIN
COLD AGGLUTININS TITER	REFERENCE LAB	7 mL WARMED SST OR RED TUBE KEEP WARM PRIOR TO TRANSPORT	TEST SENT MON-FRI @ 2 PM RESULTED 2- 5 DAYS AFTER RECEIPT AT REFERENCE LAB

COMPLEMENT ACTIVITY TOTAL (EIA)	REFERENCE LAB	7 mL RED TOP TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
COMPREHENSIVE METABOLIC PANEL	CHEMISTRY	7 mL SST MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
CORONARY RISK PROFILE (LIPID PROFILE)	CHEMISTRY	14 HR FAST RECOMMENDED 7 mL SST TUBE MINIMUM REQUIREMENT = 5 mL BLOOD	ROUTINE – 4 HOURS
CORTISOL, 24 HR URINE	REFERENCE LAB	24 HR URINE W NO PRESERVATIVE- REFRIGERATE DURING COLLECTION	TEST SENT MON-FRI AT 2 PM RESULTED 1-4 DAYS AFTER RECEIPT AT REFERENCE LAB
CORTISOL, SERUM	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS MON-FRI DAYSHIFT ONLY
C-PEPTIDE	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
C-REACTIVE PROTEIN, QUANTITATE	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS
CREATININE CLEARANCE, 24 HR	CHEMISTRY	24 HOUR URINE- NO PRESERVATIVES-REFRIGERATE THROUGH COLLECTION. DRAW 7 ML SST TUBE FOR A CURRENT SERUM CREATININE. NEED HEIGHT AND WEIGHT OF PATIENT.	ROUTINE – 4 HOURS
CREATININE, SERUM	CHEMISTRY	7 mL SST MINIMUM REQUIREMENT = 2 mL	ROUTINE – 4 HOURS, STAT 45-60 MIN
CREATININE, URINE RANDOM	CHEMISTRY	2 mL RANDOM URINE	ROUTINE – 4 HOURS, STAT 45-60 MIN
CRP HIGH SENSITIVITY	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS
CRYSTALS BODY FLUID	HEMATOLOGY	ANTI-COAGULATED SPECIMEN, EDTA OR HEPARIN	ROUTINE – 4 HOURS, STAT 45-60 MIN
CYCLIC CITRULLINATED PEPTIDE AB, IGG (CCP)	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED ONCE A WEEK
CYSTIC FIBROSIS GENOTYPE (32 mutations)	REFERENCE LAB	5 mL LAV TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 3-7 DAYS AFTER RECEIPT AT REFERENCE LAB
D-DIMER	HEMATOLOGY	2.7 mL OR 1.8 ML FULL BLUE TOP TUBE	ROUTINE – 4 HOURS, STAT 45-60 MIN
DHEA – SULFATE	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
DIGOXIN	CHEMISTRY	SPECIAL PREP DRAW BEFORE NEXT DOSE RED TUBE (7mL) MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN

DNA ANTIBODIES, DOUBLE STRANDED	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-3 DAYS AFTER RECEIPT AT REFERENCE LAB
DRUG SCREEN, URINE ONLY PERFORMED ON INPATIENTS AND ED PATIENTS. OUTPATIENTS ARE DIRECTED TO THE OHC.	CHEMISTRY	RANDOM URINE 5 mL MINIMUM REQUIREMENT = 2 mL URINE	STAT FOR ED ONLY
ELECTROLYTES, RANDOM URINE, URINE CHLORIDE, SODIUM, POTASSIUM, CREATININE	CHEMISTRY	SPECIAL PREP 5 – 10 mL RANDOM URINE MINIMUM REQUIREMENT = 2 mL RANDOM URINE	ROUTINE – 4 HOURS, STAT 45-60 MIN
ELECTROLYTES, SERUM	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS, STAT 45-60 MIN
EPSTEIN-BARR VIRUS ABS (includes antibodies to capsid antigens, nuclear antigens, and early-D)	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
ERYTHROCYTE SEDIMENTATION RATE (ESR) (SED RATE)	HEMATOLOGY	WHOLE BLOOD EDTA LAV TOP PED: LAV MINIMUM REQUIREMENT: 5 mL TUBE-MIN. DRAW 3.75 ML 4 mL TUBE-MIN. DRAW 3.0 mL 3 mL (PED)-MIN. DRAW 2.25 mL LAV	ROUTINE – 4 Hours
ESTRADIOL (MEN AND CHILDREN)	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-4 DAYS AFTER RECEIPT AT REFERENCE LAB
ESTRADIOL FREE BY ed/lc-ms/ms	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-6 DAYS AFTER RECEIPT AT REFERENCE LAB
EXPOSURE HEPATITIS PROFILE	Reference Lab	2-7 mL RED TOP TUBES	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
F-ACTIN SMOOTH MUSCLE ABS, IGG WITH REFLEX	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-5 DAYS AFTER RECEIPT AT REFERENCE LAB
FACTOR ASSAYS FVIII, FIX	HEMATOLOGY	2.7 mL OR 1.8 ML FULL BLUE TOP TUBE	ROUTINE – 4 HOURS MON-FRI DAYSHIFT ONLY
FACTOR V LEIDEN	REFERENCE LAB	LAV TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 2-5 DAYS AFTER RECEIPT AT REFERENCE LAB
FERRITIN	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS MON-FRI DAYSHIFT ONLY
FETAL FIBRONECTIN (FFN)	CHEMISTRY	CALL CHEMISTRY LAB 610-431-5159	ROUTINE – 4 HOURS, STAT 45-60 MIN
FIBRIN DEGRADATION PRODUCTS, FDP/FSP	HEMATOLOGY	2.7 mL OR 1.8 ML FULL BLUE TOP TUBE	ROUTINE – 4 HOURS, STAT 45-60 MIN
FIBRINOGEN	HEMATOLOGY	2.7 mL OR 1.8 ML FULL BLUE TOP TUBE	ROUTINE – 4 HOURS, STAT 45-60 MIN
FOLATE (FOLIC ACID)	CHEMISTRY	7 mL SST TUBE FASTING SPECIMEN PERFORMED	ROUTINE – 4 HOURS MON-FRI DAYSHIFT ONLY

FREE T-3	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS MON-FRI DAYSHIFT ONLY
FREE T-4	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS MON-FRI DAYSHIFT ONLY
FSH	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS MON-FRI DAYSHIFT ONLY
GENTAMICIN, PEAK	CHEMISTRY	SPECIAL PREP 15 MIN. AFTER A 30-60 MIN. DRUG INFUSION RED TOP TUBE (7 ML) MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
GENTAMICIN, TROUGH	CHEMISTRY	SPECIAL PREP 30-60 MIN. BEFORE IV DOSE RED TOP TUBE MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
GGT	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS, STAT 45-60 MIN
GLUCOSE – 6- PHOS. DEHYDROGENASE	REFERENCE LAB	YELLOW ACDA OR5 mL LAV TOP TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-3 DAYS AFTER RECEIPT AT REFERENCE LAB
GLUCOSE TOLERANCE TESTING (ORAL), GESTATIONAL AND NON-GESTATIONAL	CHEMISTRY	CALL LAB AT 610-431-5499	BY APPOINTMENT ONLY. PERFORMED ON OUTPATIENTS ONLY.
GLUCOSE, 1 HR POST GLUCOLA DOSE (FOR GESTATIONAL PATIENTS ONLY)	CHEMISTRY	1 HR AFTER GLUCOLA 7 mL SST TUBE	BY APPOINTMENT ONLY
GLUCOSE, 2 HR. PP	CHEMISTRY	DRAW 2 HRS. AFTER DESIGNATED MEAL 7 mL SST TUBE MINIMUM REQUIREMENT = 1 mL BLOOD	ROUTINE – 4 HOURS
GLUCOSE, CSF	CHEMISTRY	2 mL CSF MINIMUM REQUIREMENT = 1 mL CSF	ROUTINE – 4 HOURS, STAT 45-60 MIN
GLUCOSE, FLUID	CHEMISTRY	2 mL FLUID IN RED TOP MINIMUM REQUIREMENT = 1 mL FLUID	ROUTINE – 4 HOURS, STAT 45-60 MIN
GLUCOSE, RANDOM/ FASTING	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS, STAT 45-60 MIN
HAPTOGLOBIN	CHEMISTRY	RED TOP TUBE MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS
HCG, TUMOR MARKER	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
HCG, QUALITATIVE SERUM	CHEMISTRY	7 mL RED TOP TUBE MINIMUM REQUIREMENT = 4 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
HCG, QUALITATIVE URINE	MICROBIOLOGY	FIRST MORNING URINE SPECIMEN REFRIGERATE	ROUTINE – 4 HOURS, STAT 45-60 MIN
HCG, QUANTITATIVE	CHEMISTRY	7 mL RED TOP TUBE MINIMUM REQUIREMENT = 4 mL BLOOD	STAT/WEEKDAYS ROUTINE/TODAY
HEAVY METAL SCREEN, BLOOD	REFERENCE LAB	FULL ROYAL BLUE TOP TRACE METAL TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-4 DAYS AFTER RECEIPT AT REFERENCE LAB

HEAVY METAL SCREEN, URINE	REFERENCE LAB	24 HR URINE W NO PRESERVATIVE- REFRIGERATE DURING COLLECTION	TEST SENT MON-FRI AT 2 PM RESULTED 1-4 DAYS AFTER RECEIPT AT REFERENCE LAB
HEMOGLOBIN A1C (GLYCOSYLATED HEMOGLOBIN)	CHEMISTRY	7 mL LAVENDER TUBE MINIMUM REQUIREMENT = 2 ML BLOOD	ROUTINE – 4 HOURS MON-FRI DAYSHIFT ONLY
HEMOGLOBIN EVALUATION W/ REFLEX TO ELECTROPHORESIS	REFERENCE LAB	5 mL LAB TOP TUBE	TEST SENT MON-FRI @ 2 PM – RESULTED 1-7 DAYS AFTER RECEIPT AT REFERENCE LAB
HEPATITIS B SURFACE ANTIBODY	REFERENCE LAB	7 mL RED TOP TUBE OR SST	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
HEPATITIS C ANTIBODY	REFERENCE LAB	7 mL RED TOP TUBE OR SST	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
HEPATITIS C ANTIBODY	REFERENCE LAB	7 mL RED TOP TUBE OR SST	1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
HEPATITIS PROFILE:	REFERENCE LAB	7 mL RED TOP TUBE OR SST	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
HERPES SIMPLEX 1 & 2 (IGG AND IGM)	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
HERPES SIMPLEX 1&2 ON CSF	MICROBIOLOGY MOLECULAR	0.5 mL CSF	PERFORMED AS RECEIVED ON DAY SHIFT
HERPES SIMPLEX 1&2 SUB-TYPING ON LESIONS	MICROBIOLOGY	VIRAL SWAB IN UTM	DAILY ON DAY SHIFT
HERPES ZOSTER (VARICELLA) IGG ANTIBODY	REFERENCE LAB (HUP)	7 mL SST TUBE	TEST SENT MON, WED, FRI AT 2 PM RESULTED 1-3 DAYS AFTER RECEIPT AT REFERENCE LAB
HIV SCREEN / EXPOSURE REFLEX POSITIVE TO CONFIRMATORY TEST AT REFERENCE LAB	MICROBIOLOGY	5 mL LAVENDER	ROUTINE – 4 HOURS, DAYSHIFT ONLY, SOURCE PATIENT 1 H 24/7
HPV GENOTYPING	MOLECULAR MICROBIOLOGY	LIQUID CYTOLOGY	THURSDAYS
HUMAN PAPILLOMAVIRUS	MOLECULAR MICROBIOLOGY	LIQUID CYTOLOGY	MONDAY AND WEDNESDAY
HUMAN T CELL LEUKEMIA	REFERENCE LAB	ACD TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 2-5 DAYS AFTER RECEIPT AT REFERENCE LAB
IGE, QUANTITATIVE	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
IGG SUBCLASSES	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM – RESULTED 1-3 DAYS AFTER SENDING

IMMUNOFIXATION ELECTROPHORESIS GEL, SERUM	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-5 DAYS AFTER RECEIPT AT REFERENCE LAB
INSULIN ANTIBODY	REFERENCE LAB	7 mL SST PATIENT MUST BE FASTING	TEST SENT MON-FRI AT 2 PM RESULTED 2-5 DAYS AFTER RECEIPT AT REFERENCE LAB
INSULIN, SERUM	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS MON-FRI DAYSHIFT ONLY
IRON PANEL IRON/TIBC	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS
L/S RATIO	REFERENCE LAB	AMNIOTIC FLUID (CALL LAB IN ADVANCE)	SENT STAT TO ADL LAB
LACTIC ACID	CHEMISTRY	GREEN TOP TUBE ON ICE. MUST BE SENT TO LAB W/IN 15 MINUTES OF COLLECTION	ROUTINE – 4 HOURS
LEAD, BLOOD	REFERENCE LAB	TRACE METAL TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-3 DAYS AFTER RECEIPT AT REFERENCE LAB
LIPASE	CHEMISTRY	7 mL SST MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
LITHIUM	CHEMISTRY	BEFORE NEXT DOSE 7 ML RED TOP TUBE MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
LIVER PROFILE,ALB,AST, ALT, ALP, GGT, TBIL, CBIL	CHEMISTRY	7 mL SST MINIMUM REQUIREMENT = 3 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
LUPUS ANTICOAGULANT	Reference Lab	2.7 mL OR 1.8 ML FULL BLUE TOP TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-3 DAYS AFTER RECEIPT AT REFERENCE LAB
LUTEINIZING HORMONE (LH)	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS
LYME ANTIBODY C10 PEPTIDE WITH REFLEX TO **WESTERN BLOT	MICROBIOLOGY	7 mL RED TOP (NOT SST)	ROUTINE – ONE RUN PER DAY MON, WED, FRI
LYME DISEASE WESTERN BLOT FOR CSF	REFERENCE LAB	CSF	TEST SENT MON-FRI AT 2 PM RESULTED 1-3 DAYS AFTER RECEIPT AT REFERENCE LAB
MAGNESIUM, 24 HR. URINE	REFERENCE LAB	24 HR URINE W NO PRESERVATIVE- REFRIGERATE DURING COLLECTION	ROUTINE – 4 HOURS
MAGNESIUM, SERUM	CHEMISTRY	7 mL SST MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
MENINGITIS/ENCEPHALITIS PANEL	MOLECULAR MICROBIOLOGY	CSF	STAT 2 HOURS
METANEPHRINE FRACTIONATED, URINE	REFERENCE LAB	24 HR URINE W NO PRESERVATIVE- REFRIGERATE DURING COLLECTION	TEST SENT MON-FRI AT 2 PM RESULTED 1-3 DAYS AFTER RECEIPT AT REFERENCE LAB
METHEMOGLOBIN	CHEMISTRY	HEPARINIZED ARTERIAL OR GREEN TOP ON ICE - BLOOD PROCESS IMMEDIATELY	ROUTINE – 4 HOURS, STAT 45-60 MIN

MICROALBUMIN	CHEMISTRY	RANDOM OR 24 HR URINE W NO PRESERVATIVE- REFRIGERATE DURING COLLECTION	ROUTINE – 4 HOURS
MIXING TEST	HEMATOLOGY	2.7 mL OR 1.8 ML FULL BLUE TOP TUBE	ROUTINE – 4 HOURS MON-FRI DAYSHIFT ONLY
MONOSPOT	BLOOD BANK	7 mL RED TOP TUBE	ROUTINE – 4 HOURS, STAT 45-60 MIN
MRSA NASAL CARRIAGE	MOLECULAR MICROBIOLOGY	NASAL SWAB	PERFORMED ONCE PER DAY
MUMPS VIRUS ANTIBODY (IGG)	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
MYCOPLASMA PNEUMO. (IGG)	REFERENCE LAB	7 mL SST	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
OSMOLARITY, SERUM	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS, STAT 45-60 MIN
OSMOLARITY, URINE	CHEMISTRY	RANDOM URINE	ROUTINE – 4 HOURS, STAT 45-60 MIN
OXYGEN SATURATION SO2 FOR MIXED VENOUS SAMPLES IN CVU	CHEMISTRY	MIXED VENOUS BLOOD SNET TO LAB ON ICE	ROUTINE – 4 HOURS, STAT 45-60 MIN
PARVOVIRUS B19 ANTIBODIES	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-3 DAYS AFTER RECEIPT AT REFERENCE LAB
PCO2	CHEMISTRY	PART OF ARTERIAL BLOOD GAS PANEL 2 ML HEPARINIZED ARTERIAL BLOOD ON ICE MINIMUM REQUIREMENT = 1 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
PH, ARTERIAL BLOOD	CHEMISTRY	PART OF ARTERIAL BLOOD GAS PANEL 2 MLS HEPARINIZED ARTERIAL BLOOD ON ICE	ROUTINE – 4 HOURS, STAT 45-60 MIN
PHENOBARBITAL	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS, STAT 45-60 MIN
PHENYTOIN, (DILANTIN)	CHEMISTRY	SPECIAL PREP 7 mL RED TOP TUBE MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
PHOSPHORUS, SERUM	CHEMISTRY	SUGGEST FASTING 7 mL SST MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
PLAVIX FUNCTION TEST	HEMATOLOGY	CONTACT HEMATOLOGY AT 610-431-5163	ROUTINE – 4 HOURS MON-FRI DAYSHIFT ONLY before 2pm
PO2, ARTERIAL BLOOD	CHEMISTRY	PART OF ABGS SPECIALCOLLECTION KIT 2 ML HEPARINIZED ARTERIAL BLOOD ON ICE IN SYRINGE MINIMUM REQUIREMENT = 500 UL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN

POTASSIUM, SERUM	CHEMISTRY	7 mL SST MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS, STAT 45-60 MIN
PREALBUMIN	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS
PRIMIDONE (MYSOLINE)	REFERENCE LAB	7 mL RED TOP TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
PROCAINAMIDE/NAPA	REFERENCE LAB	7 mL RED TOP TUBE MINIMUM REQUIREMENT = 2 mL BLOOD	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
PROCALCITONIN	HEMATOLOGY	GREEN TOP TUBE	ROUTINE – 4 HOURS, STAT 45-60 MIN
PROGESTERONE	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS MON-FRI DAYSHIFT ONLY
PROLACTIN	CHEMISTRY	7 mL SST TUBE	MON-FRI DAYSHIFT ONLY
PROTEIN C - FUNCTIONAL ACTIVITY	REFERENCE LAB	BLUE TOP	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
PROTEIN ELECTROPHORESIS, SERUM	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
PROTEIN ELECTROPHORESIS, URINE	REFERENCE LAB	24 HOUR COLLECTION WITHOUT PRESERVATIVE. REFRIGERATE SPECIMEN DURING COLLECTION	TEST SENT MON-FRI AT 2 PM RESULTED 1-5 DAYS AFTER RECEIPT AT REFERENCE LAB
PROTEIN S - FUNCTIONAL ACTIVITY	REFERENCE LAB	BLUE TOP	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
PROTEIN, CSF	CHEMISTRY	COLLECTED BY PATIENT CARE PERSONNEL 2 ML CSF MINIMUM REQUIREMENT = 1 mL CSF	ROUTINE – 4 HOURS, STAT 45-60 MIN
PROTEIN, TOTAL SERUM	CHEMISTRY	7 mL SST MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE – 4 HOURS
PROTEIN, TOTAL, 24 HR URINE	CHEMISTRY	24 HR URINE W NO PRESERVATIVE- REFRIGERATE DURING COLLECTION	ROUTINE – 4 HOURS
PROTHROMBIN MUTATION	REFERENCE LAB	5 mL LAV	TEST SENT MON-FRI AT 2 PM RESULTED 2-5 DAYS AFTER RECEIPT AT REFERENCE LAB
PSA, FREE AND TOTAL	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
PSA, TOTAL	CHEMISTRY	7 mL SST TUBE	ROUTINE – 4 HOURS MON-FRI DAYSHIFT ONLY

PT /INR	HEMATOLOGY	2.7 mL OR 1.8 ML FULL BLUE TOP TUBE	ROUTINE – 4 HOURS, STAT 45-60 MIN
PTH, INTACT	CHEMISTRY	5 mL LAV	ROUTINE – 4 HOURS TUE/FRI DAYSHIFT ONLY
QUANTITATIVE IMMUNOGLOBULINS IGA-IGG-IGM	REFERENCE LAB	7 ML SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
RAST/IMMUNOCAP	REFERENCE LAB	7 mL SST (MUST LIST ALLERGINS TO BE TESTED)	RESULTS DEPEND ON TYPE AND NUMBER OF ALLERGENS.
RENIN ACTIVITY	REFERENCE LAB	5 mL LAV TOP TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-3 DAYS RECEIPT AT REFERENCE LAB
RETICULOCYTE COUNT	HEMATOLOGY	WHOLE BLOOD EDTA ANY SIZE LAV TOP	ROUTINE – 4 Hours
RESPIRATORY PATHOGEN PANEL	MOLECULAR MICROBIOLOGY	NASOPHARYNGED SWAB IN VTM	ROUTINE- 2 HOURS
RHEUMATOID FACTOR	BLOOD BANK	7 mL RED TOP TUBE	ROUTINE – RUN 1 X PER DAY UNLESS REQUESTED, MON-FRI DAYSHIFT ONLY
RUPTURE OF MEMBRANE (ROM)	CHEMISTRY	SPECIAL COLLECTION KIT L&D	ROUTINE- 1 HOUR STAT- 45-60 MIN.
RPR	BLOOD BANK	7 mL RED TOP TUBE	ROUTINE - 1 RUN PER DAY DAYSHIFT ONLY
RUBELLA (IGG)	CHEMISTRY	7 mL SST TUBE	ROUTINE - 4 HOURS MON-FRI DAYSHIFT ONLY
RUBEOLA VIRUS ANTIBODIES (IGG)	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
SALICYLATE (ASPIRIN)	CHEMISTRY	7 mL RED TOP TUBE MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE - 4 HOURS, STAT 45-60 MIN
SCLERODERMA ANTIBODIES (SCL-70)	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM - RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
SEROTONIN, BLOOD	REFERENCE LAB	7 ML SST TUBE	TEST SENT MON-FRI AT 2 PM - RESULTED 1-5 DAYS AFTER RECEIPT AT REFERENCE LAB
SERUM VISCOSITY	HEMATOLOGY	7 mL SERUM RED TOP	ROUTINE - 4 HOURS, STAT 45-60 MIN
SICKLE CELL SCREEN	HEMATOLOGY	WHOLE BLOOD EDTA ANY SIZE LAV TOP	ROUTINE - 4 Hours

SJÖGREN'S SYNDROME ANTIBODIES (SS-A & B)	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI @ 2 PM RESULTED 2-3 DAYS AFTER RECEIPT AT REFERENCE LAB
SMEARS FOR WRIGHT STAIN FECAL LEUKOCYTES URINE FOR EOS	HEMATOLOGY	STOOL, URINE	ROUTINE - 4 Hours
SODIUM, SERUM	CHEMISTRY	7 mL SST MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE - 4 HOURS, STAT 45-60 MIN
T3, TOTAL	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM - RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
TESTOSTERONE, ADULT MALE	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM - RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
TESTOSTERONE, FREE AND TOTAL ADULT MALE	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM - RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
THEOPHYLLINE	REFERENCE LAB	7 mL RED TOP TUBE MINIMUM REQUIREMENTS = 2 mL BLOOD	ROUTINE - 4 HOURS, STAT 45-60 MIN
THYROGLOBULIN ANTIBODIES	REFERENCE LAB	7 mL SST TUBE	ROUTINE – 1 -3 HOURS MON, TUES, THURS DAYSHIFT ONLY
THYROGLOBULIN, QUANTITATIVE	REFERENCE LAB	7 mL SST TUBE	ROUTINE – 1 -3 HOURS MON, TUES, THURS DAYSHIFT ONLY
THYROID PEROXIDASE (MICROSOMAL) ANTIBODY	CHEMISTRY	7 mL SST TUBE	ROUTINE – 1 -3 HOURS MON, TUES, THURS DAYSHIFT ONLY
TOBRAMYCIN, PEAK	CHEMISTRY	7 mL RED TOP TUBE	ROUTINE - 4 HOURS
TOBRAMYCIN, TROUGH	CHEMISTRY	7 mL RED TOP TUBE DRAW IMMEDIATELY PRIOR TO NEXT DOSE	ROUTINE - 4 HOURS
TRIGLYCERIDES, SERUM	CHEMISTRY	12-14 HR FAST 7 mL SST MINIMUM REQUIREMENT = 2 mL BLOOD	ROUTINE - 4 HOURS
TSH	CHEMISTRY	7 mL SST TUBE	ROUTINE - 4 HOURS
tSPOT – SERUM TEST FOR TB	REFERENCE LAB	GREEN TOP TUBE	SENT ONLY MON - FRI. MUST BE IN LAB IN MONRING. RESULTS 2-5 DAYS.
URIC ACID, 24 HR URINE	REFERENCE LAB	24 HOUR COLLECTION REFRIGERATE. AFFECTED BY DIET & MEDICATIONS	24 HOURS AFTER RECEIPT AT REFERENCE LAB
URIC ACID, SERUM	CHEMISTRY	7 mL SST TUBE	ROUTINE - 4 HOURS

URINALYSIS	MICROBIOLOGY	URINE- COLLECT INTO A CLEAN OR STERILE CONTAINER. REFRIGERATED SPECIMENS CAN BE STORED FOR A MAXIMUM OF <24 HOURS.	ROUTINE - 4 HOURS, STAT 45-60 MIN
VALPROIC ACID (DEPAKENE)	CHEMISTRY	7 ML RED TOP TUBE	ROUTINE - 4 HOURS
VANCOMYCIN, RANDOM	CHEMISTRY	7 mL RED TOP TUBE MINIMUM REQUIREMENT = 3 ML BLOOD	ROUTINE - 4 HOURS
VANCOMYCIN, TROUGH	CHEMISTRY	DRAW TIME 30-60 MIN BEFORE NEXT DOSE 7 ML RED TOP TUBE MINIMUM REQUIREMENT = 3 mL BLOOD	ROUTINE - 4 HOURS
VARICELLA-ZOSTER AB, IGG	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM - RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB
VARICELLA-ZOSTER AB, IGG AND IGM	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM - RESULTED 1-5 DAYS AFTER RECEIPT AT REFERENCE LAB
VITAMIN B12	CHEMISTRY	7 mL SST TUBE FASTING SPECIMEN PREFERRED	ROUTINE - 4 HOURS MON-FRI DAYSHIFT ONLY
VITAMIN D, 25 HYDROXY	REFERENCE LAB	7 mL SST TUBE	TEST SENT MON-FRI AT 2 PM - RESULTED 1-2 DAYS AFTER RECEIPT AT REFERENCE LAB

Point of Care Test Menu

TEST NAME	**DEPARTMENT**	**SPECIMEN REQUIREMENTS**	**TURNAROUND TIME**
ACTIVATED CLOTTING TIME (ACT+)	POINT OF CARE TESTING	0.2 mL FRESH NON-ANTICOAGULATED WHOLE BLOOD	PERFORMED AT BEDSIDE
ACTIVATED CLOTTING TIME LOW RANGE (ACT-LR)	POINT OF CARE TESTING	0.2 mL FRESH NON-ANTICOAGULATED WHOLE BLOOD	PERFORMED AT BEDSIDE
BLOOD GAS ELECTROLYTES, IONIZED CALCIUM, HCT, GLUCOSE, LACTATE	POINT OF CARE TESTING	92 µL FRESH WHOLE BLOOD, LITHIUM HEPARIN (NO ICE)	PERFORMED AT BEDSIDE
OXYGEN SATURATION	POINT OF CARE TESTING	50 µL FRESH WHOLE BLOOD, LI HEPARIN	PERFORMED AT BEDSIDE
PH – NG TUBE PLACEMENT	POINT OF CARE TESTING	0.25 mL FLUID	PERFORMED AT BEDSIDE
URINALYSIS, PROTEIN AND GLUCOSE VISUAL DIPSTICK	POINT OF CARE TESTING	1-2 mL FRESH VOIDED URINE	PERFORMED AT BEDSIDE
URINE PREGNANCY QUALITATIVE	POINT OF CARE TESTING	1-2 mL FRESH VOIDED URINE	PERFORMED AT BEDSIDE
WHOLE BLOOD GLUCOSE	POINT OF CARE TESTING	1.2 µL FRESH WHOLE BLOOD	PERFORMED AT BEDSIDE

Specimen Collection and Preparation Protocols for Nursing

TEST NAME	PREPARATION
AMMONIA LEVELS	Venous Ammonia levels are collected by Laboratory personnel or other patient care personnel. NOTE: Venous blood is the specimen of choice. Lithium Heparin green top tube is the collection tube of choice. Place the collected specimen in a biohazard bag. Place the bagged specimen in another bag which contains ice. Do not allow the collected specimen to come in contact with the ice. The label must not be obscured rendering specimen identification impossible. Name (first and last) Medical record number if known or date of birth Date/Time Patient location
ARTERIAL BLOOD GASES	Specimens are collected by Respiratory Care Services Collection kits are NOT supplied by the Laboratory. Place specimen in one biohazard bag and the ice in a separate bag. Place bagged specimen in the bag containing ice and transport to the lab immediately. Do not place specimen directly in contact with ice. The label must not be obscured rendering specimen identification impossible. Label specimen with required information: Name (first and last) Medical record number if known or date of birth Date/Time Patient location Transmittal forms must accompany specimens. Write FI02 information on transmittal form. Deliver the specimen to Laboratory Central Receiving.
BLOOD CULTURES	Blood cultures must only be ordered as Scheduled or STAT and never Routine.
BLOOD LACTATE	Venous lactic levels are collected in green topped tubes on ice and sent to the Laboratory immediately.
BODY FLUIDS, OTHER	Please identify the anatomic site of the fluid when submitting. Collect body fluid specimens in red or green top tubes for most fluid Chemistry requests. Label specimens with required information: Name (first and last) Medical record number if known or date of birth Date/Time Patient location Transmittal forms must accompany specimen. Deliver the specimen to Laboratory Central Receiving.

CEREBRAL SPINAL FLUID (CSF)	Label specimens with required information: Name (first and last) Medical record number if known or date of birth Date/Time Patient location Transmittal forms must accompany specimens. Deliver specimen to Laboratory Central Receiving IMMEDIATELY. CSF specimen results are affected by time.
ORAL GLUCOSE TOLERANCE TESTING	The Laboratory offers oral glucose tolerance testing for both the gestational and non-gestational patient. All oral glucose testing follows the guidelines established by the American Diabetes Association (ADA). Testing is by appointment only. Please call 267-758-4410.
THERAPEUTIC DRUG LEVELS	The drugs listed below have ideal draw times. Therapeutic ranges are based on these draw times. 1 - 2 Hours BEFORE the NEXT DOSE: Digoxin Lithium Carbamazepine Dilantin Phenobarbital Valproic Acid NOTE: Gentamicin, Tobramycin and Vancomycin have specific criteria. These are SCHEDULED TESTS. Use the SCHEDULE priority when entering orders and notify the beeper phlebotomist. Gentamicin/Tobramycin Trough Levels: 30 - 60 minutes BEFORE the drug is infused. Gentamicin/Tobramycin Peak Levels: 15 minutes AFTER a 30 – 60 minute drug infusion. Vancomycin Trough Levels: 30 - 60 minutes BEFORE the drug is infused.
URINE, RANDOM	May be collected at any time. Does not require a preservative unless stated. Sufficient volume for test request should be submitted. Label container with required information: Name (first and last) Medical record number if known or date of birth Date/Time Patient location The transmittal form must accompany the specimen. Deliver the specimen to Laboratory Central Receiving.
URINE COLLECTION, 24 HOURS	The Laboratory will supply the collection containers. Keep the specimen container refrigerated during the collection. Advise the patient to avoid contact with the preservative. Ideal start time for a 24-hour collection is early morning. Patient should maintain normal intake of fluids during the collection. Note the time and collect all urine for a 24-hour time period.

	The collection will end at the same time the next day. Only ONE first morning specimen should be included in any 24-hour collection period. Label container with required information: Name (first and last) Medical record number if known or date of birth Date/Time Patient location The transmittal form must accompany the specimen. Deliver the specimen to Laboratory Central Receiving.

Pediatric Specimen Requirements

Blood losses from phlebotomy, particularly in pediatric patients and those with many venipunctures, may be a cause of iatrogenic anemia and increased transfusion needs. Adverse consequences of excess venipunctures include complications during collection for patients and health-care workers, hazards from subsequent transfusions, contending with increased amounts of hazardous waste, and greater cost. Suggested solutions include carefully considering the need for laboratory tests, avoiding unnecessary repetition of tests, and minimizing use of standing orders.

TEST NAME	SPECIMEN REQUIREMENTS	TUBE TYPE	COMMENTS
ABGS	0.1 mL OF HEP ARTERIAL BLOOD	HEPARINIZED SYRINGE ON ICE	DELIVER STAT
ACETAMINOPHEN	0.7 mL	4 mL RED TOP/MT	
AMMONIA	1 mL	GREEN TOP ON ICE	DELIVER STAT
AMYLASE/LIPASE	1.4 mL	4 mL RED TOP/MT	
AST, ALT, LDH, GGT	0.7 mL	4 mL RED TOP/MT	
BILIRUBIN	0.7 mL	4 mL RED TOP/MT	GOLD/AMBER
BLOOD CULTURE	1-4 mL	PEDIATRIC COLLECTION BOTTLE	
CAFFEINE	1.4 mL	4 mL RED TOP/2 MT	SENT OUT
CARBAMAZEPINE	0.7 mL	4 mL RE TOP/MT	
CBC/ABC	2.25 mL 500 µL	LAV/MT	INVERT WELL
BASIC MET PANEL	0.7 mL	4 mL RED TOP, GREEN (LI HEPARIN) OR GOLD / 2 MT	
CHEM 10	0.7 mL	4 mL RED TOP/MT	
PT/PTT	1.8 mL	BLUE TOP –**MUST BE FULL TUBE**	INVERT WELL

LIVER PANEL	0.7 mL	4 mL RED TOP/MT	
CREATININE	0.7 mL	4 mL RED TOP/MT	
DIGOXIN	0.7 mL	4 mL RED TOP/MT	
DILANTIN	0.7 mL	4 mL RED TOP/MT	
GENTAMICIN	0.7 mL	4 mL RED TOP/MT	PEAK/TROUGH
GLUCOSE	0.7 mL	RED/GREEN/MT	
MAGNESIUM	0.7 mL	4 mL RED TOP/MT	
PHOSPHORUS	0.7 mL	4 mL RED TOP/MT	
RETIC COUNT	2.25 ML 500 µL	LAV TOP/MT	INVERT WELL
RPR	0.7 mL	4 mL RED TOP/MT	
SALICYLATE	0.7 mL	4 mL RED TOP/MT	
SED RATE	2.25 mL	LAV TOP/MT	INVERT WELL
FREE T4/TSH	2.1 mL	4 mL RED TOP/MT/3 MT	
THEOPHYLLINE	0.7 mL	4 mL RED TOP/MT	
TOTAL CALCIUM	0.7 mL	4 mL RED TOP/MT	
URINALYSIS	2.0 mL URINE	CALL LAB FOR LESSER AMOUNTS	
VALPROIC ACID	1.4 mL	4 mL RED TOP/MT	
VANCOMYCIN	0.7 mL	4 mL RED TOP/MT	

- RED TOP Vacutainer tubes come in a variety of sizes and draws.
- MT = Microtainer brand collection system. Tube may contain additives depending on test.
- Please fill to the top of the "frosted" area.
- Lavender unit has two graduations, 250 µL (0.25 mL) and 500 µL (0.5 mL). Unit has a powdered anticoagulant and must be filled to the 250 mark as a minimum draw, but can be filled to the 500 mark. THIS TUBE MUST BE WELL MIXED.

PLEASE CALL THE LABORATORY AT EXTENSION 610-431-5161 FOR SPECIMEN REQUIREMENTS ON TESTS NOT INDICATED ABOVE.
** REQUIREMENTS SUBJECT TO CHANGE**

List of STAT Tests

Clinical Chemistry

Acetaminophen (Tylenol), serum
Alcohol, serum (medical)
Amylase, serum or urine
Betahydroxybutyrate
Bilirubin, neonatal, total, serum
Bilirubin, neonatal, direct, serum

Blood ammonia
Brain Natriuretic Peptide
Chemistry 8 (C8) – consists of Na, K,Chloride, CO_2, BUN, Creatinine, Glucose and Calcium
Calcium, serum
Carbamazepine, serum
Carboxyhemoglobin, blood
Creatine kinase (CK), serum, total
Creatinine, serum
Digoxin, serum
Dilantin, serum
Drug screen urine, qualitative (medical) non-outpatients
Fetal Fibronectin
Fluid assays - glucose, LDH, Protein
Gentamicin, serum
GGT
Glucose, serum
Human chorionic gonadotropin, serum, quantitative
Lactate
LDH, serum
Lipase, serum
Lithium, serum
Liver
Magnesium
Blood Gas, arterial
Blood Gas, mixed venous
Potassium, serum
Salicylate, serum
Sodium, serum
Theophylline, serum
Thyroid Stimulating Hormone (TSH)
Tobramycin, serum
Troponin
Urea Nitrogen (BUN), serum
Vancomycin, serum

Blood Bank/Serology

ABO/Rh and Antibody Screen
Transfusion of Red Cells, Fresh Frozen Plasma, Platelets, and Cryoprecipitate
Direct Antiglobulin test (DAT) [Direct Coombs]
Monospot
Preliminary evaluation of possible transfusion reaction
Post-partum Rh Immune Globulin testing

Hematology and Coagulation

Complete Blood Count
Complete Blood Count w/differential
Erythrocyte Sedimentation Rate (ESR) (for temporal arteritis)
FDP (split products)
Fibrinogen

Fluid Cell Count
Fluid Crystals
Partial Thromboplastin Time (activated)
Procalcitonin
Prothrombin Time
Retic Count
Serum Viscosity
D-Dimer

Microbiology

Wet Prep for Yeast
Gram stain (any appropriate specimen)
Group A streptococcus screening
Urinalysis - macroscopic and microscopic
Urine pregnancy –qualitative
Vaginitis/Vaginosis Screen
Source Patient HIV
Flu A+B/RSV PCR
Meningitis Panel
Respiratory Panel
SARS-CoV-2 PCR

Special Tests/Panels

Stroke Panel (Stroke Alert)

Surgical Pathology/Cytopathology

Intraoperative consultation
Any other specimens submitted as STAT should be discussed with the on-call pathologist/Medical Director to determine appropriateness of such processing.

BLOOD BANK PROTOCOLS, TESTS & PRODUCTS

Procuring Blood or Blood Products

- Complete or release Transfusion request. Verify the patient's full name, medical record number.
- RN requisitioning blood/component signs slip.
- Take the completed form to the Blood Bank.
- Blood/components will be issued on only one patient at a time.

Refer to Nursing Policy and Procedure Manual for proper procedures for:

- Administration of Blood and Blood Components
- Use of Blood Warmer
- Blood Transfusion Reactions
- Nursing Implications for the Patient Receiving Therapeutic Apheresis.

Transfusion Reaction Investigation - There are no patient charges for this testing.

Blood Bank Test Menu

Test	Specimen Requirements Patient Prep	Department	Method	Availability
ABO Group/Rh Type (If ABO Group/Rh AND Antibody Screen are needed, order Type and Screen)	1 Pink top tube; must be properly labeled	Blood Bank	Automated/manual	Routine -4 hours, STAT - 60 min
Antibody Screen (If ABO Group/Rh AND Antibody Screen are needed, order Type and Screen)	1 Pink top tube; must be properly labeled	Blood Bank	Automated/manual	Routine- 4 hours, STAT 45-60 Min
Cord Blood Evaluation – includes ABO/Rh and Direct Coombs	1 mL Cord Blood – must be properly labeled	Blood Bank	Manual	Routine- 4 hours, STAT 45-60 Min
Cryoprecipitate	Call Blood Bank to verify if a Type & Screen specimen is needed.	Blood Bank		20 – 30 min. to thaw product
Emergency Release – Uncrossmatched Group O Red Blood Cells	If a current Type & Screen specimen is not in the Blood Bank, one is needed at the earliest possibility before or after the emergent situation.	Blood Bank		
Fresh Frozen Plasma	Call Blood Bank to verify if a Type & Screen specimen is needed.	Blood Bank		30 – 40 min. to thaw product
HLA Matched Platelets	Number of specimens varies; call Blood Bank	Blood Bank	Special order to American Red Cross (ARC)	Varies dependent on ARC inventory
Fetal Hemoglobin	1 Pink top tube; must be properly labeled	Reference Lab	Flow Cytometry	TAT 2-3 days
Neonatal ABO/Rh and DAT	1/2 Purple microtainer; must be properly labeled	Blood Bank	Manual	Routine - 4 hours, STAT 45-60 min
Neonatal Exchange & Patent Ductus Arterious	Notify Blood Bank Supr. as soon as possibility of procedure arises.	Blood Bank		Blood products will be available as needed
Platelets	Call Blood Bank to verify if a Type & Screen specimen is needed.	Blood Bank		Available upon request unless a specimen is needed
Red blood cells	Call Blood Bank to verify if a Type & Screen specimen is needed.	Blood Bank		Routine - 4 hours STAT 45-60 Min
Rh Immune Globulin Evaluation (Includes Type & Screen, Fetal Bleed Screen and RhIg if indicated)	1 pink top tube; must be properly labeled	Blood Bank	Manual	Routine - 4 hours, STAT 45-60 Min
ED Rh Immune Globulin RHGL20 – Transfuse RhIg < 20 weeks pregnant	Call Blood Bank to verify if Type & Screen specimen needed	Blood Bank		Upon request unless a specimen is needed

ED Rh Immune Globulin 20RHG – Transfuse RhIg greater than or equal to 20 weeks pregnant	Call Blood Bank to verify if Type & Screen specimen is needed	Blood Bank		ROUTINE 4 hours, STAT 45-60 Min
Therapeutic Phlebotomy	Performed on inpatients			Nursing will call Red Cross to arrange this procedure on inpatients.
Transfusion Reaction Workup	Immediately notify Blood Bank	Blood Bank		Treated as a STAT, but interpretation may be longer depending on in the investigation
TYPE AND SCREEN (includes titer for prenatal patients if Antibody Screen is positive)	1 pink top tube; must be properly labeled	Blood Bank	Automated/manual	Routine - 4 hours STAT - 45-60 Min

MICROBIOLOGY INFORMATION & MICROBIOLOGY COLLECTION CHART

The quality of the specimen collected is critical in obtaining clinically significant results. Inadequate or inappropriately collected specimens yield confusing results, which may lead to unnecessary further testing and unnecessary antibiotics. It is very important to refer to the specimen collection section below prior to collection to ensure that the most appropriate specimen is obtained.
NOTE: Not all specimens contain clinically significant pathogens. Antimicrobial susceptibility studies will be performed only on appropriate isolates for which there are approved methods for susceptibility testing.

Micro Specimen Labeling

The Microbiology Section of the Department of Pathology and Laboratory Medicine will not accept any specimen for evaluation for which unlabeled or improperly labeled. The minimum requirement for labeling of the primary container (not the wrapper or biohazard bag) is the patient's full name, and a unique identifier (i.e. Date of birth, Medical Record Number, Social Security Number)

Micro Specimen Collection

- To obtain a quality specimen, carefully select the optimal site for the disease process.
- Prepare the site and remove the material according to specimen handling instructions provided in the sections that follow.
- Consult the test sections for additional information. SPECIMENS MUST BE IN LEAK PROOF CONTAINERS AND FREE OF ANY EXTERNAL CONTAMINATION.

Micro Specimen Transport

- The integrity of specimens must be maintained during transport. To accomplish this, various media and preservatives are provided.
- If the specimen is not properly submitted, results may not provide accurate clinical

information.

- The Microbiology Section of the Department of Pathology and Laboratory Medicine reserves the right to reject any specimen that is determined unsuitable for culture due to improper specimen collection, improper maintenance after collection, improper transport or excessive delay in transport.

Aerobic/Anaerobic Swab Specimens

- An aspirate from an incision and drainage procedure is always preferred to a specimen collected with a swab when doing cultures for anaerobes. As a last resort, the specimen may be collected using a transport swab provided by the Chester County Hospital Department of Pathology and Laboratory Medicine, which has been chosen, for its ability to support the growth of both aerobic and anaerobic organisms. **It is not necessary to send two swabs when requesting aerobic and anaerobic evaluation of a specimen.**
- Specimens from the following sites are acceptable for anaerobic culture:
  a. Trans-tracheal aspiration or protected brush from bronchoscopy procedure
  b. Suprapubic urine from: suprapubic bladder aspiration or nephrostomy tube
  c. Genital specimens from:
    1) Cul-de-sac aspiration
    2) Culdocentesis
    3) Placenta
    4) Fallopian tube
    5) Septic abortion
    6) Surgical specimens
    7) Exudates, aspirates from deep wounds, or abscesses

Note: Specimens not mentioned above may be processed anaerobically only after consultation with the Microbiology Supervisor. IUD'S ARE NOT AN APPROPRIATE SPECIMEN FOR CULTURE. PAP SMEARS ARE THE PREFERRED DIAGNOSTIC TEST IF ACTINOMYCES IS SUSPECTED.

- Specimens from the following sites are **not acceptable** for anaerobic culture:
  a. Throat and nasopharyngeal swabs
  b. Sputum and bronchoscopy (other than those listed above)
  c. Voided or catheterized urine
  d. Feces or rectal swabs
  e. Vaginal and cervical swabs
  f. Specimens from sites contaminated with intestinal contents:
    1) Colostomy sites
    2) Draining pilonidal sinus
    3) Traumatic perforation of the bowel
    4) Superficial wounds **including decubitus ulcers**

- DECONTAMINATION OF SKIN: This procedure must be performed prior to collection of specimens such as CSF, wound cultures, and aspirates.
  a. Clean the intended culture site with ChloraPrep.
  b. Allow to dry. Do not probe with your finger after site has been cleaned.
  c. Following the procedure, remove ChloraPrep with 70% alcohol.

- AEROBIC AND ANAEROBIC TRANSPORT: **Note: Submit swab specimen only when more suitable fluid aspirates are not obtainable.**
  a. **A**erobic/Anaerobic Transport Swab: Use to collect swab specimens for aerobic and/or anaerobic culture.
  b. Swabs for aerobic and/or anaerobic culture should be transported to the lab ASAP at room temperature.
  c. TURNAROUND TIMES FOR AEROBIC/ANAEROBIC SWAB CULTURES
     1) STAT Test: the gram stain is available within 60 minutes of receipt of the specimen.
     2) Final results are generally available within 72 hours of the specimen being plated. A longer turnaround time should be expected if a potential pathogen is not isolated until the second or third day of incubation. Daily preliminary results are available through the information system.

Aspirates, Sterile

- DECONTAMINATION OF SKIN: This procedure must be performed prior to collection of specimens such as CSF, wound cultures, and aspirates.
  a. Clean the intended culture site with ChloraPrep.
  b. Allow to dry.
  c. Do not probe with your finger after puncture site has been cleaned.

- COLLECTION AND TRANSPORTATION
  a. Follow standard procedures and obtain the specimen by aspiration.
  b. Syringes with sterile caps, or sterile interior Vacutainer tubes (red or green top) may be used for specimen transport.
     1) The specimen may be submitted in the syringe used for collection after a sterile cap has replaced the needle. Syringes with needles attached **will be rejected**.
     2) If bloody, the specimen should be submitted in a heparinized syringe or green top sterile interior Vacutainer tube after decontamination of the rubber stopper.
     3) The collected specimen should be maintained at ambient temperature after collection and during transport. Deliver the labeled specimen to Central Receiving immediately. Give the specimen to a clerk for immediate processing.

- TURNAROUND TIMES FOR STERILE ASPIRATES
  a. STAT test: The gram stain is available within 60 minutes of receipt of the specimen.
  b. Final results are generally available within 5 to 6 days of the specimen being processed. Daily preliminary results are available through the information system.

Blood Cultures

- TIMING OF BLOOD CULTURES
  A. Before the use of systemic antimicrobial therapy, obtain 2-3 separate sets of blood cultures, drawn from different sites when there is a fever of >101 F combined with significant leukocytosis or leukopenia. A minimum of 40-60 mL of blood is required.

B. One set is one aerobic and one anaerobic bottle on adults or one bottle on infants and children. DOUBLE VOLUME OBTAINED DURING A SINGLE VENIPUNCTURE DOES NOT CONSTITUTE TWO SETS. EACH SET MUST BE OBTAINED BY SEPARATE VENIPUNCTURE FROM SEPARATE SITES.

C. The aerobic bottle and anaerobic bottle that were drawn from the same site constitute one set and should be labeled with the same accession number. If another set of blood cultures is drawn, it should be labeled with a different accession number so that it is clear which aerobic bottle goes with which anaerobic bottle. Each set should have the date and time that it was drawn.

D. Systemic and Localized Infections

1. Suspected acute sepsis, meningitis, osteomyelitis, arthritis, urosepsis, or acute untreated bacterial meningitis: Obtain two sets at two different sites quickly.
2. Fever of Unknown Origin: Initially, obtain 2-3 sets of blood cultures. If negative, 24 to 36 hours later, obtain two additional sets of blood cultures. **Note:** Studies have shown that the yield beyond four sets of blood cultures is often negligible!
3. Suspected Early Typhoid or Brucellosis: Due to the low grade bacteremia present in these infections, obtain four sets of blood cultures over a 24 to 36-hour period. **NOTIFY LAB OF SUSPECTED PATHOGEN**.
4. Infective Endocarditis –**NOTIFY LAB OF DIAGNOSIS**
   a. Acute: Obtain three sets of blood cultures during the first 1 to 2 hours of evaluation.
   b. Subacute: Obtain three sets of blood cultures on the first day. If all three sets are negative 24 hours later, obtain two additional sets of cultures.
   c. Culture Negative Endocarditis: Consult with the Microbiology Supervisor, Clinical Director, or Infectious Disease Physician after five negative sets of blood cultures. Special culture techniques may be advised.

- **COLLECTION, VENIPUNCTURE PROCEDURE**

A. Skin Preparation: CHLORAPREP FREPP

1. Apply the tourniquet to the arm of the patient and choose the vein to be used, loosen the tourniquet.
2. Remove ChloraPrep from kit. Hold in horizontal position and pinch handle once to break the ampule. Do not continue to squeeze the handle.
3. Place sponge on selected site and depress twice to saturate the sponge.
4. Scrub **vigorously** for at least 30 seconds. **Allow to dry.**
5. While the CHLORAPREP is drying, prepare the blood culture bottles:
   a. Disinfect the rubber stoppers of the bottles with sterile alcohol wipe. Make sure the stopper is dry before the blood is drawn into the tubes.
   b. Prepare an aerobic and anaerobic bottle for adults (gray and purple) or one yellow top bottle for infants and children.
   c. Mark off on each bottle the amount of blood to be drawn: 10 mL for each adult bottle. See chart below for pediatric samples:

PATIENT WEIGHT		NUMBER OF VENIPUNCTURES	AEROBIC BOTTLE mL	ANAEROBIC BOTTLE mL
Kg	lb.			
<3	<6	ONE	*2	0
4-9	8-19	ONE	*4	0
10-12	20-26	ONE	6	0
13-20	27-44	ONE	4	4
21-25	45-55	ONE	5	5
26-36	56-80	ONE	10	10
>37	>81	TWO	10 SET #1	10 SET #1
			10 SET #2	10 SET #2

*Pediatric Bottle

Note: If a single venipuncture is performed, collect higher volume in bottle #1

d. If less than 20 Ml is obtained for adults: put 10 mL into the aerobic bottle (gray) and the remainder into the anaerobic bottle (purple).
e. 1-4 mL for each pediatric bottle.

B. PERFORM THE VENIPUNCTURE
1. Reapply the tourniquet and, using a butterfly and special adapter for the blood culture bottles, perform the venipuncture without palpating the site.
2. Fill the aerobic bottle (gray) first then fill the anaerobic bottle (purple).
3. Label the tubes with the patient name, medical record number, time of collection, and tech code.

C. CULTURE FROM AN IV LINE
1. Decontaminate port or stopcock with alcohol.
2. Draw 10 mL of blood into an aerobic (gray) after disinfecting the stopper with alcohol.
3. Label and deliver to Central Receiving within 30 minutes of collection.

D. Blood cultures for fungus or AFB – **Sent to Reference Lab**
1. Order “Fungal Blood Culture” or Blood culture for AFB. A special bottle will be collected

- TURNAROUND TIMES FOR BLOOD CULTURES:

All blood cultures, if they continue to be "no growth”, continue to be incubated for five full days. Blood cultures are monitored continuously for growth by the instrument. The pharmacist is notified as soon as a blood culture is determined to be positive for growth and told the morphologic type seen in the gram stain of the positive bottle. (If an out-patient, the ordering physician’s office will be called with this information). The pharmacist will then notify the provider of the gram stain. A multiplex molecular panel, which will be able to detect many of the most common pathogens will be performed on the first positive bottle on a patient. The run time of the test is approximately one hour and a follow-up call with the results is made to a pharmacist who will contact the physician regarding antimicrobial therapy. The status of a blood culture is available in the computer.

Cerebrospinal Fluid (CSF)

1. DECONTAMINATION OF SKIN -Follow standard procedures and obtain specimen by aspiration.
2. Deliver to Central Receiving
   A. Submit in a separate sterile screw-capped tube. The **second** or **third** tube is used for analysis.
   B. Label CSF specimen, deliver specimen immediately to Central Receiving and give to a lab staff member for processing.
   C. **Never refrigerate.**

3. TURNAROUND TIMES
   A. STAT tests: The gram stain results will be available within 60 minutes of receipt of the specimen. The meningitis/encephalitis panel turn-around-time is about 2 hours.
   B. Final results will be available within 72 hours of the specimen being plated. A longer turnaround time should be expected if a potential pathogen is not isolated until the second or third day of incubation. Daily preliminary results are available through the information system.

Chlamydia DNA Probe Collection and Transport

- COLLECTION AND TRANSPORT
  A. Aptima unisex collection (cervical specimens on females) are available from Central Receiving. Aptima Multi-Use collection kits are available for vaginal specimens., These kits are FDA approved for collection of genital specimens on adults only. Collection tubes are stored at room temperature. Urine specimens on males and females are acceptable. Collect the first part of the stream (**not** clean catch). Liquid cytology has been validated for testing.
  B. An amplified DNA probe is used for testing.
  C. CT/GC testing in cases of abuse must be performed at the crime lab.
  D. TURNAROUND TIME: CT/GC testing is performed 3 times per week.
  E. A positive test for Chlamydia is reported to both the physician and to the PA Department of Health in compliance with Pennsylvania law.

Clostridium Difficile Toxin

(Recommended for any age patient >6 months with ≥ 3 watery stools in the previous 24 hours and a history of ABT or use of antineoplastic agents.

1. COLLECTION: Stools should be collected in a clean, dry, leak proof container. Stools must conform to the shape of the container. Formed stools will not be tested.
2. TRANSPORT: Make sure the lid is tightly closed. If the specimen cannot be delivered immediately to the laboratory, place the container in the refrigerator or on ice and deliver to laboratory within 24 hours.
3. TURN-AROUND-TIME: Specimens for Clostridium difficile testing will be tested by a molecular method. This test is run multiple times on day shift. If the test is negative for the toxin gene, results will be reported as negative. If the initial molecular testing is

positive for the gene, the test will be reflexed to an immunoassay test for the actual toxin. If that is positive, the result of the immunoassay will be reported as positive for C. difficile toxin. If the immunoassay is negative, the result will be reported as negative by immunoassay for the toxin with a comment that since the molecular assay was positive for the toxin gene, contact isolation is required and treatment may be indicated. The immunoassay will also be performed multiple times on day shift.

Herpes simplex 1 & 2

COLLECTION:

1. Performed in-house. Collection of specimens from cutaneous or mucocutaneous sites should be done using a flocked swab and VTM medium provided by the Laboratory.
2. Fluid "Blister" swabs from lesions. Obtain fluid from blisters using a tuberculin syringe. Alternatively use a swab (not wooden shafted) placed into viral transport medium.
3. NICU/NUR surface cultures (rectal, eye, skin). Place all 3 swabs into one UTM tube.
4. TRANSPORT: Deliver the specimen immediately to the Laboratory. If there is a delay in transport, the VTM should be refrigerated.
5. TURNAROUND TIME: HSV 1&2 testing on cutaneous or mucocutaneous sites is performed in house by a molecular method and performed on day shift only. It is available the same day if the specimen is submitted to the laboratory by 12:00.
6. **It can also be performed in house on CSF specimens. For NICU specimens, it is often requested in addition to a meningitis panel since the HSV performed separately on the Simplexa is more sensitive than the HSV on the meningitis panel.**

Human Papillomavirus Testing

1. COLLECTION: Acceptable specimens are ThinPrep PAP vials.
2. HPV testing is done by physician request.
3. TURNAROUND TIME: Testing is performed on Mondays and Wednesdays. Genotyping of positive HPV's is done on Thursdays if ordered.

Influenza A & B/RSV

1. Mid-turbinate swabs are collected into UTM media using special flocked swabs.
2. The testing procedure is available around the clock.
3. TAT is approximately 1 hour.

Lyme C10 Antibody Testing, EIA

1. Lyme testing is performed three times per week during the peak summer months and twice a week in the winter months.
2. All specimens that yield positive or equivocal results will be sent for Western Blot confirmation.
3. Serum is the only acceptable specimen for testing.
4. Lipemic and hemolyzed specimens may yield anomalous results.

MRSA Screen

1. Collect specimen from anterior nares using a single swab culturette. Make sure to sample both nostrils.
2. Insert the swab into one nostril about 1 inch, depress the outside of the nose with your finger and rotate the swab 3-5 times.

3. Put the swab into the alternate nostril and repeat this procedure.
4. Transport Culturette at ambient temperature.
5. Test is performed Sunday-Saturday. TAT is < 24 hours from receipt in the laboratory.

Mycobacterium Cultures and Smears (AFB Cultures and Smears)

SMEARS

1. AFB smears and cultures are sent to the Microbiology Laboratory at the Hospital of the University of Pennsylvania in Philadelphia for testing.
2. Routine AFB smears are usually available within 2 days.
3. The CCH Laboratory will be notified of any positive AFB smears and isolates of Mycobacterium tuberculosis. The physician will be notified along with Infection Prevention.

Cultures for Respiratory Tuberculosis Diagnosis

1. Three sputum specimens should be collected at least 8-24 hours apart, with at least one being a first morning specimen, should be collected and delivered in **LEAK PROOF CONTAINERS** within 30 minutes of collection.
2. Alternatively, a BAL (bronchial lavage) may be collected and sent in **LEAK PROOF CONTAINERS** within 30 minutes of collection.
3. AFB cultures are sent to the Microbiology Laboratory at the Hospital of the University of Pennsylvania in Philadelphia for testing. They are monitored once per week for 8 weeks. Preliminary results of positive cultures are sent to the Chester County Hospital Microbiology Laboratory and physicians will be notified of the preliminary results.
4. All isolates of *Mycobaterium tuberculosis* have susceptibilities performed. Susceptibility testing on other species of *Mycobacterium* is available upon request.
5. The ordering physician and the PA Department of Health are notified of all positive culture results.

Mycology Cultures and Smears

1. All fungal cultures and fungal smears are sent to a reference lab for testing. If the laboratory is notified by the reference lab that a dimorphic fungus or highly pathogenic filamentous fungus is isolated from any source, the physician will be notified.
2. Fungal cultures are typically incubated for 4 weeks before being reported as negative.
3. If requested, yeast susceptibility testing can be performed by our reference laboratory and usually takes 7-10 days to complete.

Neisseria gonorrhea (GC) by DNA Probe

(Only for genital or urine sources on adults; see *Neisseria gonorrhoeae* culture for pediatrics or other sources)

- COLLECTION AND TRANSPORT
    A. Aptima unisex collection are available from Central Receiving. These kits are FDA approved for collection of genital specimens (cervical specimens on females) on adults only. Vaginal specimens are collected in Aptima Multi-Use Collection kits. Collection tubes are stored at room temperature. Urine specimens on males and females are acceptable. Collect the first part of the stream (**not** clean catch). Liquid cytology has been validated for testing.
    B. An amplified DNA probe is used for testing. The testing is performed 3 times per

week.

C. CT/GC testing in cases of abuse must be performed at the crime lab.
D. TURNAROUND TIME: CT/GC testing is performed 3 times per week.

- COLLECTION OF SPECIMEN WHEN USING APTIMA COLLECTION KITS
  1. On Females: Aptima Unisex collection kit for cervical specimens: Use the large swab in the kit to remove discharge present in the endocervix and discard. Use the second swab (blue shaft) to obtain a good sample of endocervical cells. Break off the swab into the Unisex vial.
  2. On females: Aptima Multi-Use Collection kits are used for collection of vaginal specimens. These contain a pink swab for collection.
  3. For urines – Patient should not have urinated for at least one hour prior to collection. Collect the first part of the stream (**not** clean catch).
  4. For male urethral specimens – Use the blue swab in the Aptima Unisex collection kit. Insert swab provided 2 to 4 cm into urethra. Rotate clockwise 2 to 3 seconds to ensure contact with all urethral surfaces. Withdraw swab and place into the Aptima Unisex vial
  5. Store inoculated Aptima vials at room temperature prior to delivery to the lab.
  6. Specimens are tested 3 times per week.
  7. A positive culture or DNA probe for *Neisseria gonorrhoeae* or *Chlamydia* is reported to both the physician and the PA Department of Health in compliance with Pennsylvania law.

Neisseria gonorrhea (GC) Culture

(Sources other than genitals or urines i.e. throat, rectal, etc. and for pre-pubescent females; specimens for cases of abuse should be directed to the crime lab)

1. Collect pharyngeal, rectal, (on adults or children) vaginal on pre-pubescent females or aspirates from skin lesions, eyes using culturette.
2. A Thayer Martin plate and zip-lock bag should be obtained from the Microbiology section. Warm to room temperature and inoculate with specimen obtained with a swab. Place the plate in the zip-lock bag.
3. TRANSPORT: Send zip-lock bag with specimen to the laboratory at ambient temperature.
4. TURNAROUND TIME: 48-72 hours

Parasite Exam, Stool Collection and Transport

1. SCREENING – Since the most frequently isolated parasite is Giardia, a screening for Giardia/Cryptosporidium will be done. This specimen will be saved for 2 weeks in case a full O&P is needed.
2. COLLECTION-Since many protozoa are passed intermittently, multiple stool examinations are required before a parasitic infection can be ruled out. It is recommended that at least 3 stool specimens, collected at 2 to 3 day intervals, be submitted for examination. Each specimen must be preserved in a single SAF vial. Stool specimens on inpatients may be submitted as fresh stool and will be transferred into the preservative in the lab.
3. Instructions for use of preservative vials: Collect the stool in a clean, dry container (do not use the toilet). Avoid contamination of the specimen with urine.

4. Open the transport vial. Using the collection spoon built into the lid, obtain scoops of stool from areas which appear bloody, slimy, or watery and place them into the vial until the volume rises to the red line. If the stool is formed (hard), sample small amounts from each end and the middle.
5. Mix the contents of the vial with the spoon, twist the cap tightly closed, and shake vigorously until the contents are well mixed.
6. If multiple specimens will be collected over several days, the **preserved** specimens may be maintained at room temperature until all the specimens have been collected. It is not necessary to bring each specimen to the laboratory as it is collected.
   NOTE: Specimens on inpatients should be sent to the lab immediately after collection and NOT held until subsequent specimens are collected.
7. Stool cultures, stools for *Clostridium difficile* toxin, and stain for WBC's **will not** be performed on any specimens submitted in formalin, PVA or SAF.
8. Specimens collected within 5 days of a barium enema are unsuitable for examination.
9. Specimens should never be frozen or placed in an incubator.
10. Full parasite examination **cannot** be performed on unpreserved specimens. Only *Cryptosporidium/Giardia* immunoassay can be performed.
11. Results of the *Cryptosporidium/Giardia* assay are usually available within 24 hours. Full O&P evaluation usually takes 72 hours and is performed at a reference laboratory.

Pneumonia Panel

1. This molecular panel tests for 26 different pathogens that can be common causes of pneumonia: 15 bacteria, 3 atypicals, and 8 viruses. In addition, it tests for various resistance genes which can be found in the bacteria on the panel.
2. Collect sputum, endotracheal aspirate or bronchial wash in a sterile container.
3. Routine culture should always be ordered along with this panel.
4. Send the specimen to the laboratory as soon as possible. Refrigerate if there is a delay in transport.
5. Test is performed on day shift only.

Respiratory Pathogen Panel

1. This test should not be used if Influenza, RSV and/or SARS-CoV-2 are suspected. In those instances, the individual Influenza A & B/RSV or COVID should be ordered.
2. Obtain a nasopharyngeal swab using a special flocked swab inserted into Universal Transport Media (UTM)
3. Specimens should be transported at ambient temperature up to 4 hours.
4. If transport will be longer than 4 hours, specimens should be refrigerated.
5. Testing is performed 24/7.
6. TAT is < 3 hours.

RSV (Respiratory Syncytial Virus; performed along with Flu A&B)

1. Mid-turbinate swabs are collected into UTM media using special flocked swabs.
2. The testing procedure is available around the clock.
3. TAT is approximately 1 hour.

SARS-CoV-2

1. Collect nasopharyngeal or mid-turbinate specimen with special flocked swab and place into viral transport media (VTM) available from the laboratory.
2. Testing is available 24/7.

3. TAT time can range from 20 minutes to 4 hours depending on the patient population.
4. Testing performed prior to a procedure is usually available the next day.

Sputum

1. The preferred specimen is early morning expectorated sputum obtained after a deep cough. The patient should rinse mouth with water before the sputum is collected. Instruct the patient to avoid adding saliva or nasopharyngeal discharges to the sputum sample as they will contaminate it with indigenous microorganisms. Pooled specimens are unsuitable for cultures of any kind. Submit the specimen within 30 minutes of collection, in a sterile cup with the top screwed on tightly.
2. Sputum, for Mycobacteria: The preferred specimen is early morning expectorated sputum obtained after a deep cough. We recommend submitting 3 specimens within 8-24 hours apart, one of which must be a first morning specimen for Mycobacteria culture and smear. Collect the specimens in labeled, tightly sealed screw-cap cups. Deliver to Central Receiving within 30 minutes.
3. In order to detect AFB in a sputum sample, a volume of at least 5 mL., preferably 10 mL. is needed.
4. Unacceptable specimens: All sputum samples for routine culture are screened to determine if the specimen submitted is adequate or if it is just saliva. If the specimen is inadequate, the physician office or nursing unit will be notified and another specimen requested.
5. Sputum for bacteriology: should be transported in a sterile, screw cap container. Twist the cap securely closed after placing the specimen in the container.
6. Refrigerate the specimen if transport to the laboratory will be delayed more than 30 minutes.
7. Delivery by Courier: Specimens which will be delivered by courier should be kept refrigerated or on ice until they are picked up by the courier. Instruct the courier to transport the sputum in the cold cooler.
8. TURNAROUND TIMES: If the specimen is determined to be inadequate by microscopic examination, the nursing unit or physician's office will be notified so another specimen may be obtained. The patient will not be charged for the unacceptable specimen.
9. STAT gram stains are available within 60 minutes of receipt of the specimen.
10. Final results are generally available within 48 to 72 hours of the specimen being plated. A longer turnaround time should be expected if a potential pathogen is not isolated until the second or third day of incubation. Daily preliminary results are available by computer or phone.

Stool Evaluation for Enteric Pathogens:

1. Stools submitted for culture will be tested for *Campylobacter*, *Salmonella*, *Shigella*, Shiga toxin producing *E. coli* (including E. coli 0157:H7), *Vibrio (vulnificus/parahaemolyticus/cholerae), Plesiomonas shigelloides, Yersinia enterocolitica* and Enterotoxigenic *E. coli* (ETEC) by molecular method and *Aeromonas* by culture. No more than 2 stools should be collected on separate days. If the patient has been hospitalized for more than 3 days without an admitting diagnosis of gastroenteritis, do not routinely perform stool cultures. First test for *C. difficile*.
2. Optimally the Orange Cap C&S Transport Media should be used for the culture (may be obtained from the Laboratory). After collection into the vial, the specimen should remain at room temperature.

3. If the specimen CANNOT be collected into the C&S Transport Media it should be collected in a clean, dry container. Diapers will **not be** accepted.
4. Check that the lid is tightly closed and the container will not leak.
5. If the stool is collected the night before it will be submitted for testing, refrigerate the specimen prior to delivery to the laboratory.
6. Optimally, the specimen collected into the C&S vials should be delivered to the laboratory within a few hours of collection. The specimen must be delivered **within 24 hours** or it will not be suitable for culture
7. Optimally, the specimen not collected in the C&S vials should be delivered to the laboratory within a few hours of collection. Specimens which are >18 hours old at time of receipt in the laboratory are unsuitable for culture**. Pathogens in unpreserved stools, even if refrigerated, will begin to die as soon as the pH begins to change so the specimen needs to be processed as soon as possible.**
8. Preliminary results are generally available within 24 hours for the molecular testing. Culture for *Aeromonas* is generally available in 48 hours.
9. Final results are generally available within 48 - 72 hours of the specimen being plated. A longer turnaround time should be expected if a potential pathogen is not isolated until the second or third day of incubation.

Tissue Cultures

1. Place tissue in a sterile cup and label. Put appropriate orders into the HIS computer
2. Deliver the specimen immediately to the laboratory Central Receiving clerk.
3. **Never refrigerate or leave a tissue specimen on the counter in Central Receiving. A Central receiving clerk or a technologist must be given the specimen**
4. If the specimen for culture will be delivered after 1600, arrangements must be made with a pathologist or the Microbiology supervisor to have the tissue processed for culture. Alternatively, the surgeon must split the specimen and place a portion in saline for Microbiology to process and a portion placed in formalin for the Histology exam.
5. STAT gram stains are available within 60 minutes of receipt of the specimen.
6. Final results for a bacterial culture are generally available within 72 hours of the specimen being plated. A longer turnaround time should be expected if a potential pathogen is not isolated until the second or third day of incubation. Daily preliminary results are available by computer or phone.
7. Fungal cultures are sent to a reference lab and are generally held for 4 weeks until being reported as negative.
8. Cultures for mycobacterium are sent to the Hospital of the University of Pennsylvania for testing and are held for 8 weeks. They are checked weekly. The physician will be notified of any positive results for MTB.

Throat Specimens for Rapid Beta Streptococcus Testing and for Culture

Rapid Streptococcus Screen

1. The specimen should be collected using a dual swab (or 2 single swabs). Avoid touching the tongue or teeth. The swab may not have any semi-solid medium in the culture tube, as this medium will interfere with the rapid detection method.
2. Negative strep screens will have culture backups.

Throat culture

1. *Neisseria gonorrhoeae*, beta Streptococcus Groups A, C, and G, *Corynebacterium diphtheriae* and *Arcanobacterium* are the only bacteria that cause pharyngitis.

Although frequently isolated from pharyngeal specimens, *Haemophilus influenzae, Streptococcus pneumoniae,* and *Staphylococcus aureus* do not cause pharyngitis.

2. Routine throats are tested only for beta hemolytic Strep Groups A, C & G. The laboratory must be notified to look specifically for *Neisseria gonorrhoeae, Corynebacterium diphtheria* or *Arcanobacterium* if these are suspected.
3. Tonsillar abscess: An aspirate of the abscess should be done and the order entered as a "Sterile Aspirate."
4. Rapid screens are available within 45 minutes of receipt of the specimen. Throat cultures are usually available within 48-72 hours of receipt.

Urine for Culture or Culture plus Urinalysis

- CLEAN CATCH: PATIENT GUIDELINES

Females

1. Wash the vaginal area from the front to the back using a towelette. Discard the towelette in the wastebasket. Lean forward slightly so that the urine flows directly down into the toilet without running along the skin. After voiding the first portion of urine, place the clean catch container under the stream of urine and collect the rest of the urine into the container. Close the cup tightly. Give the container to the nurse or phlebotomist.

Males

1. Use the towelette provided to wash the end of the penis. Discard the towelette into the wastebasket. Begin to urinate into the toilet. After voiding a small amount, place the clean catch container under the stream of urine and collect the rest of the urine into the container. Close the cup tightly. Give the cup to the nurse or phlebotomist.

Nursing Instructions for Processing

1. If a urinalysis and/or culture is ordered, label the cup and send with transmittal form(s) to Central Receiving within 30 minutes of collection. Refrigerate if unable to deliver within 30 minutes.

Delivery by Courier

1. Urine specimens which will be delivered by courier should be kept refrigerated or on ice until they are picked up. Instruct the courier to transport the urine in the cold cooler. Urine >24 hours old will not be accepted.

- INDWELLING CATHETER
  1. Obtain the specimen according to the nursing policy and procedure. Aspirate at least 10 mL of urine.
  2. Transfer the urine to a sterile cup if a culture is ordered.
  3. If both a culture and urinalysis are ordered, both tests can be performed from the same specimen cup.
  4. Label and deliver specimen to Central Receiving within 30 minutes. Refrigerate if unable to deliver within 30 minutes. Urine >24 hours old will not be accepted
  5. Follow instructions above for delivery by courier.

  Note: Specimens obtained from the collection bag are NOT suitable for culture. Foley tips will NOT be accepted for any analysis.

- STRAIGHT CATH, CYSTOSCOPIC OR SUPRAPUBIC ASPIRATION URINE
  1. The specimen is obtained by standard procedures and should be submitted in a sterile tube or cup if culture or culture and urinalysis are desired. Label and deliver to Central

Receiving within 30 minutes. Refrigerate if unable to deliver within 30 minutes. Urine >24 hours old will not be accepted
2. Final results are generally available within 24-48 hours of the specimen being plated. A longer turnaround time should be expected if a potential pathogen is not isolated until the second day of incubation.

Urine for Pregnancy (hCG)

1. First morning specimen is preferred because the concentration of hCG is highest but random urines are acceptable.
2. Refrigerate after collection for transport to the laboratory.
3. STATs are available within 1 hour after receipt in the laboratory.

Herpes simplex 1&2 Testing (HSV-1 and HSV-2)

1. Collection of specimens from cutaneous or mucocutaneous sites should be done using a flocked swab and UTM medium provided by the Laboratory.
2. Deliver the specimen immediately to the Laboratory. If there is a delay in transport, the UTM should be refrigerated.
3. HSV 1&2 testing on cutaneous or mucocutaneous sites is performed in house by a molecular method and performed on day shift only and available the same day if the specimen is submitted to the Laboratory by 12:00.

Viral Testing (Other than HSV) All performed by PCR

1. Collect the specimen using a flocked swab and UTM medium provided by the Laboratory. If the specimen is an aspirate, respiratory secretions, stool or CSF, send the specimen to the Laboratory and a technologist will transfer the specimen into the UTM as appropriate. If the specimen is blood, an ACD tube should be collected.
2. Depending on the virus being requested, some are tested in house while others may be sent to a reference laboratory for testing.
3. Deliver the specimens to the Laboratory immediately. If there is a delay in transport, the UTM should be refrigerated.
4. Specimens sent to a reference laboratory to be tested with a PCR method with a TAT of 48-72 hours. Specimens tested in house are generally available the same day.

VRE Screen

1. Sample rectal area with a culturette swab.
2. Transport the culturette to the laboratory at ambient temperature.
3.

Microbiology Quick Reference Chart Test Information and Turnaround Time.

TEST	SPECIMEN	COLLECTION AND SUBMISSION REQUIREMENTS	TEST METHOD AND TURNAROUND TIME
AFB Culture (Tuberculosis Culture)	Sputum, endotracheal, aspirate, bronchial wash, tissue, sterile space, fluid,	If sputum, collect 3 specimens 8-24 hours apart with at least 1 being a first morning specimen. Each specimen needs to be at least 5 mL. Submit at least 10 mL of BAL. Submit all	Culture and identification performed by DNA probe and/or standard biochemical methods at the Hospital of the University of Pennsylvania

	urine, bone marrow, stool	specimens in sterile or clean leak-proof containers.	Microbiology Laboratory. TAT approximately 2 to 8 weeks.
Blood for AFB	Blood collected in special tubes	Blood collected in Myco/F-lytic bottle	Culture method done at Reference Lab. TAT approximately 2 to 8 weeks.
AFB Smear	All specimens listed under AFB culture will have AFB smears (except CSF due to unacceptable low yield). AFB smears on tissue will be done only at the discretion of the pathologist	Collect and submit specimens as described for AFB culture.	Fluorescent Auramine with Kinyoun confirmation. Performed at the Hospital of the University of Pennsylvania Microbiology Laboratory. STAT smears will be read within 24 hours of receipt of specimen by Hospital of the University of Pennsylvania. Routine smears will be read within 72 hours.
Blood culture from an intravascular catheter	Blood drawn through any suitable line.	See Blood Culture Collection Procedure on pages 4 and 5. Refer to Nursing Policy and Procedure Manual for collection procedure. When collecting from a line, also page the phlebotomist to obtain one peripheral specimen for comparison.	Blood cultures are monitored for growth continuously for 5 days. As soon as a blood is determined to be positive, the preliminary results will be given to an appropriate healthcare provider.
Bronchoscopy Wash or Lavage	Aspirated secretions	Collected by pulmonologist during bronchoscopy procedure. Submit in sterile Lukens or other sterile container. If using a Lukens trap, remove the cap with tubing and replace with the solid cap after culture collection.	Standard culture procedures. Direct Gram stain of secretions included. TAT is 48-72 hours for culture.
Body fluids: Amniotic, Joint, Pericardial, Peritoneal, and Pleural	Amniotic, Joint, Pericardial, Peritoneal, and Pleural	Physician collects specimen. Submit in any sterile container or sterile blood collection tube (red top or green top). Do not inject specimen into culturette tube.	Standard culture method. Direct Gram stain will be done on specimens after slides are prepared using cytospin. Anaerobic culture included. TAT is 5 days unless growth is detected earlier.
Bordetella pertussis	Nasopharyngeal swab in viral transport media (this organism is also included in	Follow instructions on package.	Real-time PCR. TAT is 48-72 hours.

	the Respiratory Pathogen panel).		
Bone Marrow Culture	Bone Marrow	Obtain media (blood culture bottle) from Microbiology and inoculate specimen directly into bottle.	Specimens are monitored for growth continuously for 5 days.
Chlamydia DNA Probe	Endocervical, urethral and urine specimens.	Females: Collect using Aptima Unisex collection kit. Collect cervical cells with blue shafted swab after removal of mucous using white swab. Vaginal specimens on females should be collected in the Aptima Multi-Use collection kits using the pink-shafted swab. Urines acceptable but not preferred. Males: Collect using Aptima Unisex collection kit (blue shafted swab) or urine. Urine should be the first part of the stream (**not** clean catch). Instructions are included in the kits. Transport at ambient temperature. For patients under the age of 14 having consensual relations, collect a Universal Transport Medium. These specimens will be sent to our Reference Laboratory for testing.	Amplified DNA probe. TAT is 24-72 hours. Test performed M, W, F.
Clostridium difficile	Patients having 3 or more loose or liquid stools. Formed stool is not appropriate for testing and will be rejected.	A minimum of 5 grams of loose or liquid stool should be collected in a clean or sterile cup. Stool must remain refrigerated or on ice until delivery to the Laboratory. Test anyone with significant diarrhea and exposure to antibiotics in the past 3 months.	Screen by molecular method for the toxin gene. If positive, the test will be reflexed to an immunoassay for the toxin. Performed on day shift only. TAT is within 24 hours of receipt of specimen.
Cerebrospinal Fluid Culture	CSF	Collected by physician. Tube # 2 or 3 should be used for culture, never tube #1. All CSF specimens are processed "STAT". Give to clerk or technologists.	Standard culture method for bacteria. Plates are incubated for 3 days. A Gram stain of the CSF will be performed on slides prepared using cytospin. Results are available within 1 hour.
Meningitis/Encephalitis Panel	CSF	Performed by molecular method. Collected by physician. Tube # 2 or 3 should be used for culture, never tube #1. All CSF specimens are processed	PCR TAT is approximately 1 ½ hour

		"STAT". Give to clerk or technologists. Culture should always be performed along with this panel.	
Ear (external canal) Culture	Secretions or exudate from external ear canal.	Aspirate secretions if possible; remove needle from syringe, cap syringe and submit for culture. Alternatively, collect specimen with culturette.	Standard culture technique. TAT is approximately 3 days. Gram stain of secretions will be performed.
Eye Culture, (Conjunctival or corneal culture)	Secretions or ulcer scraping	Obtain secretions using culturette. If cornea, obtain scraping.	Standard culture technique. Gram stain is performed. TAT is approximately 3 days.
Endotracheal Aspirate Culture	Specimen suctioned from endotracheal tube from intubated patients or patients with permanent trach.	Specimen collected by respiratory therapist or nurse using Lukens trap. After collection, replace the tubing cap with the solid cap provided in the Lukens package.	Standard culture technique. Gram stain is performed. TAT is approximately 3 to 4 days.
Escherichia coli O157:H7 Culture	Feces (See stool evaluation for enteric pathogens)	Culture for this organism is no longer performed. See Stool Evaluation for Enteric Pathogens which is done by a molecular method.	See Stool Evaluation for Enteric Pathogens which is done by a molecular method.
Fungus Culture	Any Specimen	Any specimen EXCEPT specimens collected with a swab may be submitted	Standard culture techniques for molds and yeasts. TAT is 4-6 weeks unless specimen is positive before that time.
Genital Specimen Culture for Bacteria	Cervical, Vaginal, Endometrial, Placenta, Prostatic fluid	All fluids should be submitted in sterile containers, syringes with needle removed and syringe capped or sterile blood collection tubes (red or green top). All other specimens may be collected using culturette.	Standard culture techniques. All fluids, endometrial, and placenta specimens will also be evaluated for Neisseria gonorrhoeae. No separate request is necessary. Gram stain will be done from any site that should normally be sterile. TAT is 48 hours to 5 days.
Genital Specimen for Group B Streptococcus	Vaginal/Rectal for Group B Streptococcus	Use swab to collect vaginal/rectal specimen	Performed by PCR. TAT is 2-3 days
Gonorrhoeae Culture	Pharyngeal, rectal, vaginal on pre-pubescent females. Aspirates from	A Jembec® plate, CO_2 generating pill and zip-lock bag should be obtained from the Microbiology section. Warm to room temperature and inoculate with specimen obtained with a	Standard culture method. TAT is 72 hours.

	skin lesions, eyes	swab. Put the CO_2 pill into the designated hole in the plate and place the plate in the zip-lock bag. Transport at ambient temperature.	
Neisseria gonorrhoeae DNA Probe	Endocervical, vaginal, urethral and urine specimens.	Females: Collect cervical specimens using Aptima Unisex collection kit. Collect cervical cells with blue shafted swab after removal of mucous using white swab. Vaginal specimens on females should be collected in the Aptima Multi-Use collection kits using the pink shafted swab. Urines acceptable but not preferred. Males: Collect using Aptima Unisex collection kit (blue shafted swab) or urine. Urine should be the first part of the stream (**not** clean catch). Instructions are included in the kits. Transport at ambient temperature. For patients under the age of 14 having consensual relations, *Neisseria gonorrhoeae* **CULTURE** should be performed (see above)	Amplified DNA probe. TAT is 24-72 hours. Test performed M, W, F.
Neisseria gonorrhoeae Smear and culture	Male Urethral Exudate	Obtain specimens with a swab and roll the swab onto the surface of 2 clear glass slides. Air-dry and label the frosted end of the slide in pencil with the patient name. Place in slide holder and send to the Microbiology Lab. Submit Jembec if culture is required.	Gram stain will be performed. TAT is 1 hour Gonorrhoeae culture will be reported within 72 hours.
Fecal Occult Blood GI Screen	Stool	Obtain a fresh specimen and submit in clean or sterile container. Multiple specimens must be submitted **BUT EACH MUST BE DELIVERED ON THE DAY OF COLLECTION.**	Sensa® Guaiac Method. Results are available the day the specimen is received. Used for GI screening.
Fecal Occult Blood Immunoassay for Colon Cancer screening	Stool	Obtain a fresh specimen and submit in clean or sterile container	Immunoassay Method for colon cancer screening of the lower GI tract.
Gastric Occult Blood	Gastric Contents	Obtain specimen and submit in clean or sterile container.	Gastroccult® Guaiac Method. Results are available the day the specimen is received.

Gram Stain	2 clear glass slides smeared with specimen	Obtain specimen with a swab and roll the swab onto the surface of 2 clear glass slides. Air-dry and label the frosted end of the slide in pencil with the patient name. Place in slide holder and send to the Microbiology Lab.	Gram stain will be performed. TAT is 1 hour for STAT requests.
Helicobacter pylori Specific Antigen	Random stool	Obtain specimen in leak proof container. Refrigerate and deliver within 8 hours of collection.	Chromatographic method using monoclonal antibody. Test performed Monday-Friday.
Herpes simplex 1 & 2	Cutaneous and mucocutaneous specimens. CSF	Obtain UTM tube and flocked swab from the Laboratory. Swab the base of the lesion and break off the swab into the Viral Mediium. If blisters are present, obtain fluid using a tuberculin syringe. For NICU specimens; put all three swabs into one UTM tube. Send specimen in primary container to laboratory.	Performed by molecular method. Completed same day if received before 12:00 Performed on day shift as specimens are received. This is also part of the meningitis/ encephalitis panel which is also performed in house.
HIV-1/2 Ag/Ab Combo	Plasma from an EDTA tube (not for newborn screening or patients less than 12 years of age)	Refrigerate specimen after collection	Immunoassay for the detection of HIV Type 1 p24 antigen and antibodies to HIV-1 and HIV-2; Only source patients from exposures are considered STAT. Routines are performed Sunday-Saturday 0700 to 1530. Positive specimens are sent to a reference laboratory for confirmation.
Human Papilloma Virus	Endocervical Cells	Specimens may be collected using the ThinPrep® PAP Test™ PreservCyt® Solution	Molecular test using transcription mediated amplification (TMA) performed Mondays and Wednesdays. Genotyping performed Thursdays if requested.
Influenza A & B / RSV (Respiratory Syncytial Virus)	Nasopharyngeal swab obtained by nurse or respiratory therapist	Perform Nasopharyngeal swab and put into UTM. Both Influenza and RSV are performed on the same specimen.	PCR detection. TAT is 1 hour

IV Catheter Tips	IV Tip	Remove all tape while holding firmly. Cleanse the surface of the skin around the IV site with alcohol or iodine. Allow to dry. With sterile forceps, remove the catheter and aseptically amputate it at a point several mm inside the former skin-catheter-surface interface into a sterile container. Label and deliver immediately to a clerk or technologist in Central Receiving.	Semi-quantitative culture. TAT is 3 days.
IV Site Culture	Swab of purulent drainage. Aspirate of purulent drainage	Decontaminate wound surface. Obtain purulent material using culturette or aspirate purulent material using syringe. If syringe is used, remove needle and replace with sterile male/female cap.	Standard culture technique. Gram stain will be done of purulent material. TAT is 3 days.
KOH Prep for Dermatophytes	Skin scraping, Nail Clipping, Hair Shaft Clipping	Collect specimen using scalpel or scissors and put into clean container.	Direct visualization of fungal elements with a special stain. Sent to a reference laboratory for testing.
Legionella detection by PCR	Lower Respiratory Tract Secretions, Pleural Fluid, Lung Tissue	Respiratory therapist or pulmonologist will collect specimen. Place in sterile container. At least 5 mL of secretions or pleural fluid is required	Performed by PCR at Reference Lab. Results will be available in 48 to 72 hours. (Also done in house on day shift only on **Sputum / endotracheal aspirate or bronchial wash** as part of the Pneumonia Panel).
Legionella Urinary Antigen	Voided Urine	Urine collected in a sterile or clean cup	Capture Immunoassay. Results available the same day.
Lyme Antibody (Only specimens that test positive or equivocal will be sent for Western blot confirmation)	Serum	0.5 mL of serum	C10 Peptide Antibody test. Performed 3 times per week during summer season. Two times per week in the off season.
MRSA Screen	Nasal swab is always done for MRSA carriage. If previous site was a wound that still exists, collect another culture of the wound and order an Aerobic Wound Culture"	Use culturette to obtain specimen. If urine was previous site of MRSA infection, send urine for culture	Performed by PCR. Results available within 24 to 48 hours. Standard culture for sites other than nares available in 2-3 days.

Pneumonia Panel	Sputum, endotracheal aspirate or bronchial washing	Collect specimen in a sterile container. Routine culture must always be ordered along with this panel.	Molecular panel for 15 26 common pathogens causing pneumonia: 15 bacteria, 3 atypicals and 8 viruses along with various resistance genes associated with those bacteria. Performed on day shift only.
Pregnancy Test (hCG)	Urine	First morning urine specimen preferred (contains highest concentration of hCG) although any urine is acceptable; Refrigerate after collection.	Chromatographic immunoassay. STAT results available in 1 hour.
Respiratory Pathogen Panel (for Adenovirus, Coronavirus 229E, Coronavirus HKU1, Coronavirus NL63, Coronavirus OC43, SARS-CoV-2 (COVID-19), Human Metapneumovirus, Influenza A, Influenza A subtype H1, Influenza A subtype H3, Influenza A subtype 2009 H1, Influenza B, Parainfluenza Viruses 1, 2, 3 and 4, Rhinovirus/Enterovirus, Respiratory Syncytial Virus, Bordetella pertussis, Bordetella parapertussis, Chlamydophila pneumoniae and Mycoplasma pneumoniae	Nasopharyngeal swab (this test should not be ordered if Influenza and/or RSV are suspected. In those cases, the individual Influenza A&B/RSV tests should be ordered)	Nasopharyngeal swab submitted in Universal Transport Media (UTM); Transport at ambient temperature up to 4 hours. Refrigerate if longer.	Performed by multiplexed nucleic acid test for multiple respiratory viral and bacterial nucleic acids; Performed 24/7 with a TAT of <3 hours.
SARS-CoV-2	Nasopharyngeal, mid-turbinate specimen collected with special flocked swab and placed into viral transport media (VTM) available from the lab	Send to the laboratory as soon as possible. Refrigerate if these will be a delay in transport.	TAT time can range from 20 minutes to 4 hours depending on the patient population and the platform on which it is tested. Pre-procedure testing results are usually available the next day.
Sinus (Aerobic) Culture	Deep Sinus Secretions	Collected by ENT physician using mini-tip culturette	Standard culture technique. Gram stain

			will also be performed. TAT is approximately 3 days.
Full Ova & Parasite Exam	Stool in SAF preservative vials. Fresh stool on inpatients should be sent to the laboratory as soon as possible and will be transferred into preservative by the lab.		Standard concentrate and permanent Trichrome stain for any Ova & Parasites performed at our Reference Lab. TAT is 3-5 days.
Ova & Parasite Immunoassay	Stool collected in SAF Vials. Unpreserved specimens can be used. If a full O and P is required, see the "Full Ova & Parasite Exam" section above.	If specimen is in the Microbiology Laboratory and has already been evaluated using the immunoassay for Giardia and Cryptosporidium and if travel history or clinical condition warrants, contact Microbiology for full O&P exam. See the "Full Ova & Parasite Exam" section above.	Specimen will be tested for Giardia and Cryptosporidium by Lateral Flow Antibody Capture. TAT is 1-2 days.
Peritoneal dialysate Fluid Culture	Peritoneal Dialysate Fluid	Submit in sterile container	Standard culture technique. TAT is 5 days.
Sputum/Induced Sputum	Respiratory Secretions	First morning collection is recommended. Obtain respiratory secretions from a deep cough. If necessary, induced sputum may be collected by a respiratory therapist as outlines in the Respiratory Therapy protocols.	Standard culture techniques. Gram stain will be performed. TAT is approximately 3 days.
Sterile Aspirate Culture	Aspirates from Abscesses	After decontaminating the skin, aspirate as much material as possible using sterile needle & syringe. Remove needle and cap with sterile plastic cap. Submit in syringe.	Standard culture technique. Aerobic and anaerobic culture will be done. Gram stain will be performed. TAT is up to 5 days.
Stool for Enteric Pathogens	Stool-If patient develops diarrhea 3 or more days after admission, order stool for C. difficile toxin, not culture	Inpatient: Collect stool in sterile cup and submit within 30 minutes to the laboratory. Outpatient: Collect in orange top culture preservative vial.	Molecular technique for Salmonella, Shigella/Enteroinvasive E. coli, Shiga toxin producing E. coli, Campylobacter, Yersinia enterocolitica, Vibrio (vulnificus, parahaemolyticus or cholera) and Plesiomonas. Culture for Aeromonas . TAT is 2-3 days.
Throat Culture	Throat, posterior pharynx & tonsillar fossa	Depress the patient's tongue with a sterile tongue blade and rub the culturette firmLy over the posterior pharynx, both	Standard culture procedures to identify Group A Streptococcus (Strep. pyogenes), and

		tonsils and any other area of inflammation or ulceration. Avoid touching the teeth or the tongue. If tonsillar abscess is present, aspirate with needle and syringe and order as Sterile Aspirate Culture.	Group C & G beta hemolytic Streptococcus only. TAT is approximately 3 days.
Strep Screen (For Group A Streptococcus Antigen)	Throat, posterior pharynx & tonsillar fossa (Collect with a double swab: one for the rapid test and the other for the reflex to culture if the rapid screen is negative)	Depress the patient's tongue with a sterile tongue blade and rub the culturette firmLy over the posterior pharynx, both tonsils and any other area of inflammation or ulceration. Avoid touching the teeth or the tongue.	Antigen detection – STAT results available within 1 hour. Negative tests are reflexed to a culture.
Tissue Biopsy Culture With or Without Gram Stain	Tissue Biopsy	Physician obtains specimens during surgery. Refer to detailed instructions on specimen handling and delivery in specimen transport section of the introduction.	Standard culture techniques for the detection of aerobic and anaerobic organisms. Gram stain is also performed if tissue with Gram stain is ordered. TAT is approximately 3-4 days.
Urine culture	Clean Catch Urine, Specimen from Foley, Straight Cath, Bladder Aspirate, Nephrostomy	See Specimen Collection section for complete instructions for Clean Catch specimens. Always take specimen from tubing, never from the Foley bag. Collect specimen into clean or sterile container. All specimens must be refrigerated unless delivered to Central Receiving within 30 minutes of collection. Specimens >24 hours old are not acceptable.	Standard culture techniques. TAT is 24-72 hours.
Urinalysis	Urine	Collect specimen into clean or sterile container. All specimens must be refrigerated unless delivered to Central Receiving within 30 minutes of collection. Specimens >24 hours old are not acceptable.	Standard urinalysis dipstick and microscopic analysis if the dipstick is positive for leukocyte esterase, protein, blood or nitrate. Microscopic analysis, if performed, is done on urine sediment. STAT TAT is 1 hour. Routine requests are available with 4 hours.

UA/Reflex to Culture	Urine	Collect specimen into clean or sterile container. All specimens must be refrigerated unless delivered to Central Receiving within 30 minutes of collection. Specimens >24 hours old are not acceptable.	If positive for > 10 WBC's per field, a culture will automatically be reflexed if UA/Reflex is ordered. TAT are the same as above for Urinalysis and Urine Culture
Vaginitis/Vaginosis Screen	Vaginal Specimen for Gardnarella, Candida and Trichomonas	Collect using the Affirm VPIII transport system. Instructions are on each collection kit.	Available within 24 hours for routine. STAT testing is available within 2 hours.
VRE Screen	Rectal swab	Collect rectal swab using culturette. Transport ambient.	Performed by routine culture method. TAT 48-72 hours.
Wet Prep for Yeast	Swab of any suspicious lesions or skin.	Specimen obtained with swab immersed in saline in plastic or glass tube with tight fitting lid.	Wet mount; prepared and evaluated microscopically for yeast. TAT within 1 hour.
Wound (Aerobic Superficial) Cultures Post OP Incisions	Superficial Wound, Decubitus, Open Wounds, Boils	See Specimen Collection section for instructions. Obtain specimen from deep areas, do not swab the surface.	Routine culture methods. A Gram stain will be performed. An anaerobic culture will NOT be done. TAT is 3-4 days.
Wound (Anaerobic) Culture	Deep Wound Aspirate for Aerobic and Anaerobic Organisms. Do not use for Decubitus Ulcers.	See Specimen Collection section for instructions. Obtain specimen from deep areas, do not swab the surface.	Routine culture methods. A Gram stain will be performed. Aerobic and anaerobic cultures will be done. TAT is 3-4 days.
Yeast Screen	Mouth, Tongue, or Other Site Ordered by Physician	Obtain specimen using culturette.	Standard culture techniques. Presence or absence of yeast will be reported. TAT is 24-72 hours.
VRE Screen	Rectal Swab	Obtain rectal swab using culturette	Standard culture technique. Presence or absence of Vancomycin Resistant Enterococcus will be reported. TAT is 24-48 hours.

Infectious Diseases PCR Tests:

If multiple respiratory viruses and bacterial pathogens are requested, consider ordering the Respiratory Pathogen Panel, Pneumonia panel and/or the Meningitis panel rather than the individual pathogens. See Respiratory Pathogen Panel, Pneumonia Panel and Meningitis Panel below.

TEST	Specimen Requirements	Department	Availability
Adenovirus	NASOSWAB	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
Babesia macrotti	ACD TUBE	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
Bordetella pertussis	NASOSWAB	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
Chlamydia pneumoniae	ACD TUBE/NASOSWAB	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
Chlamydia trachomatis (genital)	APTIMA UNISEX, MULTI-USE COLLECTION KIT OR URINE	MOLECULAR MICROBIOLOGY	MON/WED/FRIDAY
Chlamydia trachomatis non genital	ACD TUBE/URINE/SWAB IN UTM	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
Cytomegalovirus	ACD TUBE/URINE	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
Epstein Barr	ACD TUBE/URINE	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
Herpes simplex 1&2	CSF	MOLECULAR MICROBIOLOGY	PERFORMED ON DAY SHIFT AS SPECIMENS ARE RECEIVED
Herpes simplex 1&2sub-typing	CUTANEOUS AND MUCOCUTANEOUS SITES VIRAL SWAB IN UTM	MICROBIOLOGY	DAY SHIFT IF RECEIVED BY 12:00 WILL RESULT SAME DAY
HME Ehrlichia chaffeensis	ACD TUBE	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
HGE Anaplasma phagocytophilum	ACD TUBE	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
HPV Genotyping	LIQUID CYTOLOGY	MOLECULAR MICROBIOLOGY	PERFORMED THURSDAYS
Human Papillomavirus	LIQUID CYTOLOGY	MOLECULAR MICROBIOLOGY	PERFORMED MONDAYS AND WEDNESDAYS
Human T cell Leukemia	ACD TUBE	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM- RESULTED 2-5 DAYS AFTER SENDING
Legionella pneumophila	NASO SWAB	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
Lyme by PCR	CSF/JOINT FLUID/PERICARDIAL FLUID	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
Meningitis/Encephalitis Panel: *Escherichia coli K1* *Haemophilus influenzae* *Listeria monocytogenes*	CSF	MOLECULAR MICROBIOLOGY	RESULTS AVAILABLE SUNDAY THROUGH SATURDAY

Neisseria meningitides Streptococcus agalactiae Streptococcus pneumoniae Cryptococcus neoformans/gattii CMV,Enterovirus,HSV-1,HSV-2, HHV-6,Human parechovirus, VZV			
Metapneumovirus	NASOSWAB	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
Molluscum contagiosum	ACD/SWAB IN UTM	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
MRSA nasal carriage	NASAL SWAB	MOLECULAR MICROBIOLOGY	PERFORMED Sunday-Saturday resulted in 1-2 days
Mycoplasma pneumoniae	ACD TUBE/NASOSWAB	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
Neisseria gonorrhoeae	APTIMA UNISEX, MULTI-USE COLLECTION KIT OR URINE	MOLECULAR MICROBIOLOGY	MON/WED/FRIDAY
Parainfluenza 1-4	NASOSWAB	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
Parvovirus	ACD TUBE	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
Pneumonia Panel for: Acinetobacter calcoaceticus-baumannii complex, Enterobacter cloacae complex, Escherichia coli, Haemophilus influenza, Klebsiella aerogenes, Klebsiella oxytoca, Klebsiella pneumonia group, Moraxella catarrhalis, Proteus species, Pseudomonas aeruginosa, Serratia marcescens, Staph aureus, Strep agalactiae, Strep pneumoniae, Strep pyogenes, Clhamydia pneumoniae, Legionella pneumophila, Mycoplasma pneumonia, Adenovirus, Coronavirus, Human Metapneumovirus, Human Rhinovirus/Enterovirus, Influenza A & B, Parainfluenza Virus and Respiratory Syncytial virus along with various bacterial resistance genes	SPUTUM, ENDOTRACHEAL ASPIRATOR OR BRONCHIAL WASHING	MOLECULAR MICROBIOLOGY	DAY SHIFT ONLY

Respiratory Pathogen Panel for: *Adenovirus,* *Coronavirus 229E, HKU1,NL63, and OC43* *SARS-CoV-2* *Human Metapheumovirus* *Rhinovirus/Enterovirus* *Influenza A&B* *Parainfluenza Virus 1,2,3,4* *Respiratory Syncytial Virus* *Bordetella pertussis* *Chlamydiophila pneumoniae* *Mycoplasma pneumoniae*	NASOPHARYNGEAL SWAB	MICROBIOLOGY	RESULTS AVAILABLE ON ALL SHIFTS SUNDAY THRU SATURDAY
Rickettsia rickettsii RMSF	ACD TUBE	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
Toxoplasma gondii	ACD TUBE	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
Ureaplasma	ACD TUBE/URINE	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
Varicella zoster	VIRAL SWAB IN UTM/CSF	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING
West Nile Virus	ACD TUBE/CSF	REFERENCE LAB	TEST SENT MON-FRI AT 2 PM - RESULTED 2-5 DAYS AFTER SENDING

Approaches to Stool Parasitology (Recommendations for Physicians): Test Ordering

PATIENT AND/OR SITUATION	TEST ORDERED	FOLLOW-UP TEST ORDERED
Patient with diarrhea and AIDS or other cause of immune deficiency **Potential waterborne outbreak (municipal/city water supply)**	Cryptosporidium or Giardia/Cryptosporidium immunoassay	If immunoassays are negative and symptoms continue, special tests for microsporidia (modified trichrome stain) and other coccidia (modified acid-fast stain) and full O&P exam should be performed
Patient with diarrhea (nursery school, day care center, camper, backpacker) **Patient with diarrhea and potential waterborne outbreak (resort setting)**	Giardia or Giardia/Cryptosporidium immunoassay particularly relevant for areas of the U.S. where Giardia most common organism found	If immunoassays are negative and symptoms continue, special tests for microsporidia and other coccidia (see above) and full O&P exam should be performed
Patient with diarrhea and relevant travel history **Patient with diarrhea who is a past or present resident of a developing country** **Patient in an area of the United States where parasites other than Giardia are found**	O&P exam, Entamoeba histolytica/E. dispar immunoassay; immunoassay for confirmation of E. histolytica; various tests for Strongyloides may be relevant (even in the absence of eosinophilia)	If exams are negative and symptoms continue, special tests for coccidia and microsporidia should be performed
Patient with unexplained eosinophilia and possible diarrhea; if chronic, patient may also have history of respiratory problems (larval migration) and/or sepsis or meningitis (hyperinfection)	Although the O&P exam is a possibility, the agar plate culture for Strongyloides stercoralis (more sensitive than the O&P exam) is recommended	If tests are negative and symptoms continue, additional full O&P exams and special tests for microsporidia and other coccidia should be performed
Patient with diarrhea (suspected food-borne outbreak)	Test for Cyclospora cayetanensis (modified acid-fast stain, autofluorescence)	If tests are negative and symptoms continue, special procedures for microsporidia and other coccidia and full O&P exam should be performed

AUTOPSY SERVICE

REFERRED AUTOPSY SERVICE

Refer to Chester County Hospital Administrative Manual Policy: Guidelines for Autopsies 7.15. This policy outlines specific details regarding the various categories of autopsy, authorization, and next of kin procedures. Contact the Nursing Supervisor, who coordinates initiation of the post-mortem procedure.

1. Consult with the physician, who plays an important role and is required to sign specific documents and interface with the family.
2. Consult with Infection Control for patients with isolation precautions or if any infectious disease is suspected. Attach red tag to patient toe and to external body pouch zipper to alert others of a known biohazard.
3. Consult with Radiation Safety for patients that may be radioactive due to concurrent treatment or an accidental exposure. If there is a radiation hazard, they will provide appropriate labeling and instructions.

The "Autopsy Referral Document Packet" is available through the HIM Department and the Nursing Office.

1. Select the appropriate packet "ADULT" or "INFANT/CHILD".
2. The labeled envelope containing the documents remains with the Medical Record Chart.
3. The stapled documents are not to be separated.
4. Begin by calling the Chester County Coroner to determine jurisdiction.
5. As each item is addressed and completed, check off (initial) that item on the front sheet. Authorizations must be appropriately signed and witnessed. The physician may not be familiar with the packet and may require assistance. There should be no blanks on sheet.
6. When all items are complete place the documents back into the envelope, attach to the Medical Record Chart, and deliver to Medical Records.
7. Medical Records w ill review the packet. The completed packet will be delivered to the Anatomic Pathology Laboratory.
8. Anatomic Pathology Laboratory staff will make arrangements for transportation and coordination with Hospital of the University of Pensylvania or Childrens Hospital of Philadelphia.

CYTOPATHOLOGY

General Information

Location: Room E352 (Cytology Office)
Room E353 (Cytopreparatory Laboratory)
Room E355 (Cytology Screening)
Telephone: 610-431-5407 Fax Number: 610-430-2935
Hours: 08:00 to 16:00, Monday through Friday
Always deliver specimens to Central Receiving.
Only intra-operative consultations are delivered directly to Cytopathology

Specimens must be labeled with two forms of identification: The patient's name and DOB/MRN. The specimen container should be tightly capped to prevent leakage of the specimen in transport.

A complete Cytology requisition/order form must accompany any specimen submitted. Include the patient's demographic information: full name and DOB/MRN#. Include the specimen source, test ordered, ICD-10 code, date and time of collection, submitting physician, ordering physician, and clinical information on the requisition. Deliver the specimen and requisition in a specimen bag to Central Receiving.

Collection and Submission of Uterine Cervical And Vaginal Cytology (PAP Smear)

Patient preparation

- Patient should avoid douches, vaginal medications or vaginal contraceptives during the 48 hours prior to collection.
- Sexual intercourse is not recommended the night before the examination.
- Optimally, specimens should be collected 2 weeks after the first day of the last menstrual period. Specimen collection during menstruation should preferably be avoided.

Specimen Collection

- Lubricant jellies should be avoided. Water may be used to lubricate and warm the speculum.
- Remove talcum from gloves prior to procedure.
- Position the speculum so that the entire face of the cervix appears at the end of the speculum. Gently remove any excess mucus or discharge with ring forceps holding a folded gauze pad.
- Inflammatory exudate may be removed by placing a dry 2- x 2-inch piece of gauze over the cervix and peeling it away after it absorbs the exudate, or by using a dry proctoswab or scopette.
- Do not clean the cervix by washing with saline. Obtain the sample before application of acetic acid.
- An optimal specimen includes sampling of the squamous and columnar epithelium, encompassing in particular the transformation zone. Squamous epithelium of the ectocervix has a smooth, pearly appearance. Columnar epithelium of the endocervix is slightly reddish with a "cobblestone: surface. The transformation zone has an intermediate, variegated appearance. Direct sampling efforts to encompass this transformation zone.

Thin-prep Sample Collection (Recommended)

- Collection using a plastic spatula and cervical brush is recommended:
  1. Label the vial of PreservCyt with the patient's name and MR# or birthdate. Two forms of ID are required.
  2. Choose the contoured end of the spatula that best conform to the anatomy of the cervix and the location of the transformation zone. Rotate the spatula at least 360 degrees about the circumference of the cervical os and ectocervix, while maintaining firm contact with the epithelial surface.
  3. Rinse the spatula in a vial of PreservCyt Solution by swirling vigorously ten times. Discard spatula. Place cap on vial.
  4. Insert the cervical brush into the os; some bristles should still be visible. This will minimize inadvertent sampling of the lower uterine segment. With gentle pressure, rotate the brush only 90 to 180 degrees to minimize bleeding.
  5. Rinse the cytobrush in PreservCyt Solution by rotating the device ten times while pushing it against the wall of the vial. Swirl the device vigorously to further release material. Discard the cytobrush.
  6. Tighten the PreservCyt vial cap so that the torque line on the cap passes the torque line

on the vial.

Conventional Sample Slide Preparation (Not Recommended)

- Collection using a plastic spatula and cervical brush is recommended:
  1. Label the frosted end of the glass slide with the patient's name, DOB/MRN# before sample collection. Two forms of ID are required.
  2. Choose the contoured end of the spatula that best conform to the anatomy of the cervix and the location of the transformation zone. Rotate the spatula at least 360 degrees about the circumference of the cervical os and ectocervix, while maintaining firm contact with the epithelial surface.
  3. Do not smear the sample at this time unless the specimen is to be immediately fixed. Hold the spatula between the fingers of the non-sampling hand or rest it on the glass slide with the specimen face-up, while the cervical brush material is collected without delay.
  4. Insert the cervical brush into the os; some bristles should still be visible. This will minimize inadvertent sampling of the lower uterine segment. With gentle pressure, rotate the brush only 90 to 180 degrees to minimize bleeding.
  5. Spread the material collected on the spatula evenly over the glass slide with a single, smooth stroking motion. Roll the brush across the glass slide by twirling the handle. To avoid the development of air-drying artifact, transfer the material from both sampling instruments to the slide within a few seconds and fix immediately.
  6. Immediately fix the specimen by coating the slide with a surface fixative. If using spray fixation, hold the container 12 inches from the slide to avoid "blasting" the cells. Spray-fixed slides must be allowed to dry completely before packaging for transport.

Special Collection Procedures for Gyn Specimens:

- **For DES studies:** It is critical that the specimen be differentiated from routine pap smears. Under direct vision, circumferentially swab or scrape the upper third of the vagina:
  A: Conventional pap smear method, spread the specimen laterally on a slide labeled: V-DES.
  B: ThinPrep method of collection use two vials. Rinse the vaginal specimen into a separate ThinPrep vial and label as V-DES.

General Instructions for Submitting Non-Gynecologic Cytology Specimens

FLUID/ WASHINGS (Body fluids, gastric washings, etc.)

- Fluids should be submitted fresh.
- Collect the fluid into an appropriate dry container. Non-sterile specimen cups are preferred.
- The container should be tightly capped to prevent leaking during transport. The container should be conducive to accessing the fluid for evaluation.
- The specimen container must be labeled with the patient name, DOB/MRN#, source and date and time of collection.
- If a short delay in delivery is expected, refrigerate the specimen at 4 degrees C. DO NOT FREEZE.
- If delay in delivery exceeding 12 hours is anticipated for urine or cerebrospinal fluids fix the

specimen, or an aliquot of it, in an equal volume of cytolyt fixative.

- Pleural and ascites fluid can be refrigerated up to 72 hours. DO NOT USE ALCOHOL to fix the specimen. Heparin (3-5IU/mL of fluid) may be used as an anticoagulant.

Smears

- Prior to the procedure, label the glass slides with the patient's name and DOB/MRN# in pencil on the frosted end of the slide.
- Preferably, slides should be fixed immediately by immersion in 95% ethanol. If the specimen is immersed in alcohol, it may remain in the alcohol for transport.
- Tightly close the container to prevent leakage in transport. Alternatively, the specimen can be immersed in alcohol for 20 to 30 minutes, removed and allowed to dry, then placed in a slide carrier for transport to the laboratory.
- Spray fixed slides are acceptable. Only quality controlled cytology spray fixatives should be used. Spray fixatives should be held 6 to 10 inches from the glass slides when applied. Air-dried slides are accepted in conjunction with Cytolyt or spray fixed specimens for specific head and neck specimens. Indicate fixed or air-dried on the frosted end of the slide in pencil. If the slides are air-dried or spray fixed transport the slides in a slide carrier to prevent damage.

Fine Needle Aspiration

- In general, aspirated material should be rinsed into Cytolyt fixative.
- Smears may be made from aspirated material. Label the glass slides with the patient's name and DOB/MR# in pencil on the frosted end of the slide.
- Slides should be immediately fixed in 95% ethanol or air-dried. Indicate fixed or air-dried on frosted end of slide in pencil. Slides should be transported in a Coplin jar of 95% alcohol if fixed with alcohol.
- Tightly close the Coplin jar to prevent leakage in transport. If the slides are air-dried or spray fixed transport the slides in a slide carrier to prevent damage.
- Cytology support for the assessment of cellularity for fine needle aspirations is available to radiology. Arrangements may be made through the Cytology Department prior to scheduling the patient in radiology. This service is also available for pulmonary cases scheduled on the OR schedule.