University of Colorado Hospital
Clinical Laboratory

Reflex Test Protocols

Test Ordered	Initial Test Performed	Criteria for Reflex	Tests Ordered and Billed by Reflex, as applicable
Blood Bank			
Antibody Titer	N/A	No Type and Screen Ordered	Type and Screen; Antibody Identification and titer if Screen is positive.
Prepare RBCs for Transfusion (aka Crossmatch)	N/A	No Antibody Screen ordered	Antibody Screen
Direct Antiglobulin Test (DAT)	Polyspecific DAT IgG DAT	Positive polyspecific DAT Positive IgG DAT	IgG DAT, C3 DAT Elution
Fetal Cell Screen	Fetal Cell Screen	Positive	Fetal Hemoglobin
Rh Type	Rh Type	Rh-negative mother with Rh - positive or Rh-unknown baby	Type and Screen and/or Rh Immunoglobulin
Type and Screen	ABO, Rh, Antibody Screen	Positive antibody screen No historical ABO type	Antibody identification ABO Group (retype)
Transfusion Reaction Investigation (red cell components only)	N/A	Patient temperature increase ≥ 3°C.	Culture and Gram Stain of blood unit
Chemistry/Immunoassay			
Celiac Disease Reflex Panel	IgA	IgA 10 mg/dL or greater IgA less than 10 mg/dL	Tissue Transglutaminase IgA Ab Tissue Transglutaminase IgG Ab and Deamidated Gliadin Peptide IgG Ab
Lactate Arterial Sepsis	Lactate, Arterial	Result of ≥ 2.0 mmol/L	Lactate, Arterial to be drawn 2 hours post treatment/ monitoring.
Lactate Venous Sepsis	Lactate, Venous	Result of ≥ 2.0 mmol/L	Lactate, Venous to be drawn 2 hours post treatment/ monitoring.
TSH with Reflex to Free T4	TSH	Result is abnormal	Free T4
Flow Cytometry			

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Anti-CD20 Therapy Monitor	CD20 Panel and Complete Blood Count (CBC) with differential (DIFF).	Requires the Absolute Lymphocyte Count from a CBC and differential.	CBC with Diff is automatically ordered and performed. Manual differential is ordered and performed when autodiff fails.
CD4 Helper T Cells	CD4 Panel and Complete Blood Count (CBC) with differential (DIFF).	Requires the Absolute Lymphocyte Count from a CBC and differential.	CBC with Diff is automatically ordered and performed. Manual differential is ordered and performed when autodiff fails.
Lymphocyte Enumeration of TBNK	TBNK Panel and Complete Blood Count (CBC) with differential (DIFF).	Requires the Absolute Lymphocyte Count from a CBC and differential.	CBC with Diff is automatically ordered and performed. Manual differential is ordered and performed when autodiff fails.
Pre-CAR T-Cells	Pre-CAR T-Cell Panel and CBC w/ Diff (Manual if Auto Fails)	If CBC values are flagged for manual review	Manual differential
T Cell Panel	T Cell Panel and Complete Blood Count (CBC) with differential (DIFF).	Requires the Absolute Lymphocyte Count from a CBC and differential.	CBC with Diff is automatically ordered and performed. Manual differential is ordered and performed when autodiff fails.
Transplant CD3	Transplant CD3 and Complete Blood Count (CBC) with differential (DIFF).	Requires the Absolute Lymphocyte Count from a CBC and differential.	CBC with Diff is automatically ordered and performed. Manual differential is ordered and performed when autodiff fails.

Hematology and Coagulation

APC Resistance w/Reflex to FVL Mutation	APC Resistance	Less than 1.8	Factor V Leiden Mutation
Body Fluid Count and Differential	Body Fluid Count	Requires nucleated cell count greater than zero.	Body fluid count is automatically performed. If the nucleated cell count is zero, the differential will be cancelled and credited.
CBC with Manual Diff if Auto Fails	CBC with Manual Diff if Auto Fails	Autodiff fails	CBC, no autodiff
Heparin Induced Antibody (HIT) Reflex	HIT	Positive	Serotonin Release Assay
Manual Differential	Complete Blood Count (CBC)	Requires white blood cell (WBC) count 0.5 x 10^9/L or greater.	Differential is cancelled and credited when WBC under 0.5 x 10^9/L. The caregiver/provider may contact the lab to request that the differential be performed if
Physician Directed Path Review	Pathologist Review and Complete Blood Count (CBC)	Pathologist required clinical context for correlation.	CBC is automatically ordered and performed.
Russell Viper Venom Time Test (RVVT)	RVVT	Abnormal RVV Test (screen) or ratio	RVVTCONF

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Immunology			
CMV IgM Reflexive (Prenatal Only)	CMV IgM	Positive	CMV IgG CMV IgG Avidity
Hepatitis B Surface Antigen	Hepatitis B Surface Antigen	Reactive, females 0 - 45 years. (Patients with gender mismatch will default to legal sex to determine confirmation reflex.)	Confirmation by neutralization
RPR (Rapid Plasma Reagin)	Treponema pallidum Ab	Treponema pallidum Ab result is Reactive	Rapid Plasma Reagin (RPR). If RPR is reactive, RPR titer
Treponema pallidum Ab with reflex	Treponema pallidum Ab	Treponema pallidum Ab result is Equivocal or Reactive	Rapid Plasma Reagin (RPR) or Treponema Pallidium AB by TPPA (TP-PA). If RPR is reactive, RPR titer. If RPR is non-reactive, TP-PA is sent out when there is no/unknown history of syphilis.
Microbiology			
AFB Culture	AFB Culture	Positive culture	AFB Smear; Identification, AFB Probe; Identification, aerobe; Identification, anaerobe; Identification, mold; Identification, Mycobacteria/ AFB; Identification, yeast; Sensitivity (per drug); Concentration; Confirmatory stains; Tissue homogenization
Bacterial Culture, Routine (on source other than blood, urine, or stool)	Routine Bacterial Culture	Positive culture	Identification, aerobe; Identification, anaerobe; Identification, enzyme detection; Identification, mold; Identification, Mycobacteria/ AFB; Identification, yeast; Sensitivity; Gram Stain; Anaerobic culture; Tissue homogenization
Blood Culture	Blood Culture	Positive culture	Identification, aerobe; Identification, anaerobe; Identification, enzyme detection; Identification, mold; Identification, Mycobacteria/ AFB; Identification, yeast; Sensitivity;

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			Culture typing; per antiserum
Cdifficile Toxin PCR	Cdifficile Toxin PCR	Detected PCR Result (Inpatient)	Toxin EIA (CDIF)

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Fungus Culture (source other other than skin, hair or nails)	Fungus Culture (source other other than skin, hair or nails)	Positive culture	Identification, aerobe; Identification, anaerobe; Identification, mold; Identification, Mycobacteria/ AFB; Identification, nucleic acid probe Identification, yeast; Sensitivity, yeast; Tissue homogenization
Fungus Culture, Skin/Hair/ Nails	Fungus Culture, Skin/Hair/ Nails	Positive culture	Identification, aerobe; Identification, anaerobe; Identification, mold; Identification, Mycobacteria/ AFB; Identification, yeast; Tissue homogenization
GI PCR PANEL PLUS	Aeromonas Culture GI PCR PANEL	None Positive Salmonella Positive Shigella/EIEC Positive for Vibrio or Vibrio Cholerae	None Salmonella Culture Shigella Culture State Health Confirmation
Hepatitis C Virus Genotype	Review chart for recent Hepatitis C Virus quant PCR	If recent Hepatitis C Virus quant PCR is unavailable	Hepatitis C Virus Quant PCR; Hepatitis C Genotype will be cancelled if Hepatitis C Virus Quant PCR is <2000 IU/mL
HIV 1/2 Antibody-Antigen Screen	HIV 1/2 Antibody-Antigen Screen	Positive screen	Confirmation & HIV-1/2 Differentiation
Ova & Parasites Complete	If clinical criteria not met, Giardia Antigen and Cryptosporidium Antigen will be substituted.	Clinical criteria for Complete O & P are not met (refer to Test Catalog).	Giardia antigen; Cryptosporidium antigen; Cryptosporidium Stain; Trichrome Stain; Concentration
SARS-CoV-2 PCR	PCR	Detected (positive)	Variant sequencing by State Health per Public Health Order. Individual results are NOT available.
Urine Culture	Urine Culture	Positive culture	Identification, urine organism; Identification, aerobe; Identification, anaerobe; Identification, enzyme detection; Identification, mold; Identification, Mycobacteria/ AFB; Identification, yeast; Sensitivity

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Sendouts			
ACHR Binding/Blocking w/Reflex Modulate	ACHR Binding, ACHR Blocking	Acetylcholine Receptor Binding AB greater than 0.4 nmol/L or Acetylcholine Receptor Blocking AB greater than 26%	Acetylcholine Receptor Modulating AB
ANA w/ reflex to titer & ANA Group	ANA, Anti-Centromere, Anti-SM/RNP, Anti-SSA/SSB	Positive ANA	Titer and Pattern
ANCA with reflex to titer	c-ANCA p-ANCA	Positive Positive	c-ANCA titer p-ANCA titer
ANCA Positive with reflex to titer & MPOAB or PR3AB	c-ANCA p-ANCA	Positive Positive	Titer Titer and PR3 Ab or MPO Ab
Anti-dsDNA by Crithidia w/Reflex titer	Anti-dsDNA/Crithidia	Positive >1:10	Titer
Anti-Mitochondrial Antibody	Antimitochondrial Ab	Positive >1:10	AMA titer
Arsenic Urine or Heavy Metals Urine	Arsenic Urine	35-2000 ug/L	Arsenic Speciation
Autoimmune Encephalopathy Antibody Panel - CSF or Serum		Pattern Suggestive of:	
	Immunofluorescence (IFA)	CRMP-5-IgG	CRMP-5-IgG Western Blot and (serum only) Ach receptor (muscle) binding antibody
	Immunofluorescence (IFA)	Amphipysin antibody, AGNA-1, ANNA-1, ANNA-2, PCA-1, PCA-Tr	Immunoblot specific to the antibody.
	Immunofluorescence (IFA)	IGLON5	IgLON5 cell-binding assay (CBA)
	IFA (AMPA only) and Cell-binding assay (CBA)	AMPA, and AMPA CBA is positive, or (serum only) CASPR2 CBA is positive	IFA titer and (serum only) CRMP-5-IgG Western Blot and Ach receptor (muscle) binding antibody.
	Immunofluorescence (IFA)	GABA-B, and GABA-B antibody is positive	IFA titer
	IFA and Cell-binding assay (CBA)	NMDA, and NMDA CBA is positive	IFA titer
	Immunofluorescence (IFA)	DPPX, GFAP, mGluR1	CBA and titer
	Immunofluorescence (IFA)	NIF	Alpha internexin CBA, NIF heavy chain CBA, NIF light chain CBA, and NIF titer
Cryoglobulins w/Reflex IFE and Ig Quants	Cryoglobulin Screen	Positive	IFE and Cryoprecipitin Quants
Drug panel 9 S/P w/Reflex Confirmations	DOA 9 S/P Screen	Positive	Confirmation for positive drug(s)
F-Actin AB IGG w/Reflex to Smooth Muscle AB IGG Titer	F-Actin AB IGG	Positive >20 units	Smooth Muscle AB IGG Titer
HTLV I/II EIA w/Reflex to WB	HTLV I/II Screen	Positive Screen	HTLV I/II Confirmation
Lyme Screen Ab w/Reflex to Western Blot	Lyme Screen	Positive >1.00 LIV	Lyme IgG WB and Lyme IgM WB

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NMDAR CSF IgG w/Reflex	NMDAR CSF IgG	Positive screen	NMDAR CSF IgG Titer
NMDAR IgG w/Reflex	NMDAR IgG	Positive screen	NMDAR IgG Titer
Q-Fever IgG/IgM w/ Reflex Titer	Q-Fever Phase I IgG Q-Fever Phase II IgG Q-Fever Phase I IgM Q-Fever Phase II IgM	Positive or indeterminate Positive or indeterminate Positive or indeterminate Positive or indeterminate	Q-Fever I IgG Titer Q-Fever II IgG Titer Q-Fever I IgM Titer Q-Fever II IgM Titer
Restricted Pain Management Urine Drug Screen w/Reflex Confirmations	CUTox Drug Screen	Positive	Quantitation/Confirmation of positives
Striated Muscle AB w/ Reflex	Striated Muscle AB	Positive screen	Striated Muscle Titer
VDRL CSF	VDRL CSF	Weakly reactive or reactive	VDRL Titer
Special Chemistry			
Hemoglobin Electrophoresis	Hemoglobin Electrophoresis	CBC not already performed within 7 days of Hgb Elect order. Patient has no previous testing at UCH Clinical Laboratory.	CBC IEF
SPEP (Serum Protein Electrophoresis) with Reflex IFE	Protein Total, Serum/Plasma and SPEP	Monoclonal protein is suspected based on the SPEP result or a suggestive clinical scenario.	Immunofixation Electrophoresis, Urine (IFE U); Pathology Interpretation
UPEP w/Reflex IFE, Timed Urine (LAB438)	Protein timed urine, protein electrophoresis	Monoclonal protein is suspected based on the UPEP result or the patient has had no previous UPEP at UCH Clinical Laboratory.	Immunofixation Electrophoresis, Urine (IFE U); Pathology Interpretation
UPEP w/Relex IFE, Random Urine (LAB837)	Protein urine, protein electrophoresis	Monoclonal protein is suspected based on the UPEP result or the patient has had no previous UPEP at UCH Clinical Laboratory.	Immunofixation Electrophoresis, Urine (IFE U); Pathology Interpretation
Urinalysis			
Eosinophil Smear, Urine	Eosinophil Smear, Urine and Urine WBC quantification	Requires Urine WBC quantification >5 WBC/hpf to perform Eosinophil Smear, Urine.	Urine WBC quantification is automatically performed. If the urine WBC result is within normal limits, the Eosinophil Smear, Urine will be cancelled and credited.
Urinalysis, Reflex	Urinalysis Chemical	Any appearance other than "Clear", and/or Positive Protein, Blood, Nitrite, and/or Leukocyte esterase	Microscopic Examination