Westchester
MEDICAL CENTER
ADVANCED LABORATORY SERVICES

Advanced Laboratory Services Manual

3/20/24

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Advanced Laboratory Services Manual

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Message from Humayun Islam, M.D., Ph.D.
Laboratory Medical Director,
Department of Pathology and Laboratory Medicine

Our mission as a department is to deliver patient-centered, physician-friendly services in a fiscally responsible manner.

This manual is intended to simplify access to the full range of pathology and laboratory medicine services offered at Westchester Medical Center. It includes an updated testing compendium and appendices, current specimen requirements, and updated leadership and contact information.

We hope that you find this reference manual helpful. We welcome your comments and suggestions regarding this manual and our other services.

Overview of Clinical and Anatomical Procedures

Westchester Medical Center's hospital-based board certified clinical and anatomic laboratory offers a broad menu of routine and esoteric procedures. Our laboratories offer testing in the following areas:

- ANATOMIC PATHOLOGY
- COAGULATION - ROUTINE AND SPECIAL
- CHEMISTRY - ROUTINE AND SPECIAL
- CYTOLOGY
- ENDOCRINOLOGY
- FLOW CYTOMETRY
- HEMATOLOGY - ROUTINE AND SPECIAL HEMATOLOGY
- IMMUNOLOGY - DIAGNOSTIC AND SPECIAL
- IMMUNOHISTOCHEMISTRY
- MICROBIOLOGY
- MOLECULAR PATHOLOGY
- ONCOLOGY MARKERS
- THERAPEUTIC DRUG MONITORING
- TOXICOLOGY
- TRANSPLANT IMMUNOLOGY
- URINALYSIS
- VIROLOGY

The laboratory is backed by the unique and substantial resources of Westchester Medical Center and serves healthcare providers throughout the medical community. Since roughly 100% of the laboratory testing is performed on site, we are able to optimize our testing schedules and provide excellent turnaround times for your patients' results. This broad in-house capability, coupled with extensive and advanced instrumentation, electronic communication and a skilled team of laboratory professionals, enables Westchester Medical Center's laboratory to deliver the highest level of quality and service, around the clock, seven days a week.

Quality Assurance Program

The Westchester Medical Center laboratory maintains the highest standards of quality at all times. Besides the routine distribution of unknown samples, technologists stringently monitor the results of standards and controls on every run. Our system utilizes a number of specific measurable events which are used to monitor and assess the quality and appropriateness of the laboratory procedures we perform. Some of those key metrics are:

- Quantity not sufficient (QNS)
- Test not performed
- Turnaround time (TAT)
- Corrected reports
- Specimen processing errors
- Phoneresponsetimes(AlertValues)
- Customer complaints
- Proficiency testing evaluation

In addition to these internal controls and metrics, Westchester Medical Center subscribes to the following proficiency testing and accreditation programs set by:

- NewYorkStateDepartmentof Health(NYSDOH)
- CLIA
- College of American Pathologists (CAP)
- American Society for Histocompatibility and Immunogenetics (ASHI)

Accreditations & Licenses

New York State Department of Health	PFI-2438
College of American Pathologists	1238801-01
American Society for Histocompatibility and Immunogenetics (ASHI)	07-1-NY-20-1
CLIA	33DO721132

Laboratory Test Request Forms

ROUTINE TEST REQUISITION — Requesting Physician

Westchester MEDICAL CENTER
ADVANCED LABORATORY SERVICES

PATIENT DATA		INSURANCE BILLING INFORMATION	
Last Name: First Name:		Patient Telephone Number (9 am to 5 pm) ( )	
Date of Birth: Gender: MRN: Registration No: ___/___/___ M F		Insured's Name (If different from patient):	Relationship to Insured: □ Self □ Spouse □ Child □ Other
Specimen collected by: Date Time		Patient Address:	
		City	State: Zip:
ADVANCED BENEFICIARY NOTICE (ABN)		Medicare ID Number:	□ Regular □ Railroad
An ABN (see reverse side of this requisition) must be signed when the doctor determines that the reason for the test requested does not meet local or national medical review policy requirements.		Medicaid ID Number (Including Suffix/Person No) Physician Signature:	
ICD9 DX Codes:		Insurance Name/Plan/HMO	
		Policy ID Number:	Group/Book Number: Category Number:

ALL TEST REQUESTS MUST BE MEDICALLY NECESSARY

	HEMATOLOGY/COAGULATION	
	CBCND	CBC Without Differential
	CBCWD	CBC With Differential
	FIB	Fibrinogen
	HGBSP	Hgb Separation by HPLC
	PT	PT
	PTT	PTT
	RETP	Retic
	ESR	Sed. Rate
	SICKL	Sickle Screen

MICROBIOLOGY

Microbiology Request For:
□ Culture Sensitivity □ Gram Stain
□ OVA + Parasite
□ Fungal Culture

Specimen Type:
Source:

Note:

	ENDOCRINOLOGY	
	CORUN	Cortisol
	FSH	FSH
	HCGQL	HCG Qualitative
	HCGQ	HCG Quantitative
	LH	LH
	PROLA	Prolactin
	PTH	PTH
	T3UP	T3 Uptake
	T4	T4 Total
	TSH	TSH
	T3	T3 Total
	FT4	T4 Free

	OTHER TESTS:	
	VNPNC	Laboratory Venipuncture

	CHEMISTRY PANELS	
	LYTES	Electrolyte Panel (Na, K, Cl, CO2)
	BMPL	Basic Metabolic Panel (Glu, Na, K, Cl, CO2, BUN, Cr, Ca)
	CMPL	Comprehensive Metabolic Panel (Glu, Na, K, Cl, CO2, Bun, Cr, Ast, Alt, Alk Phos, T. Bil, Protein, Alb, Ca)
	HFP	Hepatic Function Panel (Ast, Alt, T.Bil, D.Bil, Alk Phos, T. Protein, Alb)
	RNFPL	Renal Function Panel (Glu, Na, K, Cl, CO2, Bun, Cr, Ca, Alb, Phos)
	LIPP1	Lipid Profile (Chol, Trig, HDL, LDL)

	CHEMISTRY TESTS	
	ALP	Alkaline Phosphatase
	AMMN	Ammonia
	AFP	Alpha Fetal Protein
	AMY	Amylase
	VB12	B12 Vitamin
	CA	Calcium
	CEA	CEA
	CHOL	Cholesterol
	CKMB	CK MB
	CPK	CK Total
	CRP	C-Reactive Protein
	FER	Ferritin
	FOLTB	Folate
	RBCF	Folate RBC
	GLU	Glucose
	FBS	Glucose Fasting
	GGT	GGT
	HA1C	Hgb A1C
	HMCYS	Homocysteine
	IONCA	Ionized Ca++
	IRON	Iron
	IRONP	Iron Testing (IRON, TIBC, UBIC)
	PSA	Prostate Specific Antigen
	SPE	Protein Electrophoresis
	SIMFX	Immunofixation Protein
	TRPI	Troponin I

	IMMUNOLOGY	
	ANTIO	Antistreptolysin-O Screen
	MONO	Mononucleosis Screen
	LYME	Lyme Titer (inc WB Reflex)
	ANAS	ANA
	DSDNA	Anti-DS-DNA
	C3	C3
	C4	C4
	HBC	Hepatitis B Core Antibody Code
	HBSB1	Hepatitis B SUR AB
	HBAG1	Hepatitis B SUR AG
	HAVB1	Hepatitis A IGG AB
	HAMB1	Hepatitis A IGM AB
	IGG	IgG
	IGA	IgA
	IGM	IgM
	RHF	Rheumatoid Factor

	THERAPEUTIC DRUGS	
	CARBA	Carbamazepine
	CYCLP	Cyclosporine
	DIG	Digoxin
	PTN	Dilantin (Phenytoin)
	LITH	Lithium
	PHENO	Phenobarb
	SIROL	Sirolimus (Rapamune)
	TACRO	Tacrolimus
	THEO	Theophylline
	VALP	Valporic Acid

	MOLECULAR TESTS	
	CDPCR	C. difficile DNA PCR
	HIVGB	HIV AG/AB
	HIVQP	HIV-1 RNA Quant PCR
	HCVQP	HCV RNA Quant PCR
	HBVQP	HBV DNA Quant PCR

	URINE TESTS	
	URPHY	Urine Physiochem
	UAM	Urinalysis
	UOSMO	Urine Osmolality
	24UCC	Creatinine Clearance
	UTP24	Protein Quantitative
		T. Volume:
		Hrs. Collected:
	UTPR	Random Urine Total Protein

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LAB COPY

Cytology and FNA Requisition Form

WESTCHESTER MEDICAL CENTER
ADVANCED LABORATORY SERVICES

CYTOLOGY & FNA REQUISITION

Requesting Physician

PATIENT DATA

Last Name: First Name:

Date of Birth: Gender: MRN: Registration No:
__/__/__ M F

Specimen collected by:

Date Time

ADVANCED BENEFICIARY NOTICE (ABN)

An ABN (see reverse side of this requisition) must be signed when the doctor determines that the reason for the test requested does not meet local or national medical review policy requirements.

ICD9 DX Codes:

INSURANCE BILLING INFORMATION

Patient Telephone Number (9 am to 5 pm)
( )

Insured's Name (If different from patient):

Relationship to Insured:
□ Self □ Spouse □ Child □ Other

Patient Address:

City State: Zip:

Medicare ID Number: □ Regular □ Railroad

Medicaid ID Number (Including Suffix/Person No)

Physician Signature:

Insurance Name/Plan/HMO

Policy ID Number: Group/Book Number: Category Number:

NON GYN CYTOLOGY TESTS

FLUIDS
- ☐ ASCITES
- ☐ PLEURAL LT___ RT___
- ☐ PERICARDIAL
- ☐ PERITONEAL
- ☐ PELVIC WASHING
- ☐ OVARIAN CYST
- ☐ JOINT/SYNOVIAL
  SITE: _____
- ☐ C.S.F.
- ☐ BREAST NIPPLE DISCHARGE

URINARY
- ☐ VOIDED
- ☐ CATHETERIZED
- ☐ CYSTOSCOPY
- ☐ URETERAL LT___ RT___
- ☐ URETHRAL
- ☐ BLADDER WASHING

GASTROINTESTINAL
- ☐ ESOPHAGUS
- ☐ RECTUM
- ☐ OTHER _____

RESPIRATORY
- ☐ SPUTUM
- ☐ BRONCHIAL WASHING LT___ RT___
- ☐ BRONCHIAL BRUSHING LT___ RT___
- ☐ BRONCHIAL ALVEOLAR LAVAGE LT___ RT___
- ☐ SPECIAL STUDIES
  ___PNEUMOCYSTIS
  ___FUNGUS
- ☐ OTHER _____
- ☐ OTHER _____

FINE NEEDLE ASPIRATION TESTS

- ☐ THYROID LT___ RT___
- ☐ BREAST LT___ RT___
- ☐ SALIVARY GLAND
- ☐ LUNG
- ☐ LIVER
- ☐ PANCREAS
- ☐ LYMPH NODE
  SITE: _____
- ☐ OTHER: _____
- ☐ SOFT TISSUE _____
- ☐ **IMMEDIATE ASSESSMENT**

PERTINENT CLINICAL INFORMATION

SIZE OF MASS:
- ☐ SOLITARY _____ CM
- ☐ MULTIPLE _____ TO _____ CM
- ☐ SOLID
- ☐ CYSTIC

☐ CHEMOTHERAPY ☐ RADIATION ☐ SURGERY

FNA Gross Description:

Fine needle aspiration was performed on _____. Total number of passes _____.
Specimen was received fresh for intraprocedural assessment and _____ smears were prepared.
____ were stained with DQ for immediate assessment and remaining _____ smears were routingly stained with Pap stain.
The remainder of the specimen was approx _____ in volume and transferred into _____. 1 thinprep / 1 cellblock was prepared.
Intraoperative consultation performed by Dr. _____ : **"Adequate / Inadequate for evaluation"**
Additional material received in RPMI, which is _____ ml/mm in volume/size. Specimen sent for flow cytometry.
Additional material received fresh, which is _____ ml in volume. Material sent for molecular studies.

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LAB COPY

Surgical Pathology Requisition Form

WESTCHESTER MEDICAL CENTER
ADVANCED LABORATORY SERVICES

SURGICAL PATHOLOGY REQUISITION

PATIENT DATA				INSURANCE BILLING INFORMATION	
Last Name:	First Name:			Patient Telephone Number (9 am to 5 pm) ( )	
Date of Birth: ___/___/___	Gender: M F	MRN:	Registration No:	Insured's Name (If different from patient):	Relationship to Insured: □ Self □ Spouse □ Child □ Other
Specimen collected by: _____ Date: _____ Time: _____				Patient Address:	
Attach Accession Sticker:				City:	State: / Zip:
				Medicare ID Number:	□ Regular □ Railroad
				Medicaid ID Number (Including Suffix/Person No) Physician Signature:	
				Insurance Name/Plan/HMO:	
				Policy ID Number:	Group/Book Number: / Category Number:

ADEQUATE PATHOLOGY EVALUATION REQUIRES CLINICAL HISTORY

CLINICAL INFORMATION – (eg. pertinent radiologic findings, lab data, prior biopsies & surgery, etc.)
TYPE OF PROCEDURE (DIAGRAM WHERE APPROPRIATE)

ICD-9 Code: _____

SURGICAL PROCEDURE (provide diagram where appropriate):	PRE-OPERATIVE DIAGNOSIS:
	POST OPERATIVE DIAGNOSIS:
	_____ PHYSICIAN'S SIGNATURE

Report Copies To:

Tissue Source & Specific Site (eg; R arm, ascending colon, cx@9:00)

Requisition Completed by (Print Legibly- Name & Phone Number)	Date:	Time:

F-778

Gyn Cytology Requisition Form

GYN CYTOLOGY REQUISITION

Requesting Physician

WESTCHESTER MEDICAL CENTER
ADVANCED LABORATORY SERVICES

PATIENT DATA

Last Name: First Name:

Date of Birth: Gender: MRN: Registration No:

__/__/__ M F

Specimen collected by:

Date Time

ADVANCED BENEFICIARY NOTICE (ABN)

An ABN (see reverse side of this requisition) must be signed when the doctor determines that the reason for the test requested does not meet local or national medical review policy requirements.

ICD9 DX Codes:

INSURANCE BILLING INFORMATION

Patient Telephone Number (9 am to 5 pm)
( )

Insured's Name (If different from patient):

Relationship to Insured:
□ Self □ Spouse □ Child □ Other

Patient Address:

City State: Zip:

Medicare ID Number: □ Regular □ Railroad

Medicaid ID Number (Including Suffix/Person No)

Physician Signature:

Insurance Name/Plan/HMO

Policy ID Number: Group/Book Number: Category Number:

ICD-9 Code *(Check All that Apply)*

☐ 627.3 Athrophic Vaginitis	☐ 621.0 Endometrial polyp	☐ 627.1 Post menopausal bleeding
☐ 795.01 Atypia, Cervix	☐ 617.9 Endometriosis	☐ V22 Pregnancy
☐ 616.0 Cervicitis - Endocervicitis	☐ 626.4 Irregular Menstrual cycle	☐ 795.0 Previous abnormal cervical Pap
☐ 078.11 Condyloma	☐ 635.90 Legal abortion	☐ V72.3 Routine Pap-Gyn examination
☐ 233.3 Carcinoma In-Situ, Cervix	☐ 632 Missed abortion	☐ V76.2 Routine Pap (special screening)
☐ 626.8 Dysfunctional Uterine Bleeding	☐ 627.9 Menopausal disorder	☐ 616.10 Vaginitis-Vulvovaginitis
☐ 622.1 Dysplasia, Cervix	☐ 627.0 Menorrhagia	☐ V15.89 High Risk Pap
☐ 622.7 Endocervical polyp	☐ V69.2 Early onset of sexual activity	☐ V24.2 Postpartum

PATIENT INFORMATION FOR SPECIMEN EVALUATION

MUST CHOOSE DIAGNOSTIC PAP OR SCREENING PAP

☐ **SCREENING PAP** **Routine Normal Exam**
No Symptoms or Evidence of Disease.
Note: *Medicare covers Every 2 years.

☐ **DIAGNOSTIC PAP**
For Signs, Symptoms, Evidence of Disease.
Note *Medicare Covers Every YEAR.

LMP: _____/_____/_____

Source: ☐ Cervical / Vaginal
☐ Vaginal Only

ThinPrep* ☐ Liquid-Based Pap Test

Additional tests are available from the same vial when a Pap test is ordered depending upon specimen adequacy.

☐ Liquid-Based Pap Test Reflex High Risk HPV
reflex HPV only from ASCUS interpretation
☐ Liquid-Based Pap & High Risk HPV, for ages 30 and over
☐ HPV DNA typing* Regardless of diagnostic outcome
*Please note: Patient may be responsible for payment
☐ Chlamydia trachomatis DNA/SDA
☐ Neisseria gonorrhoea DNA/SDA
☐ Chlamydia / N gonorrhoea DNA/SDA

CLINICAL HISTORY

Check all that apply for DIAGNOSTIC PAP:

☐ No Pap test within 7 years	☐ HX of LSIL or higher Pap/Bx within 2 years
☐ Previous abnormal Pap Test	☐ Neoplasm of female genital tract - Malignancy
☐ Bleeding, post menopausal	☐ ASCUS/AGUS Pap/Bx within 2 years
☐ Bleeding, Postcoital	☐ Inflammatory Disease of genital tract
☐ Cervical Lesion	☐ Vaginitis
☐ Endometriosis	
☐ Genital Herpes	
☐ HPV HX/Rx	
☐ Suspicious findings of female genital tract	

please specify _____

CURRENT PATIENT STATUS:

☐ Oral Contraceptive	☐ Postpartum
☐ Hormone Therapy	☐ Postmenopausal
☐ Hysterectomy	☐ Pelvic Radiation
☐ Pregnant	

Additional History / Clinical Comments:

Send Copies of Test Results to: Physician (Full Name, Phone #, Fax #)

Form F-776 2/11

LAB COPY

Client & Transport Services

Client Services

The laboratory is available 24 hours a day, seven days a week to respond to your inquiries and requests. **The clientservice specialists at (914) 493-7979 are HIPAA trained and extremely knowledgeable about the laboratory and its suite of services.** We are committed to providing prompt, courteous service with the highest standards.

INFORMATION PROVIDED BY CLIENT SERVICE SPECIALISTS:

- STATUS OF TESTS
- TEST MENU
- TEST RESULTS
- SPECIMEN REQUIREMENTS
- ADD-ON TESTS
- PATHOLOGIST REFERRALS
- SPECIMEN COLLECTION SUPPLIES
- SCHEDULING A STAT COURIER PICK-UP

Transport Services

Regularlyscheduledcourierpick-up servicesare providedby the Westchester Medical Center transport. A courier will provide direct specimen pick-up, a temperature controlled environment for specimens in transit, and delivery of patient reports and specimen collection supplies.

FOR PICK-UPS CALL (914) 493-7777

Billing Policies and Procedures

Patient Billing

Formost proceduresrequested, Westchester Medical Center Advanced Laboratory Services will bill patients or third party insurance directly. The test requisition form must include the patient name, address, telephone number, and guarantorinformation.

Third Party Billing

Westchester Medical Center Advanced Laboratory Services will bill thirdparty, Medicare, and Medicaid directly. For these billing types the following information is required:

1. Date of phlebotomy
2. Patient's date of birth, sex, age, and marital status
3. Relationship to insured
4. Patient's telephone number
5. Responsible party's name if different than insured
6. Insured's mailing address
7. Referring physician's name (please include middle initial), address, NPI and UPIN #
8. Applicable ICD-9 codes
9. Complete name, address and telephone number of the primary insurance
10. Complete name, address and telephone number of the secondary insurance company
11. Group and policynumbers
12. Insurance identification numbers for Medicare, Medicaid and third party payers patient's signature
13. Patient's signature
14. Physician's signature **required** for all testing ordered

Medical Necessity

The Health Care Financing Administration (HCFA) is responsible for administering the Medicare Program throughout the United States. Medicare does not cover routine screening tests and will only pay for tests that meet Medicare coverage criteria. Medicare will only pay for those tests which it considers reasonable and necessary, and supported by the patient's medical record. To document medical necessity of the ordered tests, physicians must provide ICD-9 codes specific to the patient's condition on the specific date of service.

Advanced Beneficiary Notices

If reimbursementis denied for improperdocumentationof medicalnecessity, Medicareprohibits the laboratory from billing the patient unless an Advanced Beneficiary Notice (ABN) has been signed and dated by the patient PRIOR to the provision of service.

The ABN insures the patient is informed of Medicare's medical necessity policy, reviews why payment may be denied on the specific tests being ordered, and requires both the patient's and physician'ssignature. A copy of the Westchester Medical Center Advanced Laboratory Services ABN may be found on the back of the laboratory test requisition, and is required for Medicare patients anytime a test highlighted is ordered. The ABN should be signed and dated after the requisition has been completed. To insure complete compliance on both the laboratory's and the physician's part, the physician must enter the appropriate ICD-9 codes to document the medical necessity of the tests being ordered.

Advanced Beneficiary Notice

WESTCHESTER MEDICAL CENTER 100 Woods Road Valhalla, NY

Patient Name:

Advance Beneficiary Notice of Noncoverage (ABN)

NOTE: If Medicare doesn't pay for the laboratory tests below, you may have to pay. Medicare does not pay for everything, Even some care that you or your health care provider have good reason to think you need. We expect Medicare may not pay for the below laboratory tests:

Laboratory Test(s)	Reason Medicare May Not Pay:	Estimated Cost

WHAT YOU NEED TO DO NOW:

- Read this notice, so you can make an informed decision about your care.
- Ask us any questions that you may have after you finish reading.
- Choose an option below about whether to receive the laboratory tests listed above.

Note: If you choose Option 1 or 2, we may help you to use any other insurance that you might have, but Medicare cannot require us to do this.

OPTIONS: Check only one box. We cannot choose a box for you.

☐ **OPTION 1.** I want the _____ listed above. You may ask to be paid now, but I also want Medicare billed for an official decision on payment, which is sent to me on a Medicare Summary Notice (MSN). I understand that if Medicare doesn't pay, I am responsible for payment, but **I can appeal to Medicare** by following the directions on the MSN. If Medicare does pay, you will refund any payments I made to you, less co-pays or deductibles.

☐ **OPTION 2.** I want the _____ listed above, but do not bill Medicare. You may ask to be paid now as I am responsible for payment. **I cannot appeal if Medicare is not billed.**

☐ **OPTION 3.** I don't want the _____ listed above. I understand with this choice I am **not** responsible for payment, and **I cannot appeal to see if Medicare would pay.**

Additional Information:

This notice gives our opinion, not an official Medicare decision. If you have other questions on this notice or Medicare billing, call **1-800-MEDICARE** (1-800-633-4227/**TTY:** 1-877-486-2048). Signing below means that you have received and understand this notice. You also receive a copy.

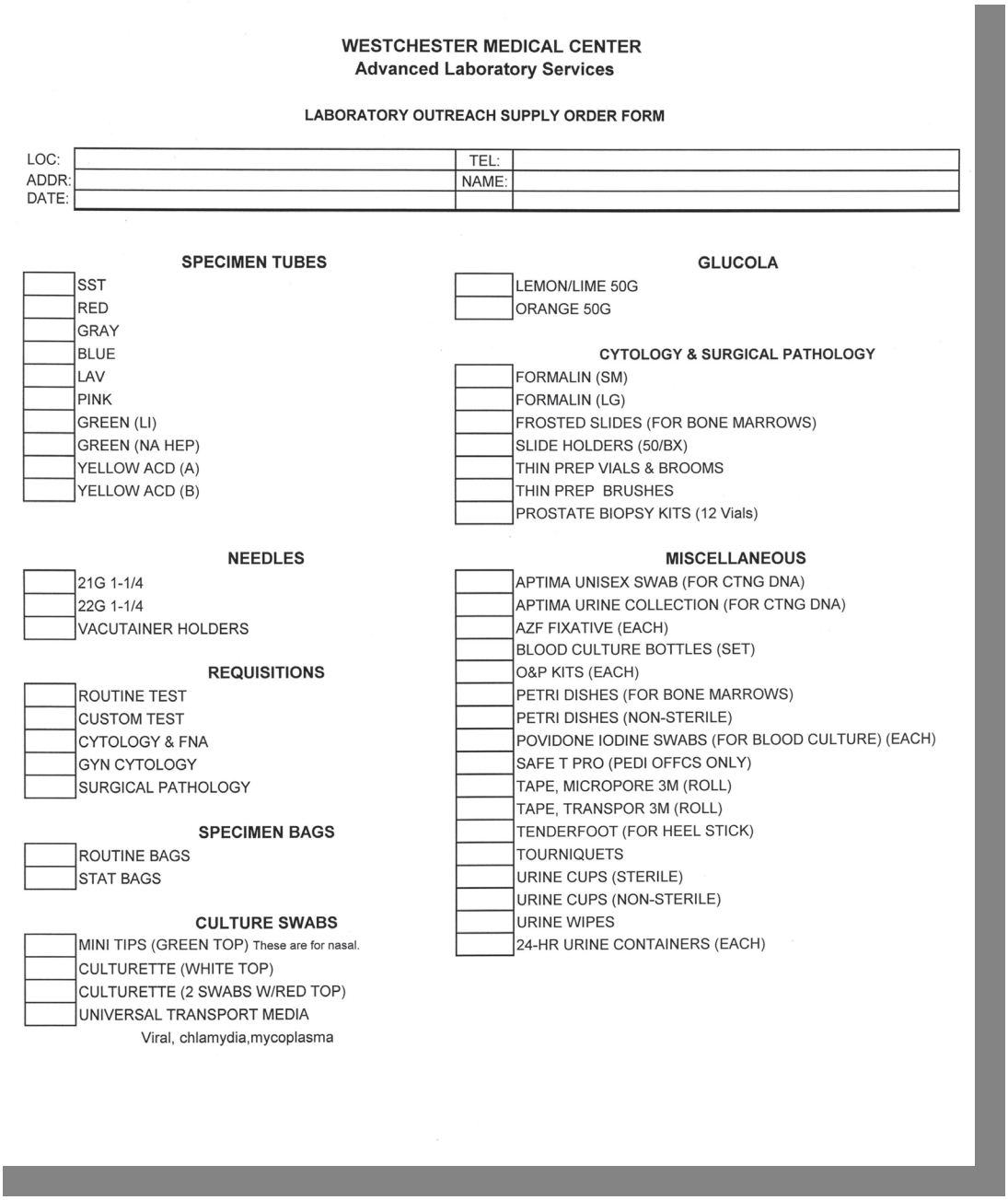
Signature:	Date:

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0938-0566. The time required to complete this information collection is estimated to average 7 minutes per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. If you have comments concerning the accuracy of the time estimate or suggestions for improving this form, please write to: CMS, 7500 Security Boulevard, Attn: PRA Reports Clearance Officer, Baltimore, Maryland 21244-1850.

Form CMS-R-131 (03/11) Form Approved OMB No. 0938-0566

Supply Requests

Westchester Medical Center facilitates the provision of necessary supplies for the drawing, collection, and submission of samples for both specialty miscellaneous testing and routine testing. To obtain these supplies, please contact distribution at 914-493-7225. It is important to note that the specimen collection supplies offered by Westchester Medical Center Advanced Laboratory Services are intended exclusively for collecting specimens to be submitted to the WMC laboratory.



WESTCHESTER MEDICAL CENTER
Advanced Laboratory Services

LABORATORY OUTREACH SUPPLY ORDER FORM

LOC:		TEL:	
ADDR:		NAME:	
DATE:			

SPECIMEN TUBES

- ☐ SST
- ☐ RED
- ☐ GRAY
- ☐ BLUE
- ☐ LAV
- ☐ PINK
- ☐ GREEN (LI)
- ☐ GREEN (NA HEP)
- ☐ YELLOW ACD (A)
- ☐ YELLOW ACD (B)

NEEDLES

- ☐ 21G 1-1/4
- ☐ 22G 1-1/4
- ☐ VACUTAINER HOLDERS

REQUISITIONS

- ☐ ROUTINE TEST
- ☐ CUSTOM TEST
- ☐ CYTOLOGY & FNA
- ☐ GYN CYTOLOGY
- ☐ SURGICAL PATHOLOGY

SPECIMEN BAGS

- ☐ ROUTINE BAGS
- ☐ STAT BAGS

CULTURE SWABS

- ☐ MINI TIPS (GREEN TOP) These are for nasal.
- ☐ CULTURETTE (WHITE TOP)
- ☐ CULTURETTE (2 SWABS W/RED TOP)
- ☐ UNIVERSAL TRANSPORT MEDIA
  Viral, chlamydia,mycoplasma

GLUCOLA

- ☐ LEMON/LIME 50G
- ☐ ORANGE 50G

CYTOLOGY & SURGICAL PATHOLOGY

- ☐ FORMALIN (SM)
- ☐ FORMALIN (LG)
- ☐ FROSTED SLIDES (FOR BONE MARROWS)
- ☐ SLIDE HOLDERS (50/BX)
- ☐ THIN PREP VIALS & BROOMS
- ☐ THIN PREP BRUSHES
- ☐ PROSTATE BIOPSY KITS (12 Vials)

MISCELLANEOUS

- ☐ APTIMA UNISEX SWAB (FOR CTNG DNA)
- ☐ APTIMA URINE COLLECTION (FOR CTNG DNA)
- ☐ AZF FIXATIVE (EACH)
- ☐ BLOOD CULTURE BOTTLES (SET)
- ☐ O&P KITS (EACH)
- ☐ PETRI DISHES (FOR BONE MARROWS)
- ☐ PETRI DISHES (NON-STERILE)
- ☐ POVIDONE IODINE SWABS (FOR BLOOD CULTURE) (EACH)
- ☐ SAFE T PRO (PEDI OFFCS ONLY)
- ☐ TAPE, MICROPORE 3M (ROLL)
- ☐ TAPE, TRANSPOR 3M (ROLL)
- ☐ TENDERFOOT (FOR HEEL STICK)
- ☐ TOURNIQUETS
- ☐ URINE CUPS (STERILE)
- ☐ URINE CUPS (NON-STERILE)
- ☐ URINE WIPES
- ☐ 24-HR URINE CONTAINERS (EACH)

WMC VALHALLA LABORATORY TUBE COLLECTION QUICK REFERENCE GUIDE*

VACUTAINER TUBE	ADDITIVE/ TUBE INVERSIONS	Inversions / Clotting time	TESTS COMMONLY ASSOCIATED
	• **LIGHT GREEN** • Lithium heparin and gel for plasma separation	**8 x** N/A*	• Acetaminophen • Amylase • Bilirubin (fractionated) • BMP / CMP / General Chemistry • CRP • C3/C4 • Cortisol • Ethanol • Ferritin • Hepatic function panel (LFTs) • HIV Ag/Ab • Iron Panel (Iron, TIBC, transferrin) • LDH • Lipase • Lipid Profile • Magnesium • Osmolarity, serum • Phosphorus • Procalcitonin (within 8 hrs of draw) • Salicylate level • T3 • T4 (free, total) • TSH • Vitamin D (25-OH) • Uric Acid
	• **DARK GREEN** • Lithium heparin*	8 x N/A*	• Phenylketonuria
	• **PURPLE** • K2EDTA	8 x N/A*	• BNP • Carbon monoxide level • CBC • ESR • HgbA1c • hs Troponin-I • Histamine • Immunosuppressants (Tacrolimus, Cyclosporine) • Parathyroid Hormone (within 24 hrs. of draw) • Retic Count
	• **PINK** • K2EDTA	8 x N/A*	• T&S • ABO verification
	• **GRAY** • Sodium Fluoride/ Potassium Oxalate	8-10x N/A*	• Lactic Acid • Glucose

Test Name	Specimen type	Reference Range	
	• **BLUE** • Sodium citrate (3.2%)	3-4 x N/A*	• aPTT • Anti-thrombin III Activity • Anti-thrombin III Ag • Coagulation tests • Factor 5 • Factor 8 (along with other factors) • D-Dimer • Fibrinogen • Protein S • Protein C • PT/INR • PTT
	• **BLUE** • Whole Blood only,	**Do Not mix!** N/A*	• Rotem Note: Hand deliver. Do not use a pneumatic tube. (Interferes with testing)
	• **Marble or Gold (SST)** • Clot activator and gel for serum separation.	**5 x** 30 MIN	• AFP • ANA • DIAGNOSTIC IMMUNOLOGY • Folate • Hepatitis Panel • Hep B Surface Ag/Ab • Hep B Core Ab Panel • Hep B e Ag/Ab • Hep C Ab • Rheumatoid Factor • Vitamin B12
	• **RED** • Silicone coated (glass)	**5 x** 60 MIN	• AFP • ANA • Cardiolipin Ab • Ceruloplasmin • Cord Blood • Double Stranded DNA (Anti- DS DNA) • EBV Ab Panel • Folate • Hepatitis Panel • Hep A Ab Panel • Hep B Surface Ag/Ab • Hep B Core Ab Panel • Hep B e Ag/Ab • Hep C Ab • Vitamin B12
	• **ROYAL BLUE** • K2EDTA (plastic)	**8 x** N/A*	• LEAD • MERCURY
	• **ROYAL BLUE** • **C**lot Activator (serum)	**5 x** 30 MIN	• ZINC

*This chart does not encompass all laboratory tests. ** No clotting time is required

SPECIMEN LABELING REQUIREMENTS:

Patients must be identified utilizing two patient identifiers.
(i.e. FIRST AND LAST NAME & MEDICAL RECORD NUMBER or DATE OF BIRTH).
All specimens must be labeled in the presence of the patient.

ORDER OF SPECIMEN DRAW

ORDER OF DRAW	Tube/Bottle	Additive

*** Tube inversions ensure the mixing of anticoagulant with blood to prevent clotting

Test Name	Specimen type	Reference Range

WMC TEST MENU

The latest version of our test directory can be found at the WMC Laboratory Service webpage by accessing https://www.westchestermedicalcenter.org/laboratory-services or The Beat .

All available test offerings by WMC Laboratories may not be listed due to new procedures that are developed throughout the year. For information about unlisted tests, please contact our Laboratory Call Center at 914-493-7384.

In addition to our Laboratory Test Menu below we partner with several reference laboratories for selected laboratory testing to offer a comprehensive test menu. Send out test are performed by the following Reference laboratories:

- BioReference Test Directory: https://www.bioreference.com/wmcdirectory/
- Mayo test catalog: https://www.mayocliniclabs.com/test-catalog
- Quest Diagnostics Test Directory: https://testdirectory.questdiagnostics.com/test/home
- ARUP Test Directory: https://www.aruplab.com/testing
- Eurofins test menu: https://www.eurofins-viracor.com/clinical/test-menu/
- Versiti test menu: https://versiti.org/diagnostic-labs-test-menu

The Instant Laboratory Report can be reviewed or downloaded on the Laboratory web site/

https://labs.wcmc.com/LIVE5.ws/swp/office/#/ . It is also available on the Beat with instruction for use. https://onfirstup.com/wmchealth/wmchealth/contents/25641924

List of Critical Values

Laboratory	Parameter	Critical Low Result	Critical High Result	Comments
Clinical Laboratory	Glucose (mg/dL)	< 54	≥ 350	*
	Calcium (mg/dL)	≤ 7	≥ 12.5	*
	Sodium (mEq/L)	≤ 120	≥ 160	*
	Potassium (mEq/L)	≤ 2.5	≥ 6.0 (≥ 6.5 pre-dialysis) (≥ 7.0 in the NICU)	Always called
	CO2 (mEq/L)	≤ 10	≥ 40	*
	BUN (mg/dL)		≥ 100 (≥ 150 if known renal)	*
	Ionized Calcium (mg/dL)	≤ 3.5	> 6.2	*
	Lactate (mmol/L)	> 2		*
	Magnesium (mg/dL)	≤ 1.2		*
	Troponin-I High sensitivity (ng/L)		>64 ng/L (Algorithm) >200 ng/L (Stand Alone)	Patients from ED and OPD
	WBC (ANC per µL)	≤ 18 yrs old: ≤ 500 Adults: ≤ 1,200	≥ 30,000	* / **
	Blast (% CBC or CSF)	any		*
	Hemoglobin (g/dL)	≤ 7		Always called
	Platelets (per µL)	≤ 20,000	≥ 1,000,000	* / **
	INR		> 4.5	*
	PTT (seconds)		≥ 100	*
	Abnormal CSF cell count (per µL)	> 5 cells/ µL In Neonates: > 30 cells/ µL		*
	Sterile Body Fluid	Positive gram stain		
	Blood Culture	Positive Blood culture		First positive of a set
	Blood parasites	Positive		
	Digoxin (ng/ml)		≥ 2.5	*
	Lithium (mEq/L)		≥ 1.5	*
	Cyclosporine (ng/ml)		≥ 1,500	
	Theophylline (ng/ml)		≥ 25.0	
	Phenytoin (ug/ml)		≥ 30.0	
	Tacrolimus (ng/ml)		≥ 20	
	Sirolimus (ng/ml)		≥ 15.0	
	Acetaminophen (ug/ml)		≥ 50	
	Urinalysis		4+ Ketonuria	
Laboratory	**Parameter**	**Critical Result**	**Critical Result**	**Comments**
Respiratory	ABG/VBG (pH)	< 7.10	> 7.59	Always called
	Arterial CO2 (mmHg)	< 19	> 75	
	Arterial O2 (mmHg)	< 40		
	ABG/VBG Ionized Calcium (mg/dL)	≤ 3.5	> 6.2	
	ABG/VBG Sodium (mEq/L)	< 120	> 160	
	ABG/VBG Potassium (mEq/L)	< 2.5	> 6.0	
	ABG/VBG Lactate (mmol/L)		> 2	
Anatomic Pathology	-Uterine contents (abortion) without villi or trophoblast -Fat in endometrial curettage -Mesothelial cells in heart biopsy -Fat in colonic endoscopic polypectomy -Acute transplant rejection -Unexpected findings (malignancy) -Bacteria or fungi in CSF cytology -AFB -Bacteria in heart valve or bone marrow -Invasive organisms in surgical pathology samples in immunocompromised patients			Always called

* These Critical Laboratory Values are called: i) When they are FIRST found and ii) A SECOND time to ensure that the medical team is aware of these abnormal results. Iii) They are called AGAIN when they recur after the parameter has been improved or normalized.

* * Persistent critical WBC or Platelet values in known hematology-oncology patients do not need to be called.

Test Name	Specimen type	Reference Range

List of CMS Approved Chemistry Panels

Comprehensive Metabolic Panel	Reference Range
Glucose	70 - 105 mg/dl
Sodium	135 - 145 mEq/L
Potassium	Adult 3.5 - 5.1 mEq/L Peds <2M 2.5 - 5.1 mEq/L Neonates (see below)
Chloride	98 - 107 mEq/L
Carbon dioxide (CO2)	22 - 30 mEq/L
BUN	6.0 - 22 mg/dl
Creatinine	0.72 - 1.25 mg/dl (M) 0.57 - 1.11 mg/dl (F)
Calcium	8.6 - 10.2 mg/dl
AST (SGOT)	4 - 35 U/L
ALT (SGPT)	6 - 55 U/L
Alk. Phosphatase	Age range (U/L) D 0-14 90 - 273 D 15-364 134 - 518 Y 1-10 156 - 369 Y 10-13 141 - 460 Y 13-15 62 - 280 Y 15-17 54 - 128 Y 17-19 48 - 95 Y 19-> 40 -150
T. Bilirubin	Age Range (mg/dl) D 0-2 0 - 10 D 2-5 0 - 15 D 5-7 0 – 10 D >7-adult 0.2 – 1.3
Total Protein	Age Range (g/dl) 1-12Y 5.1 - 7.3 1-24Y 5.6 - 7.5 24Y> 6.4 - 8.3
Albumin	3.4 - 4.8 g/dl

D-Day; M-Month, Y-Year

Basic Metabolic Profile	Reference Range
Glucose	70 - 105 mg/dl
Sodium	135 - 145 mEq/L
Potassium	Adult 3.5 - 5.1 mEq/L Peds <2M 2.5-5.1mEq/L Neonates (see below)
Chloride	98 - 107 mEq/L
Carbon dioxide (CO2)	22 - 30 mEq/L
BUN	6.0 - 22 mg/dl
Creatinine	0.72 - 1.25 mg/dl (M) 0.57 - 1.11 mg/dl (F)
Calcium	8.6 - 10.2 mg/dl

Hepatic Function Panel

Profile	Reference Range
AST (SGOT)	4 - 35 U/L
ALT (SGPT)	6 - 55 U/L
Total Bilirubin	Age Range (mg/dl) D 0-2 0 - 10 D 2-5 0 - 15 D 5-7 0 – 10 D >7-adult 0.2 – 1.3
Direct Bilirubin	0.1 - 0.6 mg/dl
Alkaline Phosphatase	Age range (U/L) D 0-14 90 - 273 D 15-364 134 - 518 Y 1-10 156 - 369 Y 10-13 141 - 460 Y 13-15 62 - 280 Y 15-17 54 - 128 Y 17-19 48 - 95 Y 19-> 40 -150
Albumin	3.4 - 4.8 g/dl
Total Protein	Age range (g/dl) 1-12 5.1 - 7.3 1-24 5.6 - 7.5 24-> 6.4 - 8.3
Globulin	2.9 - 4.0 (g/dl)

Electrolyte Panel:

Profile	Reference Range
Sodium	135 - 145 mEq/L
Potassium	3.5 - 5.1 mEq/L
Chloride	98 - 107 mEq/L
Carbon dioxide (CO2)	22 - 30 mEq/L

Renal Function Panel

Profile	Reference Range
Albumin	3.4 - 4.8 g/dl
Calcium	8.6 - 10.2 mg/dl
Phosphate	2.3 - 4.7 mg/dl
Carbon dioxide (CO2)	22 - 30 mEq/L
Chloride	98 - 107 mEq/L
Creatinine	0.72 - 1.25 mg/dl (M) 0.57 - 1.11 mg/dl (F)
Sodium	135 - 145 mEq/L
Potassium	3.5 - 5.1 mEq/L
BUN	6.0 - 22 mg/dl
Glucose	70 - 105 mg/dl

Lipid Panel:

Profile	Reference Range
Cholesterol	Peds <18Y 90-180 Adult 125-240
Triglycerides	Up to 200 mg/dl
HDl	Age and sex dependent
LDl	(Calculated)

Test Name	Specimen type	Reference Range

Test Name	Specimen type	Reference Ranges
Acetone-Blood	Green top tube	Negative
Acetaminophen (Tylenol)	Green top tube	10.0-30.0 ug/ml
Albumin	Green top tube	3.4-4.8 g/dl
Alcohol/Ethyl	Green top tube or urine	Negative (<10 mg/dl)
Alkaline Phosphatase	Green top tube	<500 U/L (F) <750 U/L (M)
Alpha-Fetoprotein (male & non-pregnant female)	SST or Red top	0.89-8.78 ng/ml
Amikacin	Green top tube *note the time for peak and trough: PEAK: 30-60 min past infusion point TROUGH: just before next dose	Therapeutic Level Random <25 ug/ml PEAK: 25-35 ug/ml Trough: 4-8 ug/ml
Ammonia (Blood)	Green top tube on ice-deliver to lab immediately. Do not use ammonium heparin (microtainer)	18-72 umol/L
Amphetamine/Methamphet amineScreen (Semi-Quant) Urine	Random urine-plastic container	Negative
Amylase (Blood)	Green top tube	25-125U/L
Amylase (Urine)	Timed or Spot urine	1-17 U/hr
Anaplasma phagocytophilum (HGE smear)	Whole blood (EDTA)	Negative
ANCA-C (Anti-PR3) (C-ANCA)	Red top tube	≤ 20 Units
ANCA-P (Anti-MPO) (P-ANCA)	Red top tube	≤ 20 Units
Anticardiolipin (IgG & IgM)	Red top tube	IgG <15.0GPL U/ml IgM <12.5MPL U/ml
Anti-DNA Antibody (Double Stranded)	Red top tube	<25 IU/ml
Anti-ENA Antibody Extractable Nuclear Antigen Ab	Red top tube	Negative (<0.9 Index)
ANA Screen w/reflex to titer	Red top tube	Negative
Anti - SSA Sjogren Ab-RO	Red top tube	Negative <20 EU/ml)
Anti - SSB Sjogren Ab-LA	Red top tube	Negative (<20 EU/ml)
Anti - SM	Red top tube	Negative (<16 EU/ml)
Anti - SM/RNP	Red top tube	Negative (<16 EU/ml)
Anti-Thrombin III	1 Blue top tube	80-120%

Test Name	Specimen type	Reference Range
Anti-Thyroglobulin Ab	Red top tube	Negative (<4.1 IU/ml)
Anti-Thyroid Peroxidase Ab	Red top tube	Negative (<5.6 IU/ml)
Babesia microti smear	Whole blood (EDTA)	Negative
Barbiturates/Metabolites Screen (Semi-Quant.) urine	50 ml Random urine collected in Plastic Container	Negative
Benzodiazepines/Metabolites Screen (Semi-Quant.) Urine	50 ml Random urine collected in Plastic container	Negative
Bicarbonate (CO2)	Green top tube	22-31 mEq/L
Bilirubin (Total)	Green top tube. Protect from light	Total:0.2-1.2 mg/dl
Bilirubin (Direct)	Green top tube. Protect from light	Dir.: 0.0-0.5 mg/dl
BK Virus DNA Quant PCR	0.7 ml FROZEN plasma from an EDTA lavender top tube or ACD Yellow top or Lavender top tube	>500 copies
BUN - Blood Urea Nitrogen	Green top tube	6.0 - 22 mg/dl
Borrelia burgdorferi	3-5 ml serum (red top)	Non-reactive
BNP (B Natriuretic peptide)	Whole blood (EDTA – plastic)	<100 pg/ml
CA 125	SST or Red top tube	0.0-35.0 U/ml
CA 15-3	Red top tube	0.0-31.3 U/ml
Caffeine	Green top tube	5 - 20 ug/ml (neonates)
Calcium (Ionized)	Green top tube (minimum 1ml)	4.5-5.3 mg/dl
Calcium (Blood)	Green top tube	8.4-10.2 mg/dl
Calcium (Urine)	24 hr. Urine Collection	<300 mg/24 hrs.
Cannabinoids/Metab. (Marijuana) Screen, (Semi-Quant) Urine	50 ml Random Urine Collected in Plastic Container	Negative
Cannabinoids (THC) Confirmation	50 ml Random Urine Collected in Plastic Container	See Patient Report
Carbamazepine (Tegretol)	Green top tube (minimum 2 ml)	4.0-12.0 ug/ml
Carcinoembryonic Antigen (CEA)	SST or Red top tube	0.0-10.0 ng/ml *Not an absolute test for cancer Use with clinical evaluation
CFS Cell Count	1 ml Fluid sterile tube	<5 WBC/ul No RBC (Adults) <30 WBC/ul (Newborns 0-28 d)
Cerebrospinal Fluid (CSF) Glucose, Total Protein	2 ml fluid, sterile tube	Glucose 40-70 mg/dl Total protein 15-45 mg/dl
Chloride (Blood)	Green top tube	98-107 meq/L

Test Name	Specimen type	Reference Range
Chloride (Urine)	24 hr. Collection or Random	110-250 mEq/24 hrs.
Cholesterol (Total) HDL LDL	Green top tube Green top tube Green top tube	Age Dependent - See Table 40-60 mg/dL <130 mg/dL
Cocaine (Metabolites) Urine	50 ml Random urine plastic container	Negative
Complement C3, serum	Green top tube	82-193 mg/dl (>14 y) 80-173 mg/dl (<14y)
Complement C4, serum	Green top tube	15-57 mg/dl (>14y) 13-46 mg/dl (<14y)
CMV AB (IGG)	1 ml serum	< 0.91--- Negative
CMV AB (IGM)	1 ml serum	0.00-0.089
CMV DNA,QN,Real-Time PCR	1 ml whole blood or plasma from EDTA lavender top tube	<200 Copies
CBC (Complete Blood Count) WBC/RBC/HGB/HCT/MCV	Whole Blood (EDTA) lavender top tube (minimum 1ml)	See Table Below (CBC Age- specific Reference Ranges)
Chlamydia/Gonorrhea DNA, TMA Aptima	2.0 ml urine specimens in APTIMA urine (yellow label) transport medium. Urethral swab in Aptima swab transport. Endocervical swab in Aptima swab transport. Vaginal swab in Aptima Vaginal swab transport.	Not Detected
Cortisol (Blood)	Green top tube	PM : 2.9-17.3 ug/dl AM : 3.7-19.4 ug/dl
COVID - IgG	SST, Red or Lavender top tube	Negative
CK-MB Quantitative	Green top tube	<6.6 ng/ml
C Reactive Protein	Green top tube	0.0-0.50 mg/dl
CPK (Creatine Phosphokinase)	Green top tube	30-200 U/L (M) 29-168 U/L (F)
Creatinine (Blood)	Green top tube	0.72 - 1.25 mg/dl (M) 0.57-1.11 mg/dl (F)
Creatinine (Urine)	24 hr. collection / Spot	0.9-2.49 g/24 hrs. (M) 0.71-1.65 g/24 hrs. (F) (No range for Spot)
Creatinine Clearance	Timed urine and 3 ml plasma Green top tube The serum and urine specimens must be submitted together	66-163 ml/min/1.7
Cryofibrinogen (Qualitative)*	Full blue top tube Keep warm during transport	Negative – Preformed in Ref Lab
Cryoglobulin	2 full 10 ml Red top tubes Keep WARM during transport Deliver to lab IMMEDIATELY (must clot at 37 degrees)	Negative
Cryptococcal antigen Serum CSF	 Red top tube Spinal fluid-sterile tube	 Negative Negative
CT/NG DNA, SDA	Surepath ThinPrep Vial (2 ml fluid)	Not Detected
Cyclosporine A (CSA) Whole blood (for transplants)	One lavender top (EDTA) tube, Refrigerate whole blood.	Therapeutic: 140-420 ng/ml
D-Dimer quantitative	Blue top tube	< 500 ng/mL FEU
Digoxin	Green top tube (minimum 2ml)	Therapeutic:

Test Name	Specimen type	Reference Range
	Specimens should be drawn 6 - 12 hours after Digoxin administration	0.8-2.0 ng/ml
Dilantin (Phenytoin) Quantitative	Green top tube (minimum 5ml)	Therapeutic Range: 10-20 ug/ml
Drug Screen, Newborn	Minimum 10 ml of urine Amphetamines/Methamphetamine Barbiturates, Benzodiazepines, Cannabinoids, Cocaine, Opiates, Ethyl Alcohol, Phencyclidine, Methadone.	Negative cut-off Amph <1000 ng/ml Barb <200 ng/ml Benzo <200 ng/ml Cannab < 50 ng/ml Cocaine <300 ng/ml Opiates <300 ng/ml Ethanol <13 mg/dl PCP <25 ng/ml Methad <300 ng/ml
Drug Screen, Rehab. and Screen ER	Minimum 10 ml of urine Amphetamines/Methamphetamine Barbiturates, Benzodiazepines, Cannabinoids, Cocaine, Opiates, PCP	See Patient Report
EBNA AB (IGG)	1 ml serum plain red top	>0.91
EBV CAPSID AB (IGM)	1 ml serum	< 0.91
EBV CAPSID AB (IGG)	1 ml serum	< 0.91
EBV DNA,QN,PCR	1 ml whole blood or plasma from an EDTA lavender top tube or 1 ml CSF in a sterile leak proof container.	< 200 copies/ml
EGFR Estim. Glomerular Filtration Rate	Red/Green top tube eGFR values<60 ml/mim/1.7m2 may indicate renal dysfunction. Clinical correlation is recommended.	>=60 ml/min/1.7m2
Ehrlichia (HGE) Smear	Purple top tube/buffy coat prep	Negative
Eosinophils (Urine)	Random Urine	Negative
ESTRADIOL	Green top tube (minimum 3ml)	ADULT FEMALES Follicular Phase.....21.0-251.0 pg/mL Luteal Phase.....21.0-312.0 pg/mL Ovulation Phase.....38.0-649.0 pg/mL Postmenopausal.....<10.0-28.0 pg/mL Postmenopausal on HRT.....<10.0-144.0 pg/mL Pregnancy/First Trimester...215->4300 pg/mL ADULT MALES.....11.0-44.0 pg/mL CHILDREN 1-10 Years Males.....<5.0-20.0 pg/mL Females..... 6.0-27.0 pg/mL Patients undergoing FULVESTRANT therapy should not be tested with the ABBOTT ARCHITECT Estradiol assay. Patients treated with MIFEPRISTONE should not be tested with the ARCHITECT Estradiol assay for up to two weeks after last treatment
ESTRADIOL, LC/MS/MS Ultrasensitive Quest Diagnostics		Follicular Phase: 19-144 pg/mL Mid-Cycle: 64-357 pg/mL Luteal Phase: 56-214 pg/mL Postmenopausal: < or = 31 pg/mL Pediatric Female Pre-pubertal <1 year: Not Established (1-9 years): < or = 16 pg/mL 10-11 years: < or = 65 pg/mL 12-14 years: < or = 142 pg/mL 15-17 years: < or = 283 pg/mL Ultrasensitive LC/MS/MS demonstrates negligible cross reactivity with fulvestrant.

Test Name	Specimen type	Reference Range
Factors II, V, VII, VIII, IX, X, XI, XII	2 Blue top tubes (minimum for ordering all factors - 1 blue top tube required)	II, V, VII, IX, X, XI, XII: 60-130% VIII: 50-150%
Ferritin	Green top tube	18-370 ug/L (M) 9-120 ug/L (F)
Fetal Fibronectin	Cervical swab (in media provided by manufacturer)	Negative for pregnant patients between 22-34 weeks gestation
Fetal Hemoglobin Stain	One full lavender top tube	Adult: 0.0 - 0.072%
Fibrinogen	1 Blue top tube	35-600 mg/dl
Folate, serum (Folic Acid)	SST or Red top tube Send to lab immediately	7.0-31.4 ng/ml
Follicle Stimulating Hormone (FSH)	Green top tube (minimum 2ml)	FEMALES - Normally Menstruating: Follicular Phase.....3.6-21.6 mIU/mL Mid Cycle Phase.....4.9-20.8 mIU/mL Luteal Phase.....1.1-13.9 mIU/mL Post Menopausal.....2.6-150.0 mIU/mL MALES.....1.4-13.6 mIU/mL --- FSH PEDIATRIC REFERENCE RANGES FEMALES Tanner Stage Age Range (mIU/mL) 1 0-3 mo 1.4-11.8 1 >3-12 mo 2.0-8.8 1 >12-24 mo 3.0-6.6 1 >24 mo-9 yrs 0.9-4.7 Tanner Stage 2 0.9-4.9 3 3.0-8.8
GGT-Gamma Glutamyl Transpetidase	Green top tube	12-64 U/L (M) 9-36 U/L (F)
Gentamicin	Green top PEAK: 1 hr. after IM, or 30-60 min after end of infusion TROUGH: immediately before next dose RANDOM: Any time	Peak: 5-10 ug/ml Trough: 0.5-4.0 ug/ml Random: <10 ug/ml
Glucose, Blood	Green or gray top tube	70-105 mg/dl
Glucose, Urine Quantitative	10 ml Aliquot of 24 hr. urine / Spot	50-300 mg/24 hrs. (No range for Spot)
Glucose-6-Phosphate Dehydrogenase (G6PD) *	1 Lavender top tube	Normal – Performed in Ref Lab
Glucose Tolerance Test	Submit separate tubes for fasting, 1 hr., 2 hrs., 3 hrs.	Interpreted By Physician
Glycohemoglobin (HbA1C)	One lavender top tube (EDTA)	4.0 – 5.6 % Increased risk for diabetes mellitus is seen in patients with HgA1C values between 5.7-6.4%. Values > or = 6.5% are considered diagnostic of diabetes mellitus.
Guaiac (Occult Blood)	Stool smear	Negative

Test Name	Specimen type	Reference Range
Haptoglobin	Green top tube	14 - 273 mg/dl
Human Chorionic Gonadotropin (Beta HCG) Quantitative	Green top tube	Non-Pregnant: <5.0 mIU/ml Indeterminate: 5-25 mIU/ml Pregnant: >25 mIU/ml Pregnancy: 2-4 weeks : 800-10,000 mIU/ml 7-8 wks.: 20,000-200,000mIU/ml At term: 55,000-60,000 mIU/ml
Human Chorionic Gonadotropin (Beta HCG) Qualitative	Green top tube	Non-Pregnant: <5mIU/ml, Negative Indeterminate: 5-25 mIU/ml Positive: >25mIU/ml
Human Chorionic Gonadotropin (Urine)	10 ml aliquot of first morning urine specimen.	Non-Pregnant: <25 mIU/ml
Hemoglobin Separation	One lavender top tube (EDTA)	Normal Pattern Hgb A
Hgb Electrophoresis - Hgb A	One lavender top tube (EDTA)	80-98% HbA
Hemoglobin A2, Blood	One lavender top tube (EDTA)	1.5%-3.5%
Hemoglobin F, Blood	One lavender top tube	<2.0%
Hemoglobin, Unstable*	One lavender top tube (EDTA)	Negative – Performed in Ref Lab
Hemosiderin, Urine	15 ml Random urine plastic container	None Present
Heparin Antibody(HIT)	1 Blue top tube	Negative
Hepatitis A Antibody, Total	1 ml serum from plain red top	Non-reactive
Hepatitis A Virus M Antibody (HAV AB-M) IgM	SST or Red top tube	Non-reactive
Hepatitis B Surface Antibody, HBsAB	SST or Red top tube	Non-reactive
Hepatitis B Surface Antigen, HBsAG	SST or Red top tube	Non-reactive
Hepatitis B Core Antibody, HBcAB	SST or Red top tube	Non-reactive
Hepatitis C AB (HCV)	SST or Red top tube	Non-reactive
Heterophile antibody	Red or lavender top tube	Negative
HIV Ag/Ab Combo (>2 yrs.)	Green top tube	Nonreactive
Rapid HIV 1/2 Ab (< 2 yrs.)	Red top tube	Negative
HLA Typing I & II*	Two yellow top ACD tubes	
Homocysteine	SST or Red top tube ON ICE	5-15 umol/L
HPV, DNA High Risk	1. Digene cervical brushes in STM (Virapap) 2. Cytyc Preser Cyt Solution (ThinPrep specimens). 3. SurePath, 2 ml Cell Pellet fraction	Not detected

Test Name	Specimen type	Reference Range
IGG Subclasses	2 ml serum from SST or plain red	Age (yrs) IgG 1 IgG 2 IgG 3 IgG 4 Units 0-1 194-842 23-300 19-85 0.5-78 mg/dl 2-3 315-945 38-225 17-68 1.0-54 mg/dl 4-5 308-945 61-345 0-122 2.0-112 mg/dl 6-7 288-918 44-375 16-85 0.4-98 mg/dl 8-9 432-1020 72-430 13-85 2.0-95 mg/dl 10-11 423-1080 78-355 17-173 2.0-115 mg/dl 12-13 342-1150 100-455 28-125 4.0-136 mg/dl 14-17 315-855 64-495 23-198 11-157 mg/dl Adult 382-929 241-700 22-178 4-86 mg/dl
Immune Cell Function	1 green top - sodium heparin	See Patient Report
Influenza Virus A & B Direct antigen (Stat)	Nasopharyngeal swab in UTM Nasal swab in UTM Nasal wash aspirate l ml in UTM	Negative
Insulin	Red top tube, fasting	Fasting: 6-27uIU/ml
Iron (Total)	Green top tube; avoid hemolysis	65 - 175 ug/dl (M) 50-170 ug/dl (F)
Iron Binding Capacity (Includes Serum Iron and % Saturation	Green top tube; avoid hemolysis (minimum 3ml)	275 - 365 ug/dl
Lactate (Lactic Acid)	Grey-top tube on ice. Bring to Lab immediately	0.5-2.2 mmol/L
Lactate Dehydrogenase (LDH)	Green top tube. Avoid hemolysis or CSF	125-220 U/L (No range listed)
Lead ,Blood	1 Tan top tube	0-6 years <3.0; 6 or more years <10
Leukemia\Lymphoma markers Immunophenotyping	Blood (green top), BM, fluids, tissue	See Patient Report
Leukocytie AlkalinePhospatase LAP*	Green top tube	Scoring: 24-280 – Performed in Ref Lab
LH, Luteinizing Hormone	SST or Red top tube	FEMALES: ------- Follicular Phase.....1.8-11.8 mIU/mL Mid Cycle Phase.....7.6-89.1 mIU/mL Luteal Phase.....0.6-14.0 mIU/mL Post Menopausal.....5.2-62.0 mIU/mL MALES.....0.6-12.1 mIU/mL UNKNOWN.....0.6-89.1 mIU/mL
Lidocaine	Green top tube (minimum 2ml)	1.5-5.0 ug/ml
Lipase, Serum	Green top tube	8 - 78 U/L
Lipid Profile: Trig/Chol HDL, LDL	Green top tube (Fasting sample-REQUIRED)	See Patient Report
Lithium, Serum	SST or Red top tube (minimum 3ml)	< 0.1 meq/L (w/o medication) 0.6-1.2 meq/L Therapeutic
Lupus Anti-Coagulant*	One blue top tube	<1.2:1 – Performed in Ref Lab
Lyme Serology	See bacteriology section	
Low Molecular Weight Hep. Anti-Xa (LMW Heparin)	One blue top tube	See Patient Report

Test Name	Specimen type	Reference Range
Magnesium, Blood	Green top tube	1.6-2.6 mg/dl
Magnesium, Urine	10 ml Aliquot of 24 hr. urine	72.9 - 121.5 mg/24 hrs.
Methadone/ Metab. (Semi-Quant.), Urine	50 ml Random urine collection in plastic container	Negative
Methotrexate	SST or Red top tube	Therapeutic range variable See Patient Report
Albumin, urine	10 ml 24 hr urine / Spot	< 2.5 mg/dL (M) < 3.5 mg/dL (F) Ratio: mg Alb/g (No range for Spot)
M. Pneumoniae AB (IGM)	1 ml serum	<770, Negative
M. Pneumoniae AB (IGG),EIA	1 ml serum from no additive red top	Negative
Mumps IgG Ab*	Red top tube	See the report – Performed in Ref Lab
Myoglobin, Blood	Green top tube	0-154.9 ng/L (M) 0-106.0 ng/L (F)
Myoglobin, Urine (Quantitative) *	15 ml Random urine collection in plastic Container. No preservative	0.0-2.0 ug/L – Preformed in a Ref Lab
O & P, Concentration & Stain	Ova and parasite transport system (O&P Kit)	Negative
Opiates/Metabolites Urine, Semi-Quantitative	50 ml Random urine in plastic container	Negative
Osmolality (Serum or plasma)	Red or green top tube	280-295 mOsm/kg
Osmolality (Urine)	Random urine	Urine: 50-1200 mOsm/kg
Parathyroid Hormone (PTH), Intact	Lavender top tube	8.5-72.5 pg/ml
Partial Thromboplastin Time (PTT)	One Blue top tube (citrated)	25-36.5 sec
Peroxidase Leukocyte	Bone marrow 5 ml Lavender top tube	By Hematology Cosult Only
Phencyclidines/Metabolites Urine (Semi-Quantitative)	50 ml Random urine collected In plastic container	Negative
Phenobarbital	Green top tube	15-40 ug/ml
Phosphorus,Inorganic - Blood	Green top tube	2.3-4.7 mg/dl Neonatal Phosphorus Ranges Preterm /Term Less than one week 6.1-11.7 4.9-8.9 (mg/dL) 3-7 weeks 5.3-8.3 (mg/dL) 1 month 5.0-9.5 (mg/dL)
Phosphorus, Inorganic - Urine	24 hr. urine collection / Spot	0.4-1.3 g/24 hrs. (No range for Spot)
Platelet Count, Quantitative Mean Platelet Volume - MPV	Whole Blood (EDTA) Lavender tube	160,000-410,000/ul 9.8-12.8 fl

Test Name	Specimen type	Reference Range
Platelet Aggregation	By appointment only: 4-5 Blue top tubes (27 ml) Must be brought to the lab by 9:30AM Notify Special Hematology x1475 before drawing blood	Normal
Potassium, Blood	Green top tube	Adult 3.5-5.1 mEq/L Pediatric <2M 2.5 - 5.1 mEq/L --- Neonatal Potassium Ranges (mEq/L) Premature Cord Blood 5.0 - 10.0 Premature 48 Hours 3.0 - 6.0
Potassium, Urine	24 hr. urine collection / Spot	25-125 mEq/L (No range for Spot)
Prealbumin	SST or Red top tube	18-45 mg/dl (M) 16-38 mg/dl (F)
Progesterone	Green top tube	See Patient Report
Prolactin	Green top tube (minimum 2ml)	3.46-19.40 ng/ml (M) 5.18-26.53 ng/ml (F)
PSA - Prostate Specific Ag	SST or Red top tube	0-4 ng/ml
Procalcitonin	Green top tube	<0.01 ng/ml
Protein C, Functional Activity	Blue top tube	65-150%
Protein Electro, Serum	1 ml serum	0-27 day 4.1-6.3; 5 month 4.7-6.7; 11 month 5.5-7.0; 1-19 years 6.3-8.2
Protein S, Functional Activity	Blue top tube	57-131%
Protein, Total, Blood	Green top tube	6.4-8.3g/dl
Protein Total, CSF	2 ml Fluid-sterile tube	15-45 mg/dl
Protein, Total, Urine	24 hr. Urine collection / Spot	< 300 mg/24 hrs. 1-14 mg/dL (for Spot)
Panels	CMS Approved chemistry panels	See Addendum
PT - Prothrombin Time	One blue top tube	9.4 – 12.5 sec
PT INR	One blue top tube	0.90-1.10 Recommended INR is 2.0-3.0 for prophylaxis venous thrombolism- high risk surgery patients, DVT, PE and prevention of systemic embolism. For mechanical heart valves, 2.5-3.5 is recommended.
Prothrombin Time - Correction With Normal Plasma	One blue top tube (Citrate)	Within 1 second from normal control
Partial Thromboplastin Time (PTT)	One Blue top tube (citrated)	25-36.5 sec
P2Y12 - Plavix (% inhibition)	2 special blue top tubes with white ring	P2Y12 Assy Baseline: 194-418 PRU

Test Name	Specimen type	Reference Range
PRU - plavix reaction units	on cap	(updated 8/21/2012) Expected Resulty: Risk of Events: 230-350 PRU Optimal Therapeutic Range: 100-230 PRU (updated 8/21/2012
Platelet Function Aspirin ARU - Aspirin Reaction Units	2 special blue top tubes with white ring on cap	Therapeutic: 350-549 ARU Non-therapeutic: 550-700ARU
PSA, FREE	1 ml serum	< or = 4.0nG/dl
Quantiferon-TB GOLD	1 Quantiferon gray, 1 Quantiferon lavender, 1 Quantiferon red tube	Negative
Reticulocyte Count	Whole blood (EDTA) lavender tube (minimum 1ml)	0.5-1.5%
Rapid Streptococcal Ag	Throat swab	Negative
Rheumatoid Factor	SST or Red top tube (minimum 5ml)	< 30 IU/ml
RPR W/TITER & CONF RFX	1.0 ml serum	Nonreactive
RSV antigen (Respiratory Syncytial Virus)	Nasopharyngeal Aspirates, swab or wash	Negative
Rubella IgG Ab	Red top tube	See Patient Report
Rubeola IgG Ab	Red top tube	See Patient Report
Salicylates, Blood	Green top tube (minimum 2ml)	Therapeutic 15-30 mg/dl
Sedimentation Rate - ESR	One Lavender top tube. (EDTA)	< 20 mm/hr (F, <50 yrs) <30 mm/hr (F, >50 yrs) <15 mm/hr (M, <50 yrs) <20 mm/hr (M, >50 yrs)
Semen Analysis	By appt. only Collect in a sterile container and tightly cap; Deliver to lab within 1 hr. Call x8698 for appointment.	Motility >60% Morphology >=30% Normal Normal sperm count: 60-150 million/ml pH: 7.0-8.3 Viscosity: Liquefaction completed after 15-60 minutes
SGOT (AST)	Green top tube	5-34 U/L
SGPT (ALT)	Green top tube	0-55 U/L
Sickle Cell Screen	One lavender top tube (EDTA)	Negative
Sirolimus	One lavender top tube (EDTA)	See Patient Report
Sodium, Blood	Green top tube	136-145 mEq/L
Sodium, Urine	24 hr. urine collection / Spot	40-220 mEq/24 hrs. (No range for Spot)
Sweat Test	By appointment call x8698	Chloride 0.0-59.0 mmol/L See Patient Report for range < 5yrs
Synovial Fluid-Cell Count/Diff	3 ml Fluid sterile tube	WBC <200 cells/uL Differential: <25% neutrophils

Test Name	Specimen type	Reference Range
Tacrolimus (FK 506)	5 cc Whole blood - EDTA tube	Therapeutic Range: Transplant Kidney: 5-15 ng/ml Liver: 10-20 ng/ml
T-3 (Triodothyronine) Total	Green top tube (minimum 1 ml)	79- 149 ng/ml
T-4 (Thyroxine)	Green top tube (minimum 1ml)	4.87-11.72 ug/dl
T-4 Free (Thyroxine)	Green top tube (minimum 1ml)	0.7-1.48 ng/dl
Thyroxine Uptake (TUP)	Green top tube (minimum 1ml)	0.69-1.41 TUP
Testosterone (Total)	Red top tube Specify age and sex on request	See Patient Report
Theophylline	Green top tube (minimum 2ml)	8-20 ug/ml - Therapeutic
Thrombin Time	Blue top tube	10.3-16.6 seconds
Thyroid Stimulating Hormone (TSH)	Green top tube	0.350 - 4.7 mIU/L* *NOTE: Does not apply to neonates or elderly >60yrs
HLA B27	2 Yellow top ACD tubes	See Patient Report
HLA-ABC (Class-I) Typing	3 Yellow top tubes (ACD Solution)	See Patient Report
Class I Antibody Identification	1 Red top tube (clotted blood from recipient)	See Patient Report
HLA-DR (Class-II) Typing	3 Yellow top tubes (ACD Solution)	See Patient Report
HLA-ABC & DRDQDP (Class I and II)Typing	5 Yellow top tubes (ACD Solution)	See Patient Report
Class II Antibody Identification	1 Red top tube (clotted blood) from Recipient	See Patient Report
Auto Crossmatch (recipient vs. self)	1 Red top & 3 Yellow tops ACD from Recipient.	See Patient Report
HLA Flow Cross match (donor vs. recipient (s))	Recipient: 1 Red top tube. Living Donor: 3 Yellow top (ACD) tubes Deceased Donor: Spleen, Lymph node or Peripheral Blood 3 yellow top (ACD tubes)	See Patient Report
Transglutaminase AB (IGA)	1 ml serum	<0.3
Tobramycin	Red or Green. Peak, Trough, or random separate tubes. PEAK:1 hr. after IM or 30-60 min after ending infusion TROUGH: Just before next dose RANDOM: at any time.	Therapeutic Range PEAK: 5-10 ug/ml TROUGH: 0.0-1.9 ug/ml Random: <10 ug/ml
Transferrin	Green top tube	174-364 mg/dl (M) 180-382 mg/dl (F)
Tricyclic Anti-depressants TCA	2 ml serum or plasma	See Patient Report

Test Name	Specimen type	Reference Range
Triglycerides	5 ml plasma - Green top tube 16 hr. fasting specimen	< 150 mg/dl (Normal) 150-199 mg/dl (Borderline high)
Troponin-I, High sensitivity	Lavender top tube Run within 8 hours from draw Room Temperature ONLY	<=35 ng/L (M) <= 17 ng/L (F)
Unfractionated Heparin	One blue top tube	See Patient Report
Urea, Nitrogen (U)	24 hr. Collection or Spot	12-20 g/24 hrs. (No range for Spot)
Uric Acid, Blood	Green top tube	3.5-7.2 mg/dl (M) 2.6-6.0 mg/dl (F) <18 yrs 2.6-6.2 mg/dl
Uric Acid, Urine	24 hr. Collection or Spot	250-750 mg/24 hrs. (No range for Spot)
Urine Analysis, Routine	Spot Urine	Spec. Gravity 1.003-1.030 pH - 5.0-9.0 Protein (qual) - Negative Glucose - Negative Ketones - Negative Blood - Negative Urobilinogen 0.2-1.0 Ehrlu/dl Nitrites - Negative Leukocytes - Negative Microscopic: WBC - 0-5/HPF RBC - 0-2/HPF Bacteria - None seen/HPF Epithelials - Occasional/LPF
Urobilinogen, Qualitative	Random urine, protect from light by wrapping in aluminum foil.	0.2-1.0 Ehrlich U.
Valproic Acid	Green top tube (minimum 2ml)	Therapeutic: 50-100 ug/ml
Vancomycin	Green top tube Trough, & random in separate tubes	Therapeutic: Trough: 5-12 mcg/ml (18y) 5-20 (>18y) Random: Redosing may be needed if <15 mcg/ml
Varicella IgG Ab	1 Red-top tube	See Patient Report
VIT D 1,25-Dihydroxy	2 ml serum from a no additive red top tube	Vitamin D 1,25 (OH)2 Total: 1-9 years: 31-87 pG/ml 10-13 years: 30-83pG/ml >17 years old: 18-72pG/ml
Von Willebrand Assay (Ristocetin cofactor)	One Blue top tube	50-150%
Von Willebrand Factor Antigen (Factor VIII Related Antigen) *	1 Blue top tube	50-160% – Performed in Ref Lab
VDRL CSF (Qualitiative titer)	1 ml CSF	Non-Reactive
Viscosity, Serum	10 ml Serum red top tube	1.4 - 1.8:1 Ratio
Vitamin B-12	SST or Red top tube (minimum 5ml)	213 - 816.0 pg/ml

Test Name	Specimen type	Reference Range
Vitamin D 25 Hydroxy	Green top tube	30 - 80 ng/ml
WBC Differential	**Males, 14 yrs - 49 yrs**: Neutrophils (M) 32-70% Lymphocytes (M) 21-55% **Males, over 49 yrs:** Neutrophils (M) 34-76% Lymphocytes (M) 16-50% **All Ages: Male/Female:** Monocytes 0 - 11% Eosinophils 0 - 5% Basophils 0.2% Bands 0 - 3% IG 0.0 - 3.0%	**Females, 14 yrs - 49 yrs:** Neutrophils (F) 36-73% Lymphocytes (F) 18-53% **Females, over 49 yrs:** Neutrophils (F) 40 - 76% Lymphocytes (F) 17 - 50% For pediatric neutrophil percentage and lymphocyte percentage: See Patient Report
Zinc, Plasma	2 ml plasma from an EDTA royal blue top trace element tube.	less than 6 months 26-141; 6-11 months 29-131; 1 year 31-120; 2-3 years 29-115; 4-5 years 48-119; 6-9 years 48-129; 10-13 years 25-148; 14-17 years 46-130

*Send out tests

CBC Age-specific Reference Ranges

MALES

TEST	SEX	AGE	NORMAL
WBC	M	0-1 D	9-30
WBC	M	2-7 D	9.4-34
WBC	M	1-4 W	5-21
WBC	M	1-2 M	5-19.7
WBC	M	2M-2Y	5.50-18
WBC	M	2-6 Y	6-17.5
WBC	M	6-16 Y	5.30-15.0
WBC	M	16-21Y	4.50-10.50
WBC	M	21-49 Y	4.50-10.80
WBC	M	49-128 Y	4.80-10.80
RBC	M	0-1 M	5.00-6.30
RBC	M	1-9 M	4.70-5.90
RBC	M	9M-4Y	3.80-5.20
RBC	M	4-14 Y	3.60-5.50
RBC	M	14-25 Y	4.00-5.20
RBC	M	25-49 Y	4.20-5.50
RBC	M	49-128 Y	4.70-6.10
HGB	M	0-1 M	18.5-21.5
HGB	M	1-6 M	15.5-18.5
HGB	M	6-9 M	13.3-16.3
HGB	M	9M-4Y	12.0-14.0
HGB	M	4-14 Y	10.5-14.2
HGB	M	14-25 Y	12.3-14.9
HGB	M	25-49 Y	12.3-16.0
HGB	M	49-128	14.0-18.0
HCT	M	0-1 M	53-65
HCT	M	1-9 M	44-56
HCT	M	9M-4Y	39-52
HCT	M	4-14 Y	36-46
HCT	M	14-25 Y	36-46
HCT	M	25-49 Y	38-47
HCT	M	49-128 Y	40.8-46.9
MCV	M	0-6 M	95-115
MCV	M	6M-1Y	92-110
MCV	M	1-14 Y	89-102
MCV	M	14-49 Y	80-95
MCV	M	49-128 Y	80-94

FEMALES

TEST	SEX	AGE	NORMAL
WBC	F	0-1 D	9-30
WBC	F	2-7 D	9.4-34
WBC	F	1-4 W	5-21
WBC	F	1-2 M	5-19.7
WBC	F	2M-2Y	5.50-18
WBC	F	2-6 Y	6-17.5
WBC	F	6-16 Y	5.30-15.0
WBC	F	16-21Y	4.50-11.50
WBC	F	21-49 Y	4.50-10.80
WBC	F	49-128 Y	4.80-10.80
RBC	F	0-1 M	5.30-6.30
RBC	F	1-9 M	5.30-6.30
RBC	F	9M-4Y	4.70-6.00
RBC	F	4-14 Y	3.70-5.10
RBC	F	14-25 Y	3.60-5.10
RBC	F	25-49 Y	3.80-5.10
RBC	F	49-128 Y	3.90-5.20
HGB	F	0-1 M	18.0-21.0
HGB	F	1-9 M	15.8-18.9
HGB	F	9M-2Y	12.8-14.8
HGB	F	2-14 Y	10.3-14.1
HGB	F	14-25 Y	11.5-14.5
HGB	F	25-49 Y	11.6-15.0
HGB	F	49-128	12.0-16.0
HCT	F	0-1 M	51-65
HCT	F	1-6 M	42-56
HCT	F	6M-4Y	32-51
HCT	F	4-14 Y	36-50
HCT	F	14-25 Y	36-47
HCT	F	25-49 Y	36-45
HCT	F	49-128 Y	37-47
MCV	F	0-3 M	94-114
MCV	F	3-9 M	92-112
MCV	F	9M-2Y	92-107
MCV	F	2-14 Y	87-101
MCV	F	14-49 Y	80-96
MCV	F	49-128 Y	81-99

UNITS:	WBC	RBC	Hgb	Hct	MCV
	k/mm^3	m/mm^3	g/dl	%	FL

Blood Bank Transfusion Medicine

The Blood Bank & Transfusion services department at Westchester Medical Center supports an adult and pediatric Level I trauma and transplant center academic hospital of over 600 beds..
Pretransfusion testing and laboratory testing of donated blood prior to transfusion is performed in order to ensure that recipients receive the safest possible blood products.

Open Hours: 7 days/wk 24h
Phone: 914-493-7610

Sadiqa Karim, M.D.
Chief of Transfusion Medicine

Melissa White MA, MT(ASCP)
Blood Bank Manager, Blood Bank/Transfusion Services

Test Description	SPECIMEN_NAME
ABO Testing	Lavander tube
Rh Testing	Lavander tube
ABO/Rh Confirmation	Lavander tube
Neonatal ABO/Rh	Lavander tube
Direct Coombs Testing	Lavander tube
Cord Blood ABO/Rh	Lavander tube
Fetal Screen	Lavander tube
Anti A1 Lectin	Lavander tube
Antibody Screening	Lavander tube
Antibody Identification	Lavander tube
Antibody Titers	Lavander tube
Elution	Lavander tube
Antigen Testing	Lavander tube
Crossmatch	Lavander tube
Transfusion Reactions	Lavander tube

Molecular Diagnostics Laboratory

General Information

Address: Westchester Medical Center
Department of Pathology Molecular/Virology Lab
Macy Pavilion, RM 1447, 1455 & 1391
100 Woods Road
Valhalla, NY 10595

Laboratory Phone # (914) 493-1090

Open Hours: 7 days/wk, 8:00AM - 10:00 PM

Laboratory Staff and Contact Information

Name	Title	Phone #
Humayun Islam, M.D., Ph.D	Director, Laboratory Services	(914) 493-6680
Vishnu Chaturvedi, Ph.D, FECMM, FADLM	Chief Microbiology and Molecular Diagnostics	(914)-493-8914
Rocky Ganthier, MPH, MBA, HTL (ASCP)	Administrative Lab Director	(845)-242-1428
Nardia Estiverne HT (ASCP) M.S, B.S	Manager, Clinical Pathology	(914) 493-5876
Christine Zeren, MT(ASCP)	Supervisor Molecular	(914) 493-5631
Dr. Jian Zhuge	Assistant Chief of Molecular/Virology	(914) 493-8520
Virology Lab Phone		(914) 493-1090

Molecular Diagnostics Laboratory Test Menu

Molecular Test Name[$]	Test Code[$]	Acceptable Specimen*	Test Schedule	Turn-Around-Time
Babesia microti DNA PCR	BABDP	EDTA blood (2ml)	Mon & Thur	1-4 days
C. difficile DNA PCR	CDPCR	Stool, liquid or soft (5 g or 5 ml)	Daily, 7 days/wk	1 day
HBV DNA viral load	HBVQP	EDTA blood (5ml) or plasma (2ml)	Mon & Thur	1-5 days
HCV RNA viral load	HCVQP	EDTA blood (5ml) or plasma (2ml)	Tue, Fri	1-5 days
HIV-1 RNA viral load	HIVQP	EDTA blood (5ml) or plasma (2ml)	Mon, Wed	1-5 days
CMV DNA quant. PCR	CMVQR	EDTA blood (5ml) or plasma (2ml)	M-F, Daily	1-3 days
EBV DNA viral load	EBVQR	EDTA blood (3ml) or plasma (1ml)	Mon, Wed, Fri	1-3 days
BKV DNA viral load-Plasma	BKVQR	EDTA blood (3ml) or plasma (1ml)	Mon, Wed, Fri	1-3 days
BKV DNA viral load-Urine	BKVQU	Urine (10ml)	Mon, Wed, Fri	1-3 days
SARS-CoV-2 PCR, Roche	COVQL	Nasopharyngeal Swab	Daily	1-3 days
SARS-CoV-2 PCR, Cepheid	COVCP	Nasopharyngeal Swab	Daily	2 hours
SARS-CoV-2/Flu/RSV PCR	CQUAD	Nasopharyngeal Swab	Daily	2 hours
Meningitis/Encephalitis Multiplex PCR, CSF	MEPCR	CSF (Non-centrifuged, lumbar puncture only) 1-2ml	Daily	3 hours
Respiratory Multiplex PCR	RMPCV	Nasopharyngeal swab	Daily	2 hours
Gastrointestinal Multiplex PCR	GIPCR	Stool in FecalSwab™ Collection Tube	Daily	1 day
Factor V Leiden mutation	FVLED	EDTA blood (2ml)	M-F, Daily	1-3 days
Prothrombin (FII) mutation	PROMU	EDTA blood (2ml)	M-F, Daily	1-3 days
JAK2 V617 mutation	JAK2V	EDTA blood or bone marrow (2ml)	Variable	1-7 days

* Refer to the enclosed instructions for more detail information.

[$] For outpatient, please order test by writing test name or test code listed above on the requisition form.

(Last Updated: 10/2023)

Test Name:	Babesia microti DNA PCR
Test Code:	BABDP
CPT:	87798
Synonyms:	*Babesia* PCR; *B. microti* DNA PCR, qualitative
Test Include:	Nucleic acid amplification test for detection of *B. microti* DNA in blood
Laboratory:	WMC Molecular Diagnostics
Availability:	Monday and Thursday
Turnaround Time:	1-5 days
Specimen:	EDTA whole blood
Volume:	2 ml blood
Minimum Volume:	0.5 ml blood
Container:	Lavender top (EDTA) tube
Collection:	Collect 2 ml EDTA whole blood and transport to laboratory at room temperature within 24 h of collection, or keep specimen refrigerated.
Storage Instruction:	Keep specimen refrigerated after receiving in the lab. Specimens should be aliquoted and stored at least two aliquots with 200 ul each at -20C or below if not tested within 7 days.
Specimen Rejection:	Blood collected in green top (heparin) tube; inadequate specimen volume; leaking specimen; improper storage, excessive delay in transport; specimen with no label or incomplete label that does not have essential patient identification information.
Reference Range:	Negative
Linearity Range:	N/A
Clinical Use:	This is a qualitative assay for rapid detection of *Babesia microti* DNA in human EDTA blood specimens collected from patients suspected of having babesiosis and other tick-borne diseases. It is intended to use as an aid in the diagnosis and management of human babesiosis.
Limitation:	This assay has been validated only for whole blood specimens using EDTA as anticoagulant. The performances of the assay for whole blood specimens using other anticoagulants and other specimen types (i.e., plasma, serum, body fluids) are not established. The test has a limit detection of 0.000065% parasitemia (3-7 parasites/µl of blood). Patients infected with *B. microti* but have an extremely low parasitemia may not be detected. A negative PCR result cannot rule out the diagnosis of babesiosis. New *Babesia* species or rare *B. microti* variants (mutants at the primer or probe-binding sites) may not be detected. Microscopic examination of Giemsa stained smears are always recommended for patients suspected with Babesiosis and other blood parasitic infections.
Methodology:	Real-time PCR, qualitative
Additional Information:	The *Babesia microti* DNA PCR is a rapid, multiplex real-time PCR assay performed on the 7500 Fast Dx Real-Time PCR System. The assay utilizes real-time PCR to amplify simultaneously a portion of the 18S rDNA sequences specific for *Babesia microti* and a fragment of human DNA as internal control. The test was developed and validated for in vitro diagnostic use; its performance characteristics were established by the Department of Pathology Laboratory.

Test Name:	Clostridium difficile toxigenic DNA PCR
Test Code:	CDPCR
CPT:	87493
Synonyms:	*C. difficile* PCR; *C. difficile* DNA real-time PCR; *C. difficile/Epi Assay*
Test Include:	Nucleic acid amplification for detection of *C. difficile* toxigenic gene B (*ctdB*)
Laboratory:	Molecular Diagnostics
Availability:	8am-8pm everyday
Turnaround Time:	1 day
Specimen:	Stool, unformed (liquid or soft)
Volume:	5 ml of liquid stool, or 5 gram unformed stool.
Minimum Volume:	0.5 ml of liquid stool, or 0.5 gram unformed stool.
Container:	Clean container. A sterile container is recommended.
Collection:	Collect 5 grams **unformed stool** or 5 ml of **liquid stool** specimen in a clean container. A minimum of 0.5 g or 0.5 ml are required. *An unformed stool is defined as a stool that takes the shape of the container.* Deliver specimens to the laboratory in room temperature or refrigerated in 2 h.
Storage Instruction:	Store stool specimens at a refrigerator before testing. Store specimen in the lab at 2-8°C before testing. The specimen is stable for up to 5 days when stored at 2-8°C, or for up to 24 hours when kept at room temperature (20-30°C)
Specimen Rejection:	Formed stool specimens; duplicate stool specimens within 7 days; leaking specimen; improper storage, excessive delay in transport; Unlabeled or inadequate labeled specimen.
Reference Range:	Negative
Linearity Range:	N/A
Clinical Use:	This test is intended for use as an aid in the diagnosis of *C. difficile* infection (CDI) and *C. difficile* associated disease (CDAD). **Request this test only in patients with clinically significant diarrhea (≥3 loose stools over 1–2 days). ONE STOOL SPECIMEN** per patient within 7 days is recommended.
Limitation:	This test is not intended for testing of cure in patients with CDI or CDAD. Healthy neonates and children ≤ 1 year of age have high rates of colonization with toxigenic *C. difficile*. Testing in patients ≤1-year-old is not recommended and requires ID approval.
Methodology:	Real-time PCR, qualitative
Additional Information:	The test is performed using the Cepheid GeneXpert® test system for detection of the *C. difficile* toxin B gene sequences. Although the 027/NAP1/BI strains can be identified, detection of 027/NAP1/BI strains of *C. difficile* is presumptive and is solely for epidemiological purposes and is not intended to guide or monitor treatment for *C. difficile* infections. To get timely test report, deliver specimen to the lab before 9:00AM or 1:00PM on weekday for the same day result.

Test Name:	HBV DNA Quantitative PCR
Test Code:	HBVQP
CPT:	87517
Synonyms:	HBV DNA viral load; Hepatitis B virus DNA quantitation
Test Include:	Nucleic acid amplification test for quantitating HBV DNA in plasma
Laboratory:	Molecular Diagnostics
Availability:	Twice per week (usually performed on Monday and Thursday)
Turnaround Time:	1-5 days
Specimen:	EDTA blood
Volume:	4-5 ml blood (2 ml plasma)
Minimum Volume:	2 ml blood (0.65 ml plasma)
Container:	Lavender top (EDTA) tube
Collection:	Whole blood should be collected in sterile tubes using EDTA as the anticoagulant.
Storage Instruction:	Whole blood in sterile tubes using EDTA as the anticoagulant may be stored and/or transported for up to 24 hours at 2°C to 25°C prior to plasma preparation. Separate plasma from whole blood by centrifugation at 800-1,600 g for 20 min at room temperature. Transfer plasma to a sterile polypropylene tube. Upon separation plasma samples may be stored in secondary tubes for up to 6 days at 2°C to 8°C or up to 12 weeks at ≤ -18°C. For long-term storage up to 6 months, temperatures at ≤ -60°C are recommended. Plasma samples are stable for up to four freeze/thaw cycles when frozen at ≤ -18°C.
Specimen Rejection:	Blood collected in green top (heparin) tube; inadequate specimen volume; plasma not separated from blood within 24 h of collection; leaking specimen; improper storage, excessive delay in transport; unlabeled or inadequate labeled specimen will not be processed unless the discrepancy can be corrected.
Reference Range:	Not Detected
Linearity Range:	10.00 - 1,000,000,000 IU/mL (1.00 - 9.00 log10 IU/mL)
Clinical Use:	This test is intended for use as an aid in the management of patients with chronic HBV infection undergoing antiviral therapy. It is not intended for use as a screening test for the presence of HBV in blood or blood products or as a diagnostic test to confirm the presence of HBV infection.
Limitation:	This test has been validated for use with only human plasma collected in EDTA anticoagulant. Testing of other specimen types may result in inaccurate results.
Methodology:	Real-time PCR
Additional Information:	The test is performed using Roche Cobas® 6800 HBV Test. It is an in vitro nucleic acid amplification test that quantitates all major genotypes of HBV.

Test Name:	HCV RNA Quantitative PCR
Test Code:	HCVQP
CPT:	87522
Synonyms:	Hepatitis C virus RNA quantitation; HCV RNA viral load
Test Include:	Nucleic acid amplification test for quantitating HCV RNA in plasma
Laboratory:	Molecular Diagnostics
Availability:	Tue and Fri
Turnaround Time:	1-5 days
Specimen:	EDTA blood
Volume:	4-5 ml blood (2 ml plasma)
Minimum Volume:	2 ml blood (0.65 ml plasma)
Container:	Lavender top (EDTA) tube
Collection:	Whole blood should be collected in sterile tubes using EDTA as the anticoagulant.
Storage Instruction:	Whole blood in sterile tubes using EDTA as the anticoagulant may be stored and/or transported for up to 24 hours at 2°C to 25°C prior to plasma preparation. Separate plasma from whole blood by centrifugation at 800-1,600 g for 20 min at room temperature. Transfer plasma to a sterile polypropylene tube. Upon separation plasma samples may be stored in secondary tubes for up to 6 days at 2°C to 8°C or up to 12 weeks at ≤ -18°C. For long-term storage up to 6 months, temperatures at ≤ -60°C are recommended. Plasma samples are stable for up to four freeze/thaw cycles when frozen at ≤ -18°C.
Specimen Rejection:	Blood collected in green top (heparin) tube; inadequate specimen volume; plasma not separated from blood within 24 h of collection; leaking specimen; improper storage, excessive delay in transport; unlabeled or inadequate labeled specimen will not be processed unless the discrepancy can be corrected.
Reference Range:	Not Detected
Linearity Range:	15.00 - 100,000, 000 IU/mL (1.18 - 8.00 log10 IU/mL)
Clinical Use:	This test is intended for use as an aid in the management of HCV-infected individuals undergoing anti-viral therapy. It is not intended for use as a screening test for the presence of HCV in blood or blood products or as a diagnostic test to confirm the presence of HCV infection. The detection and quantitation of HCV RNA offers a measure of active viremia in antibody-positive chronic HCV infected patients undergoing antiviral therapy. Current guidelines support the importance of measuring HCV RNA levels at baseline prior to treatment (baseline), at intervals during treatment (4, 12, 24 weeks) to assess antiviral response, and after treatment is completed to assess the efficacy of the treatment.
Limitation:	This assay can detect HCV RNA in EDTA plasma at concentration of 11 IU/ml with a positivity rate greater than 95% using the first WHO International Standard. The overall limit of detection for HCV genotypes 1 to 6 using clinical specimens is 15 IU/mL. This test has been validated for use with only human plasma with EDTA-anticoagulant.
Methodology:	Real-time PCR
Additional Information:	The test is performed using Roche Cobas® 6800 HCV. It is an in vitro nucleic acid amplification test that quantitates all major subtypes of HCV.

Test Name:	HIV-1 RNA Quantitative PCR
Test Code:	HIVQP
CPT:	87536
Synonyms:	HIV-1 RNA viral load; Human immunodeficiency virus-1 RNA quantitation
Test Include:	Nucleic acid amplification test for quantitating HIV-1 RNA in plasma
Laboratory:	Molecular Diagnostics
Availability:	Mon and Wed
Turnaround Time:	1-5 days
Specimen:	EDTA blood
Volume:	4-5 ml blood (2 ml plasma)
Minimum Volume:	2 ml blood (0.65 ml plasma)
Container:	Lavender top (EDTA) tube
Collection:	Whole blood should be collected in sterile tubes using EDTA as the anticoagulant.
Storage Instruction:	Whole blood collected in EDTA tubes may be stored and/or transported for up to 24 hours at 2°C to 25°C prior to plasma preparation. Separate plasma from whole blood by centrifugation at 800-1,600 g for 20 min at room temperature. Transfer plasma to a sterile polypropylene tube upon separation EDTA plasma samples may be stored in secondary tubes for up to 6 days at 2°C to 8°C or up to 12 weeks at ≤ -18°C. For long-term storage up to 6 months, temperatures at ≤ -60°C are recommended. Plasma samples are stable for up to four freeze/thaw cycles when stored frozen at ≤ -18°C.
Specimen Rejection:	Blood collected in green top (heparin) tube; inadequate specimen volume; plasma not separated from blood within 24 h of collection; leaking specimen; improper storage, excessive delay in transport; unlabeled or inadequate labeled specimen will not be processed unless the discrepancy can be corrected.
Reference Range:	Not Detected
Linearity Range:	20.00 - 10,000,000 copies/mL (1.30 - 7.00 log10 copies/mL)
Clinical Use:	This test is intended for use in conjunction with clinical presentation and other laboratory markers of disease progress for the clinical management of HIV-1 infected patients. The test can be used to assess patient prognosis by measuring the baseline HIV-1 RNA level or to monitor the effects of antiretroviral therapy by measuring changes in EDTA plasma HIV-1 RNA levels during the course of antiretroviral treatment.
Limitation:	This test is not intended for use as a screening test for the presence of HIV-1 in blood or blood products or as a diagnostic test to confirm the presence of HIV-1 infection. Its performance has neither been evaluated with specimens containing HIV-1 group N, nor with specimens containing HIV-2.
Methodology:	Real-time PCR
Additional Information:	The test is performed using Roche Cobas® 6800 HIV-1. It is an in vitro nucleic acid amplification test that quantitates all major subtypes of HIV-1 group M and HIV-1 group O. One copy of HIV-1 RNA is equivalent to 1.67 International Units (IU) based on the WHO 1st International Standard for HIV-1 RNA.

Test Name:	**Epstein-Barr virus (EBV) DNA Quantitative PCR**
Test Code:	EBVQR
CPT:	87799
Synonyms:	EBV DNA viral load; EBV DNA quant real-time PCR; EBV PCR
Test Include:	Nucleic acid amplification test for quantitating EBV DNA in plasma
Laboratory:	WMC Molecular Diagnostics
Availability:	**M, W, F**
Turnaround Time:	1-3 days
Specimen:	EDTA blood; EDTA plasma
Volume:	3 ml EDTA-blood (1.0 ml plasma)
Minimum Volume:	1.0 ml EDTA-blood (0.35 ml plasma)
Container:	Lavender top (EDTA) tube
Collection:	Whole blood should be collected in sterile tubes using EDTA as the anticoagulant.
Storage Instruction:	Whole blood using EDTA as the anticoagulant may be stored and/or transported for up to 24 hours at 2-25°C prior to plasma preparation. Separate plasma from whole blood by centrifugation at 800-1,600 g for 20 min at room temperature. Upon separation plasma samples may be stored for 24 hours at 2-30°C in primary or secondary tubes. Storage in primary or secondary tubes for up to 6 days at 2-8°C. Storage in secondary tubes for up to 6 months at -15°C to -80°C. Plasma samples are stable for up to four freeze/thaw cycles when frozen at -15°C to -80°C.
Specimen Rejection:	Blood collected in green top (heparin) tube; inadequate specimen volume; plasma not separated from blood within 24 h of collection; leaking specimen; improper storage, excessive delay in transport; unlabeled or incomplete label that does not have essential patient identification information will not be processed unless the discrepancy can be corrected.
Reference Range:	Not Detected
Linearity Range:	35.00 - 100,000,000 IU/mL (1.54 -8.00 log10 IU/mL)
Clinical Use:	This test is intended for use in the detection and quantification of EBV specific DNA in human blood specimens. Quantitative EBV DNA PCR testing provides a “viral load” value useful for the early detection and management of EBV infections and diseases. EBV is intended for use as an aid in the management of EBV in transplant patients. In patients undergoing monitoring of EBV, serial DNA measurements can be used to indicate the need for potential treatment changes and to assess response to treatment.
Limitation:	The performance characteristics were established only for human EDTA plasma samples; The limit of quantitation (LOQ) of this assay is 35 IU/mL (or 1.54 log10 IU/mL) of plasma. Recommendations regarding monitoring EBV viral load post-transplant and medically relevant EBV DNA thresholds vary among transplant type and transplant institutions. While elevated EBV viral load may suggest post-transplant lymphoproliferative disorders (PTLD), the diagnosis of PTLD is made based on histological evaluation of tissue biopsy. PTLD may be present without detectable EBV viral load, and an increase in EBV viral load is not necessarily diagnostic of PTLD.Due to the potential for variability in EBV DNA measurements across different EBV assays, it is recommended that the same device be used for the serial quantitation of EBV DNA when managing individual patients.
Methodology:	Real-time PCR, quantitative
Additional Information:	The test is performed using the Roche Cobas® 6800 EBV Test kit. Result of EBV DNA quantitative PCR is reported as International Unit (IU) per mL.

Test Name:	Cytomegalovirus (CMV) DNA Quantitative PCR
Test Code:	CMVQR
CPT:	87497
Synonyms:	CMV DNA viral load; CMV DNA quant real-time PCR; CMV PCR
Test Include:	Nucleic acid amplification test for quantitating CMV DNA in plasma
Laboratory:	WMC Molecular Diagnostics
Availability:	**M-F, daily**
Turnaround Time:	1-3 days
Specimen:	EDTA blood; EDTA plasma
Volume:	4-5 ml EDTA-blood (2.0 ml plasma)
Minimum Volume:	2.0 ml EDTA-blood (0.5 ml plasma)
Container:	Lavender top (EDTA) tube
Collection:	Whole blood should be collected in sterile tubes using EDTA as the anticoagulant. **Specimen must be delivered to the Received Lab by 9:00AM on a test day if the same day result is desired.**
Storage Instruction:	Whole blood using EDTA as the anticoagulant may be stored and/or transported for up to 36 hours at 2-25°C prior to plasma preparation. Separate plasma from whole blood by centrifugation at 800-1,600 g for 20 min at room temperature. Plasma samples may be stored and/or transported for up to 6 days at 2-8°C or up to 12 weeks at -20°C ± 2°C. For long-term storage up to 6 months, temperatures at -75°C ± 15°C are recommended. Plasma samples are stable for up to four freeze/thaw cycles when frozen at -20°C ± 2°C.
Specimen Rejection:	Blood collected in green top (heparin) tube; inadequate specimen volume; plasma not separated from blood within 36 h of collection; leaking specimen; improper storage, excessive delay in transport; unlabeled or incomplete label that does not have essential patient identification information will not be processed unless the discrepancy can be corrected.
Reference Range:	Not Detected
Linearity Range:	34.50 - 10,000,000 IU/mL (1.54 -7.00 log10 IU/mL)
Clinical Use:	This test is intended for use in the detection and quantification of CMV specific DNA in human blood specimens. Quantitative CMV DNA PCR testing provides a “viral load” value useful for the early detection and management of CMV infections and diseases. It has been used to demonstrate the relationship between viral load and risk of CMV disease in several studies. It has been reported that patients with a baseline CMV viral load <18,200 IU/mL are likely to resolve CMV disease more rapidly than those who have a higher baseline viral load.
Limitation:	The performance characteristics were established only for human EDTA plasma samples; The limit of quantitation (LOQ) of this assay is 34.5 IU/mL (or 1.54 log10 IU/mL) of plasma. The clinical cutoff viral load for differentiating CMV infection from disease and for initiating anti-CMV therapy has not established. The CMV viral load results may not be comparable among different laboratories since various reference materials may be used as the assay calibrators; however, monitoring of the CMV viral load results from the same laboratory has shown significant value in patient management.
Methodology:	Real-time PCR, quantitative
Additional Information:	The test is performed using the Roche Cobas® 6800 CMV Test kit. Result of CMV DNA quantitative PCR is reported as International Unit (IU) per mL, which is traceable to the human CMV W.H.O. International Standard for Nucleic Acid Amplification Techniques (1st International Standard, NIBSC No. 09/162).

Test Name:	**BK Virus (BKV) DNA Quantitative PCR-Plasma**
Test Code:	BKVQR
CPT:	87799
Synonyms:	BKV DNA viral load; BKV DNA quant real-time PCR; BKV PCR
Test Include:	Nucleic acid amplification test for quantitating BKV DNA in plasma
Laboratory:	WMC Molecular Diagnostics
Availability:	**M, W, F**
Turnaround Time:	1-3 days
Specimen:	EDTA blood; EDTA plasma
Volume:	3 ml EDTA-blood (1.0 ml plasma)
Minimum Volume:	1.0 ml EDTA-blood (0.35 ml plasma)
Container:	Lavender top (EDTA) tube
Collection:	Whole blood should be collected in sterile tubes using EDTA as the anticoagulant.
Storage Instruction:	Whole blood using EDTA as the anticoagulant may be stored and/or transported for up to 24 hours at 2-25°C prior to plasma preparation. Separate plasma from whole blood by centrifugation at 800-1,600 g for 20 min at room temperature. Upon separation plasma samples may be stored for 24 hours at 2-30°C in primary or secondary tubes. Storage in primary or secondary tubes for up to 6 days at 2-8°C. Storage in secondary tubes for up to 6 months at -15°C to -80°C. Plasma samples are stable for up to four freeze/thaw cycles when frozen at -15°C to -80°C.
Specimen Rejection:	Blood collected in green top (heparin) tube; inadequate specimen volume; plasma not separated from blood within 24 h of collection; leaking specimen; improper storage, excessive delay in transport; unlabeled or incomplete label that does not have essential patient identification information will not be processed unless the discrepancy can be corrected.
Reference Range:	Not Detected
Linearity Range:	21.50 - 100,000,000 IU/mL (1.33 -8.00 log10 IU/mL)
Clinical Use:	This test is intended for use in the detection and quantification of BKV specific DNA in human blood specimens. BKV is intended for use as an aid in the management of BKV in transplant patients. In patients undergoing monitoring of BKV in EDTA plasma, serial DNA measurements can be used to indicate the need for potential treatment changes and to assess viral response to treatment.
Limitation:	The performance characteristics were established only for human EDTA plasma samples; The limit of quantitation (LOQ) of this assay is 21.5 IU/mL (or 1.33 log10 IU/mL) of plasma. Due to the potential for variability in BKV DNA measurements across different BKV assays, it is recommended that the same device be used for the serial quantitation of BKV DNA when managing individual patients.
Methodology:	Real-time PCR, quantitative
Additional Information:	The test is performed using the Roche Cobas® 6800 BKV Test kit. Result of BKV DNA quantitative PCR is reported as International Unit (IU) per mL.

Test Name:	BK Virus (BKV) DNA Quantitative PCR-Urine
Test Code:	BKVQU
CPT:	87799
Synonyms:	BKV DNA viral load; BKV DNA quant real-time PCR; BKV PCR
Test Include:	Nucleic acid amplification test for quantitating BKV DNA in urine
Laboratory:	WMC Molecular Diagnostics
Availability:	**M, W, F**
Turnaround Time:	1-3 days
Specimen:	Urine; Urine stabilized in Cobas® PCR Media
Volume:	10-50 ml Urine
Minimum Volume:	If not enough volume of urine (4.3 mL) is available for diluting in the Cobas® PCR Urine Sample tube, urine may be diluted manually with Cobas® PCR Media. Before testing with Cobas® BKV, at least 0.5 mL of neat urine must be manually diluted in Cobas® PCR Media (1:1 ratio).
Container:	Urine collection cup or Cobas® PCR Media Tube
Collection:	10 to 50 mL of the initial urine stream into a urine collection cup. Urine specimens must be transferred into the Cobas® PCR Media tube (stabilized) immediately.
Storage Instruction:	If specimens cannot be transferred immediately, they can be stored at 2ºC to 30ºC for up to 24 hours. Once the urine samples are stabilized in Cobas® PCR Media, samples may be stored for up to 90 days at 2-30°C.
Specimen Rejection:	Untested urine specimens must show the top of the liquid level between the two black lines on the Cobas® PCR Media tube label window. If the liquid level is above or below these lines, the specimen has not been collected properly and cannot be used for testing. Leaking or broken tube, inadequate storage or transport.
Reference Range:	Not Detected
Linearity Range:	200 - 100,000,000 IU/mL (2.30-8.00 log10 IU/mL)
Clinical Use:	This test is intended for use in the detection and quantification of BKV specific DNA in human urine specimens. BKV is intended for use as an aid in the management of BKV in transplant patients. In patients undergoing monitoring of BKV in EDTA plasma, serial DNA measurements can be used to indicate the need for potential treatment changes and to assess viral response to treatment.
Limitation:	The limit of quantitation (LOQ) of this assay is 200 IU/mL (or 2.30 log10 IU/mL) of urine. Due to the potential for variability in BKV DNA measurements across different BKV assays, it is recommended that the same device be used for the serial quantitation of BKV DNA when managing individual patients.
Methodology:	Real-time PCR, quantitative
Additional Information:	The test is performed using the Roche Cobas® 6800 BKV Test kit. Result of BKV DNA quantitative PCR is reported as International Unit (IU) per mL.

Test Name:	**SARS-CoV-2 PCR, Roche**
Test Code:	COVQL
CPT:	87635
Synonyms:	COBAS SARS-CoV-2 RT-PCR
Test Include:	Qualitative detection and identification SARS-CoV-2
Laboratory:	WMC Molecular/Virology Laboratory
Availability:	Daily
Turnaround Time:	1-3 day
Specimen:	Nasopharyngeal swab
Volume:	3 ml
Minimum Volume:	0.6 ml
Container:	UTM/VTM tube
Collection:	Collect one nasopharyngeal swab (NPS) and place swab specimen to one universal transport medium (UTM) tube provided by the laboratory.
Storage Instruction:	Specimen collected in UTM or VTM should be stored at 2-25ºC and processed within 48 hours. If longer storage is required, the specimens should be kept at -20 ºC or below.
Specimen Rejection:	Any non-nasopharyngeal swab specimens; NPS not in VTM tube; inadequate specimens; leaking specimens; improper storage; excessive delay in transport; specimens with no label or incomplete label; adult inpatients without Infectious Disease approval.
Reference Range:	Not Detected
Linearity Range:	N/A
Clinical Use:	A Detected result is considered a positive test result for COVID-19. This indicates that RNA from SARS-CoV-2 was detected and that the patient is considered infected with the virus and presumed to be contagious.
Limitation:	A Not Detected (negative) test result for this test means that SARS-CoV-2 RNA was not present in the specimen above the limit of detection. However, it does not rule out the possibility of COVID-19 and should not be used as the sole basis for patient management decisions.
Methodology:	An Indeterminate result means not all of the testing targets were detected. This could be due to a sample with viral concentrations near the limit of detection of the test or other factors. An additional sample collection may be considered.
Additional Information:	Detection of SARS-CoV-2 RNA may be affected by sample collection methods, patient factors (e.g., presence of symptoms), and/or stage of infection.

Test Name:	**CEPHEID SARS-CoV-2 plus PCR**
Test Code:	COVCP
CPT:	87635
Synonyms:	Cepheid SARS-CoV-2 plus RT-PCR
Test Include:	Qualitative detection and identification SARS-CoV-2
Laboratory:	WMC Molecular/Virology Laboratory
Availability:	Daily
Turnaround Time:	2 Hours
Specimen:	Nasopharyngeal swab
Volume:	3 ml
Minimum Volume:	0.3 ml
Container:	UTM/VTM tube
Collection:	Collect one nasopharyngeal swab (NPS) and place swab specimen to one universal transport medium (UTM) tube provided by the laboratory.
Storage Instruction:	Specimens can be stored at room temperature (15-30°C) for up to 48 hours and refrigerated (2-8°C) up to seven days until testing is performed. If longer storage is required, the specimens should be kept at -20 ºC or below.
Specimen Rejection:	Any non-nasopharyngeal swab specimens; NPS not in VTM tube; inadequate specimens; leaking specimens; improper storage; excessive delay in transport; specimens with no label or incomplete labels; adult inpatients without Infectious Disease approval.
Reference Range:	Not Detected
Linearity Range:	N/A
Clinical Use:	A Detected result is considered a positive test result for COVID-19. This indicates that RNA from SARS-CoV-2 was detected and that the patient is considered infected with the virus and presumed to be contagious. A Not Detected (negative) test result for this test means that SARS-CoV-2 RNA was not present in the specimen above the limit of detection. However, it does not rule out the possibility of COVID-19 and should not be used as the sole basis for patient management decisions. An Indeterminate result means not all of the testing targets were detected. This could be due to a sample with viral concentrations near the limit of detection of the test or other factors. An additional sample collection may be considered.
Limitation:	Detection of SARS-CoV-2 RNA may be affected by sample collection methods, patient factors (e.g., presence of symptoms), and/or stage of infection. As with any molecular test, mutations within the target regions of Cobas® SARS-CoV-2 could affect primer and/or probe binding resulting in failure to detect the presence of virus.
Methodology:	Real-time PCR
Additional Information:	This test is performed using a FDA-approved (EUA) kit. Cepheid Xpert Xpress SARS-CoV-2. The test is designed to amplify and detect unique sequences in nucleocapsid (N2) and envelope (E) targets. Nasopharyngeal swab is the only type of specimen acceptable for testing.

Test Name:	**CEPHEID SARS-CoV-2/Flu/RSV plus PCR**
Test Code:	CQUAD
CPT:	87635, 87636, 0241U
Synonyms:	Cepheid SARS-CoV-2/Flu/RSV plus
Test Include:	Qualitative detection and identification SARS-CoV-2, influenza A, influenza B, and/or respiratory syncytial virus (RSV)
Laboratory:	WMC Molecular/Virology Laboratory
Availability:	Daily
Turnaround Time:	2 Hours
Specimen:	Nasopharyngeal swab
Volume:	3 ml
Minimum Volume:	0.3 ml
Container:	UTM/VTM tube
Collection:	Collect one nasopharyngeal swab (NPS) and place swab specimen to one universal transport medium (UTM) tube provided by the laboratory.
Storage Instruction:	Specimens should be processed and tested as soon as possible. If storage is required, specimen stability is as follows: - Room Temperature (15-25°C) ≤48 hours - Refrigerated (2-8°C) ≤7 days - Frozen (≤-15°C) ≤30 days
Specimen Rejection:	Any non-nasopharyngeal swab specimens; NPS not in VTM tube; inadequate specimens; leaking specimens; improper storage; excessive delay in transport; specimens with no label or incomplete labels; adult inpatients without Infectious Disease approval.
Reference Range:	Not Detected
Linearity Range:	N/A
Clinical Use:	The Xpert Xpress CoV-2/Flu/RSV plus test is a rapid, multiplexed real-time RT-PCR test intended for the simultaneous qualitative detection and differentiation of RNA from SARS-CoV-2, influenza A, influenza B, and/or respiratory syncytial virus (RSV) in nasopharyngeal swab specimens collected from individuals suspected of respiratory viral infection. An Indeterminate result means not all of the testing targets were detected. This could be due to a sample with viral concentrations near the limit of detection of the test or other factors. An additional sample collection may be considered.
Limitation:	Detection of SARS-CoV-2 RNA may be affected by sample collection methods, patient factors (e.g., presence of symptoms), and/or stage of infection. As with any molecular test, mutations within the target regions of Cobas® SARS-CoV-2 could affect primer and/or probe binding resulting in failure to detect the presence of virus.
Methodology:	Multiplex Real-time PCR
Additional Information:	This test is performed using a FDA-approved (EUA) kit. Cepheid Xpert Xpress SARS-CoV-2/Flu/RSV plus. The test is designed to amplify and detect unique sequences in the following: nucleocapsid (N) and envelope (E) and RNA-dependent RNA polymerase (RdRP) genes of the SARS-CoV-2 virus genome, influenza A matrix (M), influenza A basic polymerase (PB2), influenza A acidic protein (PA), influenza B matrix (M), influenza B non- structural protein (NS), and the RSV A and RSV B nucleocapsid. Nasopharyngeal swab is the only type of specimen acceptable for testing.

Test Name:	**Meningitis/Encephalitis Multiplex PCR, CSF**
Test Code:	MEPCR
CPT:	87483 (effective 1/1/2017)
Synonyms:	MEPCR; Meningitis/Encephalitis PCR; Meningitis PCR panel; Encephalitis PCR panel; *Escherichia coli* PCR, CSF; *Haemophilus influenzae* PCR, CSF; *Listeria monocytogenes* PCR, CSF; *Neisseria menigitidis* PCR, CSF; *Streptococcus agalactiae* PCR, CSF; *Streptococcus pneumoniae* PCR, CSF; *Cytomegalovirus* (CMV) PCR, CSF; *Enterovirus* PCR, CSF; *Herpes simplex virus 1*(HSV-1) PCR, CSF; *Herpes simplex virus 2* (HSV-2) PCR, CSF; *Human Herpesvirus 6* (HHV-6) PCR, CSF; *Human Parechovirus* PCR, CSF; *Varicella-zoster virus* (VZV) PCR, CSF; and *Cryptococcus neoformans/gattii* PCR, CSF.
Test Include:	Qualitative detection and identification of *Escherichia coli* (w/ K1 capsular antigen only), *Haemophilus influenzae, Listeria monocytogenes, Neisseria menigitidis* (encapsulated only), *Streptococcus agalactiae, Streptococcus pneumoniae*, *Cytomegalovirus (CMV), Enterovirus, Herpes simplex virus 1(HSV-1), Herpes simplex virus 2 (HSV-2), Human Herpesvirus 6 (HHV-6), Human Parechovirus, Varicella-zoster virus (VZV),* and *Cryptococcus neoformans/gattii.*
Laboratory:	WMC Virology Laboratory
Availability:	Daily
Turnaround Time:	3 Hours
Specimen:	CSF (Non-centrifuged, lumbar puncture only)
Volume:	1-2 ml
Minimum Volume:	0.5 ml
Container:	Sterile collection tube
Collection:	Collect 1-2 mL of CSF to a sterile collection tube via standard lumbar puncture. Specimens should **NOT** be centrifuged. CSF collected via medical device (e.g. shunt) is unacceptable for this test.
Storage Instruction:	Transport specimen at 4°C with ice pad (preferred) or room temperature to the laboratory as soon as possible, but no later than 24 hours after collection. If delayed transport (>1 day) is expected, keep specimen refrigerated and transport to the laboratory in 4°C.Specimens should be processed and tested with the BioFire ME panel as soon as possible. Specimen can be stored at refrigerator temperature (2-8°C) for up to 7 days from the time of collection.
Specimen Rejection:	Any non-CSF specimens; CSF specimens collected via shunt or other indwelling medical device; insufficient volume (<200 microliters); specimen without label or label lack essential patient information; other conditions specified in the laboratory QM/QC program.
Reference Range:	Not Detected
Linearity Range:	N/A
Clinical Use:	The detection of viral, bacterial and/or yeast targets provides direct evidence for the presence of individual microorganism in clinical sample and can be used as an aid for the diagnosis in individuals suspected of central nervous system (CNS) infections.
Limitation:	The performance of this test has not been established for CSF specimens from patients without signs and/or symptoms of meningitis and/or encephalitis. The viral, bacterial and yeast nucleic acids detected by this assay may persist in vivo independent of organism viability. Results from this test must be correlated with the clinical, epidemiological and other laboratory data available for evaluating the patient. A positive result does not imply that the corresponding organisms are infectious, or

are the causative agents for clinical symptoms. The detection of analyte target(s) does not rule out co-infection with other organisms.

Negative results may be due to infection with pathogens that are not detected by this test or, improper specimen collection, transport or handling. A negative result does not exclude the possibility of viral, bacterial or yeast infection.

Cross-reactivity between *Enterovirus* and *Human Rhinoviruses* may occur; caution should be exercised during specimen collection to avoid contamination with rhinoviruses associated with respiratory infection. Other possible cross-reactivity may include those between *H. influenzae* and *H. haemolyticus*, and between *C. neoformans/gattii* and *C. amylolentus*. In addition, this test cannot distinguish the latent or active infection of HHV-6 and CMV.

Only *E. coli* strains possessing the K1 capsular antigen will be detected. Only encapsulated strains of *N. meningitidis* will be detected.

Methodology: Multiplex real-time PCR

Additional Information: An Infectious Disease Approval is required for all inpatients. Consult Infectious Disease for approval prior to order this test.
This test is performed using an FDA-approved Meningitis/Encephalitis Panel kit.
CSF from lumbar puncture is the only type of specimen acceptable for testing. This test is not intended for use with CSF collected from indwelling medical devices (e.g. shunt).

Test Name:	Respiratory Multiplex PCR
Test Code:	RMPCV
CPT:	87633, 87798, 87486, 87581
Synonyms:	Respiratory panel PCR
Test Include:	Qualitative detection and identification of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), *Adenovirus, Coronavirus (229E, HKU1, NL63 and OC43), human Metapneumovirus (hMPV), human Rhinovirus/Enterovirus, Influenza virus A (subtype H1, H3 and H1/2009), Influenza virus B, Parainfluenza viruses 1-4, Respiratory syncytial virus (RSV), Bordetella pertussis, Chlamydophila penumoniae* and *Mycoplasma pneumoniae*.
Laboratory:	WMC Molecular/Virology Laboratory
Availability:	Daily
Turnaround Time:	2 Hours
Specimen:	Nasopharyngeal swab
Volume:	3 ml
Minimum Volume:	0.3 ml
Container:	UTM/VTM tube
Collection:	Collect one nasopharyngeal swab (NPS) and place swab specimen to one universal transport medium (UTM) tube provided by the laboratory.
Storage Instruction:	*At room temperature for up to 4 h*ours (15-25 °C) Refrigerated for up to 3 days (2-8 °C) Frozen (≤-15 °C or ≤-70°C) (for up to 30 days)
Specimen Rejection:	Any non-nasopharyngeal swab specimens; NPS not in VTM tube; inadequate specimens; leaking specimens; improper storage; excessive delay in transport; specimens with no label or incomplete labels; adult inpatients without Infectious Disease approval.
Reference Range:	Not Detected
Linearity Range:	N/A
Clinical Use:	The detection of respiratory virus and bacteria provides direct evidence for the presence of individual microorganism in clinical sample and can be used as an aid for the diagnosis in individuals suspected of respiratory tract infections.
Limitation:	The viral and bacterial nucleic acids detected by this assay may persist *in vivo* independent of organism viability. Results from this test must be correlated with the clinical, epidemiological and other laboratory data available for evaluating the patient. A positive result does not imply that the corresponding organisms are infectious, or are the causative agents for clinical symptoms. The detection of analyte target(s) does not rule out co-infection with other organisms. A negative result does not exclude the possibility of viral or bacterial infection. This test cannot reliably differentiate between human Rhinovirus and Enterovirus. The Coronavirus OC43 assay may cross-react with Coronavirus HKU1. Recent administration of a nasal influenza vaccine may cause false positive results for Influenza A and/or Influenza B.
Methodology:	Multiplex real-time PCR
Additional Information:	This test is performed using a FDA-approved Respiratory Panel kit. BioFire Respiratory Panel 2.1 (RP 2.1). Nasopharyngeal swab is the only type of specimen acceptable for testing.

Test Name:	**Gastrointestinal Multiplex PCR**
Test Code:	GIPCR
CPT:	87507
Synonyms:	Gastrointestinal panel
Test Include:	Qualitative detection and identification of *Campylobacter* (C. Jejuni/C.coli/C. upsaliensis), *Plesiomonas shigelloides, Salmonella, Vibrio (V. parahaemolyticus/V. vulnificus/v. cholera, including specific I.D. of Vibrio cholera), Yersinia enterocolitica, Enteroaggregative Escherichia coli (EAEC), Enteropathogenic Escherichia coli (EPEC), Enterotoxigenic Escherichia coli (ETEC) lt/st, Shiga-like toxin-producing Escherichia coli (STEC) stx1/stx2 (including specific identification of the E. coli O157 serogroup within STEC), Shigella/Enteroinvasive Escherichia coli (EIEC), Cryptosporidium, Cyclospora cayetanesis, Entamoeba histolytica, Giardia lamblia, Adenovirus* F40/41*, Astrovirus, Norovirus* GI/GII*, Rotavirus A, Sapovirus* (Genogroups I, II, IV and V).
Laboratory:	WMC Virology Laboratory
Availability:	Daily
Turnaround Time:	1 day
Specimen:	Stool in FecalSwab™ Collection Tube / Cary-Blair Transport Media
Volume:	2 ml containing 0.5 g of soft stool or 0.5-mL of liquid stool
Minimum Volume:	0.5 ml (or 0.5 gram) stool
Container:	Sterile collection tube; FecalSwab™ Collection Tube / Cary-Blair Transport Media
Collection:	Collect fresh stool to a sterile container and deliver to the lab within 2 hrs of collection; or use flocked swab provided in the FecalSwab collection kit obtained from the laboratory to transfer 0.5-mL of liquid or 0.5 gram of soft stool specimen to the FecalSwab collection tube containing 2-mL of Carey-Blair transport medium.
Storage Instruction:	At room temperature for up to 4 days. Refrigerated for up to 4 days.
Specimen Rejection:	Any non-stool specimens; stool specimens collected in the wrong collection media; stool samples in fixative (e.g., formalin or polyvinyl alcohol; PVA); insufficient volume; specimen without label or label lack essential patient information; stool in FecalSwab transport tube for >2 days at room temperature or >4 days at 2-8°C; other conditions specified in the laboratory QM/QC program. Duplicate stool specimen collected within 7 days will be rejected if not justified by the requesting physician.
Reference Range:	Not Detected
Linearity Range:	N/A
Clinical Use:	The detection of viral, bacterial and/or parasitic targets provides direct evidence for the presence of individual microorganism in clinical sample and can be used as an aid for the diagnosis in individuals suspected of gastrointestinal infections.
Limitation:	The viral, bacterial and parasitic nucleic acids detected by this assay may persist in vivo independent of organism viability. Results from this test must be correlated with the clinical, epidemiological and other laboratory data available for evaluating the patient. A positive result does not imply that the corresponding organisms are infectious, or are the causative agents for clinical symptoms. The detection of analyte target(s) does not rule out co-infection with other organisms. Negative results may be due to infection with pathogens that are not detected by this test or, improper specimen collection, transport or handling. A negative result does not exclude the possibility of viral, bacterial or parasitic infection. This test will only detect Enteroaggregative *E.coli* (EAEC) strains carrying the *aggR* and/or *aatA* gene on the pAA plasmid. Please request the C. difficile PCR to be performed on the Cepheid GeneXpert system if an infection of *C. difficile* is suspected.

Methodology: Multiplex real-time PCR

Additional Information: **An Infectious Disease Approval is required for all inpatients.** Consult Infectious Disease for approval prior to order this test. Request without ID/GI approval will be rejected and requesting physician will be notified.

This test is performed using a FDA-approved Gastrointestinal Panel kit. Rectal/stool swab in Cary Blair medium is the only type of specimen acceptable for testing. Call Virology Laboratory at (914) 493-1090 for more information.

Test Name:	**Factor V Leiden Mutation PCR**
Test Code:	FVLED
CPT:	81241
Synonyms:	Factor V mutation; Factor V Leiden mutation
Test Include:	Qualitative detection and genotyping
Laboratory:	WMC Molecular Diagnostics
Availability:	Monday - Friday
Turnaround Time:	1-3 days
Specimen:	EDTA whole blood
Volume:	2 ml blood
Minimum Volume:	0.5 ml blood
Container:	Lavender top (EDTA) tube
Collection:	Collect 2 ml EDTA whole blood and transport to laboratory at room temperature within 6 h of collection, or keep specimen refrigerated.
Storage Instruction:	Keep specimen refrigerated after receiving in the lab. Do not centrifuge and separate plasma.
Specimen Rejection:	Order without signed copy of Informed consent form (HC-1070-10); Blood collected in green top (heparin) tube; inadequate specimen volume; leaking specimen; improper storage, excessive delay in transport; specimen with no label or incomplete label that does not have essential patient identification information.
Reference Range:	Factor V Leiden Mutation Negative
Linearity Range:	N/A
Clinical Use:	Factor V Leiden is the most common inherited cause of thrombophilia. A point mutation at position 1691 of the Factor V gene, referred to as Factor V Leiden mutation, causes an Arginine to Glutamine substitution at position 506 (R506Q) in the Factor V protein and renders it partially resistant to inactivation by activated protein C (APC). Individuals who have one copy of the mutation (heterozygous) are at a 4-8-fold increased risk of thrombosis and individuals who have two copies of the mutation (homozygous) are at a 40-80-fold increased risk of thrombosis.
Limitation:	Since genetic variation and other factors can affect the accuracy of direct mutation testing, these results should be interpreted in conjunction with other clinical and laboratory data.
Methodology:	Real-time PCR, qualitative
Additional Information:	**Signed WMC Informed Consent Form (HC-1070-10) is required for this test.** This test is performed using the Cepheid Xpert® Factor II & Factor V Assay kit.

Test Name:	**Prothrombin G20210A Mutation PCR**
Test Code:	PROMU
CPT:	81240
Synonyms:	Factor II mutation; Prothrombin mutation
Test Include:	Qualitative detection and genotyping
Laboratory:	WMC Molecular Diagnostics
Availability:	Monday - Friday
Turnaround Time:	1-3 days
Specimen:	EDTA whole blood
Volume:	2 ml blood
Minimum Volume:	0.5 ml blood
Container:	Lavender top (EDTA) tube
Collection:	Collect 2 ml EDTA whole blood and transport to laboratory at room temperature within 6 h of collection, or keep specimen refrigerated.
Storage Instruction:	Keep specimen refrigerated after receiving in the lab. Do not centrifuge and separate plasma.
Specimen Rejection:	Order without signed copy of Informed consent form (HC-1070-10); Blood collected in green top (heparin) tube; inadequate specimen volume; leaking specimen; improper storage, excessive delay in transport; specimen with no label or incomplete label that does not have essential patient identification information.
Reference Range:	Prothrombin G20210A Mutation Negative
Linearity Range:	N/A
Clinical Use:	The G20210A mutation in the Factor II (Prothrombin) gene is the second most common inherited risk factor for thrombosis. Individuals who have one copy of the mutation are at a 3-6-fold increased risk for thrombosis and individuals who have two copies are at an even more increased risk.
Limitation:	Since genetic variation and other factors can affect the accuracy of direct mutation testing, these results should be interpreted in conjunction with other clinical and laboratory data.
Methodology:	Real-time PCR, qualitative
Additional Information:	**Signed WMC Informed Consent Form (HC-1070-10) is required for this test.** This test is performed using the Cepheid Xpert® Factor II & Factor V Assay kit.

Test Name:	**JAK2 V617F Mutation**
Test Code:	JAK2V
CPT:	81270
Synonyms:	Janus kinase 2; JAK2 gene analysis; p.Val617Phe (V617F) variant
Test Include:	Detection of JAK2 V617F mutation
Laboratory:	WMC Molecular Diagnostics
Availability:	Variable
Turnaround Time:	2-7 days
Specimen:	EDTA -whole blood or bone marrow
Volume:	2.0 mL
Minimum Volume:	0.5 mL
Container:	Lavender-top tube with EDTA as anti-coagulant
Collection:	Collect EDTA whole blood or bone marrow and transport to laboratory at room temperature or refrigerated within 6 h of collection. Keep sample refrigerated if transport delay is expected.
Storage Instruction:	The specimen should be processed within 24 hours if stored at room temperature or within 7 days if refrigerated at 4°C.
Specimen Rejection:	Hemolysis (which inhibits PCR), inadequate sample volume, incorrect specimen collection tube type, i.e., heparin (green topped), evidence of specimen tampering, broken tubes or transportation containers and incorrect/absent patient identification.
Reference Range:	Negative for JAK2 (V617F) mutation
Linearity Range:	N/A
Clinical Use:	The JAK2 V617F mutation has been detected in ~95% of patients with polycythemia vera (PV), ~50% of those with essential thrombocythemia (ET) and primary myelofibrosis (PMF). Results of this test must always be interpreted in the context of clinicopathologic data. The result should not be used as the sole diagnostic test.
Limitation:	The detection limit for this assay is 0.1% of JAK2 V617F DNA in a background of wild type DNA.
Methodology:	ARMS-PCR
Additional Information:	JAK2 V617F mutation can be found in ~1% of normal individuals without evidence of myeloid neoplasms. The clinical significance of such mutation is not clear. Therefore, this test should not be used alone for the diagnosis of PV, ET, and IMF. Clinical correlation is recommended.

MicrobiologySpecimen Collectionand Transport Guidelines

Specimen	Collection and Transport Method	Comments
Anaerobic		
Abscesses	Aspirate pus and transport in red top tube (RTT) (withoutseparator)oranaerobictransportcontainer. Transport immediately.	Expelairfromsyringebeforeinoculating RTT. Transport containers available in Microbiology lab. Do not refrigerate. Swabs are inadequate.
Body Fluids	Decontaminate skin. Collect 1 ml of fluid. Transport immediately in redtop tube, othersterilecontainer, or anaerobic transport container.	Same. Do not put in blood culture bottles.
Tissue	Surgicallyremoveadequatesizepieceoftissue and transport in anaerobicorothersterilecontainer.Transportimmediately.	Add no more than 0.5 ml sterile saline to preventdryingif necessaryforsmall piece of tissue.
Wound	Debridenecrotictissue. Biopsysamplefromleadingedgeor below debrided tissue. Transport in anaerobic transport container.	Do not sample non-debrided necrotic areas. Swabsofteninadequate.(Ifswab, 2 required if stain andculture needed)
Body Fluids		
Bile	Surgically aspirate or obtain from drainage line at least 1 ml. Transportinsterilecontaineror AnaerobicTransportcontainer.	Foranaerobesuseanaerobictransport container. Swabs inadequate.
Blood	Decontaminateskinwith 70% alcoholand then 2% tinctureof iodine (wait 1 min.). Disinfect rubber stoppers of bottles. **2-3sets of bloodcultureswithin24 hrs. recommended.** For adults, collect 20 ml by sterile venipuncture. Put 10 ml into each of twobloodculturebottles. Forpediatricpatients, collect 1-10 ml per set of bloodculture. Inoculatethe aerobic culture bottle first if less than the recommended volume of blood is drawn. Contact Microbiology Lab for detailed instructions.	Palpate vein before decontamination. Transport immediately, do not refrigerate. No morethan 3x cultureswithin 24 hours are acceptable except for prior approval by ID or Microbiology. Thissystemwilldetectmostcandidemias. For unusual fungi and cryptococcus, see Mycology section. Bloodculturesare incubatedroutinelyfor 5 days. Specify on requisitionslip or callmicrobiologylab if prolongedincubationtimeneededforrecovery of certain fastidiousorganisms.
Bone Marrow	Decontaminate skin. Collect 1 ml or more by sterile percutaneousaspiration.Transportinbloodbottlesor purpletop tube or isolator tubeif systemic fungemia suspected (if 3 ml or more).	Purple top vacutainer recommended for smear for histoplasmosis.

Specimen	Collection and Transport Method	Comments
Cerebrospinal Fluid	Decontaminateskin. Collect at least 1 ml by sterile lumbarpuncture. Transportimmediately in sterile CSF Centrifuge tube.	Collectshunt CSFin a sterile CSFcentrifuge tube or other sterile centrifuge tube. Do not refrigerate.
Other Fluids (Synovial, Pleural, Peritoneal, Pericardial, Dialysate, other)	Collect by aseptic aspiration at least 1 ml of fluid and transport in sterile tube.	For anaerobic culture send in red top tube or anaerobic vial. Swabs inadequate.
Catheter tips		
Intravenous Penrose, Arterial Vascular	Decontaminate skin surface, remove catheter. Aseptically cut a 1-4 inchsegment. Transport in sterilecontainer.	**Do not add any fluid.** Transport immediately to prevent drying.
Foley	Not recommended for culture.	Specimen rejected by microbiology.
Ear		
External	Clean surface of external canal. Obtain swab, scraping or fluid aspirate. Transport in sterilecontainer or cultureswab.	Collectmaterialfrominflammationmargin, preferably fresh secretions.
Internal	Cleanseexternalcanal. Obtaindrainagefluid by tympanocentesis. Transportin sterilecontainer.	Submit fluid if volume allows.
Eye		
External	Cleanseskin aroundeye. Use sterile curettesfor conjunctival or cornealscrapingsanddirectlyinoculateappropriatemedia. (ophthalmology)	Transportimmediately. Giemsaandgramstains may be requested. Proper curettes may be obtained from ophthalmology. Swabs are often inadequate.
Internal	Surgicallyobtainfluidwithsyringe. Transportimmediately in red top tube. May be transported immediately in other sterile tube.	Label whetherleft or righteye. Do not use a swab.
Gastrointestinal		
Bile	See body fluids.	
Colostomy Ileostomy	Obtainseveralseveralml byaspiration. Transport immediately in sterilecontainer.	Swabs not recommended. Do not use fixative if culture is requested.
Gastric aspirate	Not acceptable for routine bacterial culture.	TB culturesaresentto thecountyhealth department.
Gastric Biopsy	Obtainbiopsyfrom Antraltissue and transport in sterile container with 0.5 ml of saline.	For helicobacter pylori only.
Rectal swab	Obtain3 swabson consecutivedays. Transportimmediately. Stool is preferred.	Not useful to detect enteric pathogen carriers, not suitablefor ova and parasites.
Stool	At least 1g obtained on up to 3 consecutive samples. Transportin cleanwaxedcardboardor othersuitablecontainer.	For culture do not add fixative. For Inpatientsadmittedformorethan 3 days, Infectious Disease approvalrequired.
Stool for clostridium difficile	Stool sample in clean container.	Acceptup to 3 stoolswithin 5 days. Test not useful to monitor therapy.
Perianal for VRE or other surveillance organisms	Swab of the perianal area.	Request'Surveillanceculture'andspecifythe organism(s) to be ruled out. Contact IC and Microbiology Lab if cultures for multiple patients needed.

Specimen	Collection and Transport Method	Comments
Genital		
Cervix	Obtaincervicalexudateby aspirationorswab and transportimmediately.	2 swabs (vaginal and rectal) required for group BStrepscreen. Testsfor Chlamydia and N. gonorrhoeae.
Endometrium Placenta	Obtaincurettings, aspiration, or placentaltissue and transportimmediatelyin a sterilecontainer.	External contamination high when obtained through vagina.
Lesions (For Treponemes/ Darkfield)	Notify Laboratory(7503) prior to collection. Prepareskin by soakingwell with sterile salinegauze. Gentlyscrape lesion and collectnon-bloody serousexudateontocoverslip. Placecoversliponto slide. (Add a small dropof saline if needed to prevent drying). Slide must be wet!	Transportimmediatelytolaboratorysincemotility is only seen on warm specimens. Specialculture techniques required forchancroid.
Vagina	Use speculum, no lubricant and aspirateor swab mucosa high in vaginalcanal. Transport on cultureswabs. Smear performed to determinepresence of vaginitisorvaginosis.	RoutineculturecommonlyforGardnerella, Group B Strep and Yeast only. Direct wet Mount needed for Trichomonas.
Urethra	Cultures for *N. gonorrhoeae/C. trachomatis*	
Respiratory		
Bronchial	Aspirate secretions through bronchoscope. Transport in sterile Tracheal container.	
Nasopharynx	Passthin wire/flexible swab through nose gentlyinto Nasopharynx. Rotate and remove. Transportswab Immediately.	Bordetella pertussis PCR or culture requires specialtransportmedium.Contactthe Receiving Lab to obtain a kit before sampling.(914) 493-8785
Nose	Insertswab 1 inch into nose and gently rotate. Transport inculture swab.	Culture for S. aureus carriers only. Specify culture for MRSA or S. aureus.
Oral Cavity	Rinsemouth, obtainswabof mucosalsurface or aspirate abscessexudate. Sendexudatein Anaerobic Transport Vial.	Mucosalsurfaceforyeast, Exudatefor Anaerobicculturesand Actinomyces.
Sputum	Instructpatient to coughdeeply and expectoratesputum intosterilecollection cup. Transportpromptly.	Gramstaindoneroutinely.Salivacontaminated specimens (OC) will be rejected.
Throat	Swab areasof exudationor inflammation. Rubtonsillarcryptsvigorously. Transporton cultureswabs.	Do nottouchoralmucosa or Tongue; culture for beta strep only, and Haemophilus in children younger than 4 years old.
Tracheal Aspirate	Same as Sputum.	
Transtracheal Aspiration	Aspirateexudatewithsterilecatheter/needle in trachea. Transportin red toppedtubeor anaerobicvial.	Anaerobic cultures alwaysperformed. Transport immediately
Tuberculosis		Refered to County Health Department
Urine		
Clean-catch, Midstream Urine	Cleangenital area well, void 20-25 ml then collectspecimen a sterileurinecup. Transportwithin 2 hrs. or refrigerate.	Earlymorningspecimenbest. Do not pool urine in for culture. One accepted per 48 hrs. U/Ashould alsobe performed. Do notcollecturinefrom a collection bag.
Indwelling Catheterized	Discardfirst 10-15 ml andcollectspecimenin sterile container. Transportwithin 2 hrs. or refrigerate.	May be collected by aspiration through tubing. Neverfromcollectionbag. Oneusuallysufficient fordiagnosis.Indicate"catheterized" on req. slip.
Suprapubicaspirationand Straight Catheterized	Collectseveral ml by sterile bladderneedleaspiration or straight (in and out) catherization. Transport within 2 hrs. in sterile container.	Anaerobicculturepermedonrequestonly. **Do not call 'straightcatheterized' if the sample is collected from an indwelling catheter.**

Specimen	Collection and Transport Method	Comments
Wounds		
Abscesses	See "Anaerobic". For Aerobicculture only. Obtain exudate and transport in sterile container.	Do not refrigerate. Swab may be inadequate. One specimen per site per day accepted. If swab, 2 required for stain.
Burns/Decubiti	Clean surface with 70% alcohol. Swab or aspirate deeper areas. Transportin sterile tube.	Swabs may be inadequate due to colonization of contaminants. Decubiti unacceptable without justification.
Pus, Exudate, Drainage	Clean and debride area as needed. Obtain freshspecimen, preferably by syringe aspiration. Transport immediately. for stain.	For anaerobic cultures use Anaerobic Transport Container. Swabs inadequate. If swab, 2 required
Superficial Wound	Clean surface with 70% alcohol. Swab or aspirate deeper areas. Transportin sterile container or culture swab.	Do not collect lesion surface. Notify lab if wound is a bite.
Tissue	See "Anaerobic"	
Umbilicus	Swab area and transport in culture swab.	Culture for Staph. aureus only.
SERUM BACTERICIDAL ASSAY	Contact Microbiology Lab (x8997) if request approved by Infectious Disease Attendings.	Needs special order. Consult Infectious Disease for approval.

II. Mycology (Fungal Culture)

Skin/Hair/Nails	Obtain scrapings, cuttings or clippings and transport to laboratory in clean paper envelope or sterile container.	Direct examination for fungal elements and culture performed routinely.
Actinomycotic Lesions	Collect by syringe and transport anaerobically.	Request must state "For Actinomycetes".
Blood	For most common Candidemias, the routine blood culture system is adequate. For Unusual fungi (filamentous, Cryptococcus, Dimorphic) Obtain isolator tubes from Microbiology lab. Prepare skin as for routine blood culture. Obtain minimum 7.5 ml for adult size isolator tube and minimum 0.5 ml for pediatric Isolator tube.	Isolator tubes are obtained from Microbiology lab after approval by Infectious Disease. Do not refrigerate tubes. Transport to the Lab ASAP. Please indicate if Malassezia furfur is being ruled out.
CSF	Same as for routine CSF cultures, must request india ink and/or fungal culture.	At least 1ml required. Cryptococcal antigen done on Request only.
Other	Collect as for routine specimens but request fungal culture.	
Candidiasis (monilia, yeast)	For culture or direct smear, send specimen in sterile container. Usually vaginal or oral swab.	Fresh moist specimen required for direct smear. KOH not routinely performed for yeast.
Cryptococcus	Send CSF for culture or Antigen testing. Serum for Antigen only.	See Serology section.
Dermatophytes	Obtain skin scrapings, nail clippings, hair cuttings and transport in a clean paper envelope.	KOH preparation routinely performed.
Fungal Cultures	Most specimens collected in same manor as routine specimens. See Part I, Bacteriology.	For special requests, notify laboratory.
India Ink	Obtain CSF aseptically and transport immediately.	Test must be specifically requested. Cultures also performed. For Cryptococcus spp., cryptococcal antigen on CSF recommended.
KOH	See "Dermatophytes"	Performed routinely for skin, nails, and hair and tissue biopsy samples. **For other specimens (i.g., BAL), KOH performed per request only.**
Serology (Fungal)	3-5 ml or serum	Test performed by N.Y. State Dept. of Health.

Specimen	Collection and Transport Method	Comments
III. Parasitology		
Malaria Smear and Other blood parasites	Obtain several drops from a finger stick and prepare 2 thin and 2 thicksmears, or obtain 3-5 ml of blood in a Heparin tube, or purpletop.	Optimal time of specimen is at the beginning of fever spikes. Thicksmearmay not be performed if purple top tube is used.
Ova & Parasite Examination	At least 5 grams of freshfirst morningstool. Transportin clean waxed container or fecal transport system.	Threestoolscollected on alternate days recommended. Foramoeba,call Labfor PVA fixative or deliver fresh (20 minutes) stool. For Inpatientsadmittedformorethan 3 days, Infectious Disease approvalrequired.
Pinworm (Scotch Tape Test)	Obtainsampleby pressingstickyside of cleartape onto perianalregion. Placetapeonto glassslide and transport to lab immediately.	Swab of perianal region may be used.
Pneumocystis	Preferredspecimenisaslidetouchpreparationof lung Biopsy Tissue. Bronchialbrushings, bronchiallavage, or tissue may be sent in a sterile container.	Directfluorescentmicroscopyassay(DFA) performed atthe County Lab.
Toxoplasma	Collect tissue and transport in sterile container. Forlice, mites, ticks, etc., collecthair or scrapingsonto microscope slide with a cover slip.	Giemsa stain only.
Cryptosporidium; Cyclospora; Isospora	At least 1g of fresh stool. Transport in a clean container.	Examined by modified acid fast stain.
Microsporidia	At least 1g of fresh stool. Transport in clean container.	Mustrequestmicrosporidiatestand obtain Infectious Diseaseapproval.
IV Direct Microscopic Exams		
Buffy coatsmear (HGA)	Collectbloodusingaseptictechnique in EDTAtube	Smear examined for intragranulocytic inclusions of anaplasma phagocytophilum. Organism can be cultured in cell line.
Darkfield (Treponema)	Obtainclearserousexudatefromscrapingof lesion. Transportimmediately on microscopeslidewithcoverslip.	Freshspecimensyieldbestresultsand must be wet. Call the laboratory before collecting and transporting the specimen
Giemsa	Obtainappropriatespecimen and transportin sterilecontainer or for histoplasma, place on slide and transport in slide box.	For detection of Pneumocystis, Toxoplasma, Blastomyces,and Histoplasma.
Gram Stain	Obtainappropriatespecimen and transport in sterile container. Swabsnot recommendedfor gramstainunless duplicate sent.	Performedonall body fluids, CSF,Sputum, and non-swab aspirates. Urine and blood not performed. May be performed on other specimensuponrequestandwhereappropriate.
India ink	Sterile CSFcentrifuge tube	Performed upon requestonly
Malaria	See“Ova and Parasite” Section III	
Scotch Tape	See“Ova and Parasite” Section III	
Treponemes	See “Darkfield”	
Trichomonas	See “Wetmount”	
Wetmount	Obtain Appropriatespecimenanddeliver Immediatelywhile moist or place on slide with coverslip and deliver while moist.	Foryeast(Monilia)and Trichomonas

Specimen	Collection and Transport Method	Comments
V. Serology		
Antistreptolysin O	3-5 ml of blood in red top tube. Transport within 12 hours	Negative, Up to 200 IU/ml. Titerobtained on all screen positivesera.
Bacterial Antigens By latex Agglutination	At least 1 ml of CSF or urine in sterile container. 3-5 ml blood (serum) In red to tube. Transport immediately.	Negative, latex agglutination. performed stat whenrequested7 days/week.RequiresInfectious Disease approval
Cryptococcal Antigen (serum)	1 ml of CSF or 3-5 ml of blood in red top tubw Transport Immediately.	Negative,latexagglutinationSTATuponrequest, test not standardized forurine.
Febrile Agglutinins (Brucella, Francisella)	No longer performed by lab	Sentto N.Y.State Dept Health Requirespatient history. Form required.
Fungal serology	3-5 ml of blood(serum) in red top tube. Transport to receivinglab.	Sent to N.Y. State Dept. of Health. Requirespatienthistory.Formrequired.
Heterophile antibody	See "Monospot"	
Lyme serology	3-5 ml of blood (serum) in red top tube. Acute and Convalescentwhenavailable.ForCSFLymeantibodytesting a serum specimen is also required.	Non-Reactive Lyme serology done by 2-step testing ELISA done as a first step followedbyseparateIgGand IgMwestern blots on ELISA reactive samples.
HGE serology	3 - 5 ml of blood in red top tube (serum)	Non-reactive Tested by IFA. Titers obtained in all positives
Monospot	3-5 ml of blood(serum) in red top tube. Transport within 12 hours.	Negative, hemagglutination. Titersobtainedon allpositives
Parasite serology	3-5 ml of blood(serum) in red top tube. Transport to receivinglab.	Sentto N.Y.State Dept Healthrequirespatient history. Form required.
Syphilis serology	3-5 ml of blood (serum) in red top tube.	
VDRL	1 ml of CSF. Transportimmediatelyor see "Syphilisserology".	
Viral serology	3-5 ml of blood(serum) in red top tube. Transport to receivinglab.	Specificvirusmustberequestedindividual tests performed.
VI. Virology		
Respiratory Virus DFA with Reflex to Viral Culture	Nasal swab in UTM, Nasopharyngeal swab in UTM Nasal /NP Wash/Tracheal Aspirate 1ml in UTM	Screens for and identifies: Influenza A & B, Parainfluenza 1-3, RSV, Adenovirus, hMPV
Influenza Culture	Nasalswab in UTM, Nasopharyngealswabin UTM, Nasal /NP Wash,Tracheal Aspirate , BAL Bronchial wash 1ml in UTM	Screens for and identifies: Influenza A & B only
RSV Culture	Nasalswab in UTM, Nasopharyngealswabin UTM, Nasal /NP Wash,Tracheal Aspirate , BAL Bronchial wash 1ml in UTM	Screens for and identifies: RSV only
Respiratory Multiplex PCR	Nasopharyngeal swab in UTM,	Screenfor Influenza A(subtyped), Influenza B, ParainfluenzaHPIV-4,RSU,Adenovirus,hMPV, B Pertussis, C Pheumonine, M. Pneumoniae Coronavirus (229E, HKUI, NL63 and)C43), Rhinovirus/Enterviris

Surgical and Cytology Specimen

Collectionand Transport Guidelines

No	Examination requested on tissue specimens	Fixative	Delivered to
A	Routine – Biopsies or small surgical specimens**[Rush Endomyocardial transplant, Renal & Liver Biopsies- see below: E] (Breast specimens-see below: F)**	10% neutral buffered formalin	Anatomic Pathology
B	Routine – large specimens such as stomach, colon, breast, lung, heart, liver, spleen,placenta, kidney, etc.	Fresh*	Anatomic Pathology Do not leave specimens without informing anyone.
C	**Frozen Section**	Fresh*	**Regular Work Hours**: Call laboratory ahead of time. Bring specimens to Anatomic Pathology immediately and **hand deliver** to accessioning person. **After Hour (After 5 pm on weekdays) & Weekends/Holidays**:Please call and inform the On Call Pathology resident (beeper numbersare posted on iCare call schedule) **atleast 1 hour before** the expected arrival of specimen in Pathology. Again, specimen should be hand delivered to On Call resident. Do notleave specimens without informing anyone.
D	Bone Marrow biopsies	Fresh*	Anatomic Pathology & then add B5 fixative in to specimen container and document fixation time. **Donot leave the specimen in the laboratory without telling anyone.**
E	**RUSH BIOPSY:** The AP Laboratory provides RUSH biopsy services for Endomyocardial transplant, Renal & Liver Biopsies, when clinically indicated.	Kidney – Fresh or saline* Liver & Endomyocardial transplant - 10% Neutral Buffered Formalin	Call laboratory ahead of time and consult to a pathologist; specimensshould be brought to Anatomic Pathology immediately. **Please note** – Specimen must be delivered by **12 noon** on weekdays &Requisition form **MUST** clearly indicate "**RUSH SPECIMEN".**
F	Breast	10% Neutral Buffered Formalin	Anatomic Pathology. Specimen should be immersed in fixative within one hour of biopsy orresection. If the specimen delivery isdelayed the tumor should be bisectedprior to immersion in fixative, ensuring that identity of margins is retained; alternatively margins maybe submitted separately. **The time of removal of the tissue from body and the time of immersion of the tissue in fixative should be recorded on request slipand submitted to the laboratory**

No	Examination requested on tissue specimens	Fixative	Delivered to
G	**Gynecologic pap test**	Collected in PAP vials	Deliver to frozen section / accessioning room with cytology requisition form.
H	**Non gynecologic cytology specimens**		
1.	**Body fluids** (pleural, peritoneal, pericardial fluids, etc) Volume: 50 ml aliquot + another 50 ml for special studies.	- Submit fresh without fixative. - No fixative neededfor up to 2 weeks if refrigerated.	Deliver to frozen section / accessioning room with cytology requisition form.
2.	**Washings** (bronchial, pelvic, bladder etc.,) Volume: 50 ml aliquot + another 50 ml for special studies.	- Submit fresh without fixative. - If delayed, refrigerate up to 24 hours. - Add equal amount of 50% alcohol or cytolyt if delayed for more than 24 hours	Deliver to frozen section / accessioning room with cytology requisition form.
3.	**Cyst fluids** (Pancreatic cyst, ovarian cyst, breast cyst, synovial fluid etc.,) Volume: Entire volume that is aspirated.	- Submit fresh. - If delayed, refrigerate up to 24 hours. - Add equal amount of 50% alcohol or cytolyt if delayed for more than 24 hours.	Deliver to frozen section / accessioning room with cytology requisition form.
4.	**CSF** Volume: minimum 1ml, preferable 3 ml, ideally 10 ml.	- Submit fresh. - If delayed, refrigerate up to 48 hours. - Add equal amount of 50% alcohol or cytolyt and refrigerate if delayed for more than 48 hours.	Deliver to frozen section / accessioning room with cytology requisition form.
5.	**Urine** Volume: 25 ml to 100 ml	- Submit fresh (1-12 hours). - If delayed, Refrigerate up to 24 hours. - Add equal amount of 50-70% ethanol or cytolyt if delayed for more than 24 hours.	Deliver to frozen section / accessioning room with cytology requisition form.
6.	**Fine needle aspiration** (palpable lesions, brushing smears, Buccalsmear etc.,)	- Place slides in 95% alcohol for PAP stain; Provide air dry slide for Diff Quik stain. The needle wash can be submitted in cytolyt preservative.	Deliver to frozen section / accessioning room with cytology requisition form.

No	Examination requested on tissue specimens	Fixative	Delivered to
I	Flow Cytometry	Fresh* or in saline	Anatomic Pathology and immediately bring it, with completedappropriate form, to the attention of technologist, clerk, resident, or pathologist. **Do not leave the specimen in the laboratory withouttelling anyone**.
J	Cytogenetics, Freezing	Fresh*	Anatomic Pathology immediately with completed appropriate forms . **Do not leave the specimen in the laboratory without telling anyone**.
K	Immunofluorescence, Electron Microscopy (e.g., skin punch biopsy)	Fresh* or in saline	Call laboratory ahead of time andspeak to a pathologist. EM or IF request needs to be documented on requisition form. Bring to Anatomic Pathology immediately.
L	Cardiac Biopsy	10% Neutral Buffered Formalin	Anatomic Pathology immediately. Specimens needs to be received by 2 pm on weekdays to be processed the same day.
M	Skeletal Muscle	Fresh*	Call laboratory ahead of time and speak to a pathologist; specimens should be brought to Anatomic Pathology immediately after excision(before 2PM on weekdays). **Do not leave the specimen in the laboratory without telling anyone**.
N	Nerve Biopsy	Fresh*	Call laboratory ahead of time and speak to a pathologist; specimens should be brought to Anatomic Pathology immediately after excision(before 2PM on weekdays). **Do not leave the specimen in the laboratory without telling anyone**.
O	At night, weekends, or holidays		Keep specimens with requisition & hand deliver to off hours staff in Anatomic Pathology. Call (914) 839-0511 if not at station.
P	When in doubt as to what to do		Talk to a staff pathologist or if offhours, call Anatomic Pathology resident on call.