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0020032	BILIT	Bilirubin, Total, Serum or Plasma														x					
0020183	FL UN	Urea Nitrogen, Fluid			x	x			x			x									
0020284	HIV WBLOT	Human Immunodeficiency Virus Type 1 (HIV-1) Antibody Confirmation by Western Blot (Test on delay as of 6/1/2023)			x																
0020408	CMP	Comprehensive Metabolic Panel														x					
0020416	HEPATIC	Hepatic Function Panel														x					
0020426	BILI	Bilirubin, Direct and Total, Serum or Plasma														x					
0020468	CRISK E	Lipid Panel, Extended			x																
0020471	UAMY	Amylase, Urine(Change effective as of 08/21/23: Refer to 3016646)																		x	
0020476	UGLU	Glucose, Urine(Change effective as of 08/21/23: Refer to 3016649)																		x	
0020509	CRT-FL	Creatinine, Body Fluid (Change effective as of 08/21/23: Refer to 3016598)																		x	
0020514	CFP	Protein, Total, CSF (Change effective as of 08/21/23: Refer to 3016604)																		x	

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0020515	GLU-CF	Glucose, CSF(Change effective as of 08/21/23: Refer to 3016614)																		x	
0020694	CU-LIVER	Copper, Liver					x														
0020734	AS UF	Arsenic, Fractionated, Urine			x		x					x									
0023107	GENHLTH	General Health Panel								x						x					
0028250	FE LIVER	Iron, Liver					x														
0050028	APO B/A	Apolipoprotein B/A Ratio			x	x			x	x											
0050029	APO B-100	Apolipoprotein B			x	x			x	x											
0050030	APO A-1	Apolipoprotein A-1			x	x			x	x											
0050065	AMA	Mitochondrial M2 Antibody, IgG (ELISA)					x														
0050095	ASO	Streptolysin O Antibody (ASO)							x	x											
0050220	DNSB	DNase-B Antibody			x		x		x												
0050520	SCKL	Hemoglobin S, Evaluation with Reflex to RBC Solubility (Change effective as of 08/21/23: Refer to 3016616 in the August Hotline)																		x	
0050725	PNEUMO AB	Streptococcus pneumoniae Antibodies, IgG (14 Serotypes)			x	x			x												
0050980	HUMPAN I	Humoral Immunity Panel I			x	x			x												
0050981	HUMPAN II	Humoral Immunity Panel II			x	x			x												

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0051368	RHD	RhD Gene (RHD) Copy Number			x	x			x												
0051726	LEISH IGG	Leishmania Antibody, IgG (Visceral Leishmaniasis)			x																
0055256	CCP IGG	Cyclic Citrullinated Peptide (CCP) Antibody, IgG (Change effective as of 08/21/23: Refer to 3016632 in the August Hotline)																		x	
0055567	T CELL-F	T-Cell Clonality Screening by PCR			x	x															
0060193	MA NOC	Antimicrobial Susceptibility - Nocardia			x		x														
0060200	MA SENS	Antimicrobial Susceptibility - Not Otherwise Specified			x		x														
0060201	MA MIC	Antimicrobial Susceptibility - MIC, Individual			x		x														
0060202	MA ANA	Antimicrobial Susceptibility - Anaerobe			x		x														
0060222	MA VIRS	Antimicrobial Susceptibility - Viridans Streptococcus			x		x														
0060345	MA FAST	Antimicrobial Susceptibility - Fastidious Organism			x		x	x													

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0060346	MA GPR	Antimicrobial Susceptibility - Gram Positive Rod			x		x														
0060706	MA ENTER	Antimicrobial Susceptibility - Enterobacteriaceae			x		x														
0060708	MA ENTERO	Antimicrobial Susceptibility - Enterococcus			x		x														
0070025	BHCG QNT	Beta-hCG, Serum Quantitative(Change effective as of 08/21/23: Refer to 3016579 in the August Hotline)																		x	
0070112	PROINS	Proinsulin, Intact			x				x	x											
0070256	PRO INS	Proinsulin, Intact/Insulin Ratio			x		x		x	x											
0090266	IGG EPI AB	Cell Surface (Epithelial) Antibodies, IgG by IIF										x									
0090299	EPITHELIAL	Basement Membrane Zone and Cell Surface (Epithelial) Antibodies, IgG and IgA by IIF										x									
0090448	CDTI7	Drugs of Abuse 7 Panel, Urine - Screen Only (Change effective as of 08/21/23: Refer to 0092184)																		x	

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0090449	CDTI7A	Drugs of Abuse 7A Panel, Urine - Screen Only(Change effective as of 08/21/23: Refer to 0092185)																		x	
0090453	CDTI9	Drugs of Abuse 9 Panel, Urine - Screen Only (Change effective as of 08/21/23: Refer to 0092186)																		x	
0090454	CDTI9A	Drugs of Abuse 9A Panel, Urine - Screen Only(Change effective as of 08/21/23: Refer to 0092187)																		x	
0090518	ETOH URN	Ethanol, Urine, Qualitative - Medical (Change effective as of 08/21/23: Refer to 0092280)																		x	
0092056	EBMZ IGG	Basement Membrane Zone (Epithelial) Antibodies, IgG by IIF										x									
0092057	EBMZ IGA	Basement Membrane Zone (Epithelial) Antibodies, IgA by IIF										x									
0092106	IGA PEMPHI	Pemphigus Antibodies, IgA by IIF										x									

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0092107	PARA PEMPH	Paraneoplastic Pemphigus (Paraneoplastic Autoimmune Multiorgan Syndrome) Screening Antibodies by IIF										x									
0092283	HG FACTOR	Pemphigoid Gestationis, Complement-Fixing Basement Membrane Antibodies (Herpes Gestationis Factor)										x									
0094030	FELBAMA	Felbamate			x	x	x														
0097709	TTG	Tissue Transglutaminase (tTG) Antibody, IgA					x														
2000183	BT REQUEST	Bladder Tumor Associated Antigen (Inactive as of 08/21/23)																			x
2001743	FHGB	Fetal Hemoglobin Determination for Fetomaternal Hemorrhage			x			x		x											
2003128	TAPENTA UR	Tapentadol, Urine, Quantitative		x					x			x									
2003176	RUFIN SP	Rufinamide, Serum or Plasma			x		x														
2003182	LACOSA SP	Lacosamide, Serum or Plasma			x	x	x														

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2004221	NMDA IGG	N-methyl-D-Aspartate Receptor Antibody, IgG by CBA-IFA, Serum with Reflex to Titer		x					x		x										
2005016	BCR MIN	BCR-ABL1, Minor (p190), Quantitative			x		x														
2005096	OPI SCR UR	Opiates, Screen Only, Urine(Change effective as of 08/21/23: Refer to 2005093)																		x	
2005103	OXY SCR UR	Oxycodone/Oxymorphone Screen Only, Urine (Change effective as of 08/21/23: Refer to 2005100)																		x	
2005164	NMDA G CSF	N-methyl-D-Aspartate Receptor Antibody, IgG by CBA-IFA, CSF with Reflex to Titer		x					x		x										
2005373	AH50	Alternative Complement Pathway Activity (AH50)		x	x	x	x		x	x	x										
2005545	MPL	MPL Mutation Detection by Capillary Electrophoresis			x				x												
2005779	PNEUMO 23	Streptococcus pneumoniae Antibodies, IgG (23 Serotypes)			x	x			x												
2006193	BCELL SCRN	B-Cell Clonality Screening (IgH and IgK) by PCR			x	x			x												

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2006332	EXOME SEQ	Exome Sequencing, Trio (Change effective as of 08/21/23: Refer to 3016583 in the August Hotline)																		x	
2006336	EXOSEQ PRO	Exome Sequencing, Proband (Change effective as of 08/21/23: Refer to 3016583 in the August Hotline)																		x	
2006340	TRACKEXAD D	Exome Sequencing, Familial Control (Change effective as of 08/21/23: Refer to 3016583 in the August Hotline)																		x	
2006621	TOF SCR CD	Drug Detection Panel, Umbilical Cord Tissue, Qualitative				x		x		x											
2008919	PNEUMO 9	Streptococcus pneumoniae Antibodies, IgG (9 Serotypes)			x	x			x												
2009452	CASPR2 IGG	Contactin-Associated Protein-2 Antibody, IgG by CBA-IFA with Reflex to Titer, Serum		x					x		x										
2009456	LGI1 IGG	Leucine-Rich, Glioma-Inactivated Protein 1 Antibody, IgG CBA-IFA with Reflex to Titer, Serum							x		x										

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2009460	LGI1 CASPR 2	Leucine-Rich, Glioma-Inactivated Protein 1 Antibody, IgG CBA-IFA and Contactin-Associated Protein-2 Antibody, IgG CBA-IFA with Reflex to Titers, Serum									x										
2009463	VGKC R	Voltage-Gated Potassium Channel (VGKC) Antibody with Reflex to LGI1 and CASPR2 Screen and Titer, Serum									x										
2011117	MYE NGS	Myeloid Malignancies Mutation Panel by Next Generation Sequencing			x																
2011132	FISH AML	Acute Myeloid Leukemia Panel by FISH (Change effective as of 08/21/23: Refer to 3016654)																		x	
2011699	AQP4 CSF	Aquaporin-4 Antibody, IgG by CBA-IFA, CSF with Reflex to Titer							x		x										
2012695	ETG SCR UR	Ethyl Glucuronide Screen Only, Urine (Change effective as of 08/21/23: Refer to 2007912)																		x	
2012849	RAPID SEQ	Critically Ill Rapid Genetic Diagnosis Panel, ~5000 Genes (Inactive as of 8/21/2023)																			x

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2012868	EGFR T790M	EGFR T790M Mutation Detection in Circulating Tumor DNA by Digital Droplet PCR (Inactive as of 08/21/23)																			x
2013107	HIV AB SUP	Human Immunodeficiency Virus Types 1 and 2 (HIV-1/2) Antibody Differentiation, Supplemental			x																
2013257	HN CONSULT	Consultation, Head and Neck			x																
2013262	NP CONSULT	Consultation, Neuropathology			x																
2013263	SP CONSULT	Consultation, Surgical Pathology			x																
2013320	AQP4 SER	Aquaporin-4 Antibody, IgG by CBA-IFA with Reflex to Titer, Serum							x		x										
2013327	AQP4 R	Aquaporin-4 Receptor Antibody by ELISA with Reflex to Aquaporin-4 Receptor Antibody, IgG by IFA									x										
2013433	CLOZAP SP	Clozapine and Metabolites, Serum or Plasma, Quantitative			x				x												
2013661	CF VAR	Cystic Fibrosis (CFTR) Expanded Variant Panel			x	x															
2013662	CF VAR FE	Cystic Fibrosis (CFTR) Expanded Variant Panel, Fetal			x	x			x												

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2013956	CV2.1 SCRN	CV2.1 Antibody, IgG by CBA-IFA with Reflex to Titer, Serum		x					x		x										
2014277	CARBAR PCR	Antimicrobial Susceptibility - Carbapenemase Gene Detection by PCR			x	x															
2014484	THIOPMETAB	Thiopurine Metabolites by LC-MS/MS (Change effective as of 08/21/23: Refer to 3016503 in the August Hotline)																		x	
3000193	HPA GENO	Platelet Antigen Genotyping Panel			x	x		x	x												
3000724	B-ALL MRD	B-Lymphoblastic Leukemia (B-ALL) Minimum Residual Disease Detection by Flow Cytometry					x														
3001053	RBC GENO	Red Blood Cell Antigen Genotyping			x	x			x												
3001257	AMPA CSF	Alpha-Amino-3-hydroxy-5-methyl-4-isoxazolepropionic Acid (AMPAR) Receptor Antibody, IgG by CBA-IFA with Reflex to Titer, CSF							x		x										

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3001260	AMPA SER	Alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic Acid (AMPA) Receptor Antibody, IgG by CBA-IFA with Reflex to Titer, Serum							x		x										
3001267	GABA-B CSF	Gamma Aminobutyric Acid Receptor, Type B (GABA-BR) Antibody, IgG by CBA-IFA with Reflex to Titer, CSF							x		x										
3001270	GABA-B SER	Gamma Aminobutyric Acid Receptor, Type B (GABA-BR) Antibody, IgG by CBA-IFA with Reflex to Titer, Serum							x		x										
3001277	MOG SER	Myelin Oligodendrocyte Glycoprotein (MOG) Antibody, IgG by CBA-IFA with Reflex to Titer, Serum							x		x										
3001283	CNS PAN	Autoimmune CNS Demyelinating Disease Reflexive Panel									x										
3001591	EPI NGS	Comprehensive Epilepsy Panel, Sequencing and Deletion/Duplication	x																		
3001784	ILD PANEL	Interstitial Lung Disease Autoantibody Panel				x			x			x									
3001947	SMR INTRP	Blood Smear with Interpretation			x																

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3001968	KL6_SPD	Interstitial Lung Disease (ILD) Biomarkers Panel (Change effective as of 08/21/23: Refer to 3001866)																		x	
3001969	SP-D	Human Surfactant Protein D (SP-D) (Change effective as of 08/21/23: Refer to 3001866)																		x	
3001986	CASPR2GCSF	Contactin-Associated Protein-2 Antibody, IgG by CBA-IFA with Reflex to Titer, CSF		x					x		x										
3001992	LGI1IGGCSF	Leucine-Rich, Glioma-Inactivated Protein 1 Antibody, IgG by CBA-IFA with Reflex to Titer, CSF		x					x		x										
3001996	VGKCCSFPAN	Voltage-Gated Potassium Channel (VGKC) Complex Antibody Panel with Reflex to Titer, CSF									x										
3002001	KEL GENO	Kell K/k (KEL) Antigen Genotyping			x			x	x												
3002002	RHC GENO	RhC/c (RHCE) Antigen Genotyping			x			x	x												
3002003	RHE GENO	RhE/e (RHCE) Antigen Genotyping			x			x	x												

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3002069	MM MRD	Multiple Myeloma Minimum Residual Disease by Flow Cytometry					x														
3002257	CV2.1 CSF	CV2.1 Antibody, IgG by CBA-IFA with Reflex to Titer, CSF		x					x		x										
3002929	PNS PAN2	Paraneoplastic Reflexive Panel									x										
3003017	MUWA R2	Autoimmune Neuromuscular Junction Reflexive Panel									x										
3003142	CLL MRD	Chronic Lymphocytic Leukemia Minimum Residual Disease by Flow Cytometry					x														
3003253	LYME PEP	Borrelia burgdorferi VlsE1/pepC10 Antibodies, Total by ELISA (Change effective as of 08/21/23: Refer to 3006053, 3003254, 3003255)																		x	
3003641	MM MRDRFLX	Multiple Myeloma Minimum Residual Disease by Flow Cytometry with Reflex to FISH					x														
3004055	RA PANEL	Rheumatoid Arthritis Panel (Change effective as of 08/21/23: Refer to 3016634 in the August Hotline)																		x	

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3004056	RA PANEL R	Rheumatoid Arthritis Panel with Reflex to Rheumatoid Factors, IgA, IgG, and IgM by ELISA (Change effective as of 08/21/23: Refer to 3016635 in the August Hotline)																		x	
3004277	MSIPCR	Microsatellite Instability (MSI) HNPCC/Lynch Syndrome by PCR			x	x			x												
3004308	MLH1 PCR	MLH1 Promoter Methylation			x	x			x												
3004359	DPPX SER	Dipeptidyl Aminopeptidase-Like Protein 6 (DPPX) Antibody, IgG by CBA-IFA with Reflex to Titer, Serum							x		x										
3004512	DPPX CSF	Dipeptidyl Aminopeptidase-Like Protein 6 (DPPX) Antibody, IgG by CBA-IFA with Reflex to Titer, CSF							x		x										
3004517	PNSPAN CSF	Paraneoplastic Reflexive Panel, CSF									x										
3004583	MEC PANEL	Drug Detection Panel, Meconium, Qualitative			x	x				x		x						x			
3005939	RWGS REA	Whole Genome Reanalysis		x																	

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3005956	MGMT METH	MGMT Promoter Methylation Detection by ddPCR			x				x												
3005961	C5 INH PAN	C5 Inhibitors Drug Monitoring Panel				x			x	x	x										
3005996	CHYLO RFLX	Triglycerides Body Fluid with Reflex to Chylomicron Electrophoresis					x														
3006049	AE CSF	Autoimmune Encephalitis Reflex Panel, CSF									x										
3006050	ENCEPHEXT 2	Autoimmune Encephalitis Extended Panel, Serum									x										
3006051	NEURO R4	Autoimmune Neurologic Disease Panel with Reflex, Serum				x					x										
3006052	NEURORCS F2	Autoimmune Neurologic Disease Panel with Reflex, CSF				x					x										
3006149	BRAFIHC	BRAF by Immunohistochemistry	x																		
3006162	IRF8 IHC	IRF8 by Immunohistochemistry	x																		
3006344	MACRO PCR	Mycoplasmoides genitalium Detection and Macrolide Resistance by PCR	x																		
3006351	CATHK IHC	Cathepsin K by Immunohistochemistry	x																		

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3006357	NR4A3 FISH	NR4A3 Rearrangement by FISH	x																		
3006366	PGXPSYC GD	Pharmacogenetics Panel: Psychotropics, with GeneDose Access	x																		
3006367	TICK PAN	Tickborne Disease Antibodies Panel	x																		
3006370	CAURIS PCR	Candida auris by PCR	x																		
3006373	M PAN_THC	Drug Detection Panel and THC Metabolite, Meconium, Qualitative				x				x		x						x			
3006379	HEPD AB QR	Hepatitis Delta Virus Antibody by ELISA With Reflex to Hepatitis Delta Virus by Quantitative PCR	x																		
3016457	PFAP	Pneumonia Panel by PCR	x																		
3016493	WGS NGS	Whole Genome Sequencing	x																		
3016497	WGS FRPT	Whole Genome Sequencing, Familial Control	x																		
3016503	THIOMET	Thiopurine Metabolites in Red Blood Cells	x																		
3016533	ENVO IGG	Envoplakin Antibody, IgG by ELISA	x																		

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3016534	PNP PLUS	Paraneoplastic Pemphigus (Paraneoplastic Autoimmune Multiorgan Syndrome) Expanded Antibody Panel by IIF With ELISA	x																		
3016579	QNT BHCG	Beta-hCG, Quantitative (Pregnancy)	x																		
3016583	EXOME PRO	Exome Sequencing	x																		
3016589	EXOME FRPT	Exome Sequencing, Familial Control	x																		
3016598	BF CRT	Body Fluid, Creatinine	x																		
3016604	CSF, Total Protein	CSF, Total Protein	x																		
3016614	CSF GLU	CSF, Glucose	x																		
3016616	SCKLHB	Hemoglobin S Evaluation with Reflex to RBC Solubility	x																		
3016631	HBV EXP	HBV Exposure Panel	x																		
3016632	CCP IGGIGA	Cyclic Citrullinated Peptide Antibody, IgG and IgA	x																		
3016634	RA PNL	Rheumatoid Arthritis (RA) Panel	x																		
3016635	RA PNL R	Rheumatoid Arthritis (RA) Panel with Refl ex to Rheumatoid Factors, IgA, IgG, and IgM by ELISA	x																		

Effective as of August 21, 2023

Additional ordering and billing information

Information when ordering laboratory tests that are billed to Medicare/Medicaid

Information regarding Current Procedural Terminology (CPT)

Test Number	Mnemonic	Test Name	New Test	Test Name Change	Specimen Requirements	Methodology	Performed/Reported	Note	Interpretive Data	Reference Interval	Component Charting Name	Component Change	Reflex Pattern	Result Type	Ask at Order Prompt	Numeric Map	Unit of Measure	CPT Code	Pricing Change	Inactivation w/ Replacement	Inactivation w/o Replacement
3016639	RBCGENO FE	Red Blood Cell Antigen Genotyping, Fetal	x																		
3016640	RHD FE	RhD Gene (RHD) Copy Number, Fetal	x																		
3016646	URN AMY	Urine, Amylase	x																		
3016649	URN GLU	Urine, Glucose	x																		
3016654	FISHAML	Acute Myeloid Leukemia Panel by FISH	x																		
3016673	HPAGENO FE	Platelet Antigen Genotyping Panel, Fetal	x																		
3016676	KELGENO FE	Kell K/k (KEL) Antigen Genotyping, Fetal	x																		
3016679	RHCGENO FE	RhC/c (RHCE) Antigen Genotyping, Fetal	x																		
3016682	RHEGENO FE	RhE/e (RHCE) Antigen Genotyping, Fetal	x																		
3016687	COCCI PCR	Coccidioides by PCR	x																		

TEST CHANGE

Bilirubin, Total, Serum or Plasma

0020032, BILIT

Specimen Requirements:	
Patient Preparation:	
Collect:	Plasma separator tube or serum separator tube.
Specimen Preparation:	Protect from light during collection, storage and shipment. Allow serum tube to clot completely at room temperature. Separate serum or plasma from cells within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Amber Transport Tube. (Min: 0.2 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	
Remarks:	
Stability:	After separation from cells if protected from light: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 6 months
Methodology:	Spectrophotometry
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	
CPT Codes:	82247
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	
By report	

HOTLINE NOTE: There is a numeric map change associated with this test. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Urea Nitrogen, Fluid

0020183, FL UN

Specimen Requirements:	
Patient Preparation:	
Collect:	Peritoneal/Ascites ~~fluid.~~
Specimen Preparation:	Centrifuge ~~and separate~~ to remove cellular material. Transfe~~por~~t 1 mL body fluid to an ARUP Standard Transport Tube.~~.~~ (Min: 0.2 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Specimen~~Dialysate and any specimen~~ types other than those listed. Specimens too viscous to be aspirated by instrument.
Remarks:	Indicate source on test request form.
Stability:	Ambient: 1 week~~24 hours~~; Refrigerated: 1 week~~5 days~~; Frozen: 1 year
Methodology:	Quantitative Spectrophotometry
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	
CPT Codes:	84520
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

For information on body fluid reference ranges and/or interpretive guidance visit https://www.aruplab.com/bodyfluids ~~Reference ranges for this assay have not been established for body fluid. Results should be interpreted in comparison to the concentration in blood and in conjunction with clinical context.~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Reference Intervals have not been~~Not~~ established.

HOTLINE NOTE: There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Human Immunodeficiency Virus Type 1 (HIV-1) Antibody Confirmation by Western Blot (Test on delay as of 6/1/2023)

0020284, HIV WBLOT

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube. Also acceptable: Lavender (EDTA), green (sodium or lithium heparin) or light blue (sodium citrate).
Specimen Preparation:	Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed or lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: Up to 7 days is acceptable, but not preferred; Refrigerated: 7 days; Frozen: 8 months~~Indefinitely~~ (avoid repeated freeze/thaw cycles)
Methodology:	Qualitative Western Blot
Performed:	Varies
Reported:	1-5 days
Note:	Order this assay only when a specimen is repeatedly reactive for HIV 1 or HIV 1-2 antibodies.
CPT Codes:	86689
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

This assay should not be used for blood donor screening, associated reentry protocols, or for screening human cell, tissues, and cellular- and tissue-based products (HCT/P).

Reference Interval:

Negative

TEST CHANGE

Comprehensive Metabolic Panel

0020408, CMP

Specimen Requirements:	
Patient Preparation:	
Collect:	Plasma separator tube or serum separator tube (SST).
Specimen Preparation:	Protect from light. Allow serum tube to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 30 minutes of collection. Transfer 1 mL serum or plasma to an ARUP Amber Transport Tube. (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	EDTA, citrate, oxalate, or sodium fluoride/potassium oxalate.
Remarks:	
Stability:	After separation from cells: Ambient: Calcium and CO2: 4 hours, All others: 24 hours; Refrigerated: 1 week; Frozen: 2 weeks
Methodology:	Quantitative Ion-Selective Electrode/Quantitative Enzymatic Assay/Quantitative Spectrophotometry
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	Tests included in this panel: Albumin, Serum or Plasma (0020030), Alkaline Phosphatase, Serum or Plasma (0020005), Aspartate Aminotransferase, Serum or Plasma (0020007), Alanine Aminotransferase, Serum or Plasma (0020008), Bilirubin, Total, Serum or Plasma (0020032), Calcium, Serum or Plasma (0020027), Carbon Dioxide, Serum or Plasma (0020004), Creatinine, Serum or Plasma (0020025), Chloride, Serum or Plasma (0020003), Glucose, Serum or Plasma (0020024), Potassium, Plasma or Serum (0020002), Protein, Total, Plasma or Serum (0020029), Sodium, Plasma or Serum (0020001), and Urea Nitrogen, Plasma or Serum (0020023).
CPT Codes:	80053
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Reference Interval:

By report (reports may vary based on instrumentation).

HOTLINE NOTE: There is a numeric map change associated with this test. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Hepatic Function Panel

0020416, HEPATIC

Specimen Requirements:	
Patient Preparation:	
Collect:	Plasma separator tube or serum separator tube.
Specimen Preparation:	Allow serum tube to clot completely at room temperature. Separate serum or plasma from cells within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.3 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	
Remarks:	
Stability:	After separation from cells: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 1 year
Methodology:	Quantitative Enzymatic Assay/Quantitative Spectrophotometry
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	This panel includes the following tests: Albumin, Serum or Plasma (0020030), Alkaline Phosphatase, Serum or Plasma (0020005), Aspartate Aminotransferase, Serum or Plasma (0020007), Alanine Aminotransferase, Serum or Plasma (0020008), Bilirubin, Direct, Serum or Plasma (0020033), Protein, Total, Plasma or Serum (0020029), and Bilirubin, Total, Serum or Plasma (0020032).
CPT Codes:	80076
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	

Refer to report. Reference intervals may vary based on instrumentation.

HOTLINE NOTE: There is a numeric map change associated with this test. Refer to the Hotline Test

Mix for interface build information.

TEST CHANGE

Bilirubin, Direct and Total, Serum or Plasma

0020426, BILI

Specimen Requirements:	
Patient Preparation:	
Collect:	Plasma separator tube or serum separator tube.
Specimen Preparation:	Protect from light during collection, storage, and shipment. Allow serum tube to clot completely at room temperature. Separate serum or plasma from cells within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Amber Transport Tube. (Min: 0.2 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	
Remarks:	
Stability:	After separation from cells if protected from light: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 6 months
Methodology:	Quantitative Spectrophotometry
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	This panel includes: Bilirubin, Direct, Serum or Plasma (0020033) and Bilirubin, Total, Serum or Plasma (0020032).
CPT Codes:	82247; 82248
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	
By report (reports may vary based on instrumentation)	

HOTLINE NOTE: There is a numeric map change associated with this test. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Lipid Panel, Extended

0020468, CRISK E

Specimen Requirements:	
Patient Preparation:	Patient must fast for 12-15 hours prior to collection.
Collect:	Serum separator tube or plasma separator tube.
Specimen Preparation:	Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Body f~~F~~luid (refer to Cholesterol, Fluid, ARUP test code 0020714; Triglycerides, Fluid ARUP test code 0020713; and Chylomicron Screen, Body Fluid, ARUP test code 0098457).
Remarks:	
Stability:	After separation from cells: Ambient: 8~~24~~ hours; Refrigerated: 5 days; Frozen: 3 months
Methodology:	Quantitative Spectrophotometry/Quantitative Enzymatic Assay
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	LDL-cholesterol is measured (not calculated) on this panel.
CPT Codes:	80061; 83721
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

An HDL cholesterol less than 40 mg/dL is low and constitutes a coronary heart disease risk factor. An HDL cholesterol greater than 60 mg/dL is a negative risk factor for coronary heart disease.

Non-HDL cholesterol is a secondary target of therapy in persons with high serum triglycerides (greater than 199 mg/dL). The goal for non-HDL cholesterol in persons with high triglycerides is 30 mg/dL higher than their LDL cholesterol goal.

CHD Risk Factors
+1 Age: Men, 45 years and older
+1 Women, 55 years and older or premature menopause without estrogen therapy
+1 Family history of premature CHD
+1 Current smoking
+1 Hypertension
+1 Diabetes mellitus
+1 Low HDL cholesterol: 39 mg/dL or less
-1 High HDL cholesterol: 60 mg/dL or greater

20 years and older	Desirable	Borderline	Higher Risk
Total Cholesterol	199 mg/dL or less	200-239 mg/dL	240 mg/dL or greater
Triglycerides	149 mg/dL or less	150-199 mg/dL	200-499 mg/dL
HDL Cholesterol	40 mg/dL or greater		39 mg/dL or less
LDL Cholesterol	129 mg/dL or less (99 mg/dL or less if patient has CHD)	130-159 mg/dL	160 mg/dL or greater
VLDL Cholesterol (calculated)	30 mg/dL or less		
0-19 years	Desirable	Borderline	High Risk
Total Cholesterol	169 mg/dL or less	170-199 mg/dL	200 mg/dL or greater
Triglycerides	149 mg/dL or less	150-199 mg/dL	200-499 mg/dL
HDL Cholesterol	40 mg/dL or greater		39 mg/dL or less
LDL-Cholesterol (measured)	109 mg/dL or less	110-129 mg/dL	130 mg/dL or greater
VLDL Cholesterol (calculated)	30 mg/dL or less		

Reference Interval:

By Report

TEST CHANGE

Copper, Liver

0020694, CU-LIVER

Specimen Requirements:	
Patient Preparation:	
Collect:	Liver tissue obtained with an 18 gauge needle.
Specimen Preparation:	Transport at least a 1 cm long specimen. Tissue can be fresh, paraffin-embedded, or dried. Also acceptable: Formalin-fixed. Specimens other than paraffin-embedded should be stored and transported in a metal-free container such as a royal blue (no additive).
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Specimens less than 0.25 mg (dry weight). Paraffin blocks that have been processed with Hollandes or other copper-containing stain.
Remarks:	
Stability:	Paraffin block, preserved (formalin), or dried: Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Indefinitely Fresh tissue: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: Indefinitely
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Performed:	~~Mon,~~ Wed~~, Thu, Fri, Sat~~
Reported:	3-10~~2-6~~ days
Note:	
CPT Codes:	82525
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Hepatic copper concentrations approach or exceed 250 µg/g in untreated Wilson disease. Elevated hepatic copper is also seen with chronic biliary obstruction and cholestatic conditions. Results inconsistent with other findings may reflect heterogeneity in hepatic copper distribution.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Reference Interval:

15-55 μg/g of tissue.

TEST CHANGE

Arsenic, Fractionated, Urine

0020734, AS UF

Specimen Requirements:	
Patient Preparation:	
Collect:	24-hour or random urine collection. Specimen must be collected in a plastic container and should be refrigerated during collection. ARUP studies indicate that refrigeration of urine alone, during and after collection, preserves specimens adequately if tested within 14 days of collection.
Specimen Preparation:	Transfer an 8 mL aliquot of urine from a well-mixed collection to ARUP Trace Element-Free Transport Tubes (ARUP supply #43116). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787. (Min: 2 mL)
Transport Temperature:	Refrigerated. Also acceptable: Room temperature or frozen.
Unacceptable Conditions:	Urine collected within 48 hours after administration of a gadolinium (Gd) containing contrast media (may occur with MRI studies). Acid preserved urine. Specimens contaminated with blood or fecal material. Specimens transported in non-trace element-free transport tube (with the exception of the original device).
Remarks:	Record total volume and collection time interval on transport tube and on test request form.
Stability:	Ambient: 2 weeks~~1 week~~; Refrigerated: 2 weeks; Frozen: 2 months~~1 year~~
Methodology:	Quantitative High Performance Liquid Chromatography (HPLC)/~~/~~Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Performed:	~~Sun,~~ Tue, Fri~~Thu, Sat~~
Reported:	1-10 days
Note:	
CPT Codes:	82175
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

The ACGIH Biological Exposure Index for the sum of inorganic and methylated species of arsenic is 35 µg/L. Inorganic species of arsenic are most toxic. Methylated species arise primarily from metabolism of inorganic species but may also come from dietary sources and are of moderate toxic potential. The organic species of arsenic are considered nontoxic and arise primarily from food. The sum of the inorganic, methylated, and organic species of arsenic may be lower than the total arsenic concentration due to the presence of unidentified organic species of arsenic.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Reference Interval:

Test Number	Components	Reference Interval
	Arsenic, Organic	By report
	Arsenic, Inorganic	By report
	Arsenic, Methylated	By report

HOTLINE NOTE: There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

General Health Panel

0023107, GENHLTH

Specimen Requirements:	
Patient Preparation:	
Collect:	Plasma separator tube (PST) and Lavender (EDTA) and two unstained whole blood smears.
Specimen Preparation:	Separate plasma from cells ASAP or within 30 minutes of collection. Do not freeze whole blood. Transport 1 mL serum in ARUP Standard Transport Tube and 3 mL whole blood in original collection tube and two unstained whole blood smears.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	
Remarks:	Do not freeze whole blood. Allow serum to clot at room temperature. Separate serum or plasma from cells ASAP.
Stability:	Refer to individual components.
Methodology:	Automated Cell Count/Differential/Quantitative Ion-Selective Electrode/Quantitative Enzymatic Assay/Quantitative Spectrophotometry/Quantitative Chemiluminescent Immunoassay
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	This panel includes the following tests: Comprehensive Metabolic Panel (0029019), CBC with Platelet Count and Automated Differential (0040003), Thyroid Stimulating Hormone (0070145).
CPT Codes:	80050
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	
By report	

HOTLINE NOTE: There is a numeric map change associated with this test. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Iron, Liver

0028250, FE LIVER

Specimen Requirements:	
Patient Preparation:	
Collect:	Liver tissue obtained with an 18 gauge needle.
Specimen Preparation:	Transport at least a 1 cm long specimen. Tissue can be fresh, paraffin-embedded, or dried. Also acceptable: Formalin-fixed. Specimens should be stored and transported in a metal-free container such as a royal blue (no additive).
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Specimens less than 0.25 mg (dry weight). Specimens stored or shipped in saline.
Remarks:	Age is required on test request form in order to calculate iron index.
Stability:	Paraffin block, preserved (formalin), or dried: Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Indefinitely Fresh tissue: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: Indefinitely
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Performed:	~~Mon, Wed, Thu,~~ Fri~~, Sat~~
Reported:	3-10~~2-6~~ days
Note:	
CPT Codes:	83540
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

A Hepatic Iron Index (HII) is not calculated for patients less than 14 years. An HII less than 1.0 is consistent with normal iron accumulation. An HII 1.0 through 1.9 is consistent with mild iron accumulation such as in heterozygous hemochromatosis or alcoholic liver disease. An HII greater than 1.9 is consistent with iron overload such as in homozygous hemochromatosis, porphyria cutanea tarda, and cirrhotic liver disease. The HII will decrease with chelation, chronic blood loss, or phlebotomy.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Reference Interval:

	Male	Female
Hepatic Iron Concentration by Weight (HIC)	200-2,000 ug/g of tissue	200-1,600 ug/g of tissue
Hepatic Iron Index (HII)	Less than 1.0	Less than 1.0

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Effective Date: August 21, 2023

TEST CHANGE

Apolipoprotein B/A Ratio

0050028, APO B/A

Specimen Requirements:	
Patient Preparation:	Fasting specimen recommended.
Collect:	Serum separator tube, plasma separator tube, K2EDTA, lithium heparin.
Specimen Preparation:	Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP standard transport tube.Standard Transport Tube. (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 248 hours; Refrigerated: 8 days; Frozen: 23 months
Methodology:	Quantitative ImmunoturbidimetryNephelometry
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	
CPT Codes:	82172 x2
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

The ratio of apolipoprotein B/apolipoprotein A-1 can provide an estimate of the relative risk for major adverse cardiovascular events in adultscoronary atherosclerotic disease.

Relative Risk: Apolipoprotein B/A Ratio: 1	Male	Female
LowOne Half Average Risk	0.2 - 0.64	0.3
MediumAverage Risk	1.0	0.61 - 0.909
HighTwice Average Risk	1.6	0.91 - 1.5.0

Deleted Cells

Deleted Cells

Reference Interval:

Test Number	Components	Reference Interval		
	Apolipoprotein B			
		Male	Female	
		55-140 mg/dL	55-125 mg/dL	
	Apolipoprotein A-1			
		Male	Female	
		94-178 mg/dL	101-199 mg/dL	

TEST CHANGE

Apolipoprotein B

0050029, APO B-100

Specimen Requirements:	
Patient Preparation:	Fasting specimen.
Collect:	Serum separator tube, plasma separator tube, K2EDTA, lithium heparin.
Specimen Preparation:	Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP standard transport tube. Standard Transport Tube. (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 248 hours; Refrigerated: 8 days; Frozen: 23 months
Methodology:	Quantitative Immunoturbidimetry Nephelometry
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	This protein is found in low density lipoprotein.
CPT Codes:	82172
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

A desirable fasting serum Apo B concentration for the prevention of atherosclerotic cardiovascular diseasein adults in adults is less than 90 mg/dL. A or less. A borderline-high fasting serum Apo B concentration of 130 mg/dL or greater corresponds to a LDL cholesterol in adults is 90 to 99 mg/dL. A high fasting serum Apo B concentration greater than 160 mg/dL in adults is 100 to 130 mg/dL. A very high fasting serum Apo B concentration in adults is greater than 130 mg/dL.

Access complete set of age- and constitutes a risk enhancing factor for atherosclerotic cardiovascular disease in adults. or gender-specific reference intervals for this test in the ARUP Laboratory Test Directory (aruplab.com).

Reference Interval:

Male: 66-13355-140 mg/dL
Female: 60-11755-125 mg/dL

TEST CHANGE

Apolipoprotein A-1

0050030, APO A-1

Specimen Requirements:	
Patient Preparation:	Freshly drawn fasting specimen.
Collect:	Serum separator tube, plasma separator tube, K2EDTA, lithium heparin.
Specimen Preparation:	Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP standard transport tube. ~~Standard Transport Tube.~~ (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	~~Hemolyzed specimens.~~
Remarks:	Separate serum from cells ASAP.
Stability:	After separation from cells: Ambient: 24~~8~~ hours; Refrigerated: 8 days; Frozen: 2~~3~~ months
Methodology:	Quantitative Immunoturbidimetry~~Nephelometry~~
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	This protein is found in high density lipoprotein.
CPT Codes:	82172
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	
Male: 104-202~~94-178~~ mg/dL Female: 108-225~~101-199~~ mg/dL	

TEST CHANGE

Mitochondrial M2 Antibody, IgG (ELISA)

0050065, AMA

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 0.5 mL to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.3 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Plasma. Contaminated, hemolyzed, grossly icteric, or severely lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)
Performed:	Sun-Sat
Reported:	1-2 days ~~Within 24 hours~~
Note:	
CPT Codes:	86381
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Antimitochondrial~~Anti-mitochondrial~~ antibodies (AMA) are thought to be present in 90-95% of patients with primary biliary cholangitis (PBC). However, the frequency of detected antibodies may be cohort or assay dependent, as lower sensitivities have been reported. Not all PBC patients are positive for AMA; some patients may be positive for SP100 and/or GP210 antibodies. A negative result does not rule out PBC.

Reference Interval:

20.0 Units or less	Negative
20.1-24.9 Units	Equivocal
25.0 Units or greater	Positive

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Effective Date: August 21, 2023

TEST CHANGE

Streptolysin O Antibody (ASO)

0050095, ASO

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.4 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 8 hours; Refrigerated: 8 days; Frozen: 3 months
Methodology:	Quantitative Nephelometry
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	
CPT Codes:	86060
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Elevated titers of antideoxyribonuclease B antibody (anti-DNase B) or antistreptolysin O antibody (ASO) indicate a recent group A Streptococcus infection. Anti-DNase B antibodies typically remain elevated longer than ASO and may remain elevated for several months after infection. Patients suspected of having complications related to a recent Streptococcus infection such as acute glomerulonephritis or acute rheumatic fever may have elevated anti-DNase B but normal ASO antibody titers. A negative or very low anti-DNase B and ASO antibody titers, especially from a specimen tested 2 weeks after a suspected infection, indicates unlikely incidence of a recent Streptococcus

Inserted Cells

infection.

Reference Interval:

0-1 year: ~~0-~~200 IU/mL
2-12 years: ~~0-~~240 IU/mL
13 years and older: ~~0-~~330 IU/mL

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Effective Date: August 21, 2023

TEST CHANGE

DNase-B Antibody

0050220, DNSB

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.4 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Plasma or severely hemolyzed specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 2~~48~~ hours; Refrigerated: 8 days~~2 weeks~~; Frozen: 3 months~~1 year~~
Methodology:	Quantitative Nephelometry
Performed:	Sun-Sat~~, Wed, Fri~~
Reported:	1-4 days
Note:	
CPT Codes:	86215
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Elevated titers of antideoxyribonuclease B antibody (anti-DNase B) or antistreptolysin O antibody (ASO) indicate a recent group A Streptococcus infection. Anti-DNase B antibodies typically remain elevated longer than ASO and may remain elevated for several months after infection. Patients suspected of having complications related to a recent Streptococcus infection such as acute glomerulonephritis or acute rheumatic fever may have elevated anti-DNase B but normal ASO antibody titers. A negative or very low anti-DNase B and ASO antibody titers, especially from a specimen tested 2 weeks after a suspected infection, indicates unlikely incidence of a recent Streptococcus

Inserted Cells

infection.

Reference Interval:

0-6 years: Less than 250 U/mL
7-17 years: Less than 310 U/mL
18 years and older: Less than 260 U/mL

TEST CHANGE

Streptococcus pneumoniae Antibodies, IgG (14 Serotypes)

0050725, PNEUMO AB

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube. Postimmunization~~Post-immunization~~ specimen should be drawn 30 days after immunization and, if shipped separately, must be received within 60 days of preimmunization~~pre-immunization~~ specimen.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 1.5 mL serum to an ARUP standard transport tube~~Standard Transport Tube~~. (Min: 0.25 mL) MARK SPECIMENS CLEARLY AS "PRE" OR "POST" SO SPECIMENS WILL BE SAVED AND TESTED SIMULTANEOUSLY.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Plasma or other body fluids. Contaminated, hemolyzed, or severely lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 60 days~~1 year~~ (avoid repeated freeze/thaw cycles)
Methodology:	Quantitative Multiplex Chemiluminescent Immunoassay~~Bead Assay~~
Performed:	Sun-Sat
Reported:	1-3 days
Note:	
CPT Codes:	86317 x14
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

A pre- and postvaccination comparison is required to adequately assess the humoral immune response to the pure polysaccharide Pneumovax 23 (PNX) and/or the protein conjugated Prevnar 7 (P7), Prevnar 13 (P13), Prevnar 20 (P20), and Vaxneuvance (V15) *Streptococcus pneumoniae* vaccines. Prevaccination samples should be collected prior to vaccine administration. Postvaccination samples should be obtained at least 4 weeks after immunization. Testing of postvaccination~~post-vaccination~~ samples alone will provide only general immune status of the

individual to various pneumococcal serotypes.

In the case of pure polysaccharide vaccine, indication of immune system competence is further delineated as an adequate response to at least 50 percent of the serotypes in the vaccine challenge for those 2-5 years of age and to at least 70 percent of the serotypes in the vaccine challenge for those 6-65 years of age. Individual immune response may vary based on age, past exposure, immunocompetence, and pneumococcal serotype.

Responder Status Antibody Ratio

Nonresponder . . . . . Non-Responder . . . . . Less than twofold increase and postvaccination concentration less2-fold
Weak Responder . . . . . 2-fold to 4-fold
Good Responder . . . . . Greater than 1.3 ug/mL

Good responder . . . . . .At least a twofold increase and/or a postvaccination concentration greater than or equal to 1.3 ug/mL4-fold

A response to 50-70 percent or more of the serotypes in the vaccine challenge is considered a normal humoral response. (Daly, 2014)response1. Antibody concentration greater than 1.0- -1.3 ugµg/mL is generally considered long-term protection. (Daly, 2015)protection2.

References:
1.Daly TM, Pickering JW, Zhang X, et al. Multilaboratory assessment of threshold versus fold-change algorithms for minimizing analytical variability in multiplexed pneumococcal IgG measurements. *Clin Vaccine Immunol*. 2014;21(7):982-988.
2.Daly TM, Hill HR. Use and clinical interpretationClinical Interpretation of pneumococcal antibody measurementsPneumococcal Antibody Measurements in the eEvaluation of humoral immune function. *Clin Vaccine Immunol*. 2015;22(2):148-152.

Reference Interval:

TEST CHANGE

Humoral Immunity Panel I

0050980, HUMPAN I

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 5.5 mL serum to ARUP standard transport tubes.~~Standard Transport Tubes.~~ (Min: 2.5 mL total)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Plasma.
Remarks:	
Stability:	After separation from cells: Ambient: Unacceptable; Refrigerated: 14 days; Frozen: 60 days~~6 months~~ (avoid repeated freeze/thaw cycles). (Refer to individual components for further information.)
Methodology:	Quantitative Immunoturbidimetry/Semi-Quantitative Multiplex Chemiluminescent Immunoassay~~Bead Assay~~
Performed:	Mon-Sat
Reported:	1-4 days
Note:	
CPT Codes:	86317 x16; 82787 x4; 82784 x3
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

A pre- and postvaccination comparison is required to adequately assess the humoral immune response to the pure polysaccharide Pneumovax 23 (PNX) and/or the protein conjugated Prevnar 7 (P7), Prevnar 13 (P13), Prevnar 20 (P20), and Vaxneuvance (V15) *Streptococcus pneumoniae* vaccines. Prevaccination samples should be collected prior to vaccine administration. Postvaccination samples should be obtained at least 4 weeks after immunization. Testing of postvaccination samples alone will provide only general immune status of the individual to various pneumococcal serotypes.

In the case of pure polysaccharide vaccine, indication of immune system competence is further delineated as an adequate response to at least 50 percent of the serotypes in the vaccine challenge for those 2-5 years of age and to at least 70 percent of the serotypes in the vaccine challenge for

those 6-65 years of age. Individual immune response may vary based on age, past exposure, immunocompetence, and pneumococcal serotype.

Responder Status Antibody Ratio

Nonresponder . . . . . Less than twofold increase and postvaccination concentration less than 1.3 ug/mL

Good responder . . . . . .At least a twofold increase and/or a postvaccination concentration greater than or equal to 1.3 ug/mL

A response to 50-70 percent or more of the serotypes in the vaccine challenge is considered a normal humoral response (Daly, 2014). Antibody concentration greater than 1.0-1.3 ug/mL is generally considered long-term protection. (Daly, 2015)

References:

1. Daly TM, Pickering JW, Zhang X, et al. Multilaboratory assessment of threshold versus fold-change algorithms for minimizing analytical variability in multiplexed pneumococcal IgG measurements. *Clin Vaccine Immunol*. 2014;21(7):982-988.

2. Daly TM, Hill HR. Use and clinical interpretation of pneumococcal antibody measurements in the evaluation of humoral immune function. *Clin Vaccine Immunol*. 2015;22(2):148-152. ~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Diphtheria Antibody, IgG	Antibody concentration of >0.1 IU/mL is usually considered protective.
Tetanus Antibody, IgG	Antibody concentration of >0.1 IU/mL is usually considered protective.

Reference Interval:

Test Number	Components	Reference Interval
	Immunoglobulin A	
		Age: Reference Interval (mg/dL) 0-2 years: 2-126 3-4 years: 14-212 5-9 years: 52-226 10-14 years: 42-345 15-18 years: 60-349 19 years and older: 68-408
	Immunoglobulin G	
		Age: Reference Interval (mg/dL) 0-2 years: 242-1108 3-4 years: 485-1160 5-9 years: 514-1672 10-14 years: 581-1652 15-18 years: 479-1433 19 years and older: 768-1632
	Immunoglobulin M	
		Age: Reference Interval (mg/dL) 0-2 years: 21-215 3-4 years: 26-155 5-9 years: 26-188 10-14 years: 47-252 15-18 years: 26-232 19 years and older: 35-263
	Immunoglobulin G Subclass 1	
		Age: Reference Interval (mg/dL) 0-2 years: 167-900 3-4 years: 313-941 5-9 years: 363-1276 10-14 years: 316-1076 15-18 years: 325-894 19 years and older: 240-1118
	Immunoglobulin G Subclass 2	

		Age	Reference Interval (mg/dL)	
		0-2 years	55-359	
		3-4 years	72-287	
		5-9 years	27-398	
		10-14 years	86-509	
		15-18 years	156-625	
		19 years and older	124-549	
	Immunoglobulin G Subclass 3			
		Age	Reference Interval (mg/dL)	
		0-2 years	34-85	
		3-4 years	25-117	
		5-9 years	17-169	
		10-14 years	14-201	
		15-18 years	34-246	
		19 years and older	21-134	
	Immunoglobulin G Subclass 4			
		Age	Reference Interval (mg/dL)	
		0-2 years	1-34	
		3-4 years	1-65	
		5-9 years	0-168	
		10-14 years	1-103	
		15-18 years	2-170	
		19 years and older	1-123	

TEST CHANGE

Humoral Immunity Panel II

0050981, HUMPAN II

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube.
Specimen Preparation:	Transfer two 1 mL aliquots of serum to individual ARUP standard transport tubes.~~Standard Transport Tubes.~~ (Min: 0.1 mL/aliquot)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Plasma.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 60 days~~1 year~~ (avoid repeated freeze/thaw cycles).
Methodology:	Semi-Quantitative Multiplex Chemiluminescent Immunoassay~~Bead Assay~~
Performed:	Mon-Sat
Reported:	1-4 days
Note:	
CPT Codes:	86317 x16
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

A pre- and postvaccination comparison is required to adequately assess the humoral immune response to the pure polysaccharide Pneumovax 23 (PNX) and/or the protein conjugated Prevnar 7 (P7), Prevnar 13 (P13), Prevnar 20 (P20), and Vaxneuvance (V15) Streptococcus pneumoniae vaccines. Prevaccination samples should be collected prior to vaccine administration. Postvaccination samples should be obtained at least 4 weeks after immunization. Testing of postvaccination samples alone will provide only general immune status of the individual to various pneumococcal serotypes.

In the case of pure polysaccharide vaccine, indication of immune system competence is further delineated as an adequate response to at least 50 percent of the serotypes in the vaccine challenge for those 2-5 years of age and to at least 70 percent of the serotypes in the vaccine challenge for those 6-65 years of age. Individual immune response may vary based on age, past exposure,

immunocompetence, and pneumococcal serotype.

Responder Status Antibody Ratio

Nonresponder . . . . . Less than twofold increase and postvaccination concentration less than 1.3 ug/mL

Good responder . . . . . .At least a twofold increase and/or a postvaccination concentration greater than or equal to 1.3 ug/mL

A response to 50-70 percent or more of the serotypes in the vaccine challenge is considered a normal humoral response. (Daly, 2014) Antibody concentration greater than 1.0-1.3 ug/mL is generally considered long-term protection. (Daly, 2015)

References:

1. Daly TM, Pickering JW, Zhang X, et al. Multilaboratory assessment of threshold versus fold-change algorithms for minimizing analytical variability in multiplexed pneumococcal IgG measurements. Clin Vaccine Immunol. 2014;21(7):982-988.

2. Daly TM, Hill HR. Use and clinical interpretation of pneumococcal antibody measurements in the evaluation of humoral immune function. Clin Vaccine Immunol. 2015;22(2):148-152. ~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Diphtheria Antibody, IgG	Antibody concentration of >0.1 IU/mL is usually considered protective.
Tetanus Antibody, IgG	Antibody concentration of >0.1 IU/mL is usually considered protective.

Reference Interval:

TEST CHANGE

RhD Gene (RHD) Copy Number

0051368, RHD

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), pink (K2EDTA), or yellow (ACD Solution A or B). ~~Fetal genotyping: Amniotic fluid OR Cultured amniocytes: Two T-25 flasks at 80 percent confluency. OR cultured CVS: Two T-25 flasks at 80 percent confluency. If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301. WITH maternal cell contamination specimen (see Remarks): Lavender (EDTA), pink (K2EDTA), or yellow (ACD Solution A or B). Parental genotyping: Lavender (EDTA), pink (K2EDTA), or yellow (ACD Solution A or B).~~
Specimen Preparation:	Whole blood: Transport 3 mL whole blood. (Min: 1 mL) ~~Amniotic fluid: Transport 10 mL amniotic fluid in a sterile container. (Min: 5 mL) Cultured amniocytes AND cultured CVS: Transport two T-25 flasks at 80 percent confluency filled with culture media. Backup cultures must be retained at the client's institution until testing is complete. Maternal cell contamination specimen: Transport 3 mL whole blood (Min: 1 mL) Whole blood (parental genotyping): Transport 3 mL whole blood. (Min: 1 mL)~~
Transport Temperature:	~~Amniotic fluid, cultured amniocytes and cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells.~~ Whole blood ~~or maternal cell contamination~~ specimen: Refrigerated.
Unacceptable Conditions:	Frozen specimens in glass collection tubes.
Remarks:	~~Maternal specimen is recommended for proper test interpretation if contamination of the fetal specimen from the mother is suspected. Order Maternal Cell Contamination. Patient History Form is available on the ARUP website or by contacting ARUP Client Services.~~
Stability:	~~Amniotic fluid, cultured amniocytes and cultured CVS Fetal Specimen: Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable~~ Whole blood ~~or maternal cell contamination~~ specimen: Ambient: 72 hours; Refrigerated: 1

	week; Frozen: 1 month
Methodology:	Polymerase Chain Reaction (PCR)/~~/~~Fluorescence Monitoring
Performed:	Varies
Reported:	2-7 days
Note:	Whole blood is acceptable for paternal specimens.
CPT Codes:	81403
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report.~~Refer to report~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA- certified laboratory and is intended for clinical purposes.~~

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Reference Interval:

By report

TEST CHANGE

Leishmania Antibody, IgG (Visceral Leishmaniasis)

0051726, LEISH IGG

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube.
Specimen Preparation:	Transfer 0.5 mL serum to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.1 mL)
Transport Temperature:	Frozen~~Refrigerated~~.
Unacceptable Conditions:	Serum containing glycerol or other viscous materials. Hemolyzed specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 3 days; Frozen: 1 year
Methodology:	Qualitative Immunoassay
Performed:	Tue
Reported:	1-8 days
Note:	
CPT Codes:	86717
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Detection of IgG antibody directed at *Leishmania* may suggest current or past infection.

Reference Interval:

Negative

TEST CHANGE

T-Cell Clonality Screening by PCR

0055567, T CELL-F

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA) ~~or green (sodium heparin)~~ whole blood or bone marrow; tissue; formalin-fixed tissue.
Specimen Preparation:	Whole Blood: Do not freeze. Transport 5 mL. (Min: 1 mL) Bone M~~m~~arrow: Do not freeze. Transport 3 mL. (Min: 1 mL) Fresh Tissue: Freeze immediately. Transport 100 mg or 0.5-2.0 cm3 tissue FFPE Tumor Tissue: Formalin fix (10 percent neutral buffered formalin) and paraffin embed tissue. Protect from excessive heat. Tissue block will be returned after testing. Transport tissue block or four 10-micron shavings in a tissue transport kit (ARUP Supply #47808) available online through eSupply using ARUP Connect~~(TM)~~ or contact ARUP Client Services at ~~(~~800-~~)~~ 522-2787.
Transport Temperature:	Whole Blood, Bone Marrow: Refrigerated. Fresh Tissue: Frozen on dry ice. FFPE Tumor Tissue: Room temperature. Also acceptable: Refrigerated. Ship in cooled container during summer months.
Unacceptable Conditions:	Whole Blood, Bone Marrow: Plasma, serum. Specimens collected in anticoagulants other than EDTA or sodium heparin. Clotted or grossly hemolyzed specimens. Tissue: Specimens fixed/processed in alternative fixatives, heavy metal fixatives (B-4 or B-5), or tissue sections on slides. Decalcified specimens.
Remarks:	If multiple specimens (blocks or slides) are sent to ARUP, they must be accompanied by one of the following: an order comment indicating that the ARUP pathologist should choose the specimen most appropriate for testing (e.g., "Choose best block"), or individual orders for each sample submitted. A Pathologist Block Selection Fee (ARUP test code 3002076) will be added to orders that utilize the first option. If multiple specimens are sent to ARUP without a request for pathologist block/slide selection or individual orders, they will be held until clarification is provided.
Stability:	Whole Blood or Bone Marrow: Ambient: 24 hours; Refrigerated: 5 days; Frozen: Unacceptable Fresh Tissue: Ambient: Unacceptable; Refrigerated: 2 hours; Frozen: 1 year FFPE Tumor Tissue: Ambient: Indefinitely; Refrigerated: Indefinitely;

	Frozen: Unacceptable
Methodology:	Capillary Electrophoresis/Polymerase Chain Reaction (PCR)
Performed:	Varies
Reported:	5-9 days
Note:	
CPT Codes:	81342
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report. ~~Refer to report.~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

TEST CHANGE

Antimicrobial Susceptibility - Nocardia

0060193, MA NOC

Specimen Requirements:	
Patient Preparation:	
Collect:	Actively growing Nocardia isolate in pure culture.
Specimen Preparation:	Transport sealed container with isolate in pure culture on agar slant. Place each specimen in individually sealed bag.
Transport Temperature:	Room temperature.
Unacceptable Conditions:	Mixed cultures or nonviable~~non-viable~~ organisms.
Remarks:	Isolate identification and specimen source required.
Stability:	Ambient: 1 month; Refrigerated: 2 weeks; Frozen: Unacceptable
Methodology:	Broth Microdilution
Performed:	Sun-Sat
Reported:	5-10~~4-7~~ days
Note:	The following agents are available for testing: amikacin, ciprofloxacin, clarithromycin, doxycycline, imipenem, linezolid, moxifloxacin, tigecycline, tobramycin, and trimethoprim/sulfamethoxazole. Selective reporting by organism. An additional processing fee will be billed for all organisms not submitted in pure culture, as indicated in the specimen requirements. If species identification is not provided, identification will be performed at ARUP. Additional charges apply.
CPT Codes:	87186
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Susceptibility testing is performed by broth microdilution using custom-made MIC panels and interpreted according to CLSI guidelines.

Reference Interval:

Susceptible, intermediate, or resistant.

TEST CHANGE

Antimicrobial Susceptibility - Not Otherwise Specified

0060200, MA SENS

Specimen Requirements:	
Patient Preparation:	
Collect:	Actively growing isolate in pure culture.
Specimen Preparation:	Transport sealed container with pure culture on agar slant. Place each specimen in individually sealed bag.
Transport Temperature:	Room temperature. If culture is suspected of being a microorganism identified on the IATA list as an infectious substance affecting humans, submit specimen according to Infectious Substance, Category A, shipping guidelines.
Unacceptable Conditions:	Mixed cultures or nonviable~~non-viable~~ organisms.
Remarks:	Isolate identification and specimen source required.
Stability:	Ambient: 1 week; Refrigerated: 1 week; Frozen: Unacceptable
Methodology:	Broth Microdilution/Disk Diffusion/Gradient Diffusion
Performed:	Sun-Sat
Reported:	2-7~~4~~ days
Note:	Aerobic susceptibility testing is organism dependent. Various methods are used and various agents are reported. Specific antibiotics to be tested should be indicated on the test request in order to ensure their inclusion in the panel. An additional processing fee will be billed for all organisms not submitted in pure culture, as indicated in the specimen requirements. If species identification is not provided, identification will be performed at ARUP. Additional charges apply.
CPT Codes:	CPT codes may vary based on method.
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Reference Interval:

Susceptible, intermediate, or resistant.

Units = μg/mL

TEST CHANGE

Antimicrobial Susceptibility - MIC, Individual

0060201, MA MIC

Specimen Requirements:	
Patient Preparation:	
Collect:	Actively growing isolate in pure culture.
Specimen Preparation:	Transport sealed container with pure culture on agar slant or in bacterial transport media. Place each specimen in individually sealed bag.
Transport Temperature:	Room temperature. If culture is suspected of being a microorganism identified on the IATA list as an infectious substance affecting humans, submit specimen according to Infectious Substance, Category A, shipping guidelines.
Unacceptable Conditions:	Mixed cultures or nonviable~~non-viable~~ organisms.
Remarks:	Isolate identification and specimen source required. Individual antibiotics must be specified.
Stability:	Ambient: 1 week; Refrigerated: Unacceptable; Frozen: Unacceptable
Methodology:	Gradient Diffusion/Broth Microdilution
Performed:	Sun-Sat
Reported:	2-7~~4~~ days
Note:	The MIC is defined as the lowest concentration of an antibiotic which will inhibit the in vitro growth of an infectious organism. Results are reported in micrograms per mL. The interpretation of in vitro data is based on achievable serum concentrations, which may vary depending on dose, route of administration, degree of protein binding, site of infection, age and weight of the patient, state of health of the patient, and other factors. Reporting of MICs can provide the physician with precise information regarding the infectious organism's degree of susceptibility. When this information is coupled with the physician's knowledge of the site and severity of the infection, as well as the pharmacology of antibiotics, a rational choice of the most appropriate antibiotic can be made to suit the individual patient. With the quantitative MIC: (1) susceptibility can be determined for dosages and routes of administration

	other than those usually prescribed and (2) susceptibility can more accurately be related to the achievable antibiotic concentration in urine, bile, CSF, and other body fluids which may vary widely from the achievable concentration in serum. This test will bill per antibiotic tested. Susceptibility panels are available for certain organisms. Refer to Antimicrobial Susceptibility by organism type. For organisms where panels are not available, specific agent(s) to be tested must be indicated. For staphylococcal species, oxacillin resistance testing is performed in order to interpret the results for b-lactam agents. An additional processing fee will be billed for all organisms not submitted in pure culture, as indicated in the specimen requirements. If species identification is not provided, identification will be performed at ARUP. Additional charges apply.
CPT Codes:	CPT codes vary based on method.
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Susceptibility testing is performed by broth microdilution using custom-made MIC panels and is interpreted according to CLSI guidelines.	
Reference Interval:	
Susceptible, intermediate, or resistant.	

TEST CHANGE

Antimicrobial Susceptibility - Anaerobe

0060202, MA ANA

Specimen Requirements:	
Patient Preparation:	
Collect:	Actively growing organism in pure culture.
Specimen Preparation:	Transport sealed container with pure culture on agar slant in anaerobic transport pouch or on a swab in anaerobic transport media. Place each specimen in an individually sealed bag.
Transport Temperature:	Room temperature.
Unacceptable Conditions:	Aerobic conditions. Mixed cultures or nonviable~~non-viable~~ organisms.
Remarks:	Isolate identification and specimen source required.
Stability:	Ambient: 72 hours; Refrigerated: Unacceptable; Frozen: Unacceptable
Methodology:	Broth Microdilution
Performed:	Sun-Sat
Reported:	5-8~~4-6~~ days
Note:	Anaerobic susceptibility testing is appropriate in the case of serious infections involving blood, bone, joint, tissue, or brain abscess. An additional processing fee will be billed for all organisms not submitted in pure culture, as indicated in the specimen requirements. If species identification is not provided, identification will be performed at ARUP. Additional charges apply. The following agents are available for testing: ampicillin/sulbactam, amoxicillin/clavulanic acid, cefoxitin, clindamycin, doxycycline, ertapenem, imipenem, meropenem, metronidazole, moxifloxicin, penicillin G, piperacillin/tazobactam, tigecycline, and vancomycin. Selective reporting by organism and source. Antibiotics other than those listed are available as an individual MIC by request only.
CPT Codes:	87186
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Reference Interval:

Susceptible or resistant.

TEST CHANGE

Antimicrobial Susceptibility - Viridans Streptococcus

0060222, MA VIRS

Specimen Requirements:	
Patient Preparation:	
Collect:	Actively growing isolate in pure culture.
Specimen Preparation:	Transport sealed container with pure culture on agar slant. Place each specimen in individually sealed bag.
Transport Temperature:	Room temperature.
Unacceptable Conditions:	Mixed cultures or nonviable~~non-viable~~ organisms.
Remarks:	Isolate identification and specimen source required.
Stability:	Ambient: 1 week; Refrigerated: Unacceptable; Frozen: Unacceptable
Methodology:	Broth Microdilution
Performed:	Sun-Sat
Reported:	2-5~~4~~ days
Note:	The following agents will be tested: ceftriaxone, clindamycin, daptomycin, doxycycline, erythromycin, gentamicin, meropenem, levofloxacin, penicillin, rifampin, trimethoprim-sulfamethoxazole, and vancomycin. Selective reporting by organism and source. An additional processing fee will be billed for all organisms not submitted in pure culture, as indicated in the specimen requirements. If species identification is not provided, identification will be performed at ARUP. Additional charges apply.
CPT Codes:	87186
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Susceptibility testing is performed by CLSI-approved broth microdilution method using custom made MIC panels.

Reference Interval:

Susceptible, intermediate, or resistant.

TEST CHANGE

Antimicrobial Susceptibility - Fastidious Organism

0060345, MA FAST

Specimen Requirements:	
Patient Preparation:	
Collect:	Actively growing isolate in pure culture.
Specimen Preparation:	Transport sealed container with pure culture on agar slant or in bacterial transport media. Place each specimen in an individually sealed bag.
Transport Temperature:	Room temperature. If culture is suspected of being a microorganism identified on the IATA list as an infectious substance affecting humans, submit specimen according to Infectious Substance, Category A, shipping guidelines.
Unacceptable Conditions:	Mixed cultures or nonviable~~non-viable~~ organisms.
Remarks:	Isolate identification and specimen source required.
Stability:	Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable
Methodology:	Broth Microdilution
Performed:	Sun-Sat
Reported:	2-7~~4~~ days
Note:	The following agents will be tested: a~~A~~mpicillin, amoxicillin/clavulanic acid, azithromycin, ceftriaxone, cefuroxime, chloramphenicol, ciprofloxacin, erythromycin, gentamicin, imipenem, levofloxacin, meropenem, penicillin, tetracycline, and trimethoprim-sulfamethoxazole. Selective reporting by organism and source. An additional processing fee will be billed for all organisms not submitted in pure culture, as indicated in the specimen requirements. If species identification is not provided, identification will be performed at ARUP. Additional charges apply.
CPT Codes:	87186
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Susceptibility testing is performed by CLSI-approved broth microdilution method using custom made MIC panels.

Reference Interval:

Susceptible, intermediate, or resistant.

TEST CHANGE

Antimicrobial Susceptibility - Gram Positive Rod

0060346, MA GPR

Specimen Requirements:	
Patient Preparation:	
Collect:	Actively growing isolate in pure culture.
Specimen Preparation:	Transport sealed container with pure culture on agar slant or in bacterial transport media. Place each specimen in an individually sealed bag.
Transport Temperature:	Room temperature. If culture is suspected of being a microorganism identified on the IATA list as an infectious substance affecting humans, submit specimen according to Infectious Substance, Category A, shipping guidelines.
Unacceptable Conditions:	Mixed cultures or nonviable~~non-viable~~ organisms.
Remarks:	Isolate identification and specimen source required.
Stability:	Ambient: 1 week; Refrigerated: Unacceptable; Frozen: Unacceptable
Methodology:	Broth Microdilution
Performed:	Sun-Sat
Reported:	2-54 days
Note:	The following agents will be tested: cefriaxone, clindamycin, daptomycin, doxycycline, erythromycin, gentamicin, levofloxacin, meropenem, penicillin, rifampin, trimethoprim-sulfamethoxazole, and vancomycin. Selective reporting by organism and source. An additional processing fee will be billed for all organisms not submitted in pure culture, as indicated in the specimen requirements. If species identification is not provided, identification will be performed at ARUP. Additional charges apply.
CPT Codes:	87186
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Susceptibility testing is performed by CLSI-approved broth microdilution method using custom-

made MIC panels.

Reference Interval:

Susceptible, intermediate, or resistant

TEST CHANGE

Antimicrobial Susceptibility - Enterobacteriaceae

0060706, MA ENTER

Specimen Requirements:	
Patient Preparation:	
Collect:	Actively growing isolate in pure culture.
Specimen Preparation:	Transport sealed container with pure culture on agar slant or in bacterial transport media. Place each specimen in an individually sealed bag.
Transport Temperature:	Room temperature.
Unacceptable Conditions:	Mixed cultures or nonviable~~non-viable~~ organisms.
Remarks:	Isolate identification and specimen source required.
Stability:	Ambient: 1 week; Refrigerated: Unacceptable; Frozen: Unacceptable
Methodology:	Automated Broth Microdilution
Performed:	Sun-Sat
Reported:	2-5~~1-3~~ days
Note:	The following agents are available for testing: amikacin, amoxicillin/clavulanic acid, ampicillin, aztreonam, cefazolin, cefepime, ceftazidime, ceftriaxone, ciprofloxacin, ertapenem, gentamicin, imipenem, levofloxacin, meropenem, nitrofurantoin, piperacillin/tazobactam, tetracycline, tobramycin, and trimethoprim-sulfamethoxazole. Selective reporting by organism and source. An additional processing fee will be billed for all organisms not submitted in pure culture, as indicated in the specimen requirements. If species identification is not provided, identification will be performed at ARUP. Additional charges apply.
CPT Codes:	87186
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	

By report

TEST CHANGE

Antimicrobial Susceptibility - Enterococcus

0060708, MA ENTERO

Specimen Requirements:	
Patient Preparation:	
Collect:	Actively growing isolate in pure culture.
Specimen Preparation:	Transport sealed container with pure culture on agar slant or in bacterial transport media. Place each specimen in an individually sealed bag.
Transport Temperature:	Room temperature.
Unacceptable Conditions:	Mixed cultures or nonviable~~non-viable~~ organisms.
Remarks:	Isolate identification and specimen source required.
Stability:	Ambient: 1 week; Refrigerated: 48 hours; Frozen: Unacceptable
Methodology:	Automated Broth Microdilution
Performed:	Sun-Sat
Reported:	2-5~~4~~ days
Note:	The following agents are available for testing: ampicillin, daptomycin, high-level gentamicin, levofloxacin, linezolid, nitrofurantoin, quinupristin/dalfopristin, high-level streptomycin, tetracycline, and vancomycin. Selective reporting by organism and source. An additional processing fee will be billed for all organisms not submitted in pure culture, as indicated in the specimen requirements. If species identification is not provided, identification will be performed at ARUP. Additional charges apply.
CPT Codes:	CPT codes vary based on method.
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	
Susceptible, intermediate, or resistant.	

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Effective Date: August 21, 2023

TEST CHANGE

Proinsulin, Intact

0070112, PROINS

Specimen Requirements:	
Patient Preparation:	Patient must fast for 12-15 hours prior to collection.
Collect:	Serum separator tube~~Separator Tube~~ (SST) or plain red~~Plain Red~~. Also acceptable: Lavender (K2EDTA) or p~~P~~ink (K2EDTA).
Specimen Preparation:	Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP standard transport tube~~Standard Transport Tube~~ and freeze immediately. (Min: 0.2 mL)
Transport Temperature:	CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.
Unacceptable Conditions:	Grossly hemolyzed specimens.
Remarks:	
Stability:	After separation from cells: Ambient: Unacceptable; Refrigerated: 24~~48~~ hours; Frozen: 2 months
Methodology:	Quantitative Chemiluminescent Immunoassay (CLIA)
Performed:	Tue, Thu
Reported:	1-6 days
Note:	
CPT Codes:	84206
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

~~Fasting intact proinsulin values above the reference interval indicate a possible insulin secreting pancreatic tumor (insulinoma) in patients with hypoglycemia. Fasting intact proinsulin values range from 3 to 50 pmol/L in patients with untreated type 2 diabetes.~~

Reference Interval:

Age	Reference Interval
0-17 years	Not established
18 years and older	Less than or equal to 7.2

Deleted Cells

Inserted Cells

	pmol/L

~~Effective May 19, 2014~~

~~Age~~	~~Reference Interval~~
~~0-17 years~~	~~Not established~~
~~18 years and older~~	~~Less than or equal to 8.0 pmol/L~~

TEST CHANGE

Proinsulin, Intact/Insulin Ratio

0070256, PRO INS

Specimen Requirements:	
Patient Preparation:	Patient must be fasting for 12-15 hours prior to collection.
Collect:	Serum separator tube~~Separator Tube~~ (SST).
Specimen Preparation:	Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube~~Standard Transport Tube~~ and freeze immediately. (Min: 0.8 mL)
Transport Temperature:	CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.
Unacceptable Conditions:	Heparinized plasma. Vitreous or I.V. fluids. Hemolyzed specimens.
Remarks:	
Stability:	After separation from cells: Ambient: Unacceptable; Refrigerated: 24~~48~~ hours; Frozen: 2 months (avoid repeated freeze/thaw cycles)
Methodology:	Quantitative Chemiluminescent Immunoassay (CLIA)/~~/~~Quantitative Chemiluminescent Immunoassay (CLIA)
Performed:	Tue, Thu
Reported:	1-6 days
Note:	
CPT Codes:	84206; 83525
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Insulin, f~~F~~asting: This test reacts on a nearly equimolar basis with the analogs insulin aspart, insulin glargine, and insulin lispro. Insulin detemir exhibits approximately 50 percent cross-reactivity. Test reactivity with insulin glulisine is negligible (less than 3 percent). To convert to pmol/L, multiply by 6.0. ~~µIU/mL by 6.0.~~

~~Proinsulin, Intact: Fasting intact proinsulin values above the reference interval indicate a possible insulin secreting pancreatic tumor (insulinoma) in patients with hypoglycemia. Fasting intact proinsulin values range from 3 to 50 pmol/L in patients with untreated type 2 diabetes.~~

Reference Interval:

Test Number	Components	Reference Interval		
	Insulin, Fasting	3-25 µIU/mL		
	Proinsulin, Intact			
		Age	pmol/L	
		0-17 year	Not established	
		18 years and older	Less than or equal to 8.0	
	Proinsulin, Intact/Insulin Ratio Calc			
		Age	Ratio (%)	
		0-17 years	Not established	
		18 years and older	0.8-21.7	

TEST CHANGE

Cell Surface (Epithelial) Antibodies, IgG by IIF

0090266, IGG EPI AB

Specimen Requirements:	
Patient Preparation:	
Collect:	Plain red or serum separator tube (SST).
Specimen Preparation:	Transfer 2 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed or lipemic specimens. Plasma.
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: Indefinitely
Methodology:	Semi-Quantitative Indirect Immunofluorescence (IIF)
Performed:	Varies
Reported:	4-9 days
Note:	For specimens less than 0.5 mL, call the Immunodermatology Laboratory at (866) 266-5699.
CPT Codes:	88346; 88350
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report	
Reference Interval:	
By report	

HOTLINE NOTE: There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Basement Membrane Zone and Cell Surface (Epithelial) Antibodies, IgG and IgA by IIF

0090299, EPITHELIAL

Specimen Requirements:	
Patient Preparation:	
Collect:	Plain red or serum separator tube (SST).
Specimen Preparation:	Transfer 2 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed or lipemic specimens. Plasma.
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: Indefinitely
Methodology:	Semi-Quantitative Indirect Immunofluorescence (IIF)
Performed:	Varies
Reported:	4-9 days
Note:	For specimens less than 0.5 mL, call the Immunodermatology Laboratory at (866) 266-5699.
CPT Codes:	88346; 88350 x5
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report	
Reference Interval:	
By report	

HOTLINE NOTE: There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Basement Membrane Zone (Epithelial) Antibodies, IgG by IIF

0092056, EBMZ IGG

Specimen Requirements:	
Patient Preparation:	
Collect:	Plain red or serum separator tube (SST).
Specimen Preparation:	Transfer 2 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed or lipemic specimens. Plasma.
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: Indefinitely
Methodology:	Semi-Quantitative Indirect Immunofluorescence (IIF)
Performed:	Varies
Reported:	4-9 days
Note:	For specimens less than 0.5 mL, call the Immunodermatology Laboratory at (866) 266-5699.
CPT Codes:	88346; 88350
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report	
Reference Interval:	
By report	

HOTLINE NOTE: There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Basement Membrane Zone (Epithelial) Antibodies, IgA by IIF

0092057, EBMZ IGA

Specimen Requirements:	
Patient Preparation:	
Collect:	Plain red or serum separator tube (SST).
Specimen Preparation:	Transfer 2 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed or lipemic specimens. Plasma.
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: Indefinitely
Methodology:	Semi-Quantitative Indirect Immunofluorescence (IIF)
Performed:	Varies
Reported:	4-9 days
Note:	For specimens less than 0.5 mL, call the Immunodermatology Laboratory at (866) 266-5699.
CPT Codes:	88346; 88350
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report	
Reference Interval:	
By report	

HOTLINE NOTE: There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Pemphigus Antibodies, IgA by IIF

0092106, IGA PEMPHI

Specimen Requirements:	
Patient Preparation:	
Collect:	Plain red or serum separator tube (SST).
Specimen Preparation:	Transfer 2 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed or lipemic specimens. Plasma.
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: Indefinitely
Methodology:	Semi-Quantitative Indirect Immunofluorescence (IIF)
Performed:	Varies
Reported:	3-7 days
Note:	The methodology is indirect immunofluorescence (IIF) of serum on substrates with known epidermal (epithelial) cell surface desmosomal antigens (both intact human skin and monkey esophagus substrate). For specimens less than 0.5 mL, call the Immunodermatology Laboratory at (866) 266-5699.
CPT Codes:	88346; 88350
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report	
Reference Interval:	
By report	

HOTLINE NOTE: There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Paraneoplastic Pemphigus (Paraneoplastic Autoimmune Multiorgan Syndrome) ~~Antibody~~ Screening Antibodies by IIF~~Panel~~

0092107, PARA PEMPH

Specimen Requirements:	
Patient Preparation:	
Collect:	Plain red or serum separator tube (SST).
Specimen Preparation:	Transfer 2 mL serum to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed or lipemic specimens. Plasma.
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: Indefinitely
Methodology:	Semi-Quantitative Indirect Immunofluorescence (IIF)
Performed:	Varies
Reported:	3-7 days
Note:	The methodology is indirect immunofluorescence (IIF) of patient serum on substrates from rodents including rat bladder, mouse bladder, mouse heart, and mouse liver to detect characteristic antibody reactivity: simple columnar epithelial cell surface and basement membrane zone in bladders, intercalated discs in heart, and portal tracts in liver. Monkey esophagus substrate is included if other concurrent IIF testing does not. For specimens less than 0.5 mL, call the Immunodermatology Laboratory at ~~(~~866~~-)~~ 266-5699. This test should be distinguished from antibody testing of cerebral spinal fluid (CSF) for paraneoplastic neurologic syndromes; 3004510, 3004512, 3004517 are different tests.
CPT Codes:	88346; 88350 x4
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report	
Reference Interval:	

By report

HOTLINE NOTE: There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Pemphigoid Gestationis, Complement-Fixing Basement Membrane Antibodies (Herpes Gestationis Factor)

0092283, HG FACTOR

Specimen Requirements:	
Patient Preparation:	
Collect:	Plain red or serum separator tube (SST).
Specimen Preparation:	Transfer 2 mL serum to an ARUP Standard Transport Tube. (Min: 1 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed or lipemic specimens. Plasma.
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: Indefinitely
Methodology:	Semi-Quantitative Complement Fixation/Indirect Immunofluorescence (IIF)/Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)
Performed:	Varies
Reported:	5-8 days
Note:	The methodology is indirect immunofluorescence (IIF) with added fresh human complement on human split skin substrate for detection of complement-fixing (herpes gestationis factor) and noncomplement-fixing IgG basement membrane zone antibodies together with IgG BP180 antibody level determination by ELISA in serum. For specimens less than 0.5 mL, call the Immunodermatology Laboratory at (866) 266-5699.
CPT Codes:	88346; 88350 x3; 83516
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report	
Reference Interval:	
By report	

HOTLINE NOTE: There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Felbamate

0094030, FELBAMA

Specimen Requirements:	
Patient Preparation:	Timing of specimen collection: Pre-dose (trough) draw - At steady state concentration.
Collect:	Plain red. Also acceptable: Lavender (EDTA), pink (K2EDTA), green (sodium heparin), gray (sodium fluoride/potassium oxalate). Avoid use of separator tubes and gels.
Specimen Preparation:	Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	
Remarks:	
Stability:	After separation from cells: Ambient: 72~~48~~ hours; Refrigerated: 2 weeks~~1 month~~; Frozen: 2 weeks~~6 months~~
Methodology:	Quantitative Liquid Chromatography-Tandem Mass Spectrometry
Performed:	Mon-Fri
Reported:	1-7~~4~~ days
Note:	
CPT Codes:	80167
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Felbamate is indicated for treatment of epilepsy. The therapeutic range is based on serum, predose (trough) draw collection at steady-state concentration. Patient pharmacokinetics may be variable due to age, co-medications, and/or compromised renal function. Adverse effects may include nausea, vomiting, dizziness, blurred vision and ataxia. Felbamate use may increase the incidence of liver failure and aplastic anemia.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Reference Interval:

Effective November 15, 2021

Therapeutic Range	30-60 ug/mL
Toxic Level	Greater than or equal to 100 ug/mL

TEST CHANGE

Tissue Transglutaminase (tTG) Antibody, IgA

0097709, TTG

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP standard transport tube. ~~Standard Transport Tube.~~ (Min: 0.3 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Plasma or urine. Contaminated, heat-inactivated, or severely hemolyzed specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid freeze/thaw cycles)
Methodology:	Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)
Performed:	Sun-Sat
Reported:	1-2 days ~~Within 24 hours~~
Note:	Testing for tTG IgA antibodies is recommended as an initial screen to identify patients at risk for celiac disease, and in whom duodenal biopsy should be performed to confirm disease. Some patients may have positive tTG IgA but negative EMA IgA and/or deamidated gliadin peptide (DGP) IgA results, which may be associated with false positivity or may indicate early disease. Close clinical correlation with continued testing may be indicated in patients with a family history of or who are at increased risk for celiac disease. A positive serology but normal biopsy may also indicate a gluten-free diet (GFD) prior to testing, latent disease, or early enteropathy. Rechallenge~~Re-challenge~~ with a gluten diet may be recommended if GFD had been initiated prior to subsequent testing. In the case of latent or early disease, HLA DQ2 and DQ8 testing may be necessary to determine risk for disease. For patients with a high degree of suspicion for celiac disease and who test negative for tTG, EMA and/or DGP IgA tests, selective

IgA deficiency should be considered and testing for tTG, EMA and/or DGP IgG antibodies performed. If serology is negative and suspicion for celiac disease is strong, intestinal biopsy may be warranted. Biopsy is particularly important for patients with diarrhea, steatorrhea, weight loss, failure to thrive, or with inherited genetic deficiencies such Down or Turner syndrome.

CPT Codes:	86364
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Presence of the tissue transglutaminase (tTG) IgA antibody is associated with glutensensitive enteropathies such as celiac disease and dermatitis herpetiformis. tTG IgA antibody concentrations greater than 40 U/mL usually correlate with results of duodenal biopsies consistent with a diagnosis of celiac disease. For antibody concentrations greater or equal to 4 U/mL but less than or equal to 40 U/mL, additional testing for endomysial (EMA) IgA concentrations may improve the positive predictive value for disease.

Reference Interval:

3 U/mL or less	Negative
4-10 U/mL	Weak Positive
11 U/mL or greater	Positive

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Effective Date: August 21, 2023

TEST CHANGE

Fetal Hemoglobin Determination for Fetomaternal Hemorrhage

2001743, FHGB

Specimen Requirements:	
Patient Preparation:	Maternal, pregnant or postpartum~~post-partum~~ whole blood.
Collect:	Lavender (EDTA) or pink (K2EDTA). New York State Clients: Lavender (EDTA). Collect and ship Monday-Thursday only. Ship same day as collection.
Specimen Preparation:	Transport 5 mL whole blood. (Min: 0.5 mL) New York State Clients: Transport 5 mL whole blood. (Min: 1 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Clotted or hemolyzed specimens. Refrigerated specimens greater than 120 hours (5 days) old; Ambient specimens greater than 12 hours old. Specimens from males or nonpregnant~~non-pregnant~~ females.
Remarks:	
Stability:	Ambient: 12 hours; Refrigerated: 120 (5 days) hours; Frozen: Unacceptable
Methodology:	Quantitative Flow Cytometry
Performed:	Sun-Sat
Reported:	1-2 days
Note:	This test should only be used to detect and quantify the extent of fetomaternal hemorrhage, in pregnant or postpartum~~post-partum~~ women who need to be assessed for Rh immune globulin (e.g. RhoGAM(R)) or fetal-maternal bleeds. For routine fetal hemoglobin (Hb F) testing, please order Hemoglobin Evaluation with Reflex to Electrophoresis and/or RBC Solubility (0050610).
CPT Codes:	86356
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	

~~The performance characteristics of this test were determined by ARUP Laboratories, Inc.~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Result	Interpretation
% Fetal RBCs	The fetal RBC percentage is directly measured by flow cytometry and gives the percentage of fetal RBCs in the maternal circulation resulting from recent fetal-maternal hemorrhage. Post-partum, some fetal cells are expected (0.04% plus or minus 0.024%, mean plus or minus SD). For accurate calculation of RhIG dosage that includes maternal height and weight, please refer to the most recent AABB Technical Manual.

Reference Interval:

0.000-0.124%~~By report~~

Inserted Cells

ARUP LABORATORIES | A nonprofit enterprise of the University of Utah and its Department of Pathology

Effective Date: August 21, 2023

TEST CHANGE

Tapentadol ~~and Metabolite~~, Urine, Quantitative

2003128, TAPENTA UR

Specimen Requirements:	
Patient Preparation:	
Collect:	Random urine.
Specimen Preparation:	Transfer 2 mL urine with no additives or preservatives to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 1 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Specimens exposed to repeated freeze/thaw cycles.
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years.
Methodology:	Quantitative Liquid Chromatography-Tandem Mass Spectrometry
Performed:	Mon
Reported:	1-8 days
Note:	
CPT Codes:	80372 (Alt code: G0480)
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Methodology: Quantitative Liquid Chromatography-Tandem Mass Spectrometry
Positive Cutoff:
Tapentadol: 50 ng/mL
~~Tapentadol glucuronide: 100 ng/mL~~
~~Tapentadol-O-sulfate: 100 ng/mL~~
~~N-desmethyltapentadol: 100 ng/mL~~

For medical purposes only; not valid for forensic use.

The ~~presence of metabolite(s) without parent drug is not uncommon and may indicate use over the prior week.~~

~~The~~ absence of expected drug(s) ~~and/or drug metabolite(s)~~ may indicate noncompliance~~non-compliance~~, inappropriate timing of specimen collection relative to drug administration, poor drug

absorption, diluted/adulterated urine, or limitations of testing. The concentration value must be greater than or equal to the cutoff to be reported as positive. Interpretive questions should be directed to the laboratory.

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Drugs Covered	Cutoff Concentrations
Tapentadol	50 ng/mL

~~Effective August 17, 2015~~

~~Drugs Covered~~	~~Cutoff Concentrations~~
~~Tapentadol~~	~~50 ng/mL~~
~~Tapentadol glucuronide~~	~~100 ng/mL~~
~~Tapentadol-O-sulfate (qualitative only)~~	~~100 ng/mL~~
~~N-desmethyltapentadol (qualitative only)~~	~~100 ng/mL~~

HOTLINE NOTE: There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.

Inserted Cells

TEST CHANGE

Rufinamide, Serum or Plasma

2003176, RUFIN SP

Specimen Requirements:	
Patient Preparation:	Timing of specimen collection: Pre-dose (trough) draw - At steady state concentration.
Collect:	Plain Red. Also acceptable: Lavender (K2 or K3EDTA), or Pink (K2EDTA).
Specimen Preparation:	Separate from cells ASAP or within 2 hours. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Whole blood. Gel separator tubes, light blue (citrate), or yellow (SPS or ACD solution).
Remarks:	
Stability:	After separation from cells: Ambient: 72 hours~~2 weeks~~; Refrigerated: 2 weeks; Frozen: 2 weeks
Methodology:	Quantitative Liquid Chromatography-Tandem Mass Spectrometry
Performed:	Mon-Fri
Reported:	1-74 days
Note:	
CPT Codes:	80210
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Adverse effects may include somnolence, vomiting, headache and fatigue.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Reference Interval:

Therapeutic Range	5-30 ug/mL
Dose-related range (values at dosages of 800-7200 mg/day)	3-30 ug/mL
Toxic	Not well established

TEST CHANGE

Lacosamide, Serum or Plasma

2003182, LACOSA SP

Specimen Requirements:	
Patient Preparation:	Timing of specimen collection: Pre-dose (trough) draw - At steady state concentration.
Collect:	Plain red. Also acceptable: Lavender (K2 or K3EDTA) or pink (K2EDTA).
Specimen Preparation:	Separate serum or plasma from cells within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Transport Temperature:	Refrigerated: Also acceptable: Room temperature or frozen.
Unacceptable Conditions:	Whole blood. Gel separator tubes, light blue (citrate), or yellow (SPS or ACD solution).
Remarks:	
Stability:	Ambient: 72 hours~~15 days~~; Refrigerated: 2 weeks~~15 days~~; Frozen: 2 weeks~~15 days~~
Methodology:	Quantitative~~High Performance~~ Liquid Chromatography-Tandem Mass Spectrometry
Performed:	Mon-Fri~~Sun-Sat~~
Reported:	1-4 days
Note:	
CPT Codes:	80235
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Lacosamide is an anticonvulsant drug indicated for adjunctive therapy for partial-onset seizures. The therapeutic range is based on serum, predose (trough) draw collection at steady-state concentration. Adverse effects may include dizziness, fatigue, nausea, vomiting, blurred vision, and tremor.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Reference Interval:

Effective November 15, 2021

Therapeutic Range:	Not well established. Suggested range 1.0-10.0 ug/mL	
Toxic Level	Greater than or equal to 20 ug/mL	

TEST CHANGE

N-methyl-D-Aspartate Receptor Antibody, IgG by CBA-IFA, Serum with Reflex to Titer

2004221, NMDA IGG

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.15 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	CSF or plasma. Contaminated, hemolyzed, or severely lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Sun-Sat
Reported:	1-3 days
Note:	If NMDA antibody IgG is positive, then an NMDA antibody IgG titer is reported. Additional charges apply.
CPT Codes:	86255; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

~~Anti-~~NMDA receptor ~~IgG~~ antibody is found in a subset of patients with autoimmune limbic encephalitis and may occur with or without associated tumor. Decreasing antibody levels may be associated with therapeutic response. In addition, positive results have been reported in patients with nonautoimmune phenotypes.~~; therefore, clinical correlation must be strongly considered.~~ A negative test result does not rule out a diagnosis of autoimmune limbic encephalitis. Results should be interpreted in correlation with

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by~~ the patients clinical history and other~~US Food and Drug Administration. This test was performed in a CLIA certified~~ laboratory findings. Serum testing should be paired with CSF testing~~and is intended~~ for improved diagnostic sensitivity.

This indirect fluorescent antibody assay utilizes full-length GluN1 transfected cell lines for the detection and semiquantification of NMDA receptor IgG antibody. ~~clinical purposes~~.

Reference Interval:

Less than 1:10

TEST CHANGE

BCR-ABL1, Minor (p190), Quantitative

2005016, BCR MIN

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender ~~(EDTA)~~ or bone marrow in lavender (EDTA). ~~(EDTA). Also acceptable: RNA extracted by CLIA-certified lab.~~
Specimen Preparation:	Whole Blood: Transport 5 mL whole blood. (Min: 3~~1~~ mL) Bone Marrow: Transport 3 mL bone marrow. (Min: 1 mL) Refrigerate Immediately. Specimens must be received within 48 hours of collection due to lability of RNA. ~~Extracted RNA: Transport 40 uL RNA with at least 40 ng/uL concentration. (Min: 40 uL) Transport RNA in a tissue transport kit (ARUP Supply #47808) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787.~~
Transport Temperature:	Whole Blood or Bone Marrow: CRITICAL REFRIGERATED. Separate specimens must be submitted when multiple tests are ordered. ~~Extracted RNA: CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.~~
Unacceptable Conditions:	Serum, plasma, ambient or frozen~~CSF, extracted DNA, RNA extracted by a non-CLIA lab,~~ bone marrow or whole blood, CSF~~core~~, or FFPE tissue. Specimens collected in anticoagulants other than EDTA. Severely hemolyzed or clotted specimens. Ambient whole blood and ambient bone marrow specimens past 7 days will be canceled. Refrigerated whole blood or bone marrow past 7 days will be canceled.
Remarks:	
Stability:	Ambient: Unacceptable~~1 hour~~; Refrigerated: 48 hours; Frozen: Unacceptable ~~Extracted RNA: Ambient: Unacceptable; Refrigerate: Unacceptable; Frozen: Indefinitely~~
Methodology:	Quantitative Reverse Transcription Polymerase Chain Reaction
Performed:	Varies ~~Sun, Tue, Thu~~
Reported:	5-9 days
Note:	For p210 fusion form (major breakpoint), order BCR-ABL1, Major (p210), Quantitative (ARUP test code 3005840).

CPT Codes:	81207
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report.	
Reference Interval:	

TEST CHANGE

N-methyl-D-Aspartate Receptor Antibody, IgG by CBA-IFA, CSF with Reflex to Titer

2005164, NMDA G CSF

Specimen Requirements:	
Patient Preparation:	
Collect:	CSF.
Specimen Preparation:	Transfer 0.5 mL CSF to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.15 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Contaminated, hemolyzed, or severely lipemic specimens.
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Sun-Sat
Reported:	1-3 days
Note:	If NMDA CSF antibody IgG is positive, then an NMDA CSF antibody IgG titer is reported. Additional charges apply.
CPT Codes:	86255; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

~~Anti-~~NMDA receptor ~~IgG~~ antibody is found in a subset of patients with autoimmune limbic encephalitis and may occur with or without associated tumor. Decreasing antibody levels may be associated with therapeutic response. In addition, positive results have been reported in patients with nonautoimmune phenotypes.~~; therefore, clinical correlation must be strongly considered.~~ A negative test result does not rule out a diagnosis of autoimmune limbic encephalitis. Results should be interpreted in correlation with

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by~~ the patients clinical history and other~~US Food and Drug Administration. This test was performed in a CLIA certified~~ laboratory findings.

This indirect fluorescent antibody assay utilizes full-length GluN1 transfected cell lines~~and is intended~~ for the detection and semiquantification of NMDA receptor IgG antibody~~clinical purposes~~.

Reference Interval:

Less than 1:1

TEST CHANGE

~~Complement Activity,~~ Alternative Complement Pathway Activity (AH50)

2005373, AH50

Specimen Requirements:	
Patient Preparation:	
Collect:	Plain Red ~~Serum separator tube or plain red.~~
Specimen Preparation:	Allow specimen to clot for one hour at room temperature. Separate serum from cells ASAP and centrifuge at~~or within~~ 2-8 degrees C and aliquot~~ hours of collection. Transfer 1 mL~~ serum into~~to an~~ ARUP standard transport tube. Freeze specimen immediately at -70 degrees C or lower freezer.~~Standard Transport Tube and freeze.~~ (Min: 0.3 mL)
Transport Temperature:	CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.
Unacceptable Conditions:	Specimen types other than serum collected from RED TOP tubes. SST or serum gel tubes are not acceptable. Refrigerated or room temperature specimens. Specimens left to clot at refrigerated temperature. Specimens exposed to repeated freeze/thaw cycles. Grossly hemolyzed or grossly lipemic specimens or icteric specimens.
Remarks:	
Stability:	After separation from cells: Ambient: unacceptable~~2 hours~~; Refrigerated: Unacceptable; Frozen: 30 days if kept at -70??C~~2 weeks~~
Methodology:	Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)~~Radial Immunodiffusion~~
Performed:	Sun, Wed~~Varies~~
Reported:	7-14 days
Note:	
CPT Codes:	86161
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	

See report. ~~This test is intended for screening of functional activity of the alternative pathway of the complement system. Abnormal test results can be due to hereditary absence or acquired functional defect in the activity of any of the individual components of the alternative pathway.~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Test Number	Components	Reference Interval
	Alternative Complement Pathway Activity~~, Alternative Pathway~~	31~~59~~ percent normal or greater
	Alternative Complement Pathway Activity	

TEST CHANGE

MPL Mutation Detection by Capillary Electrophoresis

2005545, MPL

Specimen Requirements:	
Patient Preparation:	
Collect:	Whole blood or bone marrow (EDTA).
Specimen Preparation:	Whole Blood: Do not freeze. Transport 5 mL whole blood. (Min: 1 mL) Bone Marrow: Transport 3 mL bone marrow. (Min: 1 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Plasma, serum, FFPE tissue blocks/slides, or frozen tissue. Specimens collected in anticoagulants other than EDTA. Clotted or grossly hemolyzed specimens.
Remarks:	
Stability:	Ambient: 24 hours; Refrigerated: 5 days; Frozen: Unacceptable ~~Extracted DNA: Ambient: 1 month; Refrigerated: Indefinitely; Frozen: Indefinitely~~
Methodology:	Capillary Electrophoresis
Performed:	Varies
Reported:	7-12 days
Note:	The test will detect MPL mutations W515K, W515L, W515A, and S505N.
CPT Codes:	81338
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report. ~~Refer to report~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

TEST CHANGE

Streptococcus pneumoniae Antibodies, IgG (23 Serotypes)

2005779, PNEUMO 23

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube. Postimmunization~~Post-immunization~~ specimen should be drawn 30 days after immunization and, if shipped separately, must be received within 60 days of preimmunization~~pre-immunization~~ specimen.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 1.5 mL serum to an ARUP standard transport tube~~Standard Transport Tube~~. (Min: 0.25 mL) MARK SPECIMENS CLEARLY AS "PRE" OR "POST" SO SPECIMENS WILL BE SAVED AND TESTED SIMULTANEOUSLY~~.~~
Transport Temperature:	Refrigerated. "Pre" and "post" pneumococcal vaccine specimens can be submitted separately or together for testing.
Unacceptable Conditions:	Plasma or other body fluids. Contaminated, hemolyzed, or severely lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 60 days~~1 year~~ (avoid repeated freeze/thaw cycles).
Methodology:	Quantitative Multiplex Chemiluminescent Immunoassay~~Bead Assay~~
Performed:	Tue, Fri
Reported:	1-5 days
Note:	
CPT Codes:	86317 x23
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

A pre- and postvaccination comparison is required to adequately assess the humoral immune response to the pure polysaccharide Pneumovax 23 (PNX) and/or the protein conjugated Prevnar 7 (P7), Prevnar 13 (P13), Prevnar 20 (P20), and Vaxneuvance (V15) *Streptococcus pneumoniae* vaccines. Prevaccination samples should be collected prior to vaccine administration. Postvaccination samples should be obtained at least 4 weeks after immunization. Testing of

postvaccination samples alone will provide only general immune status of the individual to various pneumococcal serotypes.

In the case of pure polysaccharide vaccine, indication of immune system competence is further delineated as an adequate response to at least 50 percent of the serotypes in the vaccine challenge for those 2-5 years of age and to at least 70 percent of the serotypes in the vaccine challenge for those 6-65 years of age. Individual immune response may vary based on age, past exposure, immunocompetence, and pneumococcal serotype.

Responder Status	Antibody Ratio
Nonresponder . . . . . .Non-Responder	Less than twofold increase and postvaccination concentration less2-fold
Weak Responder . . . . . 2-fold to 4-fold	
Good Responder . . . . . Greater	than 1.3 ug/mL
Good responder . . . . . .At least a twofold increase and/or a postvaccination concentration greater than or equal to 1.3 ug/mL4-fold	

A response to 50-70 percent or more of the serotypes in the vaccine challenge is considered a normal humoral response. (Daly, 2014)response1. Antibody concentration greater than 1.0- -1.3 ugug/mL is generally considered long-term protection. (Daly, 2015)protection2.

References:
1. Daly TM, Pickering JW, Zhang X, et al. Multilaboratory assessment of threshold versus fold-change algorithms for minimizing analytical variability in multiplexed pneumococcal IgG measurements. *Clin Vaccine Immunol*. 2014;21(7):982-988.
2. Daly TM, Hill HR. Use and clinical interpretation of pneumococcal antibody measurements in the evaluation of humoral immune function. *Clin Vaccine Immunol*. 2015;22(2):148-152.

Reference Interval:

TEST CHANGE

B-Cell Clonality Screening (IgH and IgK) by PCR

2006193, BCELL SCRN

Specimen Requirements:	
Patient Preparation:	
Collect:	Whole blood or bone marrow (EDTA), tissue, formalin-fixed tissue.
Specimen Preparation:	Whole Blood: Do not freeze. Transport 5 mL whole blood. (Min: 1 mL) Bone Marrow: Do not freeze. Transport 3 mL bone marrow. (Min: 1 mL) Fresh Tissue: Freeze immediately. Transport 100 mg or 0.5-2.0 cm3 tissue. FFPE Tumor Tissue: Formalin fix (10 percent neutral buffered formalin) and paraffin embed tissue. Protect from excessive heat. Tissue block will be returned after testing. Transport tissue block or four 10-micron shavings in a tissue transport kit (ARUP Supply #47808) available online through eSupply using ARUP Connect~~(TM)~~ or contact ARUP Client Services at ~~(~~800~~-)~~-522-2787.
Transport Temperature:	Whole Blood, Bone Marrow: Refrigerated. Fresh Tissue: Frozen on dry ice. FFPE Tumor Tissue: Room temperature. Also acceptable: Refrigerated. Ship in cooled container during summer months
Unacceptable Conditions:	Plasma, serum. Specimens collected in anticoagulants other than EDTA. Clotted or grossly hemolyzed specimens. Tissue: Specimens fixed/processed in alternative fixatives, heavy metal fixatives (B-4 or B-5), or tissue sections on slides. Decalcified specimens.
Remarks:	If multiple specimens (blocks or slides) are sent to ARUP, they must be accompanied by one of the following: an order comment indicating that the ARUP pathologist should choose the specimen most appropriate for testing (e.g., "Choose best block"), or individual orders for each sample submitted. A Pathologist Block Selection Fee (ARUP test code 3002076) will be added to orders that utilize the first option. If multiple specimens are sent to ARUP without a request for pathologist block/slide selection or individual orders, they will be held until clarification is provided.
Stability:	Whole Blood or Bone Marrow: Ambient: 24 hours; Refrigerated: 5 days; Frozen: Unacceptable Fresh Tissue: Ambient: Unacceptable; Refrigerated: 2 hours; Frozen: 1 year FFPE Tumor Tissue: Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable

Methodology:	Capillary Electrophoresis/Polymerase Chain Reaction (PCR)
Performed:	Varies
Reported:	5-9 days
Note:	
CPT Codes:	81261; 81264
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report. ~~Refer to report.~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.~~

Reference Interval:

TEST CHANGE

Drug Detection Panel, Umbilical Cord Tissue, Qualitative

2006621, TOF SCR CD

Specimen Requirements:	
Patient Preparation:	
Collect:	Umbilical Cord (At least 8 inches, approximately the width of a sheet of paper.)
Specimen Preparation:	Drain and discard any blood. Rinse the exterior of the cord segment with normal saline or water. Pat the cord dry and transport at least 8 inches of umbilical cord in a routine urine collection cup or Security Kit for Meconium/Umbilical Drug Detection (ARUP supply #51548) available online through eSupply using ARUP Connect(TM) or by contacting ARUP Client Services at (800) 522-2787.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Cords soaking in blood or other fluid. Formalin fixed. Tissue that is obviously decomposed.
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 3 weeks; Frozen: 1 year
Methodology:	Qualitative Liquid Chromatography-Tandem Mass Spectrometry
Performed:	Sun-Sat
Reported:	1-3 days
Note:	Absolute Minimum: 6 inches. For marijuana metabolite, order Marijuana Metabolite, Umbilical Cord Tissue, Qualitative (ARUP test code 3000256). For alcohol metabolite, order Ethyl Glucuronide, Umbilical Cord Tissue, Qualitative (ARUP test code 3000443). For kratom metabolite, order Kratom, Umbilical Cord, Qualitative (ARUP test code 3005874) When ordering multipleumbilical ~~When ordering all three umbilical~~ cord tests, unless ARUP is otherwise notified, testing will be performed in the following order of priority: Drug Detection Panel (1.0g) Marijuana Metabolite (1.0g) Ethyl Glucuronide (1.0g) Kratom(1.0 g)
CPT Codes:	80326; 80347; 80364; 80355 (Alt code: G0481)

New York DOH Approval Status: This test is New York DOH approved.

Interpretive Data:

Methodology: Qualitative Liquid Chromatography/Tandem Mass Spectrometry

Detection of drugs in umbilical cord tissue is intended to reflect maternal drug use during approximately the last trimester of a full-term pregnancy. The pattern and frequency of drug(s) used by the mother cannot be determined by this test. A negative result does not exclude the possibility that a mother used drugs during pregnancy. Detection of drugs in umbilical cord tissue depends on extent of maternal drug use, as well as drug stability, unique characteristics of drug deposition in umbilical cord tissue, and the performance of the analytical method. Drugs administered during labor and delivery may be detected. Detection of drugs in umbilical cord tissue does not insinuate impairment and may not affect outcomes for the infant. Interpretive questions should be directed to the laboratory.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Reference Interval:

Effective February 20, 2018

Drugs covered and range of cutoff concentrations.

Drugs/Drug Classes	Cutoff Concentrations (ng/g)	Drugs/Drug Classes	Cutoff Concentrations (ng/g)
Buprenorphine	1	Amphetamine	5
Norbuprenorphine	0.5	Benzoylecgonine	10.5
		m-OH-Benzoylecgonine	1
Codeine	0.5	Cocaethylene	1
Dihydrocodeine	1	Cocaine	10.5
Fentanyl	0.5	MDMA (Ecstasy)	5
Hydrocodone	0.5	Methamphetamine	5
Norhydrocodone	1	Phentermine	8
Hydromorphone	0.5	Alprazolam	0.5
Meperidine	2	Alpha-OH-Alprazolam	0.5
Methadone	2	Butalbital	25
Methadone metabolite	1	Clonazepam	1
6-Acetylmorphine	1	7-Aminoclonazepam	1
Morphine	0.5	Diazepam	1
Naloxone	1	Lorazepam	5
Oxycodone	0.5	Midazolam	1
Noroxycodone	1	Alpha-OH-Midazolam	2
Oxymorphone	0.5	Nordiazepam	1
Noroxymorphone	0.5	Oxazepam	2
Propoxyphene	1	Phenobarbital	75
Tapentadol	2	Temazepam	1
Tramadol	2	Zolpidem	0.5
N-desmethyltramadol	2	Phencyclidine (PCP)	1
O-desmethyltramadol	2	Gabapentin	10

TEST CHANGE

Streptococcus pneumoniae Antibodies, IgG (9 Serotypes)

2008919, PNEUMO 9

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube. Postimmunization~~Post-immunization~~ specimen should be drawn 30 days after immunization and, if shipped separately, must be received within 60 days of preimmunization~~pre-immunization~~ specimen.
Specimen Preparation:	Separate serum from cells within 2 hours of collection. Transfer 1.5 mL serum to an ARUP standard transport tube~~Standard Transport Tube~~. (Min: 0.25 mL) MARK SPECIMENS CLEARLY AS "PRE" OR "POST" SO SPECIMENS WILL BE SAVED AND TESTED SIMULTANEOUSLY.
Transport Temperature:	Refrigerated. "Pre" and "post" pneumococcal vaccine specimens can be submitted separately or together for testing.
Unacceptable Conditions:	Plasma or other body fluids. Contaminated, hemolyzed, or severely lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 60 days~~1 year~~ (avoid repeated freeze/thaw cycles)
Methodology:	Quantitative Multiplex Chemiluminescent Immunoassay~~Bead Assay~~
Performed:	Tue, Fri
Reported:	1-5 days
Note:	
CPT Codes:	86317 x9
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

A pre- and postvaccination comparison is required to adequately assess the humoral immune response to the pure polysaccharide Pneumovax 23 (PNX) and/or the protein conjugated Prevnar 7 (P7), Prevnar 13 (P13), Prevnar 20 (P20), and Vaxneuvance (V15) *Streptococcus pneumoniae* vaccines. Prevaccination samples should be collected prior to vaccine administration. Postvaccination samples should be obtained at least 4 weeks after immunization. Testing of

postvaccination samples alone will provide only general immune status of the individual to various pneumococcal serotypes.

In the case of pure polysaccharide vaccine, indication of immune system competence is further delineated as an adequate response to at least 50 percent of the serotypes in the vaccine challenge for those 2-5 years of age and to at least 70 percent of the serotypes in the vaccine challenge for those 6-65 years of age. Individual immune response may vary based on age, past exposure, immunocompetence, and pneumococcal serotype.

Responder Status	Antibody Ratio
Nonresponder . . . . . Non-Responder	Less than twofold increase and postvaccination concentration less2-fold
Weak Responder . . . . . 2-fold to 4-fold	
Good Responder . . . . . Greater	than 1.3 ug/mL
Good responder . . . . . .At least a twofold increase and/or a postvaccination concentration greater than or equal to 1.3 ug/mL4-fold	

A response to 50-70 percent or more of the serotypes in the vaccine challenge is considered a normal humoral response. (Daly, 2014)response1. Antibody concentration greater than 1.0- -1.3 ugug/mL is generally considered long-term protection. (Daly, 2015)protection2.

References:

1. Daly TM, Pickering JW, Zhang X, et al. Multilaboratory assessment of threshold versus fold-change algorithms for minimizing analytical variability in multiplexed pneumococcal IgG measurements. *Clin Vaccine Immunol*. 2014;21(7):982-988.
2. Daly TM, Hill HR. Use and clinical interpretation of pneumococcal antibody measurements in the evaluation of humoral immune function. *Clin Vaccine Immunol*. 2015;22(2):148-152.

Reference Interval:

TEST CHANGE

Contactin-Associated Protein-2 Antibody, IgG by CBA-IFA with Reflex to Titer, Serum

2009452, CASPR2 IGG

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube.
Specimen Preparation:	Separate serum from cells within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.2 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	CSF or plasma. Contaminated, hemolyzed, or severely lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Wed
Reported:	1-8 days
Note:	If CASPR2 antibody IgG is positive, then CASPR2 antibody IgG titer will be added. Additional charges apply.
CPT Codes:	86255; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Contactin-associated protein-2 (CASPR2) IgG antibody may occur as part of the voltage-gated potassium channel (VGKC) complex antibodies.

The presence of CASPR2 IgG antibody is associated with a wide spectrum of clinical manifestations, including acquired neuromyotonia, limbic encephalitis, painful neuropathy, and Morvan syndrome. Tumors such as thymoma, small cell lung cancer, and other rarer tumors may occur. The full-spectrum of clinical disorders and tumors associated with the CASPR2 IgG antibody continues to be defined. Results should be interpreted in correlation with the patient's clinical history and other laboratory findings.

This indirect fluorescent antibody assay utilizes ~~contactin-associated protein-2 (~~CASPR2~~)~~

transfected cell lines for the detection and semiquantification~~semi-quantification~~ of the CASPR2 IgG antibody.

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Less than 1:10

TEST CHANGE

Leucine-Rich, Glioma-Inactivated Protein 1 Antibody, IgG CBA-IFA with Reflex to Titer, Serum

2009456, LGI1 IGG

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube.
Specimen Preparation:	Separate serum from cells within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.2 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	CSF or plasma. Contaminated, hemolyzed, or severely lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Wed
Reported:	1-8 days
Note:	If LGI1 antibody IgG is positive, then LGI1 antibody IgG titer will be added. Additional charges apply.
CPT Codes:	86255; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Leucine-rich, glioma-inactivated 1 protein (LGI1) IgG antibody may occur as part of the voltage-gated potassium channel (VGKC) complex antibodies.

The presence of LGI1 IgG antibody is mainly associated with limbic encephalitis, hyponatremia, and myoclonic movements. LGI1 IgG antibody is rarely associated with tumors but may occur infrequently in Morvan syndrome, neuromyotonia, and idiopathic epilepsy. The full-spectrum of clinical disorders associated with the LGI1 IgG antibody continues to be defined. Results should be interpreted in correlation with the patient's clinical history and other laboratory findings.

This indirect fluorescent antibody assay utilizes ~~leucine-rich, glioma-inactivated 1 protein (~~LGI1~~)~~

transfected cell lines for the detection and semiquantification~~semi-quantification~~ of the LGI1 IgG antibody.

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Less than 1:10

TEST CHANGE

Leucine-Rich, Glioma-Inactivated Protein 1 Antibody, IgG CBA-IFA and Contactin-Associated Protein-2 Antibody, IgG CBA-IFA with Reflex to Titers, Serum

2009460, LGI1CASPR2

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube.
Specimen Preparation:	Separate serum from cells within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.2 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	CSF or plasma. Contaminated, hemolyzed, or severely lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Wed
Reported:	1-8 days
Note:	If LGI1 antibody IgG is positive, then LGI1 antibody IgG titer will be added. If CASPR2 antibody IgG is positive, then CASPR2 antibody IgG titer will be added. Additional charges apply.
CPT Codes:	86255 x2; if reflexed add 86256 per titer
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Reference Interval:

Test Number	Components	Reference Interval
	CASPR2 Ab IgG CBA-IFA Screen ~~by IFA~~, Serum	Less than 1:10

	LGI1 Ab IgG CBA-IFA Screen ~~by IFA~~, Serum	Less than 1:10

TEST CHANGE

Voltage-Gated Potassium Channel (VGKC) Antibody with Reflex to LGI1 and CASPR2 Screen and Titer, Serum

2009463, VGKC R

Specimen Requirements:	
Patient Preparation:	
Collect:	Plain red or serum separator tube.
Specimen Preparation:	Separate serum from cells within 1 hour. Transfer 4 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Plasma. Severely lipemic or icteric specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 72 hours; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles)
Methodology:	Quantitative Radioimmunoassay/Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Tue
Reported:	1-8 days
Note:	If VGKC is Indeterminate or Positive, LGI1 Antibody IgG and CASPR2 Antibody IgG will be added. If LGI1 antibody IgG is positive, then LGI1 antibody IgG titer will be added. If CASPR2 antibody IgG is positive, then CASPR2 antibody IgG titer will be added. Additional charges apply.
CPT Codes:	83519; if reflexed add 86255 x2; if reflexed add 86256 per titer
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Voltage-Gated Potassium Channel (VGKC) antibodies are associated with neuromuscular weakness as found in neuromyotonia (also known as Issacs syndrome) and Morvan syndrome. VGKC antibodies are also associated with paraneoplastic neurological syndromes and limbic encephalitis; however, VGKC antibody-associated limbic encephalitis may be associated with antibodies to leucine-rich, glioma-inactivated 1 protein (LGI1) or contactin-associated protein-2 (CASPR2) instead of potassium channel antigens. A substantial number of VGKC-antibody positive cases are negative for LGI1 and CASPR 2 IgG autoantibodies, not all VGKC complex antigens are known. The clinical significance of this test can only be determined in conjunction with the

patient's clinical history and related laboratory testing.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Component	Interpretation	
Voltage-Gated Potassium Channel (VGKC) Antibody, Serum	Negative Indeterminate Positive	31 pmol/L or less 32-87 pmol/L 88 pmol/L or greater

Reference Interval:

Test Number	Components	Reference Interval
	Voltage-Gated Potassium Channel Ab, Ser	31 pmol/L or less

TEST CHANGE

Myeloid Malignancies Mutation Panel by Next Generation Sequencing

2011117, MYE NGS

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), g~~G~~reen (sodium heparin), bone marrow~~Bone Marrow~~ (EDTA), or bone marrow~~Bone Marrow~~ (sodium heparin). ~~Fresh-frozen Tissue.~~
Specimen Preparation:	Whole Blood or Bone Marrow: Transport 3 mL. (Min: 1.0 mL for bone marrow, 1.5 mL for whole blood) ~~Fresh-frozen Tissue: Transport 5 mg fresh-frozen tissue. (Min: 5 mg)~~ Separate specimens must be submitted when multiple tests are ordered
Transport Temperature:	Whole Blood or Bone Marrow: Refrigerated. ~~Fresh-frozen Tissue: Frozen.~~
Unacceptable Conditions:	Serum, plasma, grossly hemolyzed specimens, buccal brush or swab, FFPE tissue.
Remarks:	
Stability:	Whole Blood or Bone Marrow: Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable ~~Fresh-frozen Tissue: Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 1 month~~
Methodology:	Massively Parallel Sequencing
Performed:	Varies
Reported:	12-14 days
Note:	Genes tested: ANKRD26; ASXL1; ASXL2; BCOR; BCORL1; BRAF; CALR; CBL; CBLB; CEBPA; CSF3R; CUX1*; DDX41; DNMT1*; DNMT3A; ELANE; ETNK1; ETV6; EZH2; FBXW7; FLT3; GATA1; GATA2; GNAS; HNRNPK; IDH1; IDH2; IL7R; JAK1; JAK2; JAK3; KDM6A*; KIT; KMT2A; KRAS; LUC7L2; MPL; NOTCH1; NPM1*; NRAS; NSD1; PHF6; PIGA; PPM1D; PRPF40B; PRPF8; PTPN11; RAD21; RUNX1; SAMD9; SAMD9L; SETBP1; SF3B1; SH2B3; SMC1A; SMC3; SRSF2; STAG2; STAT3; STAT5B*; SUZ12*; TET2; TP53; U2AF1; U2AF2; UBA1; WT1; ZRSR2 *One or more exons are not covered by sequencing for the indicated gene; see Additional Technical Information.
CPT Codes:	81455

New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

Interpretive Data:

Refer to report. ~~Refer to report.~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.~~

Reference Interval:

By report

TEST CHANGE

Aquaporin-4 Antibody, IgG by CBA-IFA, CSF with Reflex to Titer

2011699, AQP4 CSF

Specimen Requirements:	
Patient Preparation:	
Collect:	CSF.
Specimen Preparation:	Transfer 0.5 mL CSF to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.15 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed, contaminated specimens or severely lipemic specimens.
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Mon, Wed, Fri
Reported:	1-6 days
Note:	If AQP4 antibody IgG is positive, then an AQP4 antibody IgG titer is reported. Additional charges apply.
CPT Codes:	86052; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Neuromyelitis optic~~Diagnosis of neuromyelitis optica~~ (NMO) commonly presents with optic neuritis or ~~requires the presence of~~ longitudinally extensive transverse~~acute~~ myelitis. ~~(lesions extending over 3 or more vertebral segments) and optic neuritis.~~ Approximately 75% ~~percent~~ of patients with NMO have~~express~~ antibodies to the aquaporin-4 (AQP4) receptor. While the absence of AQP4 receptor antibodies does not rule out a diagnosis of NMO, presence of this antibody is diagnostic for NMO.

This indirect fluorescent antibody assay utilizes AQP4 receptor transfected cell lines for the detection and semiquantification of AQP4 IgG antibody.

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Less than 1:1

TEST CHANGE

Human Immunodeficiency Virus Types 1 and 2 (HIV-1/2) Antibody Differentiation, Supplemental

2013107, HIV AB SUP

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA) or pink (K2EDTA). Also acceptable: Serum separator tube (SST).
Specimen Preparation:	Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma into an ARUP standard transport tube dedicated only for HIV testing. (Min: 0.5 mL) Remove particulate material.
Transport Temperature:	Frozen.
Unacceptable Conditions:	Specimens containing particulate material. Severely hemolyzed or heat-inactivated specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 7 days; Frozen: 8 months~~Indefinitely~~ (avoid repeated freeze/thaw cycles)
Methodology:	Qualitative Immunoassay
Performed:	Varies
Reported:	1-2 days
Note:	For use ONLY when patient has a repeatedly reactive third- or fourth-generation HIV screen test result. This test discriminates between HIV-1 and HIV-2 antibodies. Results for each type are reported. This test is for use as the antibody differentiation test in the specific multitest algorithm. If results are negative or indeterminate, this test does NOT reflex to a nucleic acid test. A multitest algorithm is recommended by the Centers for Disease Control and Prevention (CDC) and the Clinical Laboratory Standards Institute (CLSI) for the diagnosis of HIV (refer to http://arupconsult.com/content/human-immunodeficiency-virus).
CPT Codes:	86701; 86702
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

This test should not be used for blood donor screening, associated reentry protocols, or for screening human cells, tissues, and cellular- and tissue-based products (HCT/P).

Reference Interval:

Test Number	Components	Reference Interval
	HIV-1 Antibody	Negative
	HIV-2 Antibody	Negative

TEST CHANGE

Consultation, Head and Neck

2013257, HN CONSULT

Specimen Requirements:	
Patient Preparation:	
Collect:	Tissue.
Specimen Preparation:	Formalin fix (10 percent neutral buffered formalin is preferred) and paraffin embed specimen. Protect paraffin block and/or slides from excessive heat. Transport all case material to include stained slides, paraffin blocks and surgical pathology report in a consultation transport kit (ARUP supply #53462) available on eSupply using ARUP Connect^TM or contact ARUP Client Services at (800)522-2787.
Transport Temperature:	Room temperature. Also acceptable: Refrigerated. Ship in cooled container during summer months.
Unacceptable Conditions:	All wet tissue, including for primary diagnosis. Specimens submitted with non-representative tissue type. Depleted specimens.
Remarks:	Submit electronic request. If you do not have electronic ordering capability, use an ARUP Anatomic Pathology Form (#32960) with an ARUP client number. For additional technical details, contact ARUP Client Services at (800) 522-2787.
Stability:	Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable
Methodology:	Microscopy
Performed:	Mon-Fri
Reported:	Varies
Note:	Appropriate stains and other ancillary testing may be performed and charged separately. Tests requested by the referring physician (eg, immunostains, molecular studies, etc.) may not be performed if they are deemed to be unnecessary by the reviewing ARUP pathologist. For all pathology consultations, ancillary testing is ordered at the discretion of the ARUP pathologist.
CPT Codes:	88321 or 88323 or 88325, if ancillary testing is performed,

	additional CPT codes and charges may apply
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data: Refer to report.	
Reference Interval:	

TEST CHANGE

Consultation, Neuropathology

2013262, NP CONSULT

Specimen Requirements:	
Patient Preparation:	
Collect:	Tissue.
Specimen Preparation:	Formalin fix (10 percent neutral buffered formalin is preferred) and paraffin embed specimen. Protect paraffin block and/or slides from excessive heat. Transport all case material to include stained slides, paraffin blocks and surgical pathology report in a consultation transport kit (ARUP supply #53462) available on eSupply using ARUP Connect^TM or contact ARUP Client Services at (800)522-2787.
Transport Temperature:	Room temperature. Also acceptable: Refrigerated. Ship in cooled container during summer months.
Unacceptable Conditions:	All wet tissue, including for primary diagnosis. Specimens submitted with non-representative tissue type. Depleted specimens.
Remarks:	Submit electronic request. If you do not have electronic ordering capability, use an ARUP Anatomic Pathology Form (#32960) with an ARUP client number. For additional technical details, contact ARUP Client Services at (800) 522-2787.
Stability:	Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable
Methodology:	Microscopy
Performed:	Mon-Fri
Reported:	Varies
Note:	Appropriate stains and other ancillary testing may be performed and charged separately. Tests requested by the referring physician (eg immunostains, molecular studies, etc.) may not be performed if they are deemed to be unnecessary by the reviewing ARUP pathologist. For all pathology consultations, ancillary testing is ordered at the discretion of the ARUP pathologist.
CPT Codes:	88321or 88323 or 88325, if ancillary testing is performed,

	additional CPT codes and charges may apply
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data: Refer to report.	
Reference Interval:	

TEST CHANGE

Consultation, Surgical Pathology

2013263, SP CONSULT

Specimen Requirements:	
Patient Preparation:	
Collect:	Tissue.
Specimen Preparation:	Formalin fix (10 percent neutral buffered formalin is preferred) and paraffin embed specimen. Protect paraffin block and/or slides from excessive heat. Transport all case material to include stained slides, paraffin blocks and surgical pathology report in a consultation transport kit (ARUP supply #53462) available on eSupply using ARUP Connect^TM or contact ARUP Client Services at (800)522-2787.
Transport Temperature:	Room temperature. Also acceptable: Refrigerated. Ship in cooled container during summer months.
Unacceptable Conditions:	All wet tissue, including for primary diagnosis. Specimens submitted with non-representative tissue type. Depleted specimens.
Remarks:	Submit electronic request. If you do not have electronic ordering capability, use an ARUP Anatomic Pathology Form (#32960) with an ARUP client number. For additional technical details, contact ARUP Client Services at (800) 522-2787.
Stability:	Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable
Methodology:	Microscopy
Performed:	Mon-Fri
Reported:	Varies
Note:	Appropriate stains and other ancillary testing may be performed and charged separately. Tests requested by the referring physician (eg immunostains, molecular studies, etc.) may not be performed if they are deemed to be unnecessary by the reviewing ARUP pathologist. For all pathology consultations, ancillary testing is ordered at the discretion of the ARUP pathologist.
CPT Codes:	88321 or 88323 or 88325, if ancillary testing is performed,

	additional CPT codes and charges may apply
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data: Refer to report.	
Reference Interval:	

TEST CHANGE

Aquaporin-4 Antibody, IgG by CBA-IFA with Reflex to Titer, Serum

2013320, AQP4 SER

Specimen Requirements:	
Patient Preparation:	N/A
Collect:	Serum separator tube~~Separator Tube~~ (SST) or plain red~~Plain Red~~.
Specimen Preparation:	Transfer 1 mL serum to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.15 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Contaminated.
Remarks:	N/A
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Mon, Wed, Fri
Reported:	1-6 days
Note:	If AQP4 antibody IgG is positive, then an AQP4 antibody IgG titer is reported. Additional charges apply.
CPT Codes:	86052; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Neuromyelitis optic~~Diagnosis of neuromyelitis optica~~ (NMO) commonly presents with optic neuritis or ~~requires the presence of~~ longitudinally extensive transverse~~acute~~ myelitis. ~~(lesions extending over 3 or more vertebral segments) and optic neuritis.~~ Approximately 75% ~~percent~~ of patients with NMO have~~express~~ antibodies to the aquaporin-4 (AQP4) receptor. While the absence of AQP4 receptor antibodies does not rule out a diagnosis of NMO, presence of this antibody is diagnostic for NMO.

This indirect fluorescent antibody assay utilizes AQP4 receptor transfected cell lines for the detection and semiquantification of AQP4 IgG antibody.

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was~~

~~performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Less than 1:10

TEST CHANGE

Aquaporin-4 Receptor Antibody by ELISA with Reflex to Aquaporin-4 Receptor Antibody, IgG by IFA

2013327, AQP4 R

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum Separator Tube (SST).
Specimen Preparation:	Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.3 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Amniotic fluid, CSF, pericardial fluid, ocular fluid, peritoneal fluid, synovial fluid, or plasma. Contaminated, hemolyzed, icteric, or lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 72 hours; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Enzyme-Linked Immunosorbent Assay/ Semi-Quantitative Indirect Fluorescent Antibody
Performed:	Tue, Thu
Reported:	1-6 days
Note:	If AQP4 antibody IgG by ELISA is positive, then AQP4 antibody IgG by IFA will be added. If AQP4 antibody IgG by IFA is positive, then an AQP4 antibody IgG titer will be added. Additional charges apply.
CPT Codes:	86051; if reflexed, add 86052; 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Approximately 75 percent of patients with neuromyelitis optica (NMO) express antibodies to the aquaporin-4 (AQP4) receptor. Diagnosis of NMO requires the presence of longitudinally extensive acute myelitis (lesions extending over 3 or more vertebral segments) and optic neuritis. While absence of antibodies to the AQP4 receptor does not rule out the diagnosis of NMO, presence of this antibody is diagnostic for NMO.

Component	Interpretation	
Aquaporin-4 Receptor Antibody	Negative Positive	2.9 U/mL or less 3.0 U/mL or greater

Reference Interval:

Test Number	Components	Reference Interval
	Aquaporin-4 Receptor Antibody	2.9 U/mL or less

TEST CHANGE

Clozapine and Metabolites, Serum or Plasma, Quantitative

2013433, CLOZAP SP

Specimen Requirements:	
Patient Preparation:	Timing of specimen collection: Predose~~Pre-dose~~ (trough) draw - at~~At~~ steady -state concentration.
Collect:	Plain red. Also acceptable: Lavender (K2 or K3EDTA) or pink (K2EDTA).
Specimen Preparation:	Separate serum or plasma from cells within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP standard transport tube.(~~Standard Transport Tube. (~~Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Whole blood. Gel separator tubes, light blue (citrate), or yellow (SPS or ACD solution).
Remarks:	
Stability:	After separation from cells: Ambient: 24 hours~~5 weeks~~; Refrigerated: 1 week~~2 months~~; Frozen: 3~~2~~ months
Methodology:	Quantitative Liquid Chromatography-Tandem Mass Spectrometry
Performed:	Sun-Sat
Reported:	1-3 days
Note:	
CPT Codes:	80159
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Therapeutic ranges are not well established. Clozapine is metabolized to norclozapine and clozapine-N-oxide. Clozapine concentrations between 100 and 700 ng/mL may correlate more with clinical response; however, nonresponsiveness~~non-responsiveness~~ may also occur within this range. For refractory schizophrenia, clozapine concentrations greater than 350 ng/mL are suggested to achieve a therapeutic response.

Toxicity: Adverse effects to clozapine therapy may include tachycardia, drowsiness, hypotension, and seizures.

Therapeutic and toxic ranges are not well established in children.

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Therapeutic Range	Not well established
Toxic Level	Total Clozapine and Metabolites: Greater than or equal to 1500 ng/mL

TEST CHANGE

Cystic Fibrosis (CFTR) Expanded Variant Panel

2013661, CF VAR

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), pink (K2EDTA~~K 2 EDTA~~).
Specimen Preparation:	Transport 3 mL whole blood. (Min: 1 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Plasma or serum. Specimens collected in sodium heparin, yellow (ACD solution), or lithium heparin tubes. Frozen specimens. ~~in glass collection tubes.~~
Remarks:	
Stability:	Ambient: 72 hours; Refrigerated: 1 week; Frozen: unacceptable~~1 month~~
Methodology:	Matrix-Assisted Laser Desorption Ionization-Time of Flight (MALDI-TOF) Mass Spectrometry
Performed:	Sun-Sat
Reported:	5-10 days
Note:	The Cystic Fibrosis (CFTR) Expanded Variant Panel includes the 23 pathogenic CF variants recommended by the American College of Medical Genetics for carrier screening as well as many more.
CPT Codes:	81220
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report.~~Refer to report.~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Reference Interval:

By report

TEST CHANGE

Cystic Fibrosis (CFTR) Expanded Variant Panel, Fetal

2013662, CF VAR FE

Specimen Requirements:	
Patient Preparation:	
Collect:	Fetal Specimen: Amniotic fluid. OR Cultured amniocytes: Two T-25 flasks at 80 percent confluency. ORof cultured CVS: Two T-25 flasksamniocytes at 80 percent confluency. *If the client is unable to culture amniocytes, this can be arranged by contacting ARUP Client Services at (800-)-522-2787. AND Maternal Whole Blood Specimen: Lavender (EDTA), pink (K2EDTA), yellow (ACD Solution A or B).
Specimen Preparation:	Amniotic Fluid: Transport 10 mL amniotic fluid in a sterile container. (Min: 5 mL). Cultured Amniocytes or CVS: Fill flasks with culture media. Backup cultures must be retained at the client's institution until testing is complete. Maternal Whole Blood Specimen: Transport 3 mL whole blood. (Min. 1 mL)
Transport Temperature:	Amniotic fluid, cultured amniocyts and cultured CVSCultured Amniocytes: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells. Maternal Whole Blood Specimen: Refrigerated.
Unacceptable Conditions:	Maternal Whole Blood Specimen: Plasma or serum. Specimens collected in sodium heparin, yellow (ACD solution), or lithium heparin tubes. Frozen specimens in glass collection tubes.
Remarks:	Maternal whole blood sample is recommended for proper test interpretation; order Maternal Cell Contamination, Maternal Specimen. Patient History Form is available on the ARUP Web site or by contacting ARUP Client Services.
Stability:	Fetal Specimen: Amniotic fluid, cultured amniocytes and cultured CVS: Room TemperatureAmbient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable Maternal Whole Blood Specimen: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month
Methodology:	Matrix-Assisted Laser Desorption Ionization-Time of Flight (MALDI-TOF) Mass Spectrometry
Performed:	Sun-Sat
Reported:	7-10 days

Note:	The Cystic Fibrosis (CFTR) Expanded Variant Panel includes 23 pathogenic CFTR variants recommended by the American College of Medical Genetics for population carrier screening.
CPT Codes:	81220; 81265 Fetal Cell Contamination (FCC)
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report.~~Refer to report.~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Reference Interval:

By report

TEST CHANGE

CV2.1 Antibody, IgG~~Screen~~ by CBA-IFA with Reflex to Titer, Serum

2013956, CV2.1 SCRN

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube~~Separator Tube~~ (SST) or plain red~~Plain Red~~
Specimen Preparation:	Transfer 1 mL serum to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.25 mL)
Transport Temperature:	Refrigerated
Unacceptable Conditions:	Hemolyzed, contaminated, or severely lipemic specimens
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Thu
Reported:	1-8 days
Note:	If CV2.1 Antibody IgG Screen by IFA is positive, then CV2.1 Antibody IgG Titer by IFA will be added. Additional charges apply.
CPT Codes:	86255; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

CV2.1 antibodies aid in discriminating between chronic paraneoplastic neurological disorder (PND) and other inflammatory disorders of the nervous system. Anti-CV2.1 is associated with small-cell lung cancer and thymoma. A negative test result does not rule out a diagnosis of autoimmune neurologic disease. Results should be interpreted in correlation with the patient's clinical history and other laboratory findings.

This indirect fluorescent antibody assay utilizes CV2.1 transfected cell lines for the detection and semiquantification of the CV2.1 IgG antibody.

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Test Number	Components	Reference Interval
	CV2.1 Ab~~Antibody~~ IgG CBA-IFA Screen, Serum ~~by IFA~~	Less than 1:10

TEST CHANGE

Antimicrobial Susceptibility - Carbapenemase Gene Detection by PCR

2014277, CARBAR PCR

Specimen Requirements:	
Patient Preparation:	
Collect:	Actively growing Enterobacteriaceae, Pseudomonas aeruginosa, or Acinetobacter baumannii in pure culture.
Specimen Preparation:	Transport sealed container with pure culture on agar slant/bacterial transport media. Place each specimen in an individually sealed bag.
Transport Temperature:	Room temperature.
Unacceptable Conditions:	Mixed cultures or nonviable organisms.
Remarks:	Isolate identification (for cultures) and specimen source required.
Stability:	Ambient: 1 week; Refrigerated: 1 week; Frozen: Unacceptable
Methodology:	Qualitative Polymerase Chain Reaction (PCR)
Performed:	Sun-Sat
Reported:	~~1~~ 2-3 days
Note:	An additional processing fee will be billed for all isolates not submitted in pure culture, as indicated in the specimen requirements. If species identification is not provided, identification will be performed at ARUP. Additional charges apply. This assay will generate a negative IMP result when testing samples containing IMP-7, IMP-13 or IMP-14 gene sequences, and may detect IMP-4 at reduced sensitivity.
CPT Codes:	87150
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

This assay detects five carbapenemase gene families (*blaKPC, blaNDM, blaOXA-48, blaVIM, blaIMP*) encoding enzymes that may confer resistance to carbapenem and other beta-lactam antibiotics. This assay is intended for use as an aid to infection control in the detection of carbapenem-resistant bacteria and is not intended to guide or monitor treatment of infection. A negative result does not exclude the presence of other resistance mechanisms or assay-specific nucleic acid in

concentrations below the level of detection.

Reference Interval:

Not Detected

TEST CHANGE

Platelet Antigen Genotyping Panel

3000193, HPA GENO

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), Pink (K2EDTA), or Yellow (ACD Solution A or B). ~~Fetal genotyping: Amniotic fluid. Cultured amniocytes: Two T-25 flasks at 80 percent confluency. If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301. WITH maternal cell contamination specimen: Lavender (EDTA), Pink (K2EDTA), or Yellow (ACD Solution A or B). Parental genotyping: Lavender (EDTA).~~
Specimen Preparation:	Whole blood: Transport 3 mL whole blood. (Min: 1 mL) ~~Amniotic fluid: Transport 10 mL amniotic fluid in a sterile container. (Min: 5 mL) OR Cultured amniocytes: Transport two T-25 flasks at 80 percent confluency filled with culture media. Backup cultures must be retained at the client's institution until testing is complete. Maternal cell contamination specimen: Transport 3 mL whole blood. (Min: 1 mL) Whole blood (parental genotyping): Transport 3 mL whole blood. (Min: 1 mL)~~
Transport Temperature:	~~Amniotic fluid, cultured amniocytes: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells.~~ Whole blood ~~or maternal cell contamination~~ specimen: Refrigerated.
Unacceptable Conditions:	Frozen specimens in glass collection tubes.
Remarks:	
Stability:	~~Fetal specimens Amniotic fluid or cultured amniocytes: Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable~~ Whole blood ~~or maternal cell contamination~~ specimen: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month
Methodology:	Polymerase Chain Reaction (PCR)~~/~~/Fluorescence Monitoring
Performed:	Varies
Reported:	7-14 days

Note:	~~Maternal specimen is recommended for proper test interpretation if contamination of the fetal specimen from the mother is suspected. Order Maternal Cell Contamination.~~
CPT Codes:	81105; 81106; 81107; 81108; 81109; 81110; 81112
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report.
~~Refer to report~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA- certified laboratory and is intended for clinical purposes.~~
Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

PA 1-6, 15 Polymorphism

HPA System	"a" Allele Common	"b" Allele Variant
HPA 1	T	C
HPA 2	C	T
HPA 3	T	G
HPA 4	G	A
HPA 5	G	A
HPA 6	G	A
HPA 15	C	A

Reference Interval:

TEST CHANGE

B-Lymphoblastic Leukemia (B-ALL) Minimum Residual Disease Detection by Flow Cytometry

3000724, B-ALL MRD

Specimen Requirements:	
Patient Preparation:	
Collect:	Bone marrow. Whole blood: Green (sodium heparin) or lavender (EDTA).
Specimen Preparation:	Transport 2 mL heparinized bone marrow (Min: 1.0 mL)~~*)~~ OR 3 mL whole blood (Min: 1.0 mL)~~1mL*)~~
Transport Temperature:	Room temperature. Also acceptable: Refrigerated. Specimen should be received within 24 hours of collection for optimal cell viability.
Unacceptable Conditions:	Clotted or hemolyzed specimens.
Remarks:	Provide specimen source, CBC, Wright stained smear (if available), clinical history, differential diagnosis. Follow up: If previous leukemia/lymphoma phenotyping was performed at another lab, the outside flow cytometry report and histograms (if possible) should accompany the specimen.
Stability:	Ambient: 48 hours; Refrigerated: 48 hours; Frozen: Unacceptable
Methodology:	Flow Cytometry
Performed:	Sun-Sat
Reported:	1-3~~2~~ days
Note:	This assay is a minimal residual disease assessment of B-ALL by flow cytometry. Available markers*: CD3, CD9, CD10, CD13, CD19, CD20, CD33, CD34, CD38, CD45, CD58, CD71, Syto 16, CD66b, CD24, CD22 *Not all markers will be reported in all cases. If COG panel is not specified, a 10-marker panel will be run: CD10, CD19, CD20, CD22, CD24, CD34, CD38, CD45, CD58, CD66b If COG panel is specified, indicate time point and specimen type: DAY 8 Peripheral blood sample will have CD10, CD19, CD20, CD34, CD45, and Syto 16 run and reported~~.~~ (6 markers total). Day 29 Bone marrow sample will have CD3, CD9, CD10, CD13, CD19, CD20, CD33, CD34, CD38, CD45, CD58, CD71, Syto 16 run and reported~~.~~ (13 markers total). The report

	will include a pathologist interpretation and a marker interpretation range corresponding to CPT codes of 2-8 markers or 9-15 markers interpreted. Charges apply per marker.
CPT Codes:	88184; 88185 each additional marker; 88187 or 88188.
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

Interpretive Data:

Refer to report.

Reference Interval:

By Report

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

TEST CHANGE

Red Blood Cell Antigen Genotyping

3001053, RBC GENO

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), Pink (K2EDTA), or Yellow (ACD Solution A or B). ~~Fetal genotyping: Amniotic fluid OR Cultured amniocytes: Two T-25 flasks at 80 percent confluency. If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301. WITH maternal cell contamination specimen: Lavender (K2EDTA), Pink (K2EDTA), or Yellow (ACD Solution A or B). OR Genotyping: Lavender (K2EDTA), Pink (K2EDTA)~~
Specimen Preparation:	Genotyping: Transport 3 mL whole blood. (Min: 1 mL) ~~Genotyping: Transport 3 mL whole blood. (Min: 1 mL) Amniotic fluid: Transport 10 mL amniotic fluid in a sterile container. (Min: 5 mL) Cultured amniocytes: Transport two T-25 flasks at 80 percent confluency filled with culture media. Backup cultures must be retained at the client's institution until testing is complete. Maternal cell contamination specimen: Transport 3 mL whole blood (Min: 1 mL)~~
Transport Temperature:	Whole blood: Refrigerated ~~Cultured amniocytes: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells. Whole blood or maternal cell contamination specimen: Refrigerated.~~
Unacceptable Conditions:	Plasma or serum; collection of specimens in sodium heparin tubes. Frozen specimens in glass collection tubes.
Remarks:	~~Maternal specimen is recommended for proper test interpretation if contamination of the fetal specimen from the mother is suspected. Order Maternal Cell Contamination.~~
Stability:	Whole blood ~~or maternal cell contamination~~ specimen: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month. ~~Fetal specimens: Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable~~
Methodology:	Polymerase Chain Reaction (PCR)/~~/~~Fluorescence Monitoring

Performed:	Varies
Reported:	3-10 days
Note:	
CPT Codes:	0001U
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report.	
Counseling and informed consent are recommended for genetic testing. Consent forms are available online.	
Reference Interval:	

TEST CHANGE

Alpha-Amino-3-hydroxy-5-methyl-4-isoxazolepropionic Acid (AMPAR) Receptor Antibody, IgG by CBA-IFA with Reflex to Titer, CSF

3001257, AMPA CSF

Specimen Requirements:	
Patient Preparation:	
Collect:	CSF.
Specimen Preparation:	Transfer 0.5 mL CSF to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.15 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed, contaminated, or severely lipemic specimens.
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Wed
Reported:	1-8 days
Note:	If Alpha-Amino-3-hydroxy-5-methyl-4-isoxazolepropionic Acid (AMPA) Receptor Antibody, IgG by IFA with Reflex to Titer, CSF IgG is positive, then an Alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic Acid (AMPA) Receptor Antibody Titer, IgG, CSF is reported. Additional charges apply.
CPT Codes:	86255; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Alpha-amino-3-hydroxy-5-methyl-4-isoxazoleproprionic acid ~~(AMPA)~~ receptor (AMPAR) antibody is found in a subset of patients with autoimmune limbic encephalitis and may occur with or without associated tumor. Decreasing antibody levels may be associated with therapeutic response.~~;~~ ~~therefore, clinical correlation must be strongly considered.~~ A negative test result does not rule out a diagnosis of autoimmune encephalitis. Results should be interpreted in correlation with the patients clinical history and other laboratory findings.

This indirect fluorescent antibody assay utilizes AMPAR transfected cell lines for detection and semiquantification~~semi-quantification~~ of AMPAR IgG antibody.

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Less than 1:1

TEST CHANGE

Alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic Acid (AMPA) Receptor Antibody, IgG by CBA-IFA with Reflex to Titer, Serum

3001260, AMPA SER

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube~~Separator Tube~~ (SST) or plain red~~Plain Red~~.
Specimen Preparation:	Transfer 1 mL serum to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.15 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed, contaminated, or severely lipemic specimens.
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Wed
Reported:	1-8 days
Note:	If Alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic Acid (AMPA) Receptor Antibody, IgG by IFA with Reflex to Titer, Serum is positive, then an Alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic Acid (AMPA) Receptor Antibody Titer, IgG, Serum is reported. Additional charges apply.
CPT Codes:	86255; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Alpha-amino-3-hydroxy-5-methyl-4-isoxazoleproprionic acid ~~(AMPA)~~ receptor (AMPAR) antibody is found in a subset of patients with autoimmune limbic encephalitis and may occur with or without associated tumor. Decreasing antibody levels may be associated with therapeutic response.~~;~~ ~~therefore, clinical correlation must be strongly considered.~~ A negative test result does not rule out a diagnosis of autoimmune encephalitis. Results should be interpreted in correlation with the patient's clinical history and other laboratory findings.

This indirect fluorescent antibody assay utilizes AMPAR transfected cell lines for the detection and semiquantification~~semi-quantification~~ of AMPAR IgG antibody.

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Less than 1:10

TEST CHANGE

Gamma Aminobutyric Acid Receptor, Type B (GABA-BR) Antibody, IgG by CBA-IFA with Reflex to Titer, CSF

3001267, GABA-B CSF

Specimen Requirements:	
Patient Preparation:	
Collect:	CSF.
Specimen Preparation:	Transfer 0.5 mL CSF to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.15 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed, contaminated, or severely lipemic specimens.
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Wed
Reported:	1-8 days
Note:	If Gamma Aminobutyric Acid Receptor, Type B (GABA-BR) Antibody, IgG by IFA with Reflex to Titer, CSF is positive, then a Gamma Aminobutyric Acid Receptor, Type B (GABA-BR) Antibody Titer, IgG, CSF is performed. Additional charges apply.
CPT Codes:	86255; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Gamma-amino butyric acid receptor, type B (GABA-BR) antibody is found in a subset of patients with autoimmune epilepsy and other autoimmune neurologic phenotypes; it~~limbic encephalitis and~~ may occur with or without associated tumor. Decreasing antibody levels may be associated with therapeutic response.~~; therefore, clinical correlation must be strongly considered.~~ A negative test result does not rule out a diagnosis of autoimmune neurologic disease. Results should be interpreted in correlation with the patients clinical history and other laboratory findings.~~encephalitis.~~

This indirect fluorescent antibody assay utilizes GABA-BR transfected cell lines for the detection and semiquantification of GABA-BR IgG antibody. ~~semi-quantification of GABA-BR IgG antibody.~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Less than 1:1

TEST CHANGE

Gamma Aminobutyric Acid Receptor, Type B (GABA-BR) Antibody, IgG by CBA-IFA with Reflex to Titer, Serum

3001270, GABA-B SER

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube~~Separator Tube~~ (SST) or plain red~~Plain Red~~.
Specimen Preparation:	Transfer 1 mL serum to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.15 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed, contaminated, or severely lipemic specimens.
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Wed
Reported:	1-8 days
Note:	If Gamma Aminobutyric Acid Receptor, Type B (GABA-BR) Antibody, IgG by IFA with Reflex to Titer, Serum is positive, then a Gamma Aminobutyric Acid Receptor, Type B (GABA-BR) Antibody Titer, IgG, Serum is performed. Additional charges apply.
CPT Codes:	86255; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Gamma-amino butyric acid receptor, type B (GABA-BR) antibody is found in a subset of patients with autoimmune epilepsy and other autoimmune neurologic phenotypes; it~~limbic encephalitis and~~ may occur with or without associated tumor. Decreasing antibody levels may be associated with therapeutic response.~~; therefore, clinical correlation must be strongly considered.~~ A negative test result does not rule out a diagnosis of autoimmune neurologic disease. Results should be interpreted in correlation with the patients clinical history and other laboratory findings.~~encephalitis.~~

This indirect fluorescent antibody assay utilizes GABA-BR transfected cell lines for the detection

and semiquantification of GABA-BR IgG antibody. ~~semi-quantification of GABA-BR IgG antibody.~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Less than 1:10

TEST CHANGE

Myelin Oligodendrocyte Glycoprotein (MOG) Antibody, IgG by CBA-IFA with Reflex to Titer, Serum

3001277, MOG SER

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube~~Separator Tube~~ (SST) or plain red~~Plain Red~~.
Specimen Preparation:	Transfer 1 mL serum to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.15 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed, contaminated, or severely lipemic specimens.
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Mon,Wed, Fri
Reported:	1-6 days
Note:	If Myelin Oligodendrocyte Glycoprotein (MOG) Antibody, IgG by IFA with Reflex to Titer, Serum is positive, then a Myelin Oligodendrocyte Glycoprotein (MOG) Antibody Titer, IgG is performed. Additional charges apply.
CPT Codes:	86362; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Myelin oligodendrocyte glycoprotein (MOG) antibody is found in a subset of patients with neuromyelitis optica spectrum disorders~~,~~ including optic neuritis and transverse myelitis, brainstem encephalitis, and acute disseminated encephalomyelitis. Persistence of antibody positivity may be associated with a relapsing course. ~~Decreasing antibody levels may be associated with therapeutic response; therefore, clinical correlation must be strongly considered.~~ A negative test result does not rule out a diagnosis of CNS demyelinating disease. Results should be interpreted in correlation with the patients clinical history and other laboratory findings ~~or autoimmune encephalitis~~.

This indirect fluorescent antibody assay utilizes full-length MOG transfected cell lines for the

detection and semiquantification of MOG IgG antibody. ~~semi-quantification of MOG IgG antibody~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Less than 1:10

TEST CHANGE

Autoimmune CNS Demyelinating Disease Reflexive Panel

3001283, CNS PAN

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum Separator Tube (SST).
Specimen Preparation:	Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.3 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed, contaminated, or severely lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Mon, Wed, Fri
Reported:	1-6 days
Note:	If Aquaporin-4 Receptor Antibody, IgG by IFA with Reflex to Titer, Serum is positive, then an Aquaporin-4 Receptor Antibody, IgG by IFA, Serum Titer will be added. If Myelin Oligodendrocyte Glycoprotein (MOG) Antibody, IgG by IFA with Reflex to Titer, Serum is positive, then a Myelin Oligodendrocyte Glycoprotein (MOG) Antibody Titer, IgG will be added. Additional charges apply.
CPT Codes:	86362; 86052; if reflexed, add 86256 x2
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Reference Interval:

Test Number	Components	Reference Interval
2013320	Aquaporin-4 Receptor Antibody, IgG by CBA-IFA with Reflex to Titer, Serum	Less than 1:10
3001277	Myelin Oligodendrocyte Glycoprotein (MOG) Antibody, IgG by CBA-IFA with Reflex to Titer, Serum	Less than 1:10

NEW TEST

Click for Pricing

Comprehensive Epilepsy Panel, Sequencing and Deletion/Duplication

3001591, EPI NGS

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender or pink (EDTA) or yellow (ACD solution A or B).
Specimen Preparation:	Transport 3 mL whole blood. (Min: 2 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Serum or plasma; grossly hemolyzed or frozen specimens; saliva, buccal brush, or swab; FFPE tissue; DNA
Remarks:	
Stability:	Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable
Methodology:	Massively Parallel Sequencing
Performed:	Varies
Reported:	14-21 days
Note:	Genes Tested: AARS; ABAT*; ADGRG1; ADSL*; ALDH5A1; ALDH7A1; ALG1*; ALG13*; ALG3; ALG6; ALG8; ALG9*; AMACR; AMT; ANKRD11*; AP3B2*; ARFGEF2; ARG1; ARHGEF9*; ARV1*; ARX*; ASAH1*; ASNS; ATN1; ATP1A1; ATP1A3; ATP6AP2; ATP7A; ATRX*; BCKDK; BRAT1*; BTD*; C12orf57; CACNA1A; CACNA1D; CACNA1E; CACNA2D2; CAD; CARS2*; CASK; CDKL5; CHD2; CHRNA4; CHRNB2; CLCN4; CLN3; CLN5*; CLN6*; CLN8; CLTC; CNKSR2*; CNTNAP2; COL4A1; CPT2; CSTB; CTSD; CTSF; CUL4B*; DCX; DDX3X*; DEAF1*; DEPDC5; DHDDS; DIAPH1; DMXL2*; DNAJC5; DNM1*; DNM1L; DOCK7; DPAGT1; DPM1; DPYD; DYNC1H1**; DYRK1A; EEF1A2; EHMT1*; EPM2A***; FARS2**; FGF12; FKTN*; FLNA; FOLR1; FOXG1*; FRRS1L; GABBR2*; GABRA1; GABRB2; GABRB3*; GABRD; GABRG2*; GALC; GAMT; GATM; GFAP; GNAO1; GNB1; GOSR2; GPHN*; GRIA3; GRIN1; GRIN2A; GRIN2B; HACE1; HCN1; HECW2; HNRNPU; HSD17B10; IQSEC2; ITPA; KANSL1*; KCNA1; KCNA2; KCNB1; KCNC1; KCNH1; KCNJ10; KCNJ11; KCNMA1; KCNQ2*; KCNQ3; KCNT1; KCTD7*; KDM5C*; KIF1A*; LGI1; MBD5*; MDH2; MECP2; MED17; MEF2C; MFSD8; MOCS2; MOGS; MPDU1; MTHFR; MTOR; NDE1; NECAP1; NEDD4L; NEU1; NEXMIF; NGLY1; NHLRC1; NPRL2; NPRL3; NR2F1*; NRXN1*;

	NSD1; NTRK2*; OPHN1; PACS1; PAFAH1B1*; PCDH19; PEX1; PEX12; PEX2; PEX3; PEX6; PHF6; PHGDH; PIGA; PIGG; PIGN; PIGO; PIGQ; PIGT; PIGV; PLCB1; PLPBP*; PMM2; PNKP; PNPO; POLG; PPT1; PRICKLE2; PRRT2; PSAP; PTPN23; PURA; QARS1; QDPR; RELN; RFT1; RNASEH2A; RNASEH2B; RNASEH2C; ROGDI; RORB*; SAMHD1*; SATB2; SCARB2; SCN1A*; SCN1B; SCN2A; SCN3A; SCN8A; SERPINI1; SETBP1; SLC12A5; SLC13A5; SLC19A3***; SLC1A2; SLC25A12*; SLC25A22; SLC2A1; SLC35A2; SLC6A1; SLC9A6*; SMARCA2*; SMC1A; SMS; SNAP25; SPATA5; SPTAN1*; ST3GAL3*; ST3GAL5; STRADA; STX1B; STXBP1*; SUOX; SYN1; SYNGAP1*; SYNJ1; SZT2*; TBC1D24; TBL1XR1; TCF4; TPK1*; TPP1; TREX1; TSC1; TSC2; TSEN54*; UBA5; UBE3A*; UNC80*; VPS13A; WDR45; WWOX**; ZEB2* *One or more exons are not covered by sequencing and/or deletion/duplication analysis for the indicated gene; see limitations section below. **Deletion/duplication detection is not available for this gene. ***One or more exons are not covered by sequencing, and deletion/duplication detection is not available for this gene; see limitations section below.
CPT Codes:	81419
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data: Refer to report.	
Reference Interval: By report	

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Interstitial Lung Disease Autoantibody Panel

3001784, ILD PANEL

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum Separator Tube (SST).
Specimen Preparation:	Separate from cells ASAP or within 2 hours of collection. Transfer five 1 mL serum aliquots to ARUP Standard Transport Tubes. (Min: 2.8 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed, hyperlipemic, icteric, heat-treated or contaminated specimens.
Remarks:	
Stability:	Ambient: 24 hours; Refrigerated: 1 weeks; Frozen: 1 month
Methodology:	Qualitative Immunoprecipitation/Semi-Quantitative Multiplex Bead Assay/Qualitative Immunoblot/Semi-Quantitative Enzyme-Linked Immunosorbent Assay/Quantitative Immunoturbidimetry
Performed:	Sun-Sat
Reported:	7-18 days
Note:	Antibodies: Ro52, Ro60, Jo-1, PL-7, PL12, EJ, Ku, SRP, OJ, PM/Scl-100, MDA5, CCP, Scl-70, RA, ANA, NXP-2, RNA Polymerase III
CPT Codes:	86235 x5; 83516 x7; 84182 x2; 86431; 86200; 86039
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Refer to report. ~~Refer to report.~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Component	Interpretation	
SSA-52 (Ro52) (ENA) Antibody, IgG	29 AU/mL or Less 30-40 AU/mL 41 AU/mL or greater	Negative Equivocal Positive
SSA-60 (Ro60) (ENA) Antibody, IgG	29 AU/mL or Less 30-40 AU/mL 41 AU/mL or greater	Negative Equivocal Positive
Scleroderma (Scl-70) (ENA) Antibody, IgG	29 AU/mL or less 30-40 AU/mL 41 AU/mL or greater	Negative Equivocal Positive
Jo-1 Antibody, IgG	29 AU/mL or less 30-40 AU/mL 41 AU/mL or greater	Negative Equivocal Positive
Cyclic Citrullinated Peptide (CCP) Ab~~Antibody~~, IgG/A	19 Units or less 20-39 Units 40-59 Units 60 Units or Greater	Negative Weak positive Moderate positive Strong positive
RNA Polymerase III Antibody, IgG	19 Units or less 20-39 Units 40-80 Units 81 Units or greater	Negative Weak positive Moderate positive Strong positive

Reference Interval:

Test Number	Components	Reference Interval
	Rheumatoid Factor	0-14 IU/mL
	Antinuclear Antibody (ANA), HEp-2, IgG	Less than 1:80
	Scleroderma (Scl-70) (ENA) Antibody, IgG	40 AU/mL or less
	SSA-52 (Ro52) (ENA) Antibody, IgG	40 AU/mL or less
	~~Cyclic Citrullinated Peptide Ab, IgG~~	~~0-19 Units~~
	Jo-1 (Histidyl-tRNA Synthetase) Ab, IgG	40 AU/mL or less
	PL-7 (threonyl-tRNA synthetase) Antibody	Negative
	PL-12 (alanyl-tRNA synthetase) Antibody	Negative
	EJ (glycyl-tRNA synthetase) Antibody	Negative
	Ku Antibody	Negative
	SRP (Signal Recognition Particle) Ab	Negative
	OJ (isoleucyl-tRNA synthetase) Antibody	Negative
	SSA-60 (Ro60) (ENA) Antibody, IgG	40 AU/mL or less
	MDA5 (CADM-140) Ab	Negative
	NXP2 (Nuclear matrix protein-2) Ab	Negative
	PM/Scl 100 Antibody, IgG	Negative

	RNA Polymerase III Antibody, IgG	19 Units or less
	Cyclic Citrullinated Peptide Ab, IgG/A	19 Units or less

HOTLINE NOTE: There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Blood Smear with Interpretation

3001947, SMR INTRP

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA).~~) or Green (Sodium or Lithium Heparin).~~ Immediately invert tube several times following procurement of whole blood.
Specimen Preparation:	Transport 5 mL whole blood and 6 unfixed push smears. (Min: 0.1 mL whole blood and 2 unfixed push smears)
Transport Temperature:	Room temperature.
Unacceptable Conditions:	Serum or plasma.
Remarks:	Most recent CBC report, patient history, clinical indications and physician's name and telephone number are required. An instructional video with more information on how to make an adequate slide can be found at: https://www.youtube.com/watch?v=ca3NwrlpS40&feature=youtu.be
Stability:	Whole Blood: Ambient: 48 hours; Refrigerated: 48 hours; Frozen: Unacceptable Unfixed Push Smears: Ambient: 5 days; Refrigerated: 5 days; Frozen: Unacceptable
Methodology:	Cytochemical Stain
Performed:	Mon-Fri
Reported:	1-2 days
Note:	Further information on how to make an adequate slide, in the form of an instructional video, can be found at: https://www.youtube.com/watch?v=ca3NwrlpS40&feature=youtu.be
CPT Codes:	85060, 85007
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	
Refer to report.	
Reference Interval:	

TEST CHANGE

Contactin-Associated Protein-2 Antibody, IgG by CBA-IFA with Reflex to Titer, CSF

3001986, CASPR2GCSF

Specimen Requirements:	
Patient Preparation:	
Collect:	CSF.
Specimen Preparation:	Transfer 0.5 mL CSF to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.15 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Contaminated, hemolyzed, or severely lipemic specimens.
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Wed
Reported:	1-8 days
Note:	If CASPR2 antibody IgG is positive, then CASPR2 antibody IgG titer will be added. Additional charges apply.
CPT Codes:	86255; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Contactin-associated protein-2 (CASPR2) IgG antibody may occur as part of the voltage-gated potassium channel (VGKC) complex antibodies.

The presence of CASPR2 IgG antibody is associated with a wide spectrum of clinical manifestations, including acquired neuromyotonia, limbic encephalitis, painful neuropathy, and Morvan syndrome. Tumors such as thymoma, small cell lung cancer, and other rarer tumors may occur. The full-spectrum of clinical disorders and tumors associated with the CASPR2 IgG antibody continues to be defined. Results should be interpreted in correlation with the patient's clinical history and other laboratory findings.

This indirect fluorescent antibody assay utilizes ~~contactin-associated protein-2 (~~CASPR2~~)~~ transfected cell lines for the detection and semiquantification~~semi-quantification~~ of the CASPR2 IgG antibody.

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Less than 1:1

TEST CHANGE

Leucine-Rich, Glioma-Inactivated Protein 1 Antibody, IgG by CBA-IFA with Reflex to Titer, CSF

3001992, LGI1IGGCSF

Specimen Requirements:	
Patient Preparation:	
Collect:	CSF.
Specimen Preparation:	Transfer 0.5 mL CSF to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.15 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Contaminated, hemolyzed, or severely lipemic specimens.
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Wed
Reported:	1-8 days
Note:	If LGI1 antibody IgG is positive, then LGI1 antibody IgG titer will be added. Additional charges apply.
CPT Codes:	86255; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Leucine-rich, glioma-inactivated 1 protein (LGI1) IgG antibody may occur as part of the voltage-gated potassium channel (VGKC) complex antibodies.

The presence of LGI1 IgG antibody is mainly associated with limbic encephalitis, hyponatremia, and myoclonic movements. LGI1 IgG antibody is rarely associated with tumors but may occur infrequently in Morvan syndrome, neuromyotonia, and idiopathic epilepsy. The full-spectrum of clinical disorders associated with the LGI1 IgG antibody continues to be defined. Results should be interpreted in correlation with the patient's clinical history and other laboratory findings.

This indirect fluorescent antibody assay utilizes ~~leucine-rich, glioma-inactivated 1 protein (~~LGI1~~)~~ transfected cell lines for the detection and semiquantification~~semi-quantification~~ of the LGI1 IgG antibody.

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Less than 1:1

TEST CHANGE

Voltage-Gated Potassium Channel (VGKC) Complex Antibody Panel with Reflex to Titer, CSF

3001996, VGKCCSFPAN

Specimen Requirements:	
Patient Preparation:	
Collect:	CSF.
Specimen Preparation:	Transfer 4 mL CSF to an ARUP Standard Transport Tube. (Min: 1.0 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Plasma. Grossly lipemic or icteric specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month
Methodology:	Quantitative Radioimmunoassay/Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Wed
Reported:	1-8 days
Note:	If LGI1 antibody IgG is positive, then LGI1 antibody IgG titer will be added. If CASPR2 antibody IgG is positive, then CASPR2 antibody IgG titer will be added. Additional charges apply.
CPT Codes:	83519; 86255 x2; if reflexed add 86256 per titer
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Component	Interpretive Data
Voltage-Gated Potassium Channel Ab, CSF	0.0-1.1 pmol/L: Negative 1.2 pmol/L or greater: Positive

Reference Interval:

Test Number	Components	Reference Interval
	Voltage-Gated Potassium Channel Ab, CSF	0.0-1.1 pmol/L
	LGI1 Ab IgG CBA-IFA Screen ~~by IFA~~, CSF	Less than 1:1
	CASPR2 Ab IgG CBA-IFA Screen ~~by IFA~~, CSF	Less than 1:1

TEST CHANGE

Kell K/k (KEL) Antigen Genotyping

3002001, KEL GENO

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (K2EDTA), pink (K2EDTA), or yellow (ACD Solution A or B). ~~Fetal genotyping: Amniotic fluid OR Cultured amniocytes: Two T-25 flasks at 80 percent confluency. If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301. WITH maternal cell contamination specimen (see Note): Lavender (K2EDTA), pink (K2EDTA), or yellow (ACD solution A or B). Parental genotyping: Lavender (K2EDTA), pink (K2EDTA).~~
Specimen Preparation:	Genotyping: Tranport 3 mL whole blood. (Min: 1 mL) ~~Amniotic fluid: Transport 10 mL amniotic fluid in a sterile container. (Min: 5 mL). Cultured amniocytes: Transport two T-25 flasks at 80 percent confluency filled with culture media. Backup cultures must be retained at the client's institution until testing is complete. Maternal cell contamination specimen: Transport 3 mL whole blood (Min: 1 mL) Whole blood (parental genotyping): Transport 3 mL whole blood. (Min: 1 mL)~~
Transport Temperature:	~~Amniotic fluid, cultured amniocytes: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells.~~ Whole blood ~~or maternal cell contamination~~ specimen: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month.
Unacceptable Conditions:	Plasma or serum. Specimens collected in sodium heparin tubes. Frozen specimens in glass collection tubes.
Remarks:	Patient History Form is available on the ARUP website or by contacting ARUP Client Services.
Stability:	~~Fetal specimens: Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable~~ Whole blood ~~or maternal cell contamination specimen~~: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month
Methodology:	Polymerase Chain Reaction (PCR)/Fluorescence Monitoring

Performed:	Varies
Reported:	3-10 days
Note:	~~Maternal specimen is recommended for proper test interpretation if contamination of the fetal specimen from the mother is suspected. Order Maternal Cell Contamination.~~
CPT Codes:	0001U
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report

Counseling and informed consent are recommended for genetic testing. Consent forms are available online. ~~Refer to report~~

Reference Interval:

By report.

TEST CHANGE

RhC/c (RHCE) Antigen Genotyping

3002002, RHC GENO

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (K2EDTA), pink (K2EDTA), or yellow (ACD Solution A or B). ~~Fetal genotyping: Amniotic fluid. OR Cultured amniocytes: Two T-25 flasks at 80 percent confluency. If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301. WITH maternal cell contamination specimen (see Note): Lavender (K2EDTA), pink (K2EDTA), or yellow (ACD solution A or B). Parental genotyping: Lavender (K2EDTA), pink (K2EDTA)~~
Specimen Preparation:	Whole blood: Transport 3 mL whole blood. (Min: 1 mL) ~~Amniotic fluid: Transport 10 mL amniotic fluid in a sterile container. (Min: 5 mL). Cultured amniocytes: Transport two T-25 flasks at 80 percent confluency filled with culture media. Backup cultures must be retained at the client's institution until testing is complete. Maternal cell contamination specimen: Transport 3 mL whole blood (Min: 1 mL) Whole blood (parental genotyping): Transport 3 mL whole blood. (Min: 1 mL)~~
Transport Temperature:	~~Cultured amniocytes: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells.~~ Whole blood ~~or maternal cell contamination~~ specimen: Refrigerated.
Unacceptable Conditions:	Plasma or serum. Specimens collected in sodium heparin tubes. Frozen specimens in glass collection tubes.
Remarks:	Patient History Form is available on the ARUP website or by contacting ARUP Client Services.
Stability:	~~Fetal specimens: Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable~~ Whole blood~~ or maternal cell contamination specimen~~: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month
Methodology:	Polymerase Chain Reaction (PCR)/Fluorescence Monitoring
Performed:	Varies

Reported:	3-10 days
Note:	~~Maternal specimen is recommended for proper test interpretation if contamination of the fetal specimen from the mother is suspected. Order Maternal Cell Contamination.~~
CPT Codes:	0001U
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online. ~~Refer to report~~

Reference Interval:

By report

TEST CHANGE

RhE/e (RHCE) Antigen Genotyping

3002003, RHE GENO

Specimen Requirements:	
Patient Preparation:	
Collect:	Parental genotyping: Lavender (K2EDTA), pink (K2EDTA) or Yellow (ACD Solution A or B). ~~Fetal genotyping : Amniotic fluid. Cultured amniocytes : Two T-25 flasks at 80 percent confluency. If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301. WITH maternal cell contamination specimen (see Note): Lavender (K2EDTA), pink (K2EDTA), or yellow (ACD solution A or B). Parental genotyping: Lavender (K2EDTA), pink (K2EDTA).~~
Specimen Preparation:	Whole blood: Transport 3 mL whole blood. (Min: 1 mL) ~~Amniotic fluid: Transport 10 mL amniotic fluid in a sterile container. (Min: 5 mL). Cultured amniocytes: Transport two T-25 flasks at 80 percent confluency filled with culture media. Backup cultures must be retained at the client's institution until testing is complete. Maternal cell contamination specimen: Transport 3 mL whole blood (Min: 1 mL) Whole blood (parental genotyping): Transport 3 mL whole blood. (Min: 1 mL~~
Transport Temperature:	~~Amniotic fluid, cultured amniocytes: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells.~~ Whole blood ~~or maternal cell contamination~~ specimen: Refrigerated.
Unacceptable Conditions:	Plasma or serum. Specimens collected in sodium heparin tubes. Frozen specimens in glass collection tubes.
Remarks:	Patient History Form is available on the ARUP Web site or by contacting ARUP Client Services.
Stability:	~~Fetal specimens: Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable~~ Whole blood ~~or maternal cell contamination~~ specimen: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month
Methodology:	Polymerase Chain Reaction (PCR)/Fluorescence Monitoring
Performed:	Varies

Reported:	3-10 days
Note:	~~Maternal specimen is recommended for proper test interpretation if contamination of the fetal specimen from the mother is suspected. Order Maternal Cell Contamination.~~
CPT Codes:	0001U
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online. ~~Refer to report~~

Reference Interval:

By report

TEST CHANGE

Multiple Myeloma Minimum Residual Disease by Flow Cytometry

3002069, MM MRD

Specimen Requirements:	
Patient Preparation:	
Collect:	Bone marrow in green (sodium heparin~~Green (Sodium Heparin~~)
Specimen Preparation:	Transport 5 mL bone marrow. (Min: 1 mL) Do not freeze.
Transport Temperature:	Room temperature. Also acceptable: Refrigerated. Specimen should be received within 24 hours of collection for optimal cell viability.
Unacceptable Conditions:	
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 48 hours; Frozen: Unacceptable
Methodology:	Flow Cytometry
Performed:	Sun-Sat
Reported:	1-3~~2~~ days
Note:	
CPT Codes:	88184; 88185 x9; 88188
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	
Refer to report.	
Reference Interval:	

TEST CHANGE

CV2.1 Antibody, IgG~~Screen~~ by CBA-IFA with Reflex to Titer, CSF

3002257, CV2.1 CSF

Specimen Requirements:	
Patient Preparation:	
Collect:	CSF.
Specimen Preparation:	Transfer 0.5 mL CSF to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.15 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed, contaminated, or severely lipemic specimens.
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Thu
Reported:	1-8 days
Note:	If CV2.1 Antibody IgG Screen by IFA, CSF is positive, then CV2.1 Antibody IgG Titer, CSF will be added. Additional charges apply.
CPT Codes:	86255; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

CV2.1 antibodies aid in discriminating between chronic paraneoplastic neurological disorder (PND) and other inflammatory disorders of the nervous system. Anti-CV2.1 is associated with small-cell lung cancer and thymoma. A negative test result does not rule out a diagnosis of autoimmune neurologic disease. Results should be interpreted in correlation with the patient's clinical history and other laboratory findings.

This indirect fluorescent antibody assay utilizes CV2.1 transfected cell lines for the detection and semiquantification of the CV2.1 IgG antibody.

Reference Interval:

Less than 1:1

TEST CHANGE

Paraneoplastic Reflexive Panel

3002929, PNS PAN2

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum Separator Tube (SST)
Specimen Preparation:	Separate from cells ASAP or within 2 hours of collection. Transfer 3 mL serum aliquot to an ARUP Standard Transport Tube. (Min: 1.0 mL)
Transport Temperature:	Refrigerated
Unacceptable Conditions:	Contaminated, heat-inactivated, hemolyzed, or lipemic specimens
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody/Qualitative Immunoblot
Performed:	Wed
Reported:	1-9 days
Note:	Purkinje Cell (PCCA) antibody and Neuronal Nuclear (ANNA) antibody IgG are screened by IFA. If the IFA screen is indeterminate, then a Neuronal Nuclear Antibodies (Hu, Ri, Yo, Tr/DNER) IgG by Immunoblot will be added. If the IFA screen is positive at 1:10 or greater, then a PCCA/ANNA antibodies titer and Neuronal Nuclear Antibodies (Hu, Ri, Yo, Tr/DNER) IgG by Immunoblot will be added. Additional charges apply. If CV2.1 Antibody IgG Screen by IFA is positive, then CV2.1 Antibody IgG Titer by IFA will be added. Additional charges apply.
CPT Codes:	86255 x2; 84182 x2; if reflexed add 86256 and/or 84182 x4; if reflexed add 86256
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report	

Reference Interval:

Test Number	Components	Reference Interval
	Neuronal Antibody (Amphiphysin)	Negative
	Purkinje Cell/Neuronal Nuclear IgG Scrn	None Detected
	CV2.1 Ab~~Antibody~~ IgG CBA-IFA Screen, Serum ~~by IFA~~	Less than 1:10
	SOX1 Antibody, IgG by Immunoblot, Serum	Negative

TEST CHANGE

Autoimmune Neuromuscular Junction Reflexive Panel

3003017, MUWA R2

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube (SST).
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transport 2 mL serum. (Min: 1 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Plasma. Contaminated, hemolyzed, or severely lipemic specimens.
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Radioimmunoassay/Qualitative Radiobinding Assay/Semi-Quantitative Flow Cytometry/Semi-Quantitative Indirect Fluorescent Antibody
Performed:	Tue
Reported:	2-8 days
Note:	If Acetylcholine Receptor Binding Antibody result is greater than 0.4 nmol/L or Acetylcholine Receptor Blocking Antibody result is greater than 26 percent, then Acetylcholine Receptor Modulating Antibody will be added. If Striated Muscle Ab is detected, then a titer will be added. If VGKC is Indeterminate or Positive, LGI1 Antibody IgG and CASPR2 Antibody IgG will be added. If LGI1 antibody IgG is positive, then LGI1 antibody IgG titer will be added. If CASPR2 antibody IgG is positive, then CASPR2 antibody IgG titer will be added. Additional charges apply.
CPT Codes:	83519 x3; 83516 x2; 86255; 86596 x2; if reflexed, add 83516; 86255 x2; 86256 x3
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Refer to report.

Component	Interpretation
Acetylcholine Receptor Binding Antibody	0.0-0.4 nmol/L Negative 0.5 nmol/L or greater Positive
Acetylcholine Receptor Blocking Antibody	0-26% blocking Negative 27-41% blocking Indeterminate 42% or greater blocking Positive
P/Q-Type Voltage-Gated Calcium Channel (VGCC) Antibody	0.0 to 24.5 pmol/L Negative 24.6 to 45.6 pmol/L Indeterminate 45.7 pmol/L or greater Positive
Voltage-Gated Potassium Channel (VGKC) Antibody, Serum	31 pmol/L or less Negative 32-87 pmol/L Indeterminate 88 pmol/L or greater Positive
Titin Antibody	0.00-0.45 IV Negative 0.46-0.71 IV Indeterminate 0.72 IV or greater Positive
N-Type Calcium Channel Antibody	0.0 to 69.9 pmol/L Negative 70.0 to 110.0 pmol/L Indeterminate 110.1 pmol/L or greater Positive
Ganglionic Acetylcholine Receptor Antibody	0.0 - 8.4 pmol/L Negative 8.5 - 11.6 pmol/L Indeterminate 11.7 pmol/L or greater Positive

Reference Interval:

Test Number	Components	Reference Interval
	Striated Muscle Antibodies, IgG Screen	Less than 1:40
	Acetylcholine Binding Antibody	0.4 nmol/L or less
	P/Q-Type Calcium Channel Antibody	24.5 pmol/L or less
	Acetylcholine Blocking Antibody	26 % blocking or less
	Voltage-Gated Potassium Channel Ab, Ser	31 pmol/L or less
	Titin Antibody	0.45 IV or less
	N-Type Calcium Channel Antibody	69.9 pmol/L or less
	Ganglionic Acetylcholine Receptor Ab	8.4 pmol/L or less

TEST CHANGE

Chronic Lymphocytic Leukemia Minimum Residual Disease by Flow Cytometry

3003142, CLL MRD

Specimen Requirements:	
Patient Preparation:	
Collect:	Whole bBlood or bone marrowBone Marrow in green (sodium heparin), lavenderGreen (Sodium Heparin), Lavender (K2EDTA)
Specimen Preparation:	Transport 3 mL whole bloodWhole Blood or bone marrowBone Marrow. (Min: 1 mL) Do not freeze.
Transport Temperature:	Room temperature. Also, acceptable: Refrigerated. Specimen should be received within 24 hours of collection for optimal cell viability.
Unacceptable Conditions:	
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 48 hours; Frozen: Unacceptable
Methodology:	Flow Cytometry
Performed:	Sun-Sat
Reported:	1-32 days
Note:	
CPT Codes:	88184; 88185 x9; 88188
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	
Refer to report.	
Reference Interval:	

TEST CHANGE

Multiple Myeloma Minimum Residual Disease by Flow Cytometry with Reflex to FISH

3003641, MM MRDRFLX

Specimen Requirements:	
Patient Preparation:	
Collect:	Bone marrow in green (sodium heparin~~Green (Sodium Heparin~~)
Specimen Preparation:	Transfer 5 mL bone marrow into each of two (2) ARUP standard transport tubes (Min: 1 mL per tube) Do not freeze.
Transport Temperature:	Room temperature. Also acceptable: Refrigerated. Specimen should be received within 24 hours of collection for optimal cell viability.
Unacceptable Conditions:	Frozen specimens. Paraffin-embedded specimens. Clotted specimens.
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 48 hours; Frozen: Unacceptable
Methodology:	Flow Cytometry/Fluorescence in situ Hybridization (FISH)
Performed:	Sun-Sat
Reported:	1-3~~2~~ days
Note:	If sorting fails to yield sufficient CD138+ cells for the Multiple Myeloma Panel by FISH (ARUP test code 3002063), FISH will be performed using unsorted cells, if available. If test does not reflex to FISH, CD138+ sorting will still be attempted. A cell pellet will be stored for 3 months from the collection date in case future FISH testing is needed. Additional charges apply. A processing fee will be charged if this procedure is canceled at the client's request, after the test has been set up, or if the specimen integrity is inadequate to allow a complete analysis.
CPT Codes:	88184; 88185 x9; 88188; if reflexed, add 88271 x7; 88275 x7
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	
Refer to report. ~~Refer to report.~~	

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

TEST CHANGE

Microsatellite Instability (MSI) HNPCC/Lynch Syndrome by PCR

3004277, MSIPCR

Specimen Requirements:	
Patient Preparation:	
Collect:	Tumor AND normal epithelial tissue.
Specimen Preparation:	Tissue: Formalin fix (10 percent neutral buffered formalin) and paraffin embed tissue. Protect from excessive heat. Transport tissue block(s) or 10 unstained 5-micron slides (5 tumor and 5 normal epithelial). ~~(Min: 3 tumor tissue and 3 normal epithelial tissue slides)~~ Transport block(s) and/or slide(s) in a tissue transport kit (ARUP Supply #47808) available online through eSupply using ARUP Connect~~(TM)~~ or contact ARUP Client Services at ~~(~~800~~-)~~ 522-2787.
Transport Temperature:	Room temperature. Also acceptable: Refrigerated. Ship in cooled container during summer months
Unacceptable Conditions:	Less than 25 percent tumor or less than 50 percent normal epithelial tissue. Specimens fixed/processed in alternative fixatives (alcohol, Prefer) or heavy metal fixatives (B-4 or B-5). Decalcified specimens.
Remarks:	Include surgical pathology report. If multiple specimens (blocks or slides) are sent to ARUP, they must be accompanied by one of the following: an order comment indicating that the ARUP pathologist should choose the specimen most appropriate for testing (e.g., "Choose best block"), or individual orders for each sample submitted. A Pathologist Block Selection Fee (ARUP test code 3002076) will be added to orders that utilize the first option. If multiple specimens are sent to ARUP without a request for pathologist block/slide selection or individual orders, they will be held until clarification is provided.
Stability:	Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable
Methodology:	Capillary Electrophoresis/Polymerase Chain Reaction (PCR)
Performed:	Varies
Reported:	10-20 days

Note:	
CPT Codes:	81301
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Refer to report. ~~Refer to report.~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.~~

Reference Interval:

TEST CHANGE

MLH1 Promoter Methylation

3004308, MLH1 PCR

Specimen Requirements:	
Patient Preparation:	
Collect:	Tumor tissue.
Specimen Preparation:	Tumor Tissue: Formalin fix (10 percent neutral buffered formalin) and paraffin embed tissue. Protect from excessive heat. Transport tissue block or 5 unstained 5-micron slides. ~~(Min: 3 slides)~~ Transport block and/or slide(s) in a tissue transport kit (ARUP Supply #47808) available online through eSupply using ARUP Connect~~(TM)~~ or contact ARUP Client Services at ~~(~~800-~~)~~ 522-2787.
Transport Temperature:	Room temperature. Also Acceptable: Refrigerated. Ship in cooled container during summer months.
Unacceptable Conditions:	Less than 25 percent tumor. Specimens fixed/processed in alternative fixatives (alcohol, Prefer) or heavy metal fixatives (B-4 or B-5). Decalcified specimens.
Remarks:	Include surgical pathology report. If multiple specimens (blocks or slides) are sent to ARUP, they must be accompanied by one of the following: an order comment indicating that the ARUP pathologist should choose the specimen most appropriate for testing (e.g., "Choose best block"), or individual orders for each sample submitted. A Pathologist Block Selection Fee (ARUP test code 3002076) will be added to orders that utilize the first option. If multiple specimens are sent to ARUP without a request for pathologist block/slide selection or individual orders, they will be held until clarification is provided.
Stability:	Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable
Methodology:	Real-Time Polymerase Chain Reaction/Fluorescence Resonance Energy Transfer (FRET)
Performed:	Varies
Reported:	7-12 days
Note:	

CPT Codes:	81288
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report. ~~Refer to report.~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.~~

Reference Interval:

TEST CHANGE

Dipeptidyl Aminopeptidase-Like Protein 6 (DPPX) Antibody, IgG by CBA-IFA w~~W~~ith Reflex to Titer, Serum

3004359, DPPX SER

Specimen Requirements:	
Patient Preparation:	Serum separator tube.
Collect:	Separate serum from cells within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.2 mL)
Specimen Preparation:	
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	CSF or plasma. Contaminated, hemolyzed, or severely lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 30 days (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Wed
Reported:	1-8 days
Note:	If DPPX antibody IgG is positive, then DPPX antibody IgG titer will be added. Additional charges apply.
CPT Codes:	86255; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

~~Anti-~~DPPX ~~IgG~~ antibody is found in a subset of patients with autoimmune encephalitis, and is often associated with prodromal gastrointestinal symptoms and unintentional weight loss. It may occur with or without associated tumor. Decreasing antibody levels may be associated with therapeutic response.~~; therefore, clinical correlation must be strongly considered.~~ A negative test result does not rule out a diagnosis of autoimmune neurologic disease. Results should be interpreted in correlation with the patient's clinical history and other laboratory findings~~limbic encephalitis~~.

This indirect fluorescent antibody ~~cell-based~~ assay ~~(CBA)~~ utilizes ~~dipeptidyl aminopeptidase-like protein 6 (~~DPPX~~)~~ transfected cells for the detection and semiquantification of the DPPX IgG antibody.

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.~~

Reference Interval:

Effective November 15, 2021
Less than 1:10

TEST CHANGE

Dipeptidyl Aminopeptidase-Like Protein 6 (DPPX) Antibody, IgG by CBA-IFA w~~W~~ith Reflex to Titer, CSF

3004512, DPPX CSF

Specimen Requirements:	
Patient Preparation:	
Collect:	Separate CSF.
Specimen Preparation:	Transfer 0.5 mL CSF to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 0.15 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed, contaminated, or severely lipemic specimens.
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month
Methodology:	Semi-Quantitative Cell-Based Indirect Fluorescent Antibody
Performed:	Wed
Reported:	1-8 days
Note:	If DPPX antibody IgG is positive, then DPPX antibody IgG titer will be added. Additional charges apply.
CPT Codes:	86255; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

~~Anti-~~DPPX ~~IgG~~ antibody is found in a subset of patients with autoimmune encephalitis, and is often associated with prodromal gastrointestinal symptoms and unintentional weight loss. It may occur with or without associated tumor. Decreasing antibody levels may be associated with therapeutic response.~~; therefore, clinical correlation must be strongly considered.~~ A negative test result does not rule out a diagnosis of autoimmune neurologic disease. Results should be interpreted in correlation with the patients clinical history and other laboratory findings~~limbic encephalitis~~.

This indirect fluorescent antibody ~~cell-based~~ assay ~~(CBA)~~ utilizes ~~dipeptidyl aminopeptidase-like protein 6 (~~DPPX~~)~~ transfected cells for the detection and semiquantification of the DPPX IgG antibody.

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was~~

~~performed in a CLIA-certified laboratory and is intended for clinical purposes..~~

Reference Interval:

Less than 1:1

TEST CHANGE

Paraneoplastic Reflexive Panel, CSF

3004517, PNSPAN CSF

Specimen Requirements:	
Patient Preparation:	
Collect:	CSF.
Specimen Preparation:	Transfer 2 mL CSF to an ARUP Standard Transport Tube. (Min: 1 mL).
Transport Temperature:	Refrigerated
Unacceptable Conditions:	Contaminated, heat-inactivated, hemolyzed, or lipemic specimens
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month
Methodology:	Semi-Quantitative Indirect Fluorescent Antibody/Qualitative Immunoblot
Performed:	Wed
Reported:	1-9 days
Note:	Purkinje Cell (PCCA) antibody and Neuronal Nuclear (ANNA) antibody IgG are screened by IFA. If the IFA screen is indeterminate, then a Neuronal Nuclear Antibodies (Hu, Ri, Yo, Tr/DNER) IgG by Immunoblot will be added. If the IFA screen is positive at 1:1 or greater, then a PCCA/ANNA antibodies titer and Neuronal Nuclear Antibodies (Hu, Ri, Yo, Tr/DNER) IgG by Immunoblot will be added. Additional charges apply. If CV2.1 Antibody IgG Screen by IFA is positive, then CV2.1 Antibody IgG Titer by IFA will be added. Additional charges apply.
CPT Codes:	86255 x2; 84182 x2; if reflexed add 86256 and/or 84182 x4; if reflexed add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was

performed in a CLIA-certified laboratory and is intended for clinical purposes.

Reference Interval:

Test Number	Components	Reference Interval
	Paraneoplastic Abs (PCCA/ANNA) IgG, CSF	None Detected
	CV2.1 Ab IgG CBA-IFA Screen, CSF	Less than 1:1
	SOX1 Antibody, IgG by Immunoblot, CSF	Negative
	Amphiphysin Antibody, CSF	Negative

TEST CHANGE

Drug Detection Panel, Meconium, Qualitative

3004583, MEC PANEL

Specimen Requirements:	
Patient Preparation:	
Collect:	All meconium (blackish material) excreted until milk/formula-based stool (yellow-green) appears.
Specimen Preparation:	Transport all available meconium (4 g is preferred) to routine urine collection cup or Security Kit for Meconium/Umbilical Drug Detection (ARUP supply #51548) available online through eSupply using ARUP Connect(TM) or by contacting ARUP Client Services at ~~(~~800-~~)~~ 522-2787.
Transport Temperature:	Refrigerated temperature.
Unacceptable Conditions:	Unknown fluids, pharmaceutical preparation, and breast milk. Diapers, cotton swabs, baby wipes, tongue depressors, bottles.
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 3 weeks; Frozen: 1 year
Methodology:	Qualitative Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS)
Performed:	Sun-Sat
Reported:	1-3 days
Note:	When ordering both meconium tests, unless ARUP is otherwise notified, testing will be performed in the following order of priority: Drug Detection Panel (0.125g) Marijuana (0.125g)
CPT Codes:	80326; 80347; 80364; 80355; 80323 (Alt code: G0481)
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Methodology: Qualitative Liquid Chromatography/Tandem Mass Spectrometry

Detection of drugs in meconium is intended to reflect maternal drug use during approximately the last trimester of a full-term pregnancy. The pattern and frequency of drug(s) used by the mother cannot be determined by this test. A negative result does not exclude the possibility that a mother used drugs during pregnancy. Detection of drugs in meconium depends on the extent of maternal drug use, as well as drug stability, unique characteristics of drug deposition in meconium, and the

performance of the analytical method. Drugs administered during labor and delivery may be detected. Detection of drugs in meconium does not insinuate impairment and may not affect outcomes for the infant. Interpretive questions should be directed to the laboratory.

For medical purposes only; not valid for forensic use.

Reference Interval:

Drugs covered and range of cutoff concentrations.

Drugs/Drug Classes	Cutoff Concentrations (ng/g)	Drugs/Drug Classes	Cutoff Concentrations (ng/g)
Buprenorphine	20	Amphetamine	20
Norbuprenorphine	20	Benzoylecgonine	20
Naloxone	20	m-OH-Benzoylecgonine	20
Codeine	20	Cocaethylene	20
Dihydrocodeine	20	Cocaine	20
Fentanyl	10	MDMA (Ecstasy)	20
Hydrocodone	20	Methamphetamine	20
Norhydrocodone	20	Phentermine	20
Hydromorphone	20	Alprazolam	5
Meperidine	20	Alpha-OH-Alprazolam	5
Methadone	10	Butalbital	50
Methadone metabolite	10	Clonazepam	5
6-Acetylmorphine	20	7-Aminoclonazepam	5
Morphine	20	Diazepam	5
Methylphenidate	20	Lorazepam	20
Oxycodone	20	Midazolam	20
Noroxycodone	20	Alpha-OH-Midazolam	20
Oxymorphone	20	Nordiazepam	20
Tapentadol	20	Oxazepam	20
Tramadol	20	Phenobarbital	200
N-desmethyltramadol	20	Temazepam	20
O-desmethyltramadol	20	Zolpidem	10
Gabapentin	20	Phencyclidine (PCP)	10
Mitragynine (Kratom)	25		

HOTLINE NOTE: There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Whole Genome Reanalysis

3005939, RWGS REA

Specimen Requirements:	
Patient Preparation:	
Collect:	No new specimen is required to process this test. New York State Clients: ARUP cannot facilitate testing for New York patients. Please work directly with a New York-approved laboratory.
Specimen Preparation:	
Transport Temperature:	
Unacceptable Conditions:	
Remarks:	Patient History Form for Rapid Whole Genome Reanalysis (REQUIRED); Fax to Genetics Processing at 801-584-5249.
Stability:	
Methodology:	Bioinformatic Processing and Variant Analysis
Performed:	Varies
Reported:	14 ~~Within~~ 21 days
Note:	Only the proband will receive an updated report. The most current list of American College of Medical Genetics and Genomics (ACMG) recommended genes will be examined for the proband if consent for reporting ACMG variants was originally provided.
CPT Codes:	81427
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	
Refer to report.	
Reference Interval:	
By report.	

TEST CHANGE

MGMT Promoter Methylation Detection by ddPCR

3005956, MGMT METH

Specimen Requirements:	
Patient Preparation:	
Collect:	Tumor tissue.
Specimen Preparation:	Tumor Tissue: Formalin fix (10 percent neutral buffered formalin) and paraffin embed tissue. Protect from excessive heat. Tissue block will be returned after testing. Transport tissue block or 5 unstained 5-micron slides. ~~(Min: 3 slides)~~ Transport block and/or slide(s) in a tissue transport kit (ARUP Supply #47808) available online through eSupply using ARUP Connect~~(TM)?~~ or contact ARUP Client Services at 800-522-2787.
Transport Temperature:	Room temperature. Ship in cooled container during summer months.
Unacceptable Conditions:	Specimens fixed/processed in alternative fixatives (alcohol, Prefer) or heavy metal fixatives (B-4 or B-5). Decalcified specimens. Less than 25 percent tumor.
Remarks:	Include surgical pathology report. If multiple specimens (blocks or slides) are sent to ARUP, they must be accompanied by one of the following: an order comment indicating that the ARUP pathologist should choose the specimen most appropriate for testing (e.g., "Choose best block"), or individual orders for each sample submitted. A Pathologist Block Selection Fee (ARUP test code 3002076) will be added to orders that utilize the first option. If multiple specimens are sent to ARUP without a request for pathologist block/slide selection or individual orders, they will be held until clarification is provided.
Stability:	Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable
Methodology:	Droplet Digital PCR (ddPCR)
Performed:	Varies
Reported:	8-12 days
Note:	

CPT Codes:	81287
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report. ~~Refer to report.~~

~~This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.~~

Reference Interval:

TEST CHANGE

C5 Inhibitors Drug Monitoring Panel

3005961, C5 INH PAN

Specimen Requirements:	
Patient Preparation:	
Collect:	Plain red.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 2.0 mL serum to an ARUP standard transport tube and freeze immediately. (Min: 2.0 mL)
Transport Temperature:	CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.
Unacceptable Conditions:	Specimens received refrigerated, ambient, lipemic specimens, or grossly hemolyzed specimens. Serum separator tubes. Specimens collected using calcium-binding anticoagulants (i.e., EDTA, ACD).
Remarks:	
Stability:	Refer to individual components.
Methodology:	Quantitative Turbidimetric/Quantitative Radial Immunodiffusion
Performed:	Tue, Fri
Reported:	1-9 days
Note:	
CPT Codes:	86160; 86161 x2; 86162
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

Interpretive Data:

Component	Interpretation
Complement Activity, Total Turbidimetric	Low: 38.6 U/mL or less Normal: 38.7-89.9 U/mL High: 90.0 U/mL or greater
Complement C5, Functional	Low: 22.9 U/mL or less Low-Normal: 23.0-28.3 U/mL Normal:

	28.4 U/mL or greater	
Complement Activity, Alternative Pathway	This test is intended for screening of functional activity of the alternative pathway of the complement system. Abnormal test results can be due to hereditary absence or acquired functional defect in the activity of any of the individual components of the alternative pathway.	
C5 Inhibitors Drug Monitoring Pan Interp	Patients treated with C5 inhibitors may show decreased/absent activity in total complement functional assay (CH50), alternative pathway functional assay (AH50), and C5 functional assay with normal or elevated C5 protein concentrations. Normal CH50, AH50, or C5 functional activity with normal or elevated C5 protein concentrations indicate inadequate complement blockage. Serial measurements are recommended when monitoring treatment efficacy. Decreases in both C5 concentration and C5 functional activity suggests a secondary	

	consumption process or C5 deficiency. Repeat testing using a new specimen is suggested if in vitro complement activation and consumption of components due to conditions of collection, transport, and/or handling is suspected.	

Reference Interval:

Test Number	Components	Reference Interval
	Complement Activity, Total Turbidimetric	38.7-89.9 U/mL
	Complement C5, Concentration	7-20 mg/dL
	Alternative Complement Pathway Activity~~, Alternative Pathway~~	31~~59~~ percent normal or greater
	Alternative Complement Pathway Activity	
	Complement C5, Functional	23.0 U/mL or greater

TEST CHANGE

Triglycerides Body Fluid with Reflex to Chylomicron Electrophoresis

3005996, CHYLO RFLX

Specimen Requirements:	
Patient Preparation:	
Collect:	Drain, pericardial, peritoneal/ascites, or pleural fluid.
Specimen Preparation:	Transfer 1 mL body fluid to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Specimen types other than those listed. Specimens too viscous to be aspirated by instrument.
Remarks:	Specimen source must be provided.
Stability:	Ambient: 48 hours; Refrigerated: 1 week; Frozen: 3 months
Methodology:	Quantitative Enzymatic Assay/Electrophoresis
Performed:	Varies~~Sun-Sat~~
Reported:	1-8 days ~~Within 24 hours~~
Note:	If Triglyceride concentration is 25-200 mg/dL, then Chylomicron Electrophoresis testing will be added. Additional charges apply.
CPT Codes:	84478; if reflexed, add 82664
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

Interpretive Data:

For information on body fluid reference ranges and/or interpretive guidance visit http://aruplab.com/bodyfluids/

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

Reference Interval:

TEST CHANGE

Autoimmune Encephalitis Reflex Panel, CSF

3006049, AE CSF

Specimen Requirements:	
Patient Preparation:	
Collect:	CSF
Specimen Preparation:	Transfer three (3) 1 mL CSF aliquots to ARUP standard transport tubes. (Min: 1.5 mL)
Transport Temperature:	Frozen.
Unacceptable Conditions:	Contaminated specimens.
Remarks:	
Stability:	Ambient: 24 hours; Refrigerated: 1 week; Frozen: 1 month (Three freeze/thaw cycles are acceptable)
Methodology:	Semiquantitative Cell-Based Indirect Fluorescent Antibody/Quantitative Radioimmunoassay/Semiquantitative Enzyme-Linked Immunosorbent Assay
Performed:	Tue
Reported:	3-10 days
Note:	If NMDA CSF antibody IgG is positive, then titer will be added. Additional charges apply. If AQP4 CSF antibody IgG is positive, then titer will be added. Additional charges apply. If AMPA CSF antibody IgG is positive, then titer will be added. Additional charges apply. If GABA-BR CSF antibody IgG is positive, then titer will be added. Additional charges apply. If CASPR2 CSF antibody IgG is positive, then titer will be added. Additional charges apply. If LGI1 CSF antibody IgG is positive, then titer will be added. Additional charges apply. If DPPX CSF antibody IgG is positive, then titer will be added. Additional charges apply. If IgLON5 CSF antibody IgG is positive, then titer will be added. Additional charges apply. If GABA-AR CSF antibody IgG is positive, then titer will be added. Additional charges apply. If mGluR1 CSF antibody IgG is positive, then titer will be added. Additional charges apply.
CPT Codes:	86052; 86255 x9; 83519; 86341; if reflexed, add 86256 per titer.
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report.

Component	Interpretation
Voltage-Gated Potassium Channel Ab, CSF	0.0-1.1 pmol/L: Negative 1.2 pmol/L or greater: Positive

Reference Interval:

Test Number	Components	Reference Interval
	Glutamic Acid Decarboxylase Antibody CSF	0.0-5.0 IU/mL
	NMDA~~N-methyl-D-Aspartate~~ Receptor Ab IgG CBA-IFA, CSF	Less than 1:1
	NMO~~Neuromyelitis Optica~~/AQP4 Ab ~~-~~IgG CBA-IFA Screen, CSF	Less than 1:1
	AMPA Receptor Ab IgG CBA-IFA Screen, CSF	Less than 1:1
	GABA-BR~~B Receptor~~ Ab IgG CBA-IFA Screen, CSF	Less than 1:1
	Voltage-Gated Potassium Channel Ab, CSF	0.0-1.1 pmol/L
	CASPR2 Ab IgG CBA-IFA Screen~~ by IFA~~, CSF	Less than 1:1
	LGI1 Ab IgG CBA-IFA Screen~~ by IFA~~, CSF	Less than 1:1
	DPPX Ab IgG CBA -IFA Screen, CSF	Less than 1:1
	IgLON5 Ab IgG CBA-IFA Screen, CSF	Less than 1:1
	GABA-AR Ab IgG CBA-IFA Screen, CSF	Less than 1:1
	mGluR1 Ab IgG CBA-IFA Screen, CSF	Less than 1:1

TEST CHANGE

Autoimmune Encephalitis Extended Panel, Serum

3006050, ENCEPHEXT2

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum Separator Tube (SST).
Specimen Preparation:	Separate from cells ASAP or within 2 hours of collection. Transfer three (3) 1 mL serum aliquots to ARUP standard transport tubes. (Min: 1.5 mL)
Transport Temperature:	Frozen.
Unacceptable Conditions:	Contaminated specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 1 month (Three freeze/thaw cycles are acceptable)
Methodology:	Semiquantitative Cell-Based Indirect Fluorescent Antibody/Quantitative Radioimmunoassay/Semiquantitative Enzyme-Linked Immunosorbent Assay
Performed:	Tue
Reported:	3-10 days
Note:	If N-methyl-D-Aspartate Receptor antibody is positive, then a titer will be added. Additional charges apply. If Aquaporin-4 Receptor antibody IgG is positive, then a titer will be added. Additional charges apply. If LGI1 antibody IgG is positive, then LGI1 antibody IgG titer will be added. Additional charges apply. If CASPR2 antibody IgG is positive, then CASPR2 antibody IgG titer will be added. Additional charges apply. If AMPAR antibody IgG is positive, then a titer will be added. Additional charges apply. If GABABR antibody IgG is positive, then a titer will be added. Additional charges apply. If MOG antibody IgG is positive, then a titer will be added. Additional charges apply. If DPPX antibody IgG is positive, then a titer will be added. Additional charges apply. If GABAAR antibody IgG is positive, then a titer will be added. Additional charges apply. If IgLON5 antibody IgG is positive, then a titer will be added. Additional charges apply. If mGluR1 antibody IgG is positive, then a titer will be added. Additional charge apply.

CPT Codes:	83519; 86052; 86341; 86362; 86255 x9; if reflexed, add 86256 per titer.
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report.

Component	Interpretive Data (pmol/L)
Voltage-Gated Potassium Channel Ab, Ser	31 or less: Negative 32-87: Indeterminate 88 or greater: Positive

Reference Interval:

Test Number	Components	Reference Interval
	Glutamic Acid Decarboxylase Antibody	0.0-5.0 IU/mL
	NMDAN-methyl-D-Aspartate Receptor Ab IgG CBA-IFA, Serum	Less than 1:10
	Voltage-Gated Potassium Channel Ab, Ser	31 pmol/L or less
	CASPR2 Ab IgG CBA-IFA Screen by IFA, Serum	Less than 1:10
	LGI1 Ab IgG CBA-IFA Screen by IFA, Serum	Less than 1:10
	NMONeuromyelitis Optica/AQP4 Ab -IgG CBA-IFA Screen, Serum	Less than 1:10
	AMPA Receptor Ab IgG CBA-IFA ScrnScreen, Serum	Less than 1:10
	GABA-BRB Receptor Ab IgG CBA-IFA Scrn, SerScreen, Serum	Less than 1:10
	MOG AbAntibody IgG CBA-IFA Screen, Serum	Less than 1:10
	DPPX Ab IgG CBA -IFA Screen, Serum	Less than 1:10
	GABA-AR Ab IgG CBA-IFA Screen, Serum	Less than 1:10
	IgLON5 Ab IgG CBA-IFA Screen, Serum	Less than 1:10
	mGluR1 Ab IgG CBA-IFA Screen, Serum	Less than 1:10

TEST CHANGE

Autoimmune Neurologic Disease Panel with Reflex, Serum

3006051, NEURO R4

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube~~Separator Tube~~ (SST)
Specimen Preparation:	Separate from cells ASAP or within 2 hours of collection. Transfer four 1 mL serum aliquots to ARUP standard transport tubes. (Min: 2.8 mL)
Transport Temperature:	Frozen
Unacceptable Conditions:	Amniotic fluid, ocular fluid, peritoneal fluid, synovial fluid, CSF, or plasma. Contaminated, grossly hemolyzed, icteric, or lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 1 month (Three freeze/thaw cycles are acceptable)
Methodology:	Semi-Quantitative~~Semiquantitative~~ Cell-Based Indirect Fluorescent Antibody/Qualitative Immunoblot/Quantitative Radioimmunoassay (RIA)/Semi-Quantitative~~/Semiquantitative~~ Enzyme Immunoassay (EIA)~~-Linked Immunosorbent Assay~~
Performed:	Tue
Reported:	3-10 days
Note:	If N-methyl-D-Aspartate Receptor Antibody is positive, then titer will be performed. Additional charges apply. If CV2.1 Antibody IgG Screen by IFA is positive, then titer will be performed, and Acetylcholine Receptor Binding Antibody will be added. Additional charges apply. If AQP4 antibody IgG is positive, then titer will be added. Additional charges apply. If PCCA/ANNA antibody IgG is screened by IFA. If the IFA screen is indeterminate, then a Neuronal Nuclear Antibodies (Hu, Ri, Yo, and Tr/DNER) IgG by Immunoblot will be performed. If the IFA screen is positive at 1:10 or greater, then a PCCA/ANNA antibodies titer and Neuronal Nuclear Antibodies (Hu, Ri, Yo, Tr/DNER) IgG by Immunoblot will be performed. Additional charges apply. If LGI1 antibody IgG is positive, then titer will be added. Additional charges apply. If CASPR2 antibody IgG is

positive, then titer will be added. Additional charges apply. If AMPAR antibody IgG is positive, then titer will be added. Additional charges apply. If GABA-BR antibody IgG is positive, then titer will be added. Additional charges apply. If MOG antibody IgG is positive, then titer will be added. Additional charges apply. If DPPX antibody IgG is positive, then titer will be added. Additional charges apply. If ITPR1 antibody IgG is positive, then titer will be added. Additional charges apply. If IgLON5 antibody IgG is positive, then titer will be added. Additional charges apply. If GABA-AR antibody IgG is positive, then titer will be added. Additional charges apply. If mGLUR1 antibody IgG is positive, then titer will be added. Additional charges apply.

CPT Codes:	83519 x2; 84182 x2; 86255 x12; 86341; 86052; 86362; 86596; if reflexed, add 83519; 84182 x4; 86256 per titer
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to Report

Component	Interpretation
Voltage-Gated Potassium Channel (VGKC) Antibody, Serum	31 pmol/L or less: Negative 32-87 pmol/L: Indeterminate 88 pmol/L or greater: Positive
P/Q-Type Voltage-Gated Calcium Channel (VGCC) Antibody	0.0 to 24.5 pmol/L: Negative 24.6 to 45.6 pmol/L: Indeterminate 45.7 pmol/L or greater: Positive
Ganglionic Acetylcholine Receptor Antibody	0.0 to 8.4 pmol/L: Negative 8.5 to 11.6 pmol/L: Indeterminate 11.7 pmol/L or greater: Positive

Reference Interval:

Test Number	Components	Reference Interval
	Neuronal Antibody (Amphiphysin)	Negative
	P/Q-Type Calcium Channel Antibody	24.5 pmol/L or less
	Glutamic Acid Decarboxylase Antibody	0.0-5.0 IU/mL
	NMDAN-methyl-D-Aspartate Receptor Ab IgG CBA-IFA, Serum	Less than 1:10
	Voltage-Gated Potassium Channel Ab, Ser	31 pmol/L or less
	Purkinje Cell/Neuronal Nuclear IgG Scrn	None Detected
	CASPR2 Ab IgG CBA-IFA Screen by IFA, Serum	Less than 1:10
	LGI1 Ab IgG CBA-IFA Screen by IFA, Serum	Less than 1:10
	NMONeuromyelitis Optica/AQP4 Ab -IgG CBA-IFA Screen, Serum	Less than 1:10
	CV2.1 AbAntibody IgG CBA-IFA Screen, Serum by IFA	Less than 1:10
	AMPA Receptor Ab IgG CBA-IFA ScrnScreen, Serum	Less than 1:10
	GABA-BRB Receptor Ab IgG CBA-IFA Scrn, SerScreen, Serum	Less than 1:10
	MOG AbAntibody IgG CBA-IFA Screen, Serum	Less than 1:10
	SOX1 Antibody, IgG by Immunoblot, Serum	Negative
	Ganglionic Acetylcholine Receptor Ab	8.4 pmol/L or less
	DPPX Ab IgG CBA -IFA Screen, Serum	Less than 1:10
	ITPR1 Ab IgG CBA-IFA Screen, Serum	Less than 1:10
	IgLON5 Ab IgG CBA-IFA Screen, Serum	Less than 1:10
	GABA-AR Ab IgG CBA-IFA Screen, Serum	Less than 1:10
	mGluR1 Ab IgG CBA-IFA Screen, Serum	Less than 1:10

TEST CHANGE

Autoimmune Neurologic Disease Panel w~~W~~ith Reflex, CSF

3006052, NEURORCSF2

Specimen Requirements:	
Patient Preparation:	
Collect:	CSF
Specimen Preparation:	Transfer four 1 mL CSF aliquots to ARUP standard transport tubes. (Min: 2.8 mL)
Transport Temperature:	Frozen
Unacceptable Conditions:	Fluid other than CSF. Grossly hemolyzed specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 1 month (Three freeze/thaw cycles are acceptable)
Methodology:	Semi-Quantitative~~Semiquantitative~~ Cell-Based Indirect Fluorescent Antibody/Qualitative Immunoblot/Quantitative Radioimmunoassay (RIA)/Semi-Quantitative~~/Semiquantitative~~ Enzyme Immunoassay (EIA)~~-Linked Immunosorbent Assay~~
Performed:	Tue
Reported:	3-10 days
Note:	If NMDA CSF antibody IgG is positive, then titer will be added. Additional charges apply. If AMPA CSF antibody IgG is positive, then titer will be added. Additional charges apply. If GABA-BR CSF antibody IgG is positive, then titer will be added. Additional charges apply. If CASPR2 CSF antibody IgG is positive, then titer will be added. Additional charges apply. PCCA/ANNA CSF antibodies are screened by IFA. If the IFA screen is indeterminate, then the Immunoblot will be added. If the IFA screen is positive at 1:1, then a specific titer (PCCA or ANNA) and Immunoblot will be added. Additional charges apply. If LGI1 CSF antibody IgG is positive, then titer will be added. Additional charges apply. If CV2.1 CSF antibody IgG is positive, then titer will be added. Additional charges apply. If DPPX CSF antibody IgG is positive, then titer will be added. Additional charges apply. If ITPR1 CSF antibody IgG is positive, then titer will be added. Additional charges apply. If IgLON5 CSF antibody IgG is positive, then titer will be added.

	Additional charges apply. If GABA-AR CSF antibody IgG is positive, then titer will be added. Additional charges apply. If mGLUR1 antibody IgG is positive, then titer will be added. Additional charges apply.
CPT Codes:	86255 x12; 83519; 86341; 84182 x2; if reflexed, add 84182 x4; 86256 per titer
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to Report

Component	Interpretive Data
Voltage-Gated Potassium Channel Ab, CSF	0.0-1.1 pmol/L: Negative 1.2 pmol/L or greater: Positive

Reference Interval:

Test Number	Components	Reference Interval
	NMDAN-methyl-D-Aspartate Receptor Ab IgG CBA-IFA, CSF	Less than 1:1
	Paraneoplastic Abs (PCCA/ANNA) IgG, CSF	None Detected
	AMPA Receptor Ab IgG CBA-IFA Screen, CSF	Less than 1:1
	GABA-BRB Receptor Ab IgG CBA-IFA Screen, CSF	Less than 1:1
	CASPR2 Ab IgG CBA-IFA Screen by IFA, CSF	Less than 1:1
	Voltage-Gated Potassium Channel Ab, CSF	0.0-1.1 pmol/L
	LGI1 Ab IgG CBA-IFA Screen by IFA, CSF	Less than 1:1
	CV2.1 Ab IgG CBA-IFA Screen, CSF	Less than 1:1
	Glutamic Acid Decarboxylase Antibody CSF	0.0-5.0 IU/mL
	SOX1 Antibody, IgG by Immunoblot, CSF	Negative
	Amphiphysin Antibody, CSF	Negative
	DPPX Ab IgG CBA -IFA Screen, CSF	Less than 1:1
	ITPR1 Ab IgG CBA-IFA Screen, CSF	Less than 1:1
	IgLON5 Ab IgG CBA-IFA Screen, CSF	Less than 1:1
	GABA-AR Ab IgG CBA-IFA Screen, CSF	Less than 1:1
	mGluR1 Ab IgG CBA-IFA Screen, CSF	Less than 1:1

NEW TEST – Available Now

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BRAF by Immunohistochemistry

3006149, BRAFIHC

Specimen Requirements:	
Patient Preparation:	
Collect:	Tissue or cells
Specimen Preparation:	Formalin fix (10 percent neutral buffered formalin) and paraffin embed specimen (cells must be prepared into a cell block). Protect paraffin block and/or slides from excessive heat. Transport tissue block or 2 unstained (3- to 5-micron thick sections), positively charged slides in a tissue transport kit (ARUP supply #47808). Available online through eSupply using ARUP Connector contact ARUP Client Services at 800-522-2787. (Min: 2 slides). If sending precut slides, do not oven bake.
Transport Temperature:	Room temperature or refrigerated. Ship in cooled container during summer months.
Unacceptable Conditions:	Specimens submitted with nonrepresentative tissue type. Depleted specimens.
Remarks:	
Stability:	Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable
Methodology:	Immunohistochemistry (IHC)
Performed:	Sun-Sat
Reported:	1-3 days
Note:	This test is performed as a stain and return service only.
CPT Codes:	88342
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	
Reference Interval:	

Test Number	Components	Reference Interval

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST – Available Now

Click for Pricing

IRF8 by Immunohistochemistry

3006162, IRF8 IHC

Specimen Requirements:	
Patient Preparation:	
Collect:	Tissue
Specimen Preparation:	Formalin fix (10 percent neutral buffered formalin) and paraffin embed specimen (cells must be prepared into a cell block). Protect paraffin block and/or slides from excessive heat. Transport tissue block or 2 unstained (3- to 5-micron thick sections), positively charged slides in a tissue transport kit (ARUP supply #47808). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787. (Min: 2 slides). If sending precut slides, do not oven bake.
Transport Temperature:	Room temperature or refrigerated. Ship in cooled container during summer months.
Unacceptable Conditions:	Specimens submitted with nonrepresentative tissue type. Depleted specimens. Tissue or cells not processed and placed in a paraffin block; serum, blood, or other body fluids; tissue not mounted on positively charged slides.
Remarks:	
Stability:	Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable
Methodology:	Qualitative Immunohistochemistry (IHC)
Performed:	Mon-Fri
Reported:	1-3 days
Note:	This test is performed as a stain and return service only.
CPT Codes:	88342
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	

Reference Interval:

Test Number	Components	Reference Interval

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST – Available Now

Click for Pricing

Mycoplasmoides genitalium Detection and Macrolide Resistance by PCR

3006344, MACRO PCR

Specimen Requirements:	
Patient Preparation:	
Collect:	Genital swab, rectal swab, or urine.
Specimen Preparation:	Transfer swab or 1 mL urine to viral transport media (ARUP supply #12884) available online through eSupply using ARUP Connector contact ARUP Client Services at 800-522-2787. Neat urine: Transfer 1mL of urine to sterile container. (Min: 0.5 mL)
Transport Temperature:	Frozen
Unacceptable Conditions:	
Remarks:	Specimen source required
Stability:	Ambient: 48 hours; Refrigerated: 10 days; Frozen: 14 days
Methodology:	Qualitative Polymerase Chain Reaction (PCR)
Performed:	Sun, Wed
Reported:	2-7 days
Note:	
CPT Codes:	87798, 87563
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

Interpretive Data:

Macrolide drug resistance is predicted based on melt probe analysis. Common resistance associated mutations occur at positions A2058, A2059, and A2062 (E. coli numbering) of the 23S rRNA gene. Other mutations of unknown significance may be detected by this assay, however this was not observed in samples sequenced during assay development and validation. This test is intended for use in conjunction with clinical presentation.

Reference Interval:

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST – Available Now

Click for Pricing

Cathepsin K by Immunohistochemistry

3006351, CATHK IHC

Specimen Requirements:	
Patient Preparation:	
Collect:	Tissue
Specimen Preparation:	Formalin fix (10 percent neutral buffered formalin) and paraffin embed specimen (cells must be prepared into a cellblock). Protect paraffin block and/or slides from excessive heat. Transport tissue block or 5 unstained (3- to 5-micron thick sections), positively charged slides in a Tissue Transport Kit (ARUP supply #47808 highly recommended) available online through eSupply using ARUP Connect or contact ARUP Client Services at 800-522-2787 (Min: 2 slides). If sending precut slides, do not oven bake.
Transport Temperature:	Room temperature. Also acceptable: Refrigerated. Ship in cooled container during summer months.
Unacceptable Conditions:	Tissue not mounted on positively charged slides. Specimens submitted with nonrepresentative tissue type. Depleted specimens. Serum, blood, or bodily fluids.
Remarks:	IMMUNOHISTOCHEMISTRY ORDERING AND SUBMISSION DETAILS: Submit electronic request. If you do not have electronic ordering capability, use an ARUP Immunohistochemistry Stain Form (#32978) with an ARUP client number. For additional technical details, contact ARUP Client Services at 800-522-2787.
Stability:	Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable
Methodology:	Qualitative Immunohistochemistry (IHC)
Performed:	Mon-Fri
Reported:	1-3 days
Note:	This test is performed as a stain and return service only.
CPT Codes:	88342

New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Reference Interval:

n/a

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST – Available Now

Click for Pricing

NR4A3 Rearrangement by FISH

3006357, NR4A3 FISH

Specimen Requirements:	
Patient Preparation:	
Collect:	Tumor Tissue
Specimen Preparation:	Formalin fix (10 percent neutral buffered formalin) and paraffin embed tissue. Protect paraffin block from excessive heat. Transport tissue block or 5 unstained (4-micron thick sections) positively charged slides in a tissue transport kit (ARUP supply #47808) highly recommended, and available online through eSupply using ARUP Connector contact ARUP Client Services at 800- 522-2787. (Min. 2 slides)
Transport Temperature:	Room temperature. Also acceptable: Refrigerated. Ship in cooled container during summer months.
Unacceptable Conditions:	Specimens fixed or processed in alternative fixatives (alcohol, Prefer) or heavy metal fixatives (B-4 or B-5). No tumor in tissue. Decalcified specimens.
Remarks:	Include surgical pathology report. If multiple specimens (blocks or slides) are sent to ARUP, they must be accompanied by one of the following: an order comment indicating that the ARUP pathologist should choose the specimen most appropriate for testing (e.g., "Choose best block"), or individual orders for each sample submitted. A Pathologist Block Selection Fee (ARUP test code 3002076) will be added to orders that utilize the first option. If multiple specimens are sent to ARUP without a request for pathologist block/slide selection or individual orders, they will be held until clarification is provided.
Stability:	Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable
Methodology:	Qualitative Fluorescence in situ Hybridization (FISH)
Performed:	Mon-Sat
Reported:	3-7 days
Note:	

CPT Codes:	88366
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Reference Interval:

Test Number	Components	Reference Interval

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Pharmacogenetics Panel: Psychotropics, with GeneDose Access

3006366, PGXPSYC GD

Specimen Requirements:	
Patient Preparation:	
Collect:	Whole Blood: Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B).
Specimen Preparation:	Transport 3 mL whole blood. (Min: 1 mL)
Transport Temperature:	Refrigerated
Unacceptable Conditions:	Plasma or serum. Specimens collected in sodium heparin or lithium heparin. Frozen specimens in glass collection tubes.
Remarks:	
Stability:	Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month
Methodology:	Polymerase Chain Reaction (PCR)/Fluorescence Monitoring/Sequencing
Performed:	Varies
Reported:	5-10 days
Note:	Whole blood is the preferred specimen type. Saliva samples that yield inadequate DNA quality and/or quantity will be reported as inconclusive if test performance does not meet laboratory-determined cirteria for reporting. Saliva is only validated for the OpenArray and CNV portions of testing and not the long-range PCR/duplication testing. Long-range PCR/duplication testing will not be performed for saliva samples. If long-range PCR/duplication testing is performed, additional charges apply. Approximately less than 5% of samples require 2D6 copy number determination.
CPT Codes:	81225; 81226; 81227; 81230; 81231; 81291; 81479; if reflexed, add 81479
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report.	

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Reference Interval:

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST – Available Now

Click for Pricing

Tickborne Disease Antibodies Panel

3006367, TICK PAN

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube (SST) or plain red.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 3 mL serum to an ARUP standard transport tube. (Min: 1.6 mL)
Transport Temperature:	Preferred transport temp: Refrigerated. Also acceptable: Frozen
Unacceptable Conditions:	CSF or plasma. Contaminated, heat-inactivated, hemolyzed, icteric, or severely lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 10 days; Frozen: 1 month (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Indirect Fluorescent Antibody (IFA)/Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)/Qualitative Immunoblot
Performed:	Mon-Fri
Reported:	1-5 days
Note:	If VlsE1/pepC10 antibodies by ELISA is 0.91 IV or greater, then IgG and IgM by Immunoblot will be added. Additional charges apply.
CPT Codes:	86753; 86666 x2; 86618; if reflexed, add 86617 x2
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report.	
Reference Interval:	

Test Number	Components	Reference Interval
	Ehrlichia chaffeensis Antibody, IgG	Less than 1:64
	A. Phagocytophilum Antibody, IgG	Less than 1:80
	Babesia microti IgG	Less than 1:16
	B. burgdorferi VlsE1/pepC10 Abs, ELISA	0.90 IV or less
	B. burgdorferi VlsE1/pepC10 Abs, ELISA	

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST – Available Now

Click for Pricing

Candida auris by PCR

3006370, CAURIS PCR

Specimen Requirements:	
Patient Preparation:	
Collect:	Skin swab, urine, bronchoalveolar lavage (BAL), or sputum
Specimen Preparation:	Swab: Place in Eswab transport media (ARUP supply #45877) available online through eSupply using ARUP Connector contact ARUP Client Services at 800-522-2787. Other: Transfer 1 mL bronchoalveolar lavage (BAL), sputum, or urine to a sterile container. (Min: 0.5 mL).
Transport Temperature:	Frozen
Unacceptable Conditions:	Plasma, serum, whole blood, tissue, culture isolate, environmental swab
Remarks:	Specimen source required
Stability:	Ambient: 14 days; Refrigerated: 14 days; Frozen: 14 days
Methodology:	Qualitative Polymerase Chain Reaction (PCR)
Performed:	Sun-Sat
Reported:	1-3 days
Note:	
CPT Codes:	87481
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	
This test is intended for surveillance purposes.	
Reference Interval:	

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Drug Detection Panel and THC Metabolite, Meconium, Qualitative

3006373, M PAN_THC

Specimen Requirements:	
Patient Preparation:	
Collect:	All meconium (blackish material) excreted until milk/formula-based stool (yellow-green) appears.
Specimen Preparation:	Transport all available meconium (4 grams is preferred) to routine urine collection cup or Security Kit for Meconium/Umbilical Drug Detection (ARUP supply #51548) available online through eSupply using ARUP Connect or by contacting ARUP Client Services at 800-522-2787.
Transport Temperature:	Refrigerated
Unacceptable Conditions:	Unknown fluids, pharmaceutical preparation, and breast milk. Diapers, cotton swabs, baby wipes, tongue depressors, bottles.
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 3 weeks; Frozen: 1 year
Methodology:	Qualitative ~~Liquid Chromatography~~ Tandem Mass Spectrometry
Performed:	Sun-Sat
Reported:	1-4 days
Note:	If only enough sample is available for one component of testing, this test will be canceled and client can order individual test. Drug Detection Panel, Meconium, Qualitative (3004583) or Marijuana, Meconium, Qualitative (0092316).
CPT Codes:	80326; 80347; 80364; 80355; 80349; 80323 (Alt code: G0481)
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Methodology: Qualitative Liquid Chromatography/Tandem Mass Spectrometry

Detection of drugs in meconium is intended to reflect maternal drug use during approximately the last trimester of a full-term pregnancy. The pattern and frequency of drug(s) used by the mother cannot be determined by this test. A negative result does not exclude the possibility that a mother used drugs during pregnancy. Detection of drugs in meconium depends on the extent of maternal

drug use, as well as drug stability, unique characteristics of drug deposition in meconium, and the performance of the analytical method. Drugs administered during labor and delivery may be detected. Detection of drugs in meconium does not insinuate impairment and may not affect outcomes for the infant. Interpretive questions should be directed to the laboratory.

For medical purposes only; not valid for forensic use.

Reference Interval:

Test Number	Components	Reference Interval
	Marijuana, Meconium, Qual	Cutoff 5 ng/g
	6-Acetylmorphine, MEC, Qual	Cutoff 20 ng/g
	7-Aminoclonazepam, MEC, Qual	Cutoff 5 ng/g
	Alpha-OH-Alprazolam, MEC, Qual	Cutoff 5 ng/g
	Alpha-OH-Midazolam, MEC, Qual	Cutoff 20 ng/g
	Alprazolam, MEC, Qual	Cutoff 5 ng/g
	Amphetamine, MEC, Qual	Cutoff 20 ng/g
	Benzoylecgonine, MEC, Qual	Cutoff 20 ng/g
	Buprenorphine, MEC, Qual	Cutoff 20 ng/g
	Butalbital, MEC, Qual	Cutoff 50 ng/g
	Clonazepam, MEC, Qual	Cutoff 5 ng/g
	Cocaethylene, MEC, Qual	Cutoff 20 ng/g
	Cocaine, MEC, Qual	Cutoff 20 ng/g
	Codeine, MEC, Qual	Cutoff 2 ng/g
	Diazepam, MEC, Qual	Cutoff 5 ng/g
	Dihydrocodeine, MEC, Qual	Cutoff 20 ng/g
	Methadone Metabolite, MEC, Qual	Cutoff 10 ng/g
	Fentanyl, MEC, Qual	Cutoff 10 ng/g
	Gabapentin, MEC, Qual	Cutoff 20 ng/g
	Hydrocodone, MEC, Qual	Cutoff 20 ng/g
	Hydromorphone, MEC, Qual	Cutoff 20 ng/g
	Lorazepam, MEC, Qual	Cutoff 20 ng/g
	MDMA- Ecstasy, MEC, Qual	Cutoff 20 ng/g
	Meperidine, MEC, Qual	Cutoff 20 ng/g
	Methadone, MEC, Qual	Cutoff 10 ng/g
	Methamphetamine, MEC, Qual	Cutoff 20 ng/g
	Methylphenidate, MEC, Qual	Cutoff 20 ng/g
	Midazolam, MEC, Qual	Cutoff 20 ng/g
	m-OH-Benzoylecgonine, MEC, Qual	Cutoff 20 ng/g
	Morphine, MEC, Qual	Cutoff 20 ng/g
	Naloxone, MEC, Qual	Cutoff 20 ng/g
	N-desmethyltramadol, MEC, Qual	Cutoff 20 ng/g
	Norbuprenorphine, MEC, Qual	Cutoff 20 ng/g
	Nordiazepam, MEC, Qual	Cutoff 20 ng/g
	Mitragynine, MEC, Qual	Cutoff 25 ng/g
	Norhydrocodone, MEC, Qual	Cutoff 20 ng/g
	Noroxycodone, MEC, Qual	Cutoff 20 ng/g

	O-desmethyltramadol, MEC, Qual	Cutoff 20 ng/g
	Oxazepam, MEC, Qual	Cutoff 20 ng/g
	Oxycodone, MEC, Qual	Cutoff 20 ng/g
	Oxymorphone, MEC, Qual	Cutoff 20 ng/g
	Phencyclidine- PCP, MEC, Qual	Cutoff 10 ng/g
	Phenobarbital, MEC, Qual	Cutoff 200 ng/g
	Phentermine, MEC, Qual	Cutoff 20 ng/g
	Tapentadol, MEC, Qual	Cutoff 20 ng/g
	Temazepam, MEC, Qual	Cutoff 20 ng/g
	Tramadol, MEC, Qual	Cutoff 20 ng/g
	Zolpidem, MEC, Qual	Cutoff 10 ng/g

HOTLINE NOTE: There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.

NEW TEST – Available Now

Click for Pricing

Hepatitis Delta Virus Antibody by ELISA With Reflex to Hepatitis Delta Virus by Quantitative PCR

3006379, HEPD AB QR

Specimen Requirements:	
Patient Preparation:	N/A
Collect:	Serum separator tube (SST).
Specimen Preparation:	Separate from cells ASAP or within 2 hours of collection. Transfer 2 mL serum to a sterile ARUP standard transport tube. (Min: 1 mL)
Transport Temperature:	Frozen
Unacceptable Conditions:	Specimens containing particulate material or obvious microbial contamination. Hemolyzed or lipemic specimens.
Remarks:	Specimen source required.
Stability:	After separation from cells: Ambient: 24 hours; Refrigerated: 5 days; Frozen: 4 months (avoid repeated freeze/thaw cycles)
Methodology:	Qualitative Enzyme Immunoassay (EIA)/Quantitative Polymerase Chain Reaction (PCR)
Performed:	Mon, Wed, Fri
Reported:	1-5 days
Note:	Order this test only when patient has an acute or chronic hepatitis B infection. If the anti-HDV screening result is positive, Hepatitis Delta Virus by Quantitative PCR (ARUP test code 2013881) will be added. Additional charges apply. Performed and Reported times are for the antibody screening portion of this test. Refer to Hepatitis Delta Virus by Quantitative PCR regarding additional information regarding Performed and Reported times for the reflex portion of the test. For Screen: The screen test detects total antibodies (IgG and IgM) to the hepatitis Delta agent. For PCR Reflex: The limit of quantification for this test is 2.1 log IU/mL (120 IU/mL). If the test DID NOT DETECT the virus, the test result will be reported as <2.1 log IU/mL (<120 IU/mL). If the test DETECTED the presence of the virus but was not able to accurately quantify

	the number of copies, the test result will be reported as Not Quantified. The quantitative range of the reflexed PCR assay is 2.1-6.8 log IU/mL (120-5,800,000 IU/mL) A negative PCR result (less than 2.1 log IU/mL or less than 120 IU/mL) does not rule out the presence of PCR inhibitors in the patient specimen or the HDV RNA concentrations below the level of detection of the test. Inhibition may also lead to underestimation of viral quantitation.
CPT Codes:	86692; if reflexed, add 87799.
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Reference Interval:

Test Number	Components	Reference Interval
	Hepatitis Delta Antibody by ELISA	Negative

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST – Available Now

Click for Pricing

Pneumonia Panel by PCR

3016457, PFAP

Specimen Requirements:	
Patient Preparation:	NA
Collect:	BAL
Specimen Preparation:	Transfer 1.0 mL (min 0.5 mL) BAL to a sterile container. BAL specimens should not be centrifuged, preprocessed, treated with any mucolytic or decontaminating agents (e.g., MycoPrep, Sputasol, Snap n' Digest, DTT, sodium hydroxide, oxalic acid, trypsin, etc.), or placed into transport media before testing.
Transport Temperature:	Frozen
Unacceptable Conditions:	Specimen other than BAL. Specimen in preservative.
Remarks:	
Stability:	Ambient: Not acceptable; Refrigerated: 24 hours; Frozen: 7 days
Methodology:	Semi-Quantitative Polymerase Chain Reaction (PCR)/Qualitative Polymerase Chain Reaction (PCR)
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	All orders for Pneumonia Panel by PCR (PFAP) from the University of Utah Hospital, Huntsman Cancer Hospital, or the Salt Lake City VA Hospital, will automatically have a culture ordered (see ARUP test code 0060700 for submission requirements, additional charges apply). Specimens from any other location will not receive a culture at ARUP. Cultures should be performed at the primary point of care and correlated to the results for Pneumonia Panel by PCR (PFAP). Per Manufacturers package insert, culture should be used in conjunction with pneumonia panel results for the determination of susceptibility or resistance.
CPT Codes:	87633
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New

York DOH approved laboratory, if possible.

Interpretive Data:

Reference Interval:

Test Number	Components	Reference Interval

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST – Available Now

Click for Pricing

Whole Genome Sequencing

3016493, WGS NGS

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA) or pink (EDTA) or yellow (ACD solution A or B). Peripheral blood required. Contact ARUP's genetic counselor at 800-242-2787 ext. 2141 prior to test submission. Refer to Whole Genome Sequencing, Familial Control (ARUP test code 3016497) for parental specimen requirements. Two parental controls are recommended for optimal whole genome analysis. New York State Clients: ARUP cannot facilitate testing for New York patients. Please work directly with a New York-approved laboratory.
Specimen Preparation:	Transport 2 mL whole blood. (Min: 1.0 mL) Refer to Whole Genome Sequencing, Familial Control (ARUP test code 3016497) for parental specimen requirements.
Transport Temperature:	Refrigerated. Refer to Whole Genome Sequencing, Familial Control (ARUP test code 3016497) for parental specimen requirements.
Unacceptable Conditions:	
Remarks:	
Stability:	Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable
Methodology:	Massively Parallel Sequencing
Performed:	Varies
Reported:	14-21 days
Note:	The ability to identify causative variant(s) for the patient's presentation is strongly influenced by the quality of the clinical information provided.
CPT Codes:	81425; per familial comparator, 81426 is added
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	

Reference Interval:

Test Number	Components	Reference Interval

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST – Available Now

Click for Pricing

Whole Genome Sequencing, Familial Control

3016497, WGS FRPT

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA) or pink (EDTA) or yellow (ACD solution A or B). Peripheral blood required. Contact ARUP's genetic counselor at 800-242-2787 ext. 2141 prior to test submission. New York State Clients: ARUP cannot facilitate testing for New York patients. Please work directly with a New York-approved laboratory.
Specimen Preparation:	Transport 2 mL whole blood. (Min: 1.0 mL)
Transport Temperature:	Refrigerated
Unacceptable Conditions:	
Remarks:	This test is used for parental control samples associated with a proband sample submitted for whole genome sequencing (ARUP test code 3016493). If a report for a parental control sample is desired, indicate opt-in status for ACMG secondary findings on the whole genome sequencing intake form (additional charges apply).
Stability:	Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable
Methodology:	Massively Parallel Sequencing
Performed:	Varies
Reported:	14-21 days
Note:	Parental samples are used to aid in interpretation of the proband's genome sequencing data. Please indicate on the whole genome sequencing intake form if a report of American College of Medical Genetics and Genomics (ACMG) secondary findings is desired for submitted parental controls (additional charges apply). Please list the name/DOB for parental controls on the whole genome sequencing intake form.
CPT Codes:	
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

Interpretive Data:
Refer to report.
Reference Interval:

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Thiopurine Metabolites in Red Blood Cells

3016503, THIOMET

Specimen Requirements:	
Patient Preparation:	Trough collection (within 1 hour prior to the next dose).
Collect:	Lavender (EDTA) or pink (K2EDTA).
Specimen Preparation:	Transport 5 mL whole blood. (Min: 2.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Gel separator tubes. Hemolyzed or lipemic specimens. Frozen specimens.
Remarks:	
Stability:	Ambient: 24 hours; Refrigerated: 7 days; Frozen: Unacceptable
Methodology:	Quantitative Liquid Chromatography-Tandem Mass Spectrometry
Performed:	Tue, Thu, Sat
Reported:	1-5 days
Note:	
CPT Codes:	80299 (Alt code: G0480)
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Thiopurine drug therapy is used to treat autoimmune diseases, inflammatory bowel disease, acute lymphoblastic leukemia, and to prevent rejection after solid organ transplant. Thiopurine drugs are metabolized to active 6-thioguanine nucleotides, which are regulated by thiopurine methyltransferase (TPMT) and nudix hydrolase 15 (NUDT15). Certain variants in the TPMT and/or NUDT15 genes can be associated with an accumulation of cytotoxic metabolites that increase the risk of drug-related toxicity with standard doses of thiopurine drugs. Thiopurine metabolites concentrations are used to assess therapeutic and toxic concentrations of thiopurine drugs.

INTERPRETIVE INFORMATION: Thiopurine metabolites	
6-TG	
Therapeutic range (optimal dosing)	235-450 pmol 6-TGN/8×108 red blood cells
Suboptimal dosing	<235 pmol 6-TGN/8×108 red blood cells
Increased risk for toxicity	>450 pmol 6-TGN/8×108 red blood cells may increase the risk for myelotoxicity and leukopenia
6-MMP	
Increased risk for toxicity	>5700 pmol 6-MMPN/8×108 red blood cells may increase the risk for hepatotoxicity

Reference Interval:

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Envoplakin Antibody, IgG by ELISA

3016533, ENVO IGG

Specimen Requirements:	
Patient Preparation:	
Collect:	Plain red or serum separator tube (SST).
Specimen Preparation:	Transfer 2 mL serum to an ARUP standard transport tube. (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed or lipemic specimens. Plasma
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: Indefinitely
Methodology:	Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)
Performed:	Varies
Reported:	7-14 days
Note:	The methodology is enzyme-linked immunosorbent assay (ELISA) to detect IgG antibodies to envoplakin. This test should be distinguished from antibody testing of cerebral spinal fluid (CSF) for paraneoplastic neurologic syndromes; 3004510, 3004512, 3004517 are different tests. Paraneoplastic pemphigus (PNP), also known as paraneoplastic autoimmune multiorgan syndrome (PAMS), is a rare paraneoplastic disease that affects patients of all ages, is associated with lymphoproliferative disorders/malignancies and demonstrates clinical features of severe pemphigus with a high mortality rate. Patients with PNP/PAMS develop serum antibodies to multiple epithelia (simple, columnar, transitional) with several possible epithelial antigen targets. Envoplakin is one of several possible epithelial targets, albeit a major one. The IgG envoplakin antibody level by ELISA, increased or normal (positive or negative), as a stand-alone diagnostic test, does not completely confirm or rule out a diagnosis of PNP/PAMS; its usefulness is as a marker in conjunction with other indicators. Additionally, IgG envoplakin antibody levels, when increased, may correlate with disease extent and activity

	and, therefore, can be useful in disease monitoring.
CPT Codes:	83516
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data: Refer to report.	
Reference Interval:	

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Paraneoplastic Pemphigus (Paraneoplastic Autoimmune Multiorgan Syndrome) Expanded Antibody Panel by IIF With ELISA

3016534, PNP PLUS

Specimen Requirements:	
Patient Preparation:	
Collect:	Plain red or serum separator tube (SST).
Specimen Preparation:	Transfer 2 mL serum to an ARUP standard transport tube. (Min: 0.5 mL)
Transport Temperature:	Refrigerated
Unacceptable Conditions:	Hemolyzed or lipemic specimens. Plasma.
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: Indefinitely
Methodology:	Semi-Quantitative Indirect Immunofluorescence (IIF)/Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)
Performed:	Varies
Reported:	7-14 days
Note:	The methodology is indirect immunofluorescence (IIF) of patient serum with rodent substrates including rat bladder, mouse bladder, mouse heart, and mouse liver to detect characteristic IgG antibody reactivity: simple columnar epithelial cell surface and basement membrane zone in bladders, intercalated discs in heart, and portal tracts in liver, and enzyme-linked immunosorbent assay (ELISA) to detect IgG antibodies to envoplakin. Monkey esophagus substrate is included if other concurrent IIF testing does not. This test should be distinguished from antibody testing of cerebral spinal fluid (CSF) for paraneoplastic neurologic syndromes; 3004510, 3004512, 3004517 are different tests. Paraneoplastic pemphigus (PNP), also known as paraneoplastic autoimmune multiorgan syndrome (PAMS), is a rare paraneoplastic disease that affects patients of all ages, is associated with lymphoproliferative disorders/malignancies and demonstrates clinical features of severe pemphigus with a high mortality rate. Patients with PNP/PAMS develop serum antibodies to multiple epithelia (simple, columnar, transitional)

	with several possible epithelial antigen targets. Envoplakin is one of several possible epithelial targets, albeit a major one, and IgG envoplakin antibody levels correlate with extent of mucocutaneous disease in patients with PNP/PAMS.
CPT Codes:	88346; 88350 x3; 83516
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report	
Reference Interval:	
By report	

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Beta-hCG, Quantitative (Pregnancy)

3016579, QNT BHCG

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube. Also acceptable: Lavender (K2EDTA or K3EDTA), pink (K2EDTAK), or green (lithium heparin).
Specimen Preparation:	Allow specimen to clot completely at room temperature. Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP standard transport tube.(Min: 0.4 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	CSF (refer to Beta-hCG, Quantitative (Tumor Marker) CSF, ARUP test code 0020730). Specimens left to clot at 2-8C
Remarks:	
Stability:	After separation from cells: Ambient: 5 days; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Electrochemiluminescent Immunoassay (ECLIA)
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	
CPT Codes:	84702
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	
Female: =<5 IU/L	

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Exome Sequencing

3016583, EXOME PRO

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender or pink (EDTA) or yellow (ACD solution A or B). Peripheral blood required. Contact ARUP's genetic counselor at 800-242-2787 ext. 2141 prior to test submission. Refer to EXOME FRPT (ARUP test code 3016589) for parental specimen requirements. Two parental controls are recommended for EXOME PRO. These should be ordered using the test code above. New York State Clients: ARUP cannot facilitate testing for New York patients. Please work directly with a New York-approved laboratory.
Specimen Preparation:	Transport 2mL whole blood (Min 1.0mL) Refer to EXOME FRPT (ARUP test code 3016589) for parental specimen requirements.
Transport Temperature:	Refrigerated. Refer to EXOME FRPT (ARUP test code 3016589) for parental specimen requirements.
Unacceptable Conditions:	
Remarks:	
Stability:	Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable
Methodology:	Massively Parallel Sequencing
Performed:	Varies
Reported:	21-28 days
Note:	The ability to identify causative variant(s) for the patient's presentation is strongly influenced by the quality of the clinical information provided.
CPT Codes:	81415: per familial comparator, 81416 is added
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	
Refer to report.	

Reference Interval:

N/A

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Exome Sequencing, Familial Control

3016589, EXOME FRPT

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender or pink (EDTA) or yellow (ACD solution A or B). Peripheral blood required. Contact ARUP's genetic counselor at 800-242-2787 ext. 2141 prior to test submission New York State Clients: ARUP cannot facilitate testing for New York patients. Please work directly with a New York-approved laboratory.
Specimen Preparation:	Transport 2 mL whole blood. (Min: 1.0 mL)
Transport Temperature:	Refrigerated
Unacceptable Conditions:	
Remarks:	This test is used for parental control samples associated with a proband sample submitted for EXOME PRO. If a report for a parental control sample is desired, indicate opt-in status for ACMG secondary findings on the exome sequencing intake form (additional charges apply).
Stability:	Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable
Methodology:	Massively Parallel Sequencing
Performed:	Varies
Reported:	21-28 days
Note:	Parental samples are used to aid in interpretation of the proband's exome sequencing data. Please indicate on the exome sequencing intake form if a report of American College of Medical Genetics and Genomics (ACMG) secondary findings is desired for submitted parental controls (additional charges apply). Please list the name/DOB for parental controls on the exome sequencing intake form.
CPT Codes:	
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	

Refer to report.

Reference Interval:

N/A

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Body Fluid, Creatinine

3016598, BF CRT

Specimen Requirements:	
Patient Preparation:	
Collect:	Peritoneal/ascites fluid
Specimen Preparation:	Centrifuge and separate to remove cellular material. Transport 1 mL body fluid. (Min: 0.2 mL)
Transport Temperature:	Refrigerated
Unacceptable Conditions:	Specimen types other than those listed. Specimens too viscous to be aspirated by instrument.
Remarks:	
Stability:	After separation from cells: Ambient: 1 week; Refrigerated: 1 week: Frozen: 3 months
Methodology:	Quantitative Enzymatic Assay
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	
CPT Codes:	82570
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	
For information on body fluid reference ranges and/or interpretive guidance visit http://aruplab.com/bodyfluids/.	
Reference Interval:	

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

CSF, Total Protein

3016604, CSFTP

Specimen Requirements:	
Patient Preparation:	Specimens should be collected prior to the intrathecal administration of contrast media.
Collect:	CSF. Also acceptable: CSF collected in plain red.
Specimen Preparation:	Centrifuge to remove cellular material. Transfer 10.5 mL CSF to an ARUP standard transport tube.(Min. 0.2 mL)
Transport Temperature:	Frozen
Unacceptable Conditions:	Specimen types other than those listed.
Remarks:	
Stability:	Ambient: 24 hours; Refrigerated: 6 days, Frozen: 1 year
Methodology:	Quantitative Turbidimetry
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	
CPT Codes:	84157
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	
15-45 mg/dL	

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

CSF, Glucose

3016614, CSF GLU

Specimen Requirements:	
Patient Preparation:	
Collect:	CSF. Also acceptable: CSF collected in plain red.
Specimen Preparation:	Centrifuge to remove cellular material. Transfer 1 mL CSF to an ARUP standard transport tube. (Min. 0.2 mL)
Transport Temperature:	Refrigerated
Unacceptable Conditions:	Specimen types other than those listed.
Remarks:	
Stability:	
Methodology:	Quantitative Enzymatic Assay
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	
CPT Codes:	82945
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Reference Interval:

Test Number	Components	Reference Interval
	CSF, Glucose	50-80 mg/dL

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Hemoglobin S Evaluation with Reflex to RBC Solubility

3016616, SCKLHB

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA) or pink (K2EDTA).
Specimen Preparation:	Transport 5 mL whole blood. (Min: 0.2 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Frozen or room temperature specimens.
Remarks:	
Stability:	Ambient: Unacceptable; Refrigerated: 1 week; Frozen: Unacceptable
Methodology:	High Performance Liquid Chromatography (HPLC)/RBC Solubility
Performed:	Sun-Sat
Reported:	1-4 days
Note:	If HPLC detects a peak which suggests Hgb S, then RBC Solubility will be added for confirmation. Additional charges apply.
CPT Codes:	83021; if reflexed, add 85660
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Negative: Negative for Hemoglobin S by HPLC. Solubility testing not performed.
Positive: Positive for Hemoglobin S by HPLC and confirmed by solubility testing. Additional charges apply.
Conf Previous: Positive for Hemoglobin S by HPLC. Solubility testing performed previously and not repeated with this submission.

This test does not differentiate hemoglobin S trait from homozygous sickle cell disease or other possible combinations such as: S/C, S/D, S/G, S/E, S/thalassemia, S/O-Arab, S/New York and C-Georgetown trait (Hb C-Harlem). For further clarification, Hemoglobin Evaluation with Reflex to Electrophoresis and/or RBC Solubility (ARUP test code 0050610) is recommended.

Reference Interval:

Negative

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST – Available Now

Click for Pricing

HBV Exposure Panel

3016631, HBV EXP

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube (SST).
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 3.00 mL serum to an ARUP standard transport tube. (Min: 1.750 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Heparinized plasma. Specimens containing particulate material or obvious microbial contamination. Heat-inactivated, or severely hemolyzed.
Remarks:	
Stability:	After separation from cells: Ambient: 12 hours; Refrigerated: 7 days; Frozen: 30 days (avoid repeated freeze/thaw cycles).
Methodology:	Quantitative Chemiluminescent Immunoassay (CLIA)/Qualitative Chemiluminescent Immunoassay (CLIA)
Performed:	Sun-Sat
Reported:	1-2 days
Note:	The HBV core total assay tests for IgG and IgM antibodies, but does not differentiate between them. HBsAb results greater than 1,000.00 IU/L are reported as greater than 1,000.00 IU/L If results for HBsAg screen are repeatedly reactive with an index value between 1.00 and 50.00, then HBsAg Confirmation will be added. Additional charges apply.
CPT Codes:	86706; 86704; 87340; if reflexed, add 87341
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	

Test Number	Components	Reference Interval		
	Hepatitis B Surface Antibody			
		Less than 10.00 IU/L	Negative	
		Greater than or equal to 10.00 IU/L	Positive	
	Hepatitis B Core Antibodies, Total	Negative		

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Cyclic Citrullinated Peptide Antibody, IgG and IgA

3016632, CCP IGGIGA

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube (SST).
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 1.0 mL serum to an ARUP standard transport tube. (Min: 0.5mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Contaminated, heat-inactivated, grossly hemolyzed, grossly icteric, or grossly lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 30 days (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)
Performed:	Sun-Sat
Reported:	1-2 days
Note:	
CPT Codes:	86200
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

A positive result for cyclic citrullinated peptide (CCP) antibodies in conjunction with consistent clinical features may be suggestive of rheumatoid arthritis (RA). Anti-CCP, IgG/IgA antibodies are present in about 66-74 percent of RA patients and have specificities of 96-99 percent. Detection of IgA antibodies in addition to the usual IgG antibodies enhances the sensitivity due to some RA patient shaving IgA antibodies to CCP in the absence of IgG. These autoantibodies may be present in the preclinical phase of disease, are associated with future RA development, and may predict radiographic joint destruction. Patients with weak positive results should be monitored and testing repeated.

Reference Interval:

Test Number	Components	Reference Interval
	Cyclic Citrullinated Peptide Ab, IgG/A	19 Units or less

19 Units or less: Negative
20-39 Units: Weak positive
40-59 Units: Moderate positive
60 Units or greater: Strong positive

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Rheumatoid Arthritis (RA) Panel

3016634, RA PNL

Specimen Requirements:	
Patient Preparation:	Fasting specimen preferred.
Collect:	Serum separator tube (SST).
Specimen Preparation:	Allow serum to clot completely at room temperature before centrifuging. Transfer 2 mL serum to an ARUP standard transport tube.(Min: 1 mL) Serum is the only acceptable specimen type for this assay without a disclaimer.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Contaminated, heat-inactivated, hemolyzed, icteric, or severely lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 1 month (should not be thawed more than once)
Methodology:	Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)/Quantitative Immunoturbidimetry
Performed:	Sun-Sat
Reported:	1-4 days
Note:	
CPT Codes:	86200; 86431; 83516
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report.	

Reference Interval:

Test Number	Components	Reference Interval
	Rheumatoid Factor	0-14 IU/mL
	Carbamylated Protein Antibody, IgG	0-19 Units

	Cyclic Citrullinated Peptide Ab, IgG/A	19 Units or less

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Rheumatoid Arthritis (RA) Panel with Refl ex to Rheumatoid Factors, IgA, IgG, and IgM by ELISA

3016635, RA PNL R

Specimen Requirements:	
Patient Preparation:	Fasting specimen preferred.
Collect:	Serum separator tube (SST).
Specimen Preparation:	Allow serum to clot completely at room temperature before centrifuging. Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.8 mL) Serum is the only acceptable specimen type for this test without a disclaimer.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Contaminated, heat-inactivated, hemolyzed, icteric, or severely lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 1 month (should not be thawed more than once)
Methodology:	Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)/Quantitative Immunoturbidimetry
Performed:	Sun-Sat
Reported:	1-4 days
Note:	If CCP IgGIGA is 20 units or greater and/or rheumatoid factor is 15 IU/mL or greater, then Rheumatoid Factor, IgA, IgM, and IgM by EIA willbe performed. Additional charges apply.
CPT Codes:	86200; 86431; 83516 if reflexed, add 83516 x3
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report.	
Reference Interval:	

Test Number	Components	Reference Interval
	Rheumatoid Factor	0-14 IU/mL
	Carbamylated Protein Antibody, IgG	0-19 Units
	Cyclic Citrullinated Peptide Ab, IgG/A	19 Units or less

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Red Blood Cell Antigen Genotyping, Fetal

3016639, RBCGENO FE

Specimen Requirements:	
Patient Preparation:	
Collect:	Fetal genotyping: Amniotic fluid OR Cultured amniocytes: Two T-25 flasks at 80 percent confluency. If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301. AND Maternal cell contamination specimen: Lavender (K2EDTA), pink (K2EDTA), or yellow (ACD solution A or B).
Specimen Preparation:	Genotyping: Transport 3 mL whole blood. (Min: 1 mL) Amniotic fluid: Transport 10 mL amniotic fluid in a sterile container. (Min: 5 mL) Cultured amniocytes: Transport two T-25 flasks at 80 percent confluency filled with culture media. Backup cultures must be retained at the client's institution until testing is complete. Maternal cell contamination specimen: Transport 3 mL whole blood (Min: 1 mL)
Transport Temperature:	Cultured amniocytes: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells. Whole blood or maternal cell contamination specimen: Refrigerated.
Unacceptable Conditions:	Plasma or serum; collection of specimens in sodium heparin tubes. Frozen specimens in glass collection tubes.
Remarks:	Maternal specimen is recommended for proper test interpretation if contamination of the fetal specimen from the mother is suspected. Order Maternal Cell Contamination.
Stability:	Whole blood or maternal cell contamination specimen: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month. Fetal specimens: Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable
Methodology:	Polymerase Chain Reaction (PCR)/Fluorescence Monitoring/Fragment Analysis
Performed:	Varies

Reported:	3-10 days
Note:	Maternal specimen is recommended for proper test interpretation; order Maternal Cell Contamination, Maternal Specimen.
CPT Codes:	0001U; 81265 Fetal Cell Contamination (FCC)
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report Counseling and informed consent are recommended for genetic testing. Consent forms are available online.	
Reference Interval:	

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

RhD Gene (RHD) Copy Number, Fetal

3016640, RHD FE

Specimen Requirements:	
Patient Preparation:	
Collect:	Fetal genotyping: Amniotic fluid OR Cultured amniocytes : Two T-25 flasks at 80 percent confluency. OR cultured CVS: Two T-25 flasks at 80 percent confluency. If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301. AND Maternal cell contamination specimen (see Remarks): Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B).
Specimen Preparation:	Amniotic fluid: Transport 10 mL amniotic fluid in a sterile container. (Min: 5 mL) Cultured amniocytes AND cultured CVS: Transport two T-25 flasks at 80 percent confluency filled with culture media. Backup cultures must be retained at the client's institution until testing is complete. Maternal cell contamination specimen: Transport 3 mL whole blood (Min: 1 mL) Whole blood (parental genotyping): Transport 3 mL whole blood. (Min: 1 mL)
Transport Temperature:	Amniotic fluid, cultured amniocytes and cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells. Whole blood or maternal cell contamination specimen: Refrigerated.
Unacceptable Conditions:	Frozen specimens in glass collection tubes.
Remarks:	Maternal specimen is recommended for proper test interpretation if contamination of the fetal specimen from the mother is suspected. Order Maternal Cell Contamination. Patient History Form is available on the ARUP website or by contacting ARUP Client Services.
Stability:	Amniotic fluid, cultured amniocytes and cultured CVS Fetal Specimen: Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable Whole blood or maternal cell contamination specimen: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month

Methodology:	Polymerase Chain Reaction (PCR)/Fluorescence Monitoring/Fragment Analysis
Performed:	Varies
Reported:	2-7 days
Note:	Maternal specimen is recommended for proper test interpretation; order Maternal Cell Contamination, Maternal Specimen.
CPT Codes:	81403; 81265 Fetal Cell Contamination (FCC)
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report. Counseling and informed consent are recommended for genetic testing. Consent forms are available online.	
Reference Interval:	
By report	

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Urine, Amylase

3016646, URN AMY

Specimen Requirements:	
Patient Preparation:	
Collect:	
Specimen Preparation:	Urine pH must be adjusted to greater than 7.0. Mix timed urine collection well. Transfer 4 mL urine to an ARUP standard transport tube.(Min: 0.5 mL) Record total volume, collection time interval, and pH on transport tube or aliquot tube and test request form.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Specimens with pH 7.0 or less. Urine collected with acid
Remarks:	
Stability:	Ambient: 2 days; Refrigerated: 10 days; Frozen: 3 weeks
Methodology:	Quantitative Enzymatic Assay
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	
CPT Codes:	82150
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	

Random urine: Men: 16-491 U/L Women: 21-447 U/L 24-hour urine: 1 - 17 U/hour

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Urine, Glucose

3016649, URN GLU

Specimen Requirements:	
Patient Preparation:	
Collect:	24-hour urine. Urine must be refrigerated during collection. Also acceptable: Random urine.
Specimen Preparation:	Mix 24 hour urine collection well. Transfer 4 mL to an ARUP standard transport tube. (Min 0.5 mL) Record total volume and collection time interval on transport tube and test request form.
Transport Temperature:	Frozen
Unacceptable Conditions:	Urine collected in preservatives.
Remarks:	
Stability:	Ambient: 8 hours; Refrigerated: 48 hours; Frozen: 7 days
Methodology:	Quantitative Enzymatic Assay
Performed:	Sun-Sat
Reported:	Within 24 hours
Note:	
CPT Codes:	82945
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	

Test Number	Components	Reference Interval
	Urine, Glucose - per 24 hr	24-hour Urine: less than 500 mg/d
	Urine, Glucose - per volume	Random Urine: ≤ 15 mg/dL
	Creatinine, Urine - per 24h	

Age	Male (mg/d)	Female (mg/d)
3-8 years	140-700	140-700
9-12 years	300-1300	300-1300
13-17 years	500-2300	400-1600
18-50 years	1000-2500	700-1600
51-80 years	800-2100	500-1400
81 years and older	600-2000	400-1300

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Acute Myeloid Leukemia Panel by FISH

3016654, FISHAML

Specimen Requirements:	
Patient Preparation:	
Collect:	Nondiluted bone marrow aspirate collected in a heparinized syringe. Also acceptable: Whole blood in green (sodium heparin). Other specimen types may be acceptable, contact the Cytogenetics Laboratory for specific specimen collection and transportation instructions.
Specimen Preparation:	Transfer bone marrow to a green (sodium heparin). Transport 3 mL bone marrow. (Min: 1 mL) OR Transport 5 mL whole blood. (Min: 2 mL)
Transport Temperature:	Room temperature
Unacceptable Conditions:	Clotted or paraffin-embedded specimens.
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 48 hours; Frozen: Unacceptable
Methodology:	Fluorescence in situ Hybridization (FISH)
Performed:	Sun-Sat
Reported:	3-10 days
Note:	A processing fee will be charged if this procedure is canceled, at the client's request, after the test has been set up, or if the specimen integrity is inadequate to allow culture growth. The fee will vary based on specimen type.
CPT Codes:	88271 x7; 88275 x7
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Reference Interval:

Test Number	Components	Reference Interval

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Platelet Antigen Genotyping Panel, Fetal

3016673, HPAGENO FE

Specimen Requirements:	
Patient Preparation:	
Collect:	Fetal genotyping: Amniotic fluid Cultured amniocytes: Two T-25 flasks at 80 percent confluency. If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301. AND Maternal cell contamination specimen: Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B).
Specimen Preparation:	Amniotic fluid: Transport 10 mL amniotic fluid in a sterile container. (Min: 5 mL) OR Cultured amniocytes: Transport two T-25 flasks at 80 percent confluency filled with culture media. Backup cultures must be retained at the client's institution until testing is complete. Maternal cell contamination specimen: Transport 3 mL whole blood. (Min: 1 mL) Whole blood (parental genotyping): Transport 3 mL whole blood. (Min: 1 mL)
Transport Temperature:	Amniotic fluid, cultured amniocytes: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells. Whole blood or maternal cell contamination specimen: Refrigerated.
Unacceptable Conditions:	Frozen specimens in glass collection tubes.
Remarks:	
Stability:	Fetal specimens Amniotic fluid or cultured amniocytes: Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable Whole blood or maternal cell contamination specimen: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month
Methodology:	Polymerase Chain Reaction (PCR)/Fluorescence Monitoring/Fragment Analysis
Performed:	Varies
Reported:	7-14 days

Note:	Please submit maternal specimen if amniotic fluid is bloody. Maternal specimen is recommended for proper test interpretation; order Maternal Cell Contamination, Maternal Specimen.
CPT Codes:	81105; 81106; 81107; 81108; 81109; 81110; 81112; 81265 Fetal Cell Contamination (FCC)
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Reference Interval:

Test Number	Components	Reference Interval

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Kell K/k (KEL) Antigen Genotyping, Fetal

3016676, KELGENO FE

Specimen Requirements:	
Patient Preparation:	
Collect:	Fetal genotyping: Amniotic fluid OR Cultured amniocytes: Two T-25 flasks at 80 percent confluency. If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301. AND Maternal cell contamination specimen (see Note): Lavender (K2EDTA), pink (K2EDTA), or yellow (ACD solution A or B).
Specimen Preparation:	Amniotic fluid: Transport 10 mL amniotic fluid in a sterile container. (Min: 5 mL). Cultured amniocytes: Transport two T-25 flasks at 80 percent confluency filled with culture media. Backup cultures must be retained at the client's institution until testing is complete. Maternal cell contamination specimen: Transport 3 mL whole blood (Min: 1 mL) Whole blood (parental genotyping): Transport 3 mL whole blood. (Min: 1 mL)
Transport Temperature:	Amniotic fluid, cultured amniocytes: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells. Whole blood or maternal cell contamination specimen: Refrigerated.
Unacceptable Conditions:	Plasma or serum. Specimens collected in sodium heparin tubes. Frozen specimens in glass collection tubes.
Remarks:	Patient History Form is available on the ARUP website or by contacting ARUP Client Services.
Stability:	Fetal specimens: Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable Whole blood or maternal cell contamination specimen: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month
Methodology:	Polymerase Chain Reaction (PCR)/Fluorescence Monitoring/Fragment Analysis
Performed:	Varies

Reported:	3-10 days
Note:	Maternal specimen is recommended for proper test interpretation; order Maternal Cell Contamination, Maternal Specimen.
CPT Codes:	0001U; 81265 Fetal Cell Contamination (FCC)
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Reference Interval:

Test Number	Components	Reference Interval

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

RhC/c (RHCE) Antigen Genotyping, Fetal

3016679, RHCGENO FE

Specimen Requirements:	
Patient Preparation:	
Collect:	Fetal genotyping: Amniotic fluid. OR Cultured amniocytes: Two T-25 flasks at 80 percent confluency. If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301. AND maternal cell contamination specimen (see Note): Lavender (K2EDTA), pink (K2EDTA), or yellow (ACD solution A or B).
Specimen Preparation:	Amniotic fluid: Transport 10 mL amniotic fluid in a sterile container. (Min: 5 mL). Cultured amniocytes: Transport two T-25 flasks at 80 percent confluency filled with culture media. Backup cultures must be retained at the client's institution until testing is complete. Maternal cell contamination specimen: Transport 3 mL whole blood (Min: 1 mL) Whole blood (parental genotyping): Transport 3 mL whole blood. (Min: 1 mL)
Transport Temperature:	Cultured amniocytes: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells. Whole blood or maternal cell contamination specimen: Refrigerated.
Unacceptable Conditions:	Plasma or serum. Specimens collected in sodium heparin tubes. Frozen specimens in glass collection tubes.
Remarks:	Patient History Form is available on the ARUP website or by contacting ARUP Client Services.
Stability:	Fetal specimens: Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable Whole blood or maternal cell contamination specimen: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month
Methodology:	Polymerase Chain Reaction (PCR)/Fluorescence Monitoring/Fragment Analysis
Performed:	Varies

Reported:	3-10 days
Note:	Maternal specimen is recommended for proper test interpretation; order Maternal Cell Contamination, Maternal Specimen.
CPT Codes:	0001U; 81265 Fetal Cell Contamination (FCC)
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Reference Interval:

By report

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

RhE/e (RHCE) Antigen Genotyping, Fetal

3016682, RHEGENO FE

Specimen Requirements:	
Patient Preparation:	
Collect:	Fetal genotyping: Amniotic fluid. Cultured amniocytes: Two T-25 flasks at 80 percent confluency. If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301. AND maternal cell contamination specimen (see Note): Lavender (K2EDTA), pink (K2EDTA), or yellow (ACD solution A or B).
Specimen Preparation:	Amniotic fluid: Transport 10 mL amniotic fluid in a sterile container. (Min: 5 mL). Cultured amniocytes: Transport two T-25 flasks at 80 percent confluency filled with culture media. Backup cultures must be retained at the client's institution until testing is complete. Maternal cell contamination specimen: Transport 3 mL whole blood (Min: 1 mL) Whole blood (parental genotyping): Transport 3 mL whole blood. (Min: 1 mL)
Transport Temperature:	Amniotic fluid, cultured amniocytes: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells. Whole blood or maternal cell contamination specimen: Refrigerated.
Unacceptable Conditions:	Plasma or serum. Specimens collected in sodium heparin tubes. Frozen specimens in glass collection tubes.
Remarks:	Patient History Form is available on the ARUP Web site or by contacting ARUP Client Services.
Stability:	Fetal specimens: Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable Whole blood or maternal cell contamination specimen: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month
Methodology:	Polymerase Chain Reaction (PCR)/Fluorescence Monitoring/Fragment Analysis
Performed:	Varies

Reported:	3-10 days
Note:	Maternal specimen is recommended for proper test interpretation; order Maternal Cell Contamination, Maternal Specimen.
CPT Codes:	0001U; 81265 Fetal Cell Contamination (FCC)
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Reference Interval:

By report

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

NEW TEST

Click for Pricing

Coccidioides by PCR

3016687, COCCI PCR

Specimen Requirements:	
Patient Preparation:	
Collect:	Bronchoalveolar lavage (BAL), sputum, CSF, tissue
Specimen Preparation:	Transfer 1 mL bronchoalveolar lavage (BAL), sputum or CSF to a sterile container (Min: 0.5 mL). Tissue: Transfer to a sterile container and freeze immediately.
Transport Temperature:	Frozen
Unacceptable Conditions:	Paraffin-embedded tissue (FFPE), serum, plasma, whole blood.
Remarks:	Specimen source required
Stability:	Respiratory and CSF: Ambient: 14 days; Refrigerated: 14 days; Frozen: 14 days Tissue: Ambient: Unacceptable; Refrigerated: 14 days; Frozen: 14 days
Methodology:	Qualitative Polymerase Chain Reaction (PCR)
Performed:	Sun-Sat
Reported:	1-3 days
Note:	This test detects but does not differentiate C. immitis and C. posadasii.
CPT Codes:	87798
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	

Reference Interval:

Test Number	Components	Reference Interval

HOTLINE NOTE: Refer to the Hotline Test Mix for interface build information.

ARUP LABORATORIES

A nonprofit enterprise of the University of Utah and its Department of Pathology

Inactivations

The following will be discontinued from ARUP's test menu on August 21, 2023
Replacement test options are indicated when applicable.

Test Number	Test Name	Refer to Replacement Test
0020471	Amylase, Urine(Change effective as of 08/21/23: Refer to 3016646)	Urine, Amylase (3016646)
0020476	Glucose, Urine(Change effective as of 08/21/23: Refer to 3016649)	Urine, Glucose (3016649)
0020509	Creatinine, Body Fluid(Change effective as of 08/21/23: Refer to 3016598)	Body Fluid, Creatinine (3016598)
0020514	Protein, Total, CSF(Change effective as of 08/21/23: Refer to 3016604)	CSF, Total Protein (3016604)
0020515	Glucose, CSF(Change effective as of 08/21/23: Refer to 3016614)	CSF, Glucose (3016614)
0050520	Hemoglobin S, Evaluation with Reflex to RBC Solubility (Change effective as of 08/21/23: Refer to 3016616 in the August Hotline)	Hemoglobin S Evaluation with Reflex to RBC Solubility (3016616)
0055256	Cyclic Citrullinated Peptide (CCP) Antibody, IgG (Change effective as of 08/21/23: Refer to 3016632 in the August Hotline)	Cyclic Citrullinated Peptide Antibody, IgG and IgA (3016632)
0070025	Beta-hCG, Serum Quantitative(Change effective as of 08/21/23: Refer to 3016579 in the August Hotline)	Beta-hCG, Quantitative (Pregnancy) (3016579)
0090448	Drugs of Abuse 7 Panel, Urine - Screen Only (Change effective as of 08/21/23: Refer to 0092184)	Drug Panel 7, Urine - Screen with Reflex to Confirmation/Quantitation (0092184)
0090449	Drugs of Abuse 7A Panel, Urine - Screen Only (Change effective as of 08/21/23: Refer to 0092185)	Drug Panel 7A, Urine - Screen with Reflex to Confirmation/Quantitation (0092185)

Test Number	Test Name	Refer to Replacement Test
0090453	Drugs of Abuse 9 Panel, Urine - Screen Only (Change effective as of 08/21/23: Refer to 0092186)	Drug Panel 9, Urine - Screen with Reflex to Confirmation/Quantitation (0092186)
0090454	Drugs of Abuse 9A Panel, Urine - Screen Only (Change effective as of 08/21/23: Refer to 0092187)	Drug Panel 9A, Urine - Screen with Reflex to Confirmation/Quantitation (0092187)
0090518	Ethanol, Urine, Qualitative - Medical(Change effective as of 08/21/23: Refer to 0092280)	Drugs of Abuse Test, Alcohol, Urine - Screen with Reflex to Confirmation/Quantitation (0092280)
2000183	Bladder Tumor Associated Antigen (Inactive as of 08/21/23)	
2005096	Opiates, Screen Only, Urine(Change effective as of 08/21/23: Refer to 2005093)	Opiates, Urine Screen with Reflex to Quantitation (2005093)
2005103	Oxycodone/Oxymorphone Screen Only, Urine (Change effective as of 08/21/23: Refer to 2005100)	Oxycodone/Oxymorphone, Urine Screen with Reflex to Quantitation (2005100)
2006332	Exome Sequencing, Trio (Change effective as of 08/21/23: Refer to 3016583 in the August Hotline)	Exome Sequencing (3016583)
2006336	Exome Sequencing, Proband (Change effective as of 08/21/23: Refer to 3016583 in the August Hotline)	Exome Sequencing (3016583)
2006340	Exome Sequencing, Familial Control (Change effective as of 08/21/23: Refer to 3016583 in the August Hotline)	Exome Sequencing (3016583)
2011132	Acute Myeloid Leukemia Panel by FISH (Change effective as of 08/21/23: Refer to 3016654)	Acute Myeloid Leukemia Panel by FISH (3016654)
2012695	Ethyl Glucuronide Screen Only, Urine(Change effective as of 08/21/23: Refer to 2007912)	Ethyl Glucuronide Screen with Reflex to Confirmation, Urine (2007912)

Test Number	Test Name	Refer to Replacement Test
2012849	Critically Ill Rapid Genetic Diagnosis Panel, ~5000 Genes (Inactive as of 8/21/2023)	
2012868	EGFR T790M Mutation Detection in Circulating Tumor DNA by Digital Droplet PCR (Inactive as of 08/21/23)	
2014484	Thiopurine Metabolites by LC-MS/MS (Change effective as of 08/21/23: Refer to 3016503 in the August Hotline)	Thiopurine Metabolites in Red Blood Cells (3016503)
3001968	Interstitial Lung Disease (ILD) Biomarkers Panel (Change effective as of 08/21/23: Refer to 3001866)	Krebs von den Lungen-6 (3001866)
3001969	Human Surfactant Protein D (SP-D) (Change effective as of 08/21/23: Refer to 3001866)	Krebs von den Lungen-6 (3001866)
3003253	Borrelia burgdorferi VlsE1/pepC10 Antibodies, Total by ELISA (Change effective as of 08/21/23: Refer to 3006053, 3003254, 3003255)	Borrelia burgdorferi VlsE1/pepC10 Antibodies, Total by ELISA With Reflex to IgM and IgG by ELISA (Modified Two-Tier Testing) (3006053), Borrelia burgdorferi VlsE1/pepC10 Antibodies, Total by ELISA with Reflex to IgG and IgM by Immunoblot (3003254), Borrelia burgdorferi VlsE1/pepC10 Antibodies, Total by ELISA with Reflex to IgG by Immunoblot (3003255)
3004055	Rheumatoid Arthritis Panel (Change effective as of 08/21/23: Refer to 3016634 in the August Hotline)	Rheumatoid Arthritis Panel (3016634)
3004056	Rheumatoid Arthritis Panel with Reflex to Rheumatoid Factors, IgA, IgG, and IgM by ELISA (Change effective as of 08/21/23: Refer to 3016635 in the August Hotline)	Rheumatoid Arthritis (RA) Panel with Reflex to Rheumatoid Factors, IgA, IgG, and IgM by ELISA (3016635)