

**UC Davis Health
Sacramento, CA
Department of Pathology and Laboratory Medicine**

REFLEX TESTING**Administrative Procedure # 822.A**

Reflex testing is a necessary follow-up for the testing listed below. This testing is required to confirm quantitative positive preliminary testing and/or specified screening tests, or to provide Pathology Physician review and interpretation with written report.

Test	Condition(s)	Reflex Test(s)
IMMUNOLOGY & FLOW CYTOMETRY		
Anti-Mitochondrial Antibody (AMA)	Positive	AMA Titer
Anti-Smooth Muscle Antibody (ASMA)	Positive	ASMA Titer
Anti-Parietal Cell Antibody (APCA)	Positive	APCA Titer
Protein Electrophoresis (PEP)	Suspicious Pattern	Immunofixation Electrophoresis (IFE)
Flow Cytometry	All	Pathologist Interpretation
Protein Electrophoresis (PEP)	All	Pathologist Interpretation
Immunofixation Electrophoresis (IFE)	All	Pathologist Interpretation
HEMATOLOGY & HEMOSTASIS		
Hemoglobin Screen	Abnormal	Gel Electrophoresis and/or KB, Solubility, Peripheral Blood Smear
Gel Electrophoresis	Abnormal	KB and/or Solubility, Peripheral Blood Smear, Send out for Hemoglobin Analysis confirmation using an alternate method per SOP
Rapid Malaria Screen	Positive	Blood parasite screen
ADAMTS-13 activity	<30%	ADAMTS-13 inhibitor assay/titer
ADAMTS-13 inhibitor	< 0.7 Inhibitor Units	ADAMTS-13 Antibody
Coagulation profile studies	Bleeding or thrombophilia work-ups	Pathologist Interpretation
Dilute Russell's Viper Venom Time (DRVVT) Screen	Prolonged	DRVVT Confirmation test
Free Protein S	Below reference range	Protein S
Inhibitor Assay	Test not indicated if factor level >10	Factor activity
Protein S	Test not indicated if free protein S within reference range	Free protein S
Serotonin release assay	Test not indicated if HIT negative	HIT
Thrombin Time	Prolonged	Protamine Correction or Plasma Mixing Test
Von Willebrand Factor (VWF) Multimer	Test not indicated if von Willebrand disease panel is normal	Von Willebrand disease panel
Von Willebrand Disease Testing	Abnormal	VWF multimer

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Von Willebrand Disease Testing	Initial work-up requests	Von Willebrand activity, Von Willebrand Ag, & Factor VIII
CBC with Auto Diff	Abnormal	Manual Differential
Fluid Studies	All	Pathologist Interpretation
Fluid Studies	First time malignant, blasts or “other” cells seen	Cytology
Peripheral Blood Smear	Abnormal	Pathologist Interpretation
Heparin Induced Thrombocytopenia (HIT)	Positive	Serotonin Release Assay (SRA)- Send Out
TRANSFUSION SERVICES		
Antibody Screen	Positive	Antibody Identification (ID), Red Cell Antigen phenotype, Direct Coombs (DAT), Select Cell Antibody Screen, Titer (OB patient), Pathologist Review; Send out ABID; Weak D analysis; Partial D analysis, Genotyping, Elution
Blood Type (ABO/Rh)	Blood Type Discrepancy	A1 lectin, DAT, Antibody Screen, Red Cell Antigen Typing (phenotype/genotype); Weak D analysis, Partial D analysis, Pathologist Review
Fetal Bleed Screen	Positive	Kleihauer-Betke, Pathologist Review
Direct Coombs (DAT) Comprehensive	Positive	Antibody Screen, Elution, Antibody ID; Red Cell Antigen Genotyping, Pathologist Review
Cord Blood Test	Incompatibility between Mom & Baby (ABO and/or Non- ABO)	MAIS, Antibody Screen, Antibody ID, Red Cell Antigen phenotype, Pathologist Review
Transfusion Reaction Panel (TR Post)	Suspected transfusion reaction	Pathologist Review; DAT comprehensive, Transfusion RXN LG/SML VOL, GS
AB ID (Antibody Identification)	Antibody detected and/or difficult crossmatch	Pathologist Review, Patient Antigen phenotyping
Miscellaneous Blood Bank Processes	Examples include use of rare antisera beyond expiration date; transfusion of Rh incompatible units; use of outdated blood, Evaluation of special testing or blood product requirements, Market withdrawal/Lookback from blood supplier	Pathologist Review antigen phenotyping, QA review for Market withdrawal
Serologic Crossmatch	Incompatible crossmatch or auto control positive	Pathologist Review; DAT; Send Out ABID
Blood Type (Bone Marrow & HPC Allogeneic Transplants)	ABO/Rh Incompatibility between donor and recipient. Known alloantibodies	ABO and/or Alloantibody Titer(s)/ Isoagglutinin titers, Pathologist Review, antigen phenotyping
Blood Type (Rh)	Weak D	Weak D analysis; Partial D analysis, Pathologist Review
CHEMISTRY		
Hepatitis B Surface	Reactive	Neutralization Test

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Antigen		
Hepatitis B Core Antibody, Total, Reflex	Reactive	Hepatitis B Core Antibody, IgM
Urinalysis-Complete	Color other than “none” or “yellow”, clarity other than “clear”, trace or greater for leukocyte esterase, blood, protein, or positive for nitrite	Microscopic Analysis
HIV Rapid (Needlestick)	Reactive	HIV Antibody/Antigen Combo Test
HIV Antibody/Antigen Combo Test	Reactive	HIV Confirmation
ED Preg Syphilis Scrn	Reactive	Syphilis IgG/IgM Ab with Reflex
Syphilis IgG/IgM Ab with Reflex	Reactive	Confirmation by RPR and/or TPPA
Amphetamine Screen, Urine	Positive except ED patient	Amphetamine/ Methamphetamine Confirmation
Acid/Neutral & Basic Blood Drug Screen GC	Positive	Confirmation by Gas Chromatography and/or Mass Spectrometry
Toxicology Basic Urine Drug Screen	Positive	Confirmation by Gas Chromatography and/or Mass Spectrometry
Comprehensive Urine Drug Screen	Positive	Confirmation by Gas Chromatography and/or Mass Spectrometry
CYTOLOGY		
ThinPrep© PAP	Age >=25 & is Atypical Squamous Cells of Undetermined Significance (ASCUS)	HPV
MICROBIOLOGY		
Ova & Larva Helminth Test	Potential parasite seen, non-helminth ova or larva.	Parasite Stain for identification or send specimen to reference lab for identification
GI (Gastrointestinal) Panel	Positive- Bacterial pathogen	Stool Culture and susceptibility testing when appropriate per protocol
GI (Gastrointestinal) Panel	Positive C. diff target	C. difficile Diagnostic Test when appropriate per protocol
Group B Strep PCR	Detected in patient with penicillin allergy	Susceptibility testing performed per protocol
Cryptococcal Antigen, CSF Source	Initial Positive	Culture Bacterial (includes gram stain) and Culture Fungal.
Cryptococcal Antigen	Positive	Cryptococcal Antigen Titer
Culture, Bacti/Fungal/AFB	Potential pathogen as detailed in protocols by specimen source	Pathogen identification and/or susceptibility testing
Culture, Bacti/Fungal/AFB	Growth of organism demonstrating unusual or concerning antimicrobial resistance	Test by alternate susceptibility or PCR method in house or send isolate to reference lab for confirmation
Culture, Bacti/Fungal/AFB	Growth of organism not identified by routine laboratory methods	Test by alternate method in house or send isolate to reference lab for identification

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Culture, Bacti	Specimen is lower respiratory, body fluid, tissue, wound, or other miscellaneous source	Gram Stain
Culture, Bacti	Specimen is Bronchial Brushing, Transtracheal/ Percutaneous Lung Aspirate, Lung Biopsy Tissue, Bronchial Alveolar Lavage(BAL), or swab from any of the above sources	Culture, Legionella
Culture, Blood	Growth of bacteria or yeast	Blood Culture ID by PCR and/or susceptibility testing when appropriate per protocol
Culture/Smear, AFB	Smear positive for AFB	MTb Nucleic Acid Amplification Test performed on all first-time smear positive patients OR 6 months from previous assay
MTB, PCR	All	AFB Smear and Culture
C. difficile Diagnostic Test	Discrepant Antigen vs Toxin Result	C. difficile Surveillance PCR
MOLECULAR PATHOLOGY		
Cystic Fibrosis mutation analysis	All	Pathologist Interpretation
HSV 1 & 2 CSF	All	Pathologist Interpretation
Hereditary Hemochromatosis	All	Pathologist Interpretation
HER2 FISH	All	Pathologist Interpretation
1p19q FISH	All	Pathologist Interpretation
MDM2 FISH	All	Pathologist Interpretation
ALK FISH	All	Pathologist Interpretation
EGFR FISH	All	Pathologist Interpretation
PTEN FISH.	All	Pathologist Interpretation
CLL FISH	All	Pathologist Interpretation
SURGICAL PATHOLOGY		
	New diagnosis of primary or metastatic breast cancer	ER, PR, AR, Ki67 and HER2/neu by IHC; Her2 FISH for invasive cancers
	Diagnosis of breast cancer after neoadjuvant chemotherapy	
	New Diagnosis of colon cancer	DNA Mismatch repair testing by IHC (MLH1, MSH2, MSH6, PMS2); testing for BRAF if MLH1 and/or PMS2 is abnormal
	Squamous Cell Carcinoma of Oropharynx	P16
	Squamous Cell Carcinoma or Dysplasia of Anogenital Region (including cervix, vulva, anus, penis)	P16
	Heart Biopsy- Transplant	Trichrome (HISTO), CD68 (IHC), and C4D (IF)

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	New diagnosis of primary or metastatic lung cancer	PD-L1 (IHC)
	Kidney-Biopsy Native (Medical)	PAS, Jones, Trichrome (HISTO) IgG, IgA, IgM, C3, C1q, kappa, lambda, fibrinogen, albumin, and FS-H&E Electron Microscopy (Send-Out)
	Kidneys-Biopsy Transplant	PAS and Trichrome (HISTO) IgG, IgA, IgM, C3, C1q, fibrinogen, albumin, FS-H&E, C4d (IF), and SV40
	Muscle Biopsies	FS-Trichrome, FS-PAS, FS-H&E, Oil Red O, NADH, ATPase pH 4.3, ATPase pH 9.4, COX/SDH (combined stain), Acid Phosphatase, NSE (non-specific esterase), Myophosphorylase, Alkaline phosphatase, SDH, Staphylococcal protein A, ATPase pH4.6
	Nerve Biopsies	Toluidine blue stain of glutaraldehyde fixed tissue on thick section (Send-Out)
	Neuroblastoma	N-MYC FISH (Send-Out)
	All Gliomas	IDH1, ATRX, p53, Ki67
	All pituitary adenomas	Ki67, cam5.2 (In house) Pit1, TPit, SF1, GH, Prolactin, TSH, ACTH (Send-Out)
	Ependymomas of Posterior Fossa	H3K27me3 (IHC Send-Out)
	All Meningiomas	Ki67
	Liver Biopsy (medical)	Reticulin, Trichrome, Iron, PAS and PASD Stains. (HISTO)
	New diagnosis of endometrial cancer	DNA Mismatch repair testing by IHC (MLH1, MSH2, MSH6, PMS2); testing for promoter methylation if MLH1 and/or PMS2 is abnormal, p53 (IHC)

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	Sentinel lymph nodes, Melanoma of skin	Melan-A (IHC) or HMB-45 (IHC) or SOX10 (IHC) each block
	Sentinel lymph nodes, gynecologic tract cancer	Pancytokeratins (IHC, x2; ultrastaging)
	Endometrial Carcinoma	For Non-Serous Carcinoma: p53 and MMR (IHC). POLE Sequencing (Stanford Send-Out) For Serous Carcinoma: HER2/neu (IHC and FISH)
	New Diagnosis of primary or metastatic melanoma (any tissue)	BRAF-V600E
	Carcinoma of the ovary	P53 and Mismatch repair analysis by IHC for all endometrioid and clear cell carcinomas POLE Sequencing (Stanford Send-Out)
	Vulvar Carcinoma	P16 and p53 (IHC)
	Mucinous neoplasm of ovary	P53 or Her2 (IHC and FISH)
	Tenosynovial biopsy, Positive Congo red stain for amyloid	Send-out to Mayo Clinic for subtyping by mass spectrometry
MGMT promoter methylation (Send-Out)	All	Pathologist Interpretation
TERT Mutation (Send-Out)	All	Pathologist Interpretation
IDH1/IDH2 Mutation Analysis (Send-Out)	All	Pathologist Interpretation
CDKN2A FISH (Send-Out)	All	Pathologist Interpretation
BRAF V600E Mutation Analysis (Send-Out)	All	Pathologist Interpretation
H3K27M Mutation (IHC) (Send-Out)	All	Pathologist Interpretation
H3K27me3 (IHC) (Send-Out)	All	Pathologist Interpretation
H3G34 R/V (IHC) (Send-Out)	All	Pathologist Interpretation
EWSR FISH (Send-Out)	All	Pathologist Interpretation
DDIT3 FISH (Send-Out)	All	Pathologist Interpretation
SYT FISH (Send-Out)	All	Pathologist Interpretation

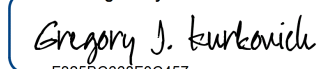
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USP6 FISH (Send-Out)	All	Pathologist Interpretation
POLE Sequencing (Stanford Send-Out)	All	Pathologist Interpretation

This list of reflex testing has been reviewed and approved by the UCDMC Medical Staff Executive Committee.

DocuSigned by:



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21-Jun-2023

Gregory J. Jurkovich, MD
Chair, Medical Staff Executive Committee

Date