Effective as of 01/20/2026

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	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
0020461	COPPER U	Copper, Urine						x												
0020462	ZINC U	Zinc, Urine			x			x												
0020473	UCRT	Creatinine, Urine - per 24h			x															
0020572	HY MET U4	Heavy Metals Panel 4, Urine with Reflex to Arsenic Fractionated						x	x	x										
0020734	AS UF	Arsenic, Fractionated, Urine						x												
0020799	HEP D AB	Hepatitis Delta Virus Antibody			x															
0025000	ARS U	Arsenic, Urine with Reflex to Fractionated						x	x	x										
0025013	CD EXP	Cadmium Exposure Panel - OSHA			x			x	x											
0025019	THALU	Thallium, Urine						x	x											
0025032	COBALT U	Cobalt, Urine						x	x											
0025040	CADMIUM U	Cadmium, Urine						x	x											
0025045	NICKEL U	Nickel, Urine						x	x											
0025050	MERCURY U	Mercury, Urine						x	x											
0025055	HYMET 6	Heavy Metals Panel 6, Urine with Reflex to Arsenic Fractionated						x	x	x										
0025060	LEAD U	Lead, Urine						x	x											

Effective as of 01/20/2026

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	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
0025067	SE-U	Selenium, Urine						x												
0025068	CR-U	Chromium, Urine						x	x											
0025070	MANG U	Manganese, Urine						x	x											
0030002	VW MUL PAN	von Willebrand Multimeric Panel																	x	
0030125	VW PANEL	von Willebrand Panel																	x	
0030284	VW PANEL 2	von Willebrand Modified Panel																		x
0050085	SMITH	Smith (ENA) Antibody, IgG			x															
0050317	ANA REF	Antinuclear Antibodies (ANA), IgG by ELISA with Reflex to ANA HEp-2 Substrate, IgG by IFA and ENA Confirmation			x															
0050345	IGE	Immunoglobulin E			x															
0050470	RNP	Smith/RNP (ENA) Antibody, IgG			x															
0050652	ENA ABS4	Extractable Nuclear Antigen Antibodies (Smith/RNP, Smith, SSA 52, SSA 60, and SSB)			x															
0050692	SSB	SSB (La) (ENA) Antibody, IgG			x															
0050714	ANTICENT	Centromere Antibody, IgG			x															

Effective as of 01/20/2026

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	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
0050791	SSA/SSB	Extractable Nuclear Antigen Antibodies (SSA 52, SSA 60, and SSB)			x															
0051175	GALTPAN	Galactosemia (GALT) Enzyme Activity and 9 Mutations												x						
0051176	GALTDNA	Galactosemia, (GALT) 9 Mutations												x						
0051270	GALTDNA FE	Galactosemia (GALT) 9 Mutations, Fetal												x						
0051332	UGT1A1	UDP Glucuronosyltransferase 1A1 (UGT1A1) Genotyping												x						
0051668	CONN	Connective Tissue Diseases Profile			x															
0055662	B12 MMA	Vitamin B12 with Reflex to Methylmalonic Acid, Serum (Vitamin B12 Status)			x															

Effective as of 01/20/2026

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	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
0060241	CGAMD	Chlamydia trachomatis and Neisseria gonorrhoeae by Transcription-Mediated Amplification (TMA)			x															
0060280	HSVFAC	Herpes Simplex Virus DFA with Reflex to Herpes Simplex Virus Culture									x									
0060281	RSPFAC	Respiratory Viruses DFA with Reflex to Viral Culture, Respiratory									x									
0060282	VZVFAC	Varicella-Zoster Virus DFA with Reflex to Varicella-Zoster Virus Culture									x									
0060283	VZV HSVFAC	Varicella-Zoster Virus and Herpes Simplex Virus DFA with Reflex to Varicella-Zoster Virus Culture and Herpes Simplex Virus Culture									x									
0060288	RSV	Respiratory Syncytial Virus DFA									x									

Effective as of 01/20/2026

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	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
0060289	RSPFA	Respiratory Viruses DFA									x									
0060290	VZVFA	Varicella-Zoster Virus DFA									x									
0060779	HMPVFA	Human Metapneumovirus DFA									x									
0070105	RENIN	Renin Activity			x															
0070112	PROINS	Proinsulin, Intact			x															
0070256	PRO INS	Proinsulin , Intact/Insulin Ratio			x															
0083918	MMA U	Methylmalonic Acid (MMA) Quantitative, Urine			x															
0092420	DRUG SCRSP	Drug Profile, Screen With Reflex to Quantitation, Serum or Plasma									x						x			
0099249	RIBPP	Ribosomal P Protein Antibody			x															
0099431	MMA QNT-P	Methylmalonic Acid, Serum or Plasma (Vitamin B12 Status)			x															
0099475	HY MET U	Heavy Metals Panel 3, Urine with Reflex to Arsenic Fractionated						x	x	x										
0099592	ANTI-JO	Jo-1 Antibody, IgG			x															

Effective as of 01/20/2026

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	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
2001755	F8 INV FE	Hemophilia A (F8) 2 Inversions, Fetal												x						
2001759	F8 INV	Hemophilia A (F8) 2 Inversions												x						
2002298	CHR FISHI	Chromosome FISH, Interphase																	x	
2002565	RSPFAPCR	Respiratory Viruses DFA with Reflex to Respiratory Virus Mini Panel by PCR									x									
2002871	PML QNT	PML-RARA Detection by RT-PCR, Quantitative (Test on Referral as of 1/17/2023)																	x	
2003387	VW PANEL R	von Willebrand Panel with Reflex to von Willebrand Multimeric Analysis																	x	
2003824	CEA M IHC	Carcinoembryonic Antigen, Monoclonal (CEA M) by Immunohistochemistry																		x
2004055	O13 IHC	Ewing Sarcoma (O13) by Immunohistochemistry																		x

Effective as of 01/20/2026

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	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
2004124	RCC IHC	Renal Cell Carcinoma (RCC) Antigen by Immunohistochemistry																		x
2005255	MMA METD	Methylmalonic Acid, Serum or Plasma (Metabolic Disorders)			x															
2005506	TVAG AMD	Trichomonas vaginalis by Transcription-Mediated Amplification (TMA)			x															
2006258	STD PANEL1	Sexually Transmitted Disease Panel 1 by Transcription-Mediated Amplification			x															
2006352	XCI	X-Chromosome Inactivation Analysis												x						
2006982	VIT B5 S	Vitamin B5 (Pantothenic Acid), Serum																	x	
2007465	IODINE U	Iodine, Urine						x	x	x										
2007473	ADENOPCR	Adenovirus by Qualitative PCR																x		
2007862	EHR ANAPCR	Ehrlichia and Anaplasma Species by PCR																x		

Effective as of 01/20/2026

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	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
2008670	TICKPCR	Tick-Borne Disease Panel by PCR, Blood																x		
2010168	DOG1 IHC	DOG1 by Immunohistochemistry																x		
2011164	CTNG CONF	Chlamydia trachomatis and Neisseria gonorrhoeae (CTNG) by Transcription-Mediated Amplification (TMA) with Reflex to CT/NG Confirmation			x															
2011304	HYMETU RND	Heavy Metals Panel 3, Random Urine with Reflex to Arsenic Fractionated						x	x	x										
2011478	U ARS RAND	Arsenic, Random Urine with Reflex to Fractionated						x	x	x										
2011479	U CAD RAND	Cadmium, Random Urine						x	x		x									
2011480	U COP RAND	Copper, Random Urine						x												
2011481	U MERCRAND	Mercury, Random Urine						x	x											
2011482	U LEADRAND	Lead, Random Urine						x	x											

Effective as of 01/20/2026

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	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
2012074	SSA RO	SSA 52 and 60 (Ro) (ENA) Antibodies, IgG			x															
2013089	HHV8 QNT	Human Herpesvirus 8 (HHV-8) by Quantitative PCR																x		
2013436	SMA DD	Spinal Muscular Atrophy (SMA) Copy Number Analysis												x						
2013484	P53 MUTAT	TP53 Somatic Mutation, Prognostic																	x	
2013518	FA PRO SP	Fatty Acids Profile, Essential Serum or Plasma																x		
2013798	CANDPCR	Candida Species by PCR			x															
2013921	BRAF CFDNA	BRAF V600E Mutation Detection in Circulating Cell-Free DNA by Digital Droplet PCR			x															
3000258	CF FX SMA	Genetic Carrier Screen, (CF, FXS, and SMA) with Reflex to Methylation												x						

Effective as of 01/20/2026

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	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
3000460	SMITH_RNP	Smith and Smith/RNP (ENA) Antibodies, IgG			x															
3000479	SSC PANEL	Criteria Systemic Sclerosis Panel			x															
3000523	MPSPCR	Mumps Virus by PCR																x		
3002463	CTD PAN	Connective Tissue Disease First Line Panel with Reflex			x															
3002581	VPAN TMA	Vaginitis Panel by TMA			x															
3002582	BV TMA	Bacterial Vaginosis by TMA			x															
3002583	CVTV TMA	Candida glabrata, Candida species, and Trichomonas vaginalis by TMA			x															
3005393	STRPOST-T	Chimerism, Posttransplant, Sorted Cells (T Cells)												x						
3005401	STRPOST-B	Chimerism, Posttransplant, Sorted Cells (B Cells)												x						
3005409	STRPOST-33	Chimerism, Posttransplant, Sorted Cells (CD33+ Cells)												x						

Effective as of 01/20/2026

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	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
3005417	STRPOST-GR	Chimerism, Posttransplant, Sorted Cells (Granulocytes)												x						
3005433	STRPOST-34	Chimerism, Posttransplant, Sorted Cells (CD34+ Cells)												x						
3005441	STRPOST-56	Chimerism, Posttransplant, Sorted Cells (CD 56+ Cells)												x						
3005449	STR_PRE	Chimerism, Recipient, Pretransplant												x						
3005454	STR_POST	Chimerism, Posttransplant												x						
3005462	STR_DONOR	Chimerism, Donor												x						
3005468	STR AD DON	Chimerism, Additional Donor												x						
3005928	RWGS FAM	Rapid Whole Genome Sequencing, Familial Control																	x	
3005933	RWGS FRPT	Rapid Whole Genome Sequencing, Familial Control with Report																	x	
3005935	RWGS NGS	Rapid Whole Genome Sequencing																	x	

Effective as of 01/20/2026

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	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
3005939	RWGS REA	Whole Genome Reanalysis			x		x													
3006075	BKQ U	BK Virus by Quantitative NAAT, Urine			x															
3006379	HEPD AB QR	Hepatitis Delta Virus Antibody by ELISA With Reflex to Hepatitis Delta Virus by Quantitative PCR			x															
3006383	CLOT RFLX	Prolonged Clot Time Reflexive Profile					x					x					x			
3016493	WGS NGS	Whole Genome Sequencing																	x	
3016497	WGS FRPT	Whole Genome Sequencing, Familial Control																	x	
3016932	VITA B7	Vitamin B7, Serum or Plasma																	x	
3017688	TP53 FFPE	Somatic TP53 Mutations in Formalin-Fixed, Paraffin-Embedded (FFPE) Tissue	x																	

Effective as of 01/20/2026

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	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
3017691	TP53 WBBM	Somatic TP53 Mutations in Whole Blood and Bone Marrow	x																	
3018776	HBSAGRDABQ	Hepatitis B Virus Surface Antigen With Reflex to Confirmation and Reflex to Hepatitis Delta Virus Antibody by ELISA With Reflex to Hepatitis Delta Virus by Quantitative PCR			x															
3018922	PMLQNT	PML::RARA Detection by RT-PCR, Quantitative	x																	
3018940	STR PRE PR	Chimerism, Recipient, Pretransplant Process and Hold												x						
3019269	MEASLESPCR	Measles Virus by Qualitative NAAT			x															
3019895	POU2F3_IHC	POU2F3 by Immunohistochemistry	x																	
3019936	PLSMGN RBC	Plasmalogens (Red Blood Cells)	x																	

Effective as of 01/20/2026

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	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
3019943	WGS PRO	Genome Sequencing	x																	
3019947	RWGS PRO	Rapid Genome Sequencing	x																	
3019951	WGS FM	Genome Sequencing, Familial Comparator	x																	
3019953	RWGS FM	Rapid Genome Sequencing, Familial Comparator	x																	
3020127	FISH INT	FISH Interphase	x																	
3020130	PIT1 IHC	Pit1 by Immunohistochemistry	x																	
3020158	TPIT IHC	Tpit by Immunohistochemistry	x																	
3020169	VW PAN	von Willebrand Factor Panel	x																	
3020170	VW RFLX	von Willebrand Factor Panel With Reflex to von Willebrand Multimers	x																	

Effective as of 01/20/2026

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	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
3020171	VW COMP	von Willebrand Factor Multimeric Panel	x																	
3020335	VENOMS-COM	Allergen, Hymenoptera Venoms With Components	x																	
3020431	VIT B5 SP	Vitamin B5 (Pantothenic Acid), Serum or Plasma	x																	
3020435	VITAMB7 SP	Vitamin B7 (Biotin), Serum or Plasma	x																	

TEST CHANGE

Copper, Urine

0020461, COPPER U

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, and nonessential over-the-counter medications (upon the advice of their physician). Collection from patients receiving iodinated or gadolinium-based contrast media must be avoided for a minimum of 72 hours post exposure.~~postexposure.~~ Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post contrast~~postcontrast~~ media exposure.
Collect:	24-hour urine. Refrigerate during collection. Specimen must be collected in a plastic container. Also acceptable: Random urine.
Specimen Preparation:	Transfer an 8 mL aliquot 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: 1 mL)
Transport Temperature:	Refrigerated. Also acceptable: Room temperature or frozen.
Unacceptable Conditions:	Specimens collected within 72 hours after administration of iodinated or gadolinium-based contrast media. Acid preserved urine. Specimens transported in containers other than specified. Specimens contaminated with blood or fecal material.
Remarks:	Record total volume and collection time interval on transport tube and on test request form.
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	High concentrations of iodine or gadolinium may interfere with elemental testing.
CPT Codes:	82525
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Individuals with symptomatic Wilson disease usually excrete more than 100 ug~~µg~~ copper per day. Other conditions associated with elevated urine copper include cholestatic liver disease, proteinuria, and some medications.~~,~~ and contaminated specimens.

Although random specimens may contain diagnostic information, a 24-hour collection is a more

consistent indicator of urine copper.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

~~urine.~~

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

Reference Interval:

Test Number	Components	Reference Interval
	Copper, Urine - per 24h	3.0-45.0 microg/d
	Copper, Urine - per volume	Less than or equal to 3.2 microg/dL
	Copper, Urine - ratio to CRT	10.0-45.0 microg/g CRT
	Creatinine, Urine - per 24h	

~~Deleted Cells~~

~~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~~

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

TEST CHANGE

Zinc, Urine

0020462, ZINC U

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, and nonessential~~non-essential~~ over-the-counter medications (upon the advice of their physician). Collection from patients receiving iodinated or gadolinium-based contrast media must be avoided for a minimum of 72 hours post-exposure. Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post contrast media exposure.
Collect:	24 Hour Urine. Refrigerate during collection. Specimen must be collected in a plastic container. Also acceptable: Random Urine.~~24 Hour Urine. Refrigerate during collection. Specimen must be collected in a plastic container. Also acceptable: Random Urine.~~
Specimen Preparation:	Transfer an 8 mL aliquot 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: 1 mL)
Transport Temperature:	Refrigerated. Also acceptable: Room temperature or frozen.
Unacceptable Conditions:	Specimens collected within 72 hours after administration of iodinated or gadolinium-based contrast media. Acid preserved urine. Specimens transported in containers other than specified. Specimen contaminated with blood or fecal material.
Remarks:	Record total volume and collection time interval on transport tube and on test request form.
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	High concentrations of iodine or gadolinium may interfere with elemental testing.
CPT Codes:	84630
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Zinc is predominantly eliminated in the feces. Elevated urine zinc may suggest excessive zinc supplementation but should be interpreted with a corresponding serum zinc concentration.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element free. If an elevated result is

suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

~~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:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Creatinine, Urine - per 24h</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Male (mg/d)</th><th>Female (mg/d)</th></tr>
<tr><td>3-8 years</td><td>140-700</td><td>140-700</td></tr>
<tr><td>9-12 years</td><td>300-1300</td><td>300-1300</td></tr>
<tr><td>13-17 years</td><td>500-2300</td><td>400-1600</td></tr>
<tr><td>18-50 years</td><td>1000-2500</td><td>700-1600</td></tr>
<tr><td>51-80 years</td><td>800-2100</td><td>500-1400</td></tr>
<tr><td>81 years and older</td><td>600-2000</td><td>400-1300</td></tr>
</table>
</td></tr>
<tr><td></td><td>Zinc, Urine - per 24h</td><td>150.0-1200.0 microg/d</td></tr>
<tr><td></td><td>Zinc, Urine - per volume</td><td>15.0-120.0 microg/dL</td></tr>
<tr><td></td><td>Zinc, Urine - ratio to CRT</td><td>110.0-750.0 microg/g CRT</td></tr>
</table>

TEST CHANGE

Creatinine, Urine - per 24h

0020473, UCRT

Specimen Requirements:	
Patient Preparation:	
Collect:	24-hour urine. Specimen must be refrigerated during collection. Also acceptable: Random urine (no reference intervals).
Specimen Preparation:	Transfer one 3 mL aliquot to an ARUP standard transport tube~~Standard Transport Tube~~. (Min: 0.5 mL) Also acceptable: Specimens previously preserved with 6M HCl, boric acid, or 5 percent NaOH.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	
Remarks:	Record total volume and collection time interval on transport tube and test request form.
Stability:	Ambient: 14 days~~48 hours~~; Refrigerated: 1 month; Frozen: 6 months
Methodology:	Quantitative Spectrophotometry
Note:	
CPT Codes:	82570
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Reference Interval:

Test Number	Components	Reference Interval
	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

TEST CHANGE

Heavy Metals Panel 4, Urine with Reflex to Arsenic Fractionated

0020572, HY MET U4

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, nonessential~~non-essential~~ over-the-counter medications (upon the advice of their physician), and avoid shellfish and seafood for 48 to 72 hours. High concentrations of iodine may interfere with elemental testing. Collection of urine specimens from patients receiving iodinated or gadolinium-based contrast media should be avoided for a minimum of 72 hours post-exposure. Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post contrast~~postcontrast~~ media exposure.
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 8 mL aliquot 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 72 hours after administration of iodinated or gadolinium-based contrast media. Acid preserved urine. Specimens contaminated with blood or fecal material. Specimen transported in nontrace~~non-trace~~ element-free transport tube (with the exception of the original device).
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	If total arsenic concentration is found to be elevated based on reference intervals, then Arsenic, Fractionated, will be added to determine the proportion of organic, inorganic, and methylated forms. Additional charges apply.
CPT Codes:	82175; 83655; 83825; 82300; if reflexed, add 82175
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Urine cadmium concentrations~~Quantification of urine excretion rates before or after chelation~~	

~~therapy has been used as an indicator of lead exposure. Urinary excretion of >125 mg of lead per 24 hours is usually associated with related evidence of lead toxicity.~~

~~Urine cadmium levels~~ can be used to assess cadmium body burden. In chronic exposures, the kidneys are the primary target organ. Symptoms associated with cadmium toxicity vary based upon route of exposure and may include tubular proteinuria, fever, headache, dyspnea, chest pain, conjunctivitis, rhinitis, sore throat and cough. Ingestion of cadmium in high concentration may cause vomiting, diarrhea, salivation, cramps, and abdominal pain.

Urinary mercury concentrations~~levels~~ predominantly reflect acute or chronic elemental or inorganic mercury exposure. Urine concentrations in unexposed individuals are typically less than 10 ug/L. 24 hour urine concentrations of 30 to 100 ug/L may be associated with subclinical neuropsychiatric symptoms and tremor while concentrations greater than 100 ug/L can be associated with overt neuropsychiatric disturbances and tremors. Urine mercury levels may be useful in monitoring chelation therapy.

The ACGIH Biological Exposure Index (BEI) for arsenic in urine is 35 ug/L measured at the end of the work week. The ACGIH BEI is based on the sum of inorganic and methylated species. For specimens with elevated total arsenic results, fractionation is automatically performed to determine the proportions of inorganic, methylated and organic species.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

~~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, Urine - per 24h	Less than or equal to 0.0-49.9 microg/d
	Arsenic, Urine - per volume	Less than or equal to 0.0-34.9 microg/L
	Arsenic, Urine - ratio to CRT	Less than or equal to 0.0-29.9 microg/g CRT
	Cadmium, Urine - per 24h	Less than or equal to 0.0-3.2 microg/d
	Cadmium, Urine - per volume	Less than or equal to 0.0-1.0 microg/L
	Cadmium, Urine - ratio to CRT	Less than or equal to 0.0-3.2 microg/g CRT
	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
	Lead, Urine - per 24h	Less than or equal to 0.0-8.1 microg/d
	Lead, Urine - per volume	Less than or equal to 0.0-5.0 microg/L
	Lead, Urine - ratio to CRT	Less than or equal to 0.0-5.0 microg/g CRT
	Mercury, Urine - per 24h	Less than or equal to 0.0-20.0 microg/d
	Mercury, Urine - per volume	Less than or equal to 0.0-5.0 microg/L
	Mercury, Urine - ratio to CRT	Less than or equal to 0.0-20.0 microg/g CRT

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 nontrace~~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; Refrigerated: 2 weeks; Frozen: 2 months
Methodology:	Quantitative High Performance Liquid Chromatography (HPLC) / Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
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 ug/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.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is

suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

Reference Interval:

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

TEST CHANGE

Hepatitis Delta Virus Antibody

0020799, HEP D AB

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube (SST). Also acceptable: Lavender (EDTA), green (sodium heparin), green (lithium heparin), or light blue (sodium citrate) plasma.
Specimen Preparation:	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. (Min: 0.5 mL).
Transport Temperature:	Frozen.
Unacceptable Conditions:	Room temperature specimens. Specimens containing particulate material or obvious microbial contamination. Hemolyzed or lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 24 hours; Refrigerated: 5 days; Frozen: 30 days~~Indefinitely~~ (avoid repeated freeze/thaw cycles)
Methodology:	Qualitative Enzyme Immunoassay (EIA)
Note:	Order this assay only when patient has an acute or chronic hepatitis B infection. This test detects total antibodies (IgG and IgM) to the hepatitis Delta agent.
CPT Codes:	86692
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	
Negative	

TEST CHANGE

Arsenic, Urine with Reflex to Fractionated

0025000, ARS U

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, nonessential over-the-counter medications (upon the advice of their physician), and avoid shellfish and seafood for 48 to 72 hours. High concentrations of iodine may interfere with elemental testing. Collection of urine specimens from patients receiving iodinated or gadolinium-based contrast media should be avoided for a minimum of 72 hours post-exposure. Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post contrast media exposure.
Collect:	24-hour or random urine collection. Specimen must be collected in a plastic container and 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 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:	Acid preserved urine. Specimens collected within 72 hours after administration of iodinated or gadolinium-based contrast media. Specimens contaminated with blood or fecal material. Specimens transported in nontrace~~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: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative High Performance Liquid Chromatography (HPLC) / Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	If total arsenic concentration is found to be elevated based on reference intervals, then Arsenic, Fractionated, will be added to determine the proportion of organic, inorganic, and methylated forms. Additional charges apply.
CPT Codes:	82175; if reflexed, add 82175
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

The ACGIH Biological Exposure Index (BEI) for arsenic in urine is 35 ug/L measured at the end of the work week. The ACGIH BEI is based on the sum of inorganic and methylated species. For specimens with elevated total arsenic results, fractionation is automatically performed to determine the proportions of inorganic, methylated and organic species.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

~~Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.~~

~~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:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Arsenic, Urine - per 24h</td><td>Less than or equal to ~~0.0~~ 49.9 microg/d</td></tr>
<tr><td></td><td>Arsenic, Urine - per volume</td><td>Less than or equal to ~~0.0~~ 34.9 microg/L</td></tr>
<tr><td></td><td>Arsenic, Urine - ratio to CRT</td><td>Less than or equal to ~~0.0~~ 29.9 microg/g CRT</td></tr>
<tr><td></td><td>Creatinine, Urine - per 24h</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Male (mg/d)</th><th>Female (mg/d)</th></tr>
<tr><td>3-8 years</td><td>140-700</td><td>140-700</td></tr>
<tr><td>9-12 years</td><td>300-1300</td><td>300-1300</td></tr>
<tr><td>13-17 years</td><td>500-2300</td><td>400-1600</td></tr>
<tr><td>18-50 years</td><td>1000-2500</td><td>700-1600</td></tr>
<tr><td>51-80 years</td><td>800-2100</td><td>500-1400</td></tr>
<tr><td>81 years and older</td><td>600-2000</td><td>400-1300</td></tr>
</table>
</td></tr>
</table>

TEST CHANGE

Cadmium Exposure Panel - OSHA

0025013, CD EXP

Specimen Requirements:	
Patient Preparation:	To avoid contamination, please collect specimens at the beginning of work shift. Blood and urine should be collected the same day. Urine: Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, and nonessential over-the-counter medications (upon the advice of their physician). High concentrations of iodine may interfere with elemental testing. Collection of urine specimens from patients receiving iodinated or gadolinium-based contrast media should be avoided for a minimum of 72 hours post exposure. Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post contrast media exposure.
Collect:	Royal blue (K2EDTA) or royal blue (NaHep). AND minimum 40 mL urine using spot technique (single void) in an open-top urine collection cup.
Specimen Preparation:	~~Transfer specimens to the appropriate transport device using the Cadmium exposure kit, ARUP supply #16450, available online through eSupply using ARUP Connect(TM) or by contacting ARUP Client Services at (800) 522-2787.~~ Blood: Transport 3 or 6 mL whole blood in the original collection tube. (Min: 0.5 mL) Urine for Beta-2-Microglobulin: Transfer 3 mL aliquot from original urine collection to an ARUP standard transport tube.~~Standard Transport Tube.~~ Adjust the pH of this specimen immediately after pouring off collection, so the pH is between 6 and 8. Use 1M HCl or 5 percent NaOH to adjust the urine pH. Label tube as beta2 Microglobulin. Freeze within one hour of collection. Urine for Cadmium: Transfer 7 mL aliquot from original urine collection to ARUP Trace Element-Free Transport Tubes (ARUP supply #43116). Available online through eSupply using ARUP Connect(TM) or by contacting ARUP Client Services at ~~(~~800~~-)~~ 522-2787. (Min: 0.5 mL) Label tube as Cadmium. Urine for Creatinine: Transfer 2 mL aliquot from original urine collection to an ARUP Standard Transport Tube. (Min: 0.5 mL) Label tube as Creatinine.
Transport Temperature:	Blood: Refrigerated. Urine for Beta-2-Microglobulin: Frozen Urine for Cadmium: Refrigerated.

	Urine for Creatinine: Refrigerated.
Unacceptable Conditions:	Blood: Specimens collected in tubes other than royal blue (K2EDTA) or royal blue (NaHep). Specimens transported in containers other than royal blue (K2EDTA) or royal blue (NaHep) tube or trace element-free transport tube. Clotted specimens. Urine: Specimens transported in nontrace element-free transport tube (with the exception of the original device). Specimens collected within 72 hours after administration of iodinated or gadolinium-based contrast media. Specimens containing blood or fecal materials.
Remarks:	Record total volume and collection time interval on transport tube and on test request form.
Stability:	Blood: Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable Urine for Beta-2-Microglobulin: Ambient: 8 hours; Refrigerated: 48 hours; Frozen: 2 months Urine for Cadmium: Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 year Urine for Creatinine: Ambient: 2 days; Refrigerated: 1 month; Frozen: 6 months
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) / Spectrophotometry / Chemiluminescent Immunoassay (CLIA)
Note:	
CPT Codes:	82300 x2; 82232
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Blood cadmium levels can be used to monitor acute toxicity and, in combination with cadmium urine and B-2 microglobulin, is the preferred method for monitoring occupational exposure. Symptoms associated with cadmium toxicity vary based upon route of exposure and may include tubular proteinuria, fever, headache, dyspnea, chest pain, conjunctivitis, rhinitis, sore throat, and cough. Ingestion of cadmium in high concentration may cause vomiting, diarrhea, salivation, cramps, and abdominal pain.

Urine cadmium levels can be used to assess cadmium body burden. In chronic exposures, the kidneys are the primary target organ. Symptoms associated with cadmium toxicity vary based upon route of exposure and may include tubular proteinuria, fever, headache, dyspnea, chest pain, conjunctivitis, rhinitis, sore throat, and cough. Ingestion of cadmium in high concentration may cause vomiting, diarrhea, salivation, cramps, and abdominal pain.

Urine B-2 microglobulin is an early marker of irreversible kidney damage and disease. Urine creatinine values less than 20 mg/dL represent very dilute urine and collections should be repeated.

CADMIUM ACTION LEVELS BEGINNING JANUARY 1999
(Federal Register 1999, Std. CFR, Part 1910. 1027 Appendix

Inserted Cells

A)

Comonents	A	B	C
Cadmium, Urine (microg/g CRT)	Less than or equal to 3	Greater than 3 to Less than or equal 7	Greater than 7
Cadmium, Blood (microg/L)	0-5	Greater than 5 to Less than or equal to 10	Greater than 10
Beta-2 Microglobulin, Urine (microg/g CRT)	Less than or equal to 300	Greater than 300 to Less than or equal to 750	Greater than 750*
Monitor	Annual	Semiannual	Quarterly
Medical Exam	Biennial	Annual	Semiannual
Reassess Cadmium exposure in less than two weeks	--------	Discretionary	Mandatory removal

*If an employee's Beta-2 Microglobulin level is above 750 microg/g CRT, in order for mandatory medical removal to be required, either the employee's CdU level must also be >3 microg/g CRT or CdB level must also be >5 microg/L. The determination of discretionary or mandatory removal is made by the examining physician consistent with the medical surveillance specifications in the Federal Register 42456 to 42463. References: 1. US Department of Labor (2004). Cadmium. Occupational Safety and Health Administration. 3136-06R. 2. US Department of Labor (1999). Cadmium. Occupational Safety and Health Standards. 1910.1027

Reference Interval:

Test Number	Components	Reference Interval
	Beta-2-Microglobulin, ratio to CRT	0-300 microg/g CRT
	Beta-2-Microglobulin, Urine	0-300 microg/L
	Cadmium, Urine - per volume	Less than or equal to ~~0.0~~1.0 microg/L
	Cadmium, Urine - ratio to CRT	Less than or equal to ~~0.0~~3.0~~2~~ microg/g CRT
	Cadmium, Whole Blood	Less than or equal to 5.0 microg/L

TEST CHANGE

Thallium, Urine

0025019, THALU

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, and nonessential~~non-essential~~ over-the-counter medications (upon the advice of their physician). High concentrations of iodine may interfere with elemental testing. Collection of urine specimens from patients receiving iodinated or gadolinium-based contrast media should be avoided for a minimum of 72 hours post-exposure. Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post-contrast media exposure.
Collect:	24-hour or random urine collection. Specimen must be collected in a plastic container. 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 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: 1 mL)
Transport Temperature:	Refrigerated. Also acceptable: Room temperature or frozen.
Unacceptable Conditions:	Urine collected within 72 hours after administration of iodinated or gadolinium-based contrast media. Acid -preserved urine. Specimens contaminated with blood or fecal material. Specimens transported in nontrace~~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: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	
CPT Codes:	83018
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Urinary thallium levels may reflect recent or chronic exposure and the presence of thallium in urine after acute exposure may persist for up to several weeks. Concentrations less than 5 ug/L are unlikely to cause adverse health effects while concentrations greater than 500 ug/L have

been associated with clinical poisoning. After severe thallium poisoning reported symptoms have varying times of onset and include gastroenteritis, multi-organ failure and neurologic injury. Peripheral neuropathy and alopecia are well-documented effects of acute and chronic exposure. Human health effects from low level thallium exposure are unknown.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

~~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:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Creatinine, Urine - per 24h</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Male (mg/d)</th><th>Female (mg/d)</th></tr>
<tr><td>3-8 years</td><td>140-700</td><td>140-700</td></tr>
<tr><td>9-12 years</td><td>300-1300</td><td>300-1300</td></tr>
<tr><td>13-17 years</td><td>500-2300</td><td>400-1600</td></tr>
<tr><td>18-50 years</td><td>1000-2500</td><td>700-1600</td></tr>
<tr><td>51-80 years</td><td>800-2100</td><td>500-1400</td></tr>
<tr><td>81 years and older</td><td>600-2000</td><td>400-1300</td></tr>
</table>
</td></tr>
<tr><td></td><td>Thallium, Urine - per 24h</td><td>Less than or equal to ~~0.0~~0.4 microg/d</td></tr>
<tr><td></td><td>Thallium, Urine - per volume</td><td>Less than or equal to ~~0.0~~2.0 microg/L</td></tr>
<tr><td></td><td>Thallium, Urine - ratio to CRT</td><td>Less than or equal to ~~0.0~~2.0 microg/g CRT</td></tr>
</table>

TEST CHANGE

Cobalt, Urine

0025032, COBALT U

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, and nonessential~~non-essential~~ over-the-counter medications (upon the advice of their physician). High concentrations of iodine may interfere with elemental testing. Collection from patients receiving iodinated or gadolinium-based contrast media must be avoided for a minimum of 72 hours post-exposure. Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post contrast media exposure.
Collect:	24-hour urine~~ Hour Urine~~. Refrigerate during collection. Specimen must be collected in a plastic container. Also acceptable: Random u~~U~~rine.
Specimen Preparation:	Transfer an 8 mL aliquot 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: 1 mL)
Transport Temperature:	Refrigerated. Also acceptable: Room temperature or frozen.
Unacceptable Conditions:	Specimens collected within 72 hours after administration of iodinated or gadolinium-based contrast media. Acid preserved urine. Specimens transported in containers other than specified. Specimens contaminated with blood or fecal material.
Remarks:	Record total volume and collection time interval on transport tube and on test request form.
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	
CPT Codes:	83018
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Urine cobalt~~Cobalt urine~~ levels can be used to monitor acute exposure as the reported half-life of cobalt is on the order of several days. Urine cobalt levels generally do not exceed 1.0 ug/L in the general population and are rarely used in the management of chronic exposure. Symptoms associated with cobalt toxicity vary based upon route of exposure and may include cardiomyopathy, allergic dermatitis, pulmonary fibrosis, cough and dyspnea.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

~~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:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Cobalt, Urine - per 24h</td><td>Less than or equal to ~~0.0~~ 4.4 microg/d</td></tr>
<tr><td></td><td>Cobalt, Urine - per volume</td><td>Less than or equal to ~~0.0~~ 1.2 microg/L</td></tr>
<tr><td></td><td>Cobalt, Urine - ratio to CRT</td><td>Less than or equal to ~~0.0~~ 4.2 microg/g CRT</td></tr>
<tr><td></td><td>Creatinine, Urine - per 24h</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Male (mg/d)</th><th>Female (mg/d)</th></tr>
<tr><td>3-8 years</td><td>140-700</td><td>140-700</td></tr>
<tr><td>9-12 years</td><td>300-1300</td><td>300-1300</td></tr>
<tr><td>13-17 years</td><td>500-2300</td><td>400-1600</td></tr>
<tr><td>18-50 years</td><td>1000-2500</td><td>700-1600</td></tr>
<tr><td>51-80 years</td><td>800-2100</td><td>500-1400</td></tr>
<tr><td>81 years and older</td><td>600-2000</td><td>400-1300</td></tr>
</table>
</td></tr>
</table>

TEST CHANGE

Cadmium, Urine

0025040, CADMIUM U

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, and non-essential over-the-counter medications (upon the advice of their physician). High concentrations of iodine may interfere with elemental testing. Abstinence from iodine-containing medications or contrast agents for at least 1 month prior to collecting specimens for elemental testing is recommended.
Collect:	24-hour or random urine collection. Specimen must be collected in a plastic container. 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 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: 1 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. Specimen 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: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	
CPT Codes:	82300
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Urine cadmium concentrations~~levels~~ can be used to assess cadmium body burden. In chronic exposures, the kidneys are the primary target organ. Symptoms associated with cadmium toxicity vary based upon route of exposure and may include tubular proteinuria, fever, headache, dyspnea, chest pain, conjunctivitis, rhinitis, sore throat and cough. Ingestion of cadmium in high concentration may cause vomiting, diarrhea, salivation, cramps, and abdominal pain.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

~~Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.~~

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:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Cadmium, Urine - per 24h</td><td>Less than or equal to ~~0.0~~3.2 microg/d</td></tr>
<tr><td></td><td>Cadmium, Urine - per volume</td><td>Less than or equal to ~~0.0~~1.0 microg/L</td></tr>
<tr><td></td><td>Cadmium, Urine - ratio to CRT</td><td>Less than or equal to ~~0.0~~3.2 microg/g CRT</td></tr>
<tr><td></td><td>Creatinine, Urine - per 24h</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Male (mg/d)</th><th>Female (mg/d)</th></tr>
<tr><td>3-8 years</td><td>140-700</td><td>140-700</td></tr>
<tr><td>9-12 years</td><td>300-1300</td><td>300-1300</td></tr>
<tr><td>13-17 years</td><td>500-2300</td><td>400-1600</td></tr>
<tr><td>18-50 years</td><td>1000-2500</td><td>700-1600</td></tr>
<tr><td>51-80 years</td><td>800-2100</td><td>500-1400</td></tr>
<tr><td>81 years and older</td><td>600-2000</td><td>400-1300</td></tr>
</table>
</td></tr>
</table>

TEST CHANGE

Nickel, Urine

0025045, NICKEL U

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, and nonessential~~non-essential~~ over-the-counter medications (upon the advice of their physician). High concentrations of iodine may interfere with elemental testing. Abstinence from iodine-containing medications or contrast agents for at least 1 month prior to collecting specimens for elemental testing is recommended.
Collect:	24-hour or random urine collection. Specimen must be collected in a plastic container. 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 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: 1 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 nontrace~~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: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	
CPT Codes:	83885
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Measurement of nickel is not recommended in asymptomatic individuals or in individuals with a low likelihood of exposure.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is

suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS) ~~Elevations in nickel urine should be interpreted with caution in individuals with no exposure risks, and may indicate contamination of the specimen.~~

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

~~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:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Creatinine, Urine - per 24h</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Male (mg/d)</th><th>Female (mg/d)</th></tr>
<tr><td>3-8 years</td><td>140-700</td><td>140-700</td></tr>
<tr><td>9-12 years</td><td>300-1300</td><td>300-1300</td></tr>
<tr><td>13-17 years</td><td>500-2300</td><td>400-1600</td></tr>
<tr><td>18-50 years</td><td>1000-2500</td><td>700-1600</td></tr>
<tr><td>51-80 years</td><td>800-2100</td><td>500-1400</td></tr>
<tr><td>81 years and older</td><td>600-2000</td><td>400-1300</td></tr>
</table>
</td></tr>
<tr><td></td><td>Nickel, Urine - per 24h</td><td>Less than or equal to ~~0.0~~ 14.9 microg/d</td></tr>
<tr><td></td><td>Nickel, Urine - per volume</td><td>Less than or equal to ~~0.0~~ 10.4 microg/L</td></tr>
<tr><td></td><td>Nickel, Urine - ratio to CRT</td><td>Less than or equal to ~~0.0~~ 9.9 microg/g CRT</td></tr>
</table>

TEST CHANGE

Mercury, Urine

0025050, MERCURY U

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, and nonessential~~non-essential~~ over-the-counter medications (upon the advice of their physician), and avoid shellfish and seafood for 48 to 72 hours. High concentrations of iodine may interfere with elemental testing. Collection of urine specimens from patients receiving iodinated or gadolinium-based contrast media should be avoided for a minimum of 72 hours post-exposure. Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post-contrast media exposure.
Collect:	24-hour or random urine collection. Specimen must be collected in a plastic container. 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 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: 1 mL)
Transport Temperature:	Refrigerated. Also acceptable: Room temperature or frozen.
Unacceptable Conditions:	Urine collected within 72 hours after administration of iodinated or gadolinium-based contrast media. Acid preserved urine. Specimens contaminated with blood or fecal material. Specimens transported in nontrace~~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: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	
CPT Codes:	83825
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Urine~~ary~~ mercury concentrations~~levels~~ predominantly reflect acute or chronic elemental or inorganic mercury exposure. Urine concentrations in unexposed individuals are typically less

than 10 ug/L. 24 hour urine concentrations of 30 to 100 ug/L may be associated with subclinical neuropsychiatric symptoms and tremors. Concentrations~~tremor while concentrations~~ greater than 100 ug/L can be associated with overt neuropsychiatric disturbances and tremors. Urine mercury levels may be useful in monitoring chelation therapy.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)

~~Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.~~

~~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:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Creatinine, Urine - per 24h</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Male (mg/d)</th><th>Female (mg/d)</th></tr>
<tr><td>3-8 years</td><td>140-700</td><td>140-700</td></tr>
<tr><td>9-12 years</td><td>300-1300</td><td>300-1300</td></tr>
<tr><td>13-17 years</td><td>500-2300</td><td>400-1600</td></tr>
<tr><td>18-50 years</td><td>1000-2500</td><td>700-1600</td></tr>
<tr><td>51-80 years</td><td>800-2100</td><td>500-1400</td></tr>
<tr><td>81 years and older</td><td>600-2000</td><td>400-1300</td></tr>
</table>
</td></tr>
<tr><td></td><td>Mercury, Urine - per 24h</td><td>Less than or equal to ~~0.0~~20.0 microg/d</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td>Mercury, Urine - per volume</td><td>Less than or equal to ~~0.0~~5.0 microg/L</td></tr>
<tr><td></td><td>Mercury, Urine - ratio to CRT</td><td>Less than or equal to ~~0.0~~20.0 microg/g CRT</td></tr>
</table>

TEST CHANGE

Heavy Metals Panel 6, Urine with Reflex to Arsenic Fractionated

0025055, HYMET 6

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, nonessential~~non-essential~~ over-the-counter medications (upon the advice of their physician), and avoid shellfish and seafood for 48 to 72 hours. Collection from patients receiving iodinated or gadolinium-based contrast media must be avoided for a minimum of 72 hours post-exposure. Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post-contrast media exposure.
Collect:	24 Hour Urine. Refrigerate during collection. Specimen must be collected in a plastic container. Also acceptable: Random Urine.
Specimen Preparation:	Transfer 8 mL aliquot 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:	Specimens collected within 72 hours after administration of iodinated or gadolinium-based contrast media. Acid preserved urine. Specimens transported in containers other than specified. Specimens contaminated with blood or fecal material.
Remarks:	Record total volume and collection time interval on transport tube and on test request form.
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	High concentrations of iodine or gadolinium may interfere with elemental testing. If total arsenic concentration is found to be elevated based on reference intervals, then Arsenic, Fractionated, will be added to determine the proportion of organic, inorganic, and methylated forms. Additional charges apply.
CPT Codes:	82175; 82300; 82525; 83655; 83825; 84630; if reflexed, add 82175
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Urine cadmium concentrations can be used to assess cadmium body burden. In chronic exposures, the kidneys are the primary target organ. Symptoms associated with cadmium

toxicity vary based upon route of exposure and may include tubular proteinuria, fever, headache, dyspnea, chest pain, conjunctivitis, rhinitis, sore throat and cough. Ingestion of cadmium in high concentration may cause vomiting, diarrhea, salivation, cramps, and abdominal pain.

Urinary mercury concentrations predominantly reflect acute or chronic elemental or inorganic mercury exposure. Urine concentrations in unexposed individuals are typically less than 10 µg/L. 24 hour urine concentrations of 30 to 100 µg/L may be associated with subclinical neuropsychiatric symptoms and tremor while concentrations greater than 100 µg/L can be associated with overt neuropsychiatric disturbances and tremors. Urine mercury levels may be useful in monitoring chelation therapy.

The ACGIH Biological Exposure Index (BEI) for arsenic in urine is 35 ug/L measured at the end of the work week. The ACGIH BEI is based on the sum of inorganic and methylated species. For specimens with elevated total arsenic results, fractionation is automatically performed to determine the proportions of inorganic, methylated and organic species.

Individuals with symptomatic Wilson disease usually excrete more than 100 ug copper per day. Other conditions associated with elevated urine copper include cholestatic liver disease, proteinuria, and some medications., and contaminated specimens.

Although random specimens may contain diagnostic information, a 24-hour collection is a more consistent indicator of urine copper.

Zinc is predominantly eliminated in the feces. Elevated urine zinc may suggest excessive zinc supplementation but should be interpreted with a corresponding serum zinc concentration.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)~~Refer to report~~

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

~~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, Urine - per 24h	Less than or equal to ~~0.0~~ 49.9 microg/d
	Arsenic, Urine - per volume	Less than or equal to ~~0.0~~ 34.9 microg/L
	Arsenic, Urine - ratio to CRT	Less than or equal to ~~0.0~~ 29.9 microg/g CRT
	Cadmium, Urine - per 24h	Less than or equal to ~~0.0~~ 3.2 microg/d
	Cadmium, Urine - per volume	Less than or equal to ~~0.0~~ 1.0 microg/L
	Cadmium, Urine - ratio to CRT	Less than or equal to ~~0.0~~ 3.2 microg/g CRT
	Copper, Urine - per 24h	3.0-45.0 microg/d
	Copper, Urine - per volume	Less than or equal to 3.2 microg/dL
	Copper, Urine - ratio to CRT	10.0-45.0 microg/g CRT
	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
	Lead, Urine - per 24h	Less than or equal to ~~0.0~~ 8.1 microg/d
	Lead, Urine - per volume	Less than or equal to ~~0.0~~ 5.0 microg/L
	Lead, Urine - ratio to CRT	Less than or equal to ~~0.0~~ 5.0 microg/g CRT
	Mercury, Urine - per 24h	Less than or equal to ~~0.0~~ 20.0 microg/d
	Mercury, Urine - per volume	Less than or equal to ~~0.0~~ 5.0 microg/L
	Mercury, Urine - ratio to CRT	Less than or equal to ~~0.0~~ 20.0 microg/g CRT
	Zinc, Urine - per 24h	150.0-1200.0 microg/d
	Zinc, Urine - per volume	15.0-120.0 microg/dL
	Zinc, Urine - ratio to CRT	110.0-750.0 microg/g CRT

TEST CHANGE

Lead, Urine

0025060, LEAD U

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, and nonessential~~non-essential~~ over-the-counter medications (upon the advice of their physician). High concentrations of iodine may interfere with elemental testing. Collection of urine specimens from patients receiving iodinated or gadolinium-based contrast media should be avoided for a minimum of 72 hours post-exposure. Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post-contrast media exposure.
Collect:	24-hour or random urine collection. Specimen must be collected in a plastic container. 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 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: 1 mL)
Transport Temperature:	Refrigerated. Also acceptable: Room temperature or frozen.
Unacceptable Conditions:	Urine collected within 72 hours after administration of iodinated or gadolinium-based contrast media. Acid preserved urine. Specimens contaminated with blood or fecal material. Specimens transported in nontrace~~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: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	
CPT Codes:	83655
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

~~Quantification of urine excretion rates before or after chelation therapy has been used as an indicator of lead exposure. Urinary excretion of >125 mg of lead per 24 hours is usually associated with related evidence of lead toxicity.~~

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)
~~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:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Creatinine, Urine - per 24h</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Male (mg/d)</th><th>Female (mg/d)</th></tr>
<tr><td>3-8 years</td><td>140-700</td><td>140-700</td></tr>
<tr><td>9-12 years</td><td>300-1300</td><td>300-1300</td></tr>
<tr><td>13-17 years</td><td>500-2300</td><td>400-1600</td></tr>
<tr><td>18-50 years</td><td>1000-2500</td><td>700-1600</td></tr>
<tr><td>51-80 years</td><td>800-2100</td><td>500-1400</td></tr>
<tr><td>81 years and older</td><td>600-2000</td><td>400-1300</td></tr>
</table>
</td></tr>
<tr><td></td><td>Lead, Urine - per 24h</td><td>Less than or equal to ~~0.0~~8.1 microg/d</td></tr>
<tr><td></td><td>Lead, Urine - per volume</td><td>Less than or equal to ~~0.0~~5.0 microg/L</td></tr>
<tr><td></td><td>Lead, Urine - ratio to CRT</td><td>Less than or equal to ~~0.0~~5.0 microg/g CRT</td></tr>
</table>

TEST CHANGE

Selenium, Urine

0025067, SE-U

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, and nonessential~~non-essential~~ over-the-counter medications (upon the advice of their physician). High concentrations of iodine may interfere with elemental testing. Abstinence from iodine-containing medications or contrast agents for at least 1 month prior to collecting specimens for elemental testing is recommended.
Collect:	24-hour or random urine collection. Specimen must be collected in a plastic container. 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 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: 1 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 nontracenon-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: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	
CPT Codes:	84255
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Urine selenium levels can be used to assess nutritional status and monitor excretion. Selenium deficiency can occur endemically or as a result of sustained TPN or restricted diets and has been associated with cardiomyopathy and may exacerbate hypothyroidism. Selenium toxicity is relatively rare. Excess intake of selenium can result in symptoms consistent with selenosis and

include gastrointestinal upset, hair loss, white blotchy nails, and mild nerve damage.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

~~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:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Creatinine, Urine - per 24h</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Male (mg/d)</th><th>Female (mg/d)</th></tr>
<tr><td>3-8 years</td><td>140-700</td><td>140-700</td></tr>
<tr><td>9-12 years</td><td>300-1300</td><td>300-1300</td></tr>
<tr><td>13-17 years</td><td>500-2300</td><td>400-1600</td></tr>
<tr><td>18-50 years</td><td>1000-2500</td><td>700-1600</td></tr>
<tr><td>51-80 years</td><td>800-2100</td><td>500-1400</td></tr>
<tr><td>81 years and older</td><td>600-2000</td><td>400-1300</td></tr>
</table>
</td></tr>
<tr><td></td><td>Selenium, Urine - per 24h</td><td>12.0-52.6 microg/d</td></tr>
<tr><td></td><td>Selenium, Urine - per volume</td><td>12.0-40.0 microg/L</td></tr>
<tr><td></td><td>Selenium, Urine - ratio to CRT</td><td>10.0-35.0 microg/g CRT</td></tr>
</table>

TEST CHANGE

Chromium, Urine

0025068, CR-U

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, and non-essential over-the-counter medications (upon the advice of their physician). High concentrations of iodine may interfere with elemental testing. Collection of urine specimens from patients receiving iodinated or gadolinium-based contrast media should be avoided for a minimum of 72 hours post-exposure. Collections from patients with impaired kidney function should be avoided for a minimum of 14 days post contrast media exposure.
Collect:	24-hour or random urine collection. Specimen must be collected in a plastic container. 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 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: 1 mL)
Transport Temperature:	Refrigerated. Also acceptable: Room temperature or frozen.
Unacceptable Conditions:	Urine collected within 72 hours after administration of iodinated or gadolinium-based contrast media. 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: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	
CPT Codes:	82495
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Urine chromium concentrations ~~Chromium urine levels~~ can be used to monitor short term exposure. The form of chromium greatly influences distribution. Trivalent chromium resides in the plasma and is usually not of clinical importance. Hexavalent chromium is considered highly

toxic. Symptoms associated with chromium toxicity vary based upon route of exposure and dose and may include dermatitis, impairment of pulmonary function, gastroenteritis, hepatic necrosis, bleeding, and acute tubular necrosis.

The ACGIH Biological Exposure Index for total~~daily exposure of hexavalent~~ chromium in~~is an increase of 10 ug/gCRT between pre-shift and post-shift~~ urine is and ~~collections. The ACGIH Biological Exposure Index for long- and short-term hexavalent chromium is an~~ end-of-shift concentration of 0.7~~30~~ ug/L measured~~gCRT~~ at the end of the work week.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

~~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:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Chromium, Urine - per 24h</td><td>Less than or equal to ~~0.0~~2.0 microg/d</td></tr>
<tr><td></td><td>Chromium, Urine - per volume</td><td>Less than or equal to ~~0.0~~2.0 microg/L</td></tr>
<tr><td></td><td>Chromium, Urine - ratio to CRT</td><td>Less than or equal to ~~0.0~~10.0 microg/g CRT</td></tr>
<tr><td></td><td>Creatinine, Urine - per 24h</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Male (mg/d)</th><th>Female (mg/d)</th></tr>
<tr><td>3-8 years</td><td>140-700</td><td>140-700</td></tr>
<tr><td>9-12 years</td><td>300-1300</td><td>300-1300</td></tr>
<tr><td>13-17 years</td><td>500-2300</td><td>400-1600</td></tr>
<tr><td>18-50 years</td><td>1000-2500</td><td>700-1600</td></tr>
<tr><td>51-80 years</td><td>800-2100</td><td>500-1400</td></tr>
<tr><td>81 years and older</td><td>600-2000</td><td>400-1300</td></tr>
</table>
</td></tr>
</table>

TEST CHANGE

Manganese, Urine

0025070, MANG U

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, and nonessential~~non-essential~~ over-the-counter medications (upon the advice of their physician). High concentrations of iodine may interfere with elemental testing. Collection of urine specimens from patients receiving iodinated or gadolinium-based contrast media should be avoided for a minimum of 72 hours post-exposure. Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post contrast media exposure.
Collect:	24-hour or random urine collection. Specimen must be collected in a plastic container. 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 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: 1 mL)
Transport Temperature:	Refrigerated. Also acceptable: Room temperature or frozen.
Unacceptable Conditions:	Urine collected within 72 hours after administration of iodinated or gadolinium-based contrast media. Acid preserved urine. Specimens contaminated with blood or fecal material. Specimens transported in nontrace~~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: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	
CPT Codes:	83785
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Urine manganese~~This assay~~ provides limited utility in determining manganese exposure. Whole blood measurements are recommended for determining recent or active exposure.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

~~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:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Creatinine, Urine - per 24h</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Male (mg/d)</th><th>Female (mg/d)</th></tr>
<tr><td>3-8 years</td><td>140-700</td><td>140-700</td></tr>
<tr><td>9-12 years</td><td>300-1300</td><td>300-1300</td></tr>
<tr><td>13-17 years</td><td>500-2300</td><td>400-1600</td></tr>
<tr><td>18-50 years</td><td>1000-2500</td><td>700-1600</td></tr>
<tr><td>51-80 years</td><td>800-2100</td><td>500-1400</td></tr>
<tr><td>81 years and older</td><td>600-2000</td><td>400-1300</td></tr>
</table>
</td></tr>
<tr><td></td><td>Manganese, Urine - per 24h</td><td>Less than or equal to ~~0.0~~ 5.0 microg/d</td></tr>
<tr><td></td><td>Manganese, Urine - per volume</td><td>Less than or equal to ~~0.0~~ 5.0 microg/L</td></tr>
<tr><td></td><td>Manganese, Urine - ratio to CRT</td><td>Less than or equal to ~~0.0~~ 5.0 microg/g CRT</td></tr>
</table>

TEST CHANGE

Smith (ENA) Antibody, IgG

0050085, SMITH

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: 0.52 mL)
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: 1 year (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Multiplex Bead Assay
Note:	
CPT Codes:	86235
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Smith antibody is highly specific (greater than 90 percent) for systemic lupus erythematosus (SLE) but only occurs in 30-35 percent of SLE cases. The presence of antibodies to Smith has variable associations with SLE clinical manifestations.

Component	Interpretation
Smith (ENA) Antibody, IgG	29 AU/mL or less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive

Reference Interval:

Test Number	Components	Reference Interval
	Smith (ENA) Antibody, IgG	40 AU/mL or less

TEST CHANGE

Antinuclear Antibodies (ANA), IgG by ELISA with Reflex to ANA HEp-2 Substrate, IgG by IFA and ENA Confirmation

0050317, ANA REF

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 1.0 mL serum to an ARUP standard transport tube.~~Standard Transport Tube.~~ (Min: 1.0~~.6~~ mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Nonserum~~Non-serum~~ specimens. Contaminated, grossly hemolyzed, heat-inactivated, severely lipemic, specimens, or inclusion of fibrin clots.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles)
Methodology:	Qualitative Enzyme-Linked Immunosorbent Assay (ELISA) / Semi-Quantitative Indirect Fluorescent Antibody (IFA) / Semi-Quantitative Multiplex Bead Assay / Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)
Note:	ANA lacks diagnostic specificity, and is associated with in variety diseases (cancers, autoimmune, infectious, and inflammatory conditions) and occurs in healthy individuals in varying prevalence. The lack of diagnostic specificity requires confirmation of positive ANA by more-specific serologic tests, which may be guided by the pattern(s) observed. Specimens are screened for ANA using ELISA. If ANA IgG is detected by ELISA, then Antinuclear Antibody (ANA), HEp-2, IgG by IFA will be added. If ANA, IgG by IFA is confirmed positive with a titer of 1:80 or greater, then a titer and pattern will be reported. In addition, samples positive for ANA, IgG by IFA will reflex to Double-Stranded DNA (dsDNA) Antibody, IgG by ELISA; Jo-1 Antibody, IgG; Smith/RNP (ENA) Antibody, IgG; Scleroderma (Scl-70) (ENA) Antibody, IgG; Smith (ENA) Antibody, IgG; SSA 52 and 60 (Ro) (ENA) Antibodies, IgG; and SSB (La) (ENA) Antibody, IgG. If Double-Stranded DNA (dsDNA) Antibody, IgG by ELISA is detected, then Double-Stranded DNA (dsDNA) Antibody, IgG by IFA (using Crithidia luciliae) will be added. Additional charges apply. ANA identified by indirect fluorescence assay (IFA) using HEp-2 substrate and IgG-specific conjugate at a screening dilution of

	1:80. Positive nuclear patterns reported include homogeneous, speckled, centromere, nucleolar, or nuclear dots. Positive cytoplasmic patterns reported include reticular/AMA, discrete/GW body-like, polar/golgi-like, rods and rings, or cytoplasmic speckled patterns. All positive results are reported with endpoint titers at no additional charge.
CPT Codes:	86038; if reflexed, add 86039; if reflexed, add 86235 x7 and 86225; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Antinuclear Antibodies (ANA), IgG by ELISA: ANA specimens are screened using enzyme-linked immunosorbent assay (ELISA) methodology. All ELISA results reported as detected are further tested by indirect fluorescent assay (IFA) using HEp-2 substrate with an IgG-specific conjugate. The ANA ELISA screen is designed to detect antibodies against dsDNA, histone, SS-A (Ro), SS-B (La), Smith, Smith/RNP, Scl-70, Jo-1, centromeric proteins, and other antigens extracted from the HEp-2 cell nucleus. ANA ELISA assays have been reported to have lower sensitivities than ANA IFA for systemic autoimmune rheumatic diseases (SARD).

Negative results do not necessarily rule out SARD.

Reference Interval:

Test Number	Components	Reference Interval
	Anti-Nuclear Ab (ANA), IgG by ELISA	None detected

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

Effective Date: January 20, 2026

TEST CHANGE

Immunoglobulin E

0050345, IGE

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube (SST) or plasma separator tube (PST). Also acceptable: Green (sodium or lithium heparin), lavender (K2EDTA), or pink (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. (Min: 0.3 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed, icteric, or lipemic specimens. Postmortem samples.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative ImmunoCAP Fluorescent Enzyme Immunoassay
Note:	
CPT Codes:	82785
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Age	Reference Interval
0-5 months	13 kU/L or less
6-12 months	34 kU/L or less
1-2 years	97 kU/L or less
3 years	199 kU/L or less
4-6 years	307 kU/L or less
7-8 years	403 kU/L or less
9-12 years	696 kU/L or less
13-15 years	629 kU/L or less
16-17 years	537 kU/L or less
18 years and older	214 kU/L or less

Inserted Cells

Inserted Cells

Reference Interval:

Effective November 17, 2014

Test Number	Components		Reference Interval
	~~Age~~	~~Reference Interval~~	
	~~0-5 months~~	~~13 kU/L or less~~	
	~~6-12 months~~	~~34 kU/L or less~~	
	~~1-2 years~~	~~97 kU/L or less~~	
	~~3 years~~	~~199 kU/L or less~~	
	~~4-6 years~~	~~307 kU/L or less~~	
	~~7-8 years~~	~~403 kU/L or less~~	
	~~9-12 years~~	~~696 kU/L or less~~	
	~~13-15 years~~	~~629 kU/L or less~~	
	~~16-17 years~~	~~537 kU/L or less~~	
	~~18 years and older~~	~~214 kU/L or less~~	
	Immunoglobulin E		
		Age	Reference Interval (kU/L)
		0-5 months	13 or less
		6-12 months	34 or less
		1-2 years	97 or less
		3 years	199 or less
		4-6 years	307 or less
		7-8 years	403 or less
		9-12 years	696 or less
		13-15 years	629 or less
		16-17 years	537 or less

Deleted Cells

Inserted Cells

		18 years and older	214 or less

TEST CHANGE

Smith/RNP (ENA) Antibody, IgG

0050470, RNP

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: 0.52~~2~~ mL)
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: 1 month (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Enzyme Immunoassay (EIA)
Note:	An affinity purified RNP/Sm antigen complex is used in this assay.
CPT Codes:	86235
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Smith/RNP antibodies are frequently seen in patients with mixed connective tissue disease (MCTD) and are also associated with other systemic autoimmune rheumatic diseases (SARDs), such as systemic lupus erythematosus (SLE), systemic sclerosis, and myositis. Antibodies targeting the Smith/RNP antigenic complex also recognize Smith antigens, therefore, the Smith antibody response must be considered when interpreting these results.

Component	Interpretation
RNP (U1) (Ribonucleic Protein) (ENA) Antibody, IgG	19 Units or less Negative 20-39 Units Weak Positive 40-80 Units Moderate Positive 81 Units or greater Strong Positive

Reference Interval:

Test Number	Components	Reference Interval
	Smith/RNP (ENA) Ab, IgG	19 Units or less

TEST CHANGE

Extractable Nuclear Antigen Antibodies (Smith/RNP, Smith, SSA 52, SSA 60, and SSB)

0050652, ENA ABS4

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: 0.5~~3~~ mL)
Transport Temperature:	Refrigerated.~~.~~
Unacceptable Conditions:	Plasma or other body fluids. Bacterially 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:	Quantitative Enzyme-Linked Immunosorbent Assay (ELISA) / Quantitative Multiplex Bead Assay
Note:	
CPT Codes:	86235 x5
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Component	Interpretation
Smith/RNP (ENA) Antibody, IgG	19 Units or less Negative 20-39 Units Weak Positive 40-80 Units Moderate Positive 81 Units or greater Strong Positive
Smith (ENA) Antibody, IgG	29 AU/mL or less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive
SSA-52 (Ro52) (ENA) Antibody, IgG	29 AU/mL or ~~l~~less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive
SSA-60 (Ro60) (ENA) Antibody, IgG	29 AU/mL or ~~l~~less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive

SSB (La) (ENA) Antibody, IgG	29 AU/mL or less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive

Reference Interval:

Test Number	Components	Reference Interval
	Smith (ENA) Antibody, IgG	40 AU/mL or less
	Smith/RNP (ENA) Ab, IgG	19 Units or less
	SSA-52 (Ro52) (ENA) Antibody, IgG	40 AU/mL or less
	SSA-60 (Ro60) (ENA) Antibody, IgG	40 AU/mL or less
	SSB (La) (ENA) Antibody, IgG	40 AU/mL or less

TEST CHANGE

SSB (La) (ENA) Antibody, IgG

0050692, SSB

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: 0.52~~2~~ mL)
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: 1 year (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Multiplex Bead Assay
Note:	
CPT Codes:	86235
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

SSB (La) antibody is seen in 50-60% of Sjogren syndrome cases and is specific if it is the only ENA antibody present. Fifteen-25% of patients with systemic lupus erythematosus (SLE) and 5-10% of patients with progressive systemic sclerosis (PSS) also have this antibody.

Component	Interpretation
SSB (La) (ENA) Antibody, IgG	29 AU/mL or less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive

Reference Interval:

Test Number	Components	Reference Interval
	SSB (La) (ENA) Antibody, IgG	40 AU/mL or less

TEST CHANGE

Centromere Antibody, IgG

0050714, ANTICENT

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: 0.5~~25~~ mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	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 Multiplex Bead Assay
Note:	
CPT Codes:	83516
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

When detected by this multiplex bead assay, the presence of centromere antibodies is mainly associated with CREST syndrome, a variant of systemic sclerosis (SSc). These antibodies target the centromere B, a dominant antigen of the centromeric complex associated with the centromere pattern observed in antinuclear antibody (ANA) testing by IFA. Centromere antibodies may also be seen in a varying percentage of patients with other autoimmune diseases, including diffuse cutaneous SSc, Raynaud syndrome, interstitial pulmonary fibrosis, autoimmune liver disease, systemic lupus erythematosus (SLE) and rheumatoid arthritis (RA).

A negative result indicates no detectable IgG antibodies to centromere B. If the result is negative but clinical suspicion for SSc is strong, consider testing for ANA by IFA along with other antibodies associated with SSc, including Scl-70, U3-RNP, PM/Scl, or Th/To.

Component	Interpretation
Centromere Antibody, IgG	29 AU/mL or less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive

Reference Interval:

Test Number	Components	Reference Interval
	Centromere Ab, IgG	0-40 AU/mL

TEST CHANGE

Extractable Nuclear Antigen Antibodies (SSA 52, SSA 60, and SSB)

0050791, SSA/SSB

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube or red tube.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.5~~3~~ mL)
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: 1 year (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Multiplex Bead Assay
Note:	
CPT Codes:	86235 x3
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Component	Interpretation
SSA-52 (Ro52) (ENA) Antibody, IgG	29 AU/mL or Less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive
SSA-60 (Ro60) (ENA) Antibody, IgG	29 AU/mL or Less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive
SSB (La) (ENA) Antibody, IgG	29 AU/mL or less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive

Reference Interval:

Test Number	Components	Reference Interval
	SSA-52 (Ro52) (ENA) Antibody, IgG	40 AU/mL or less
	SSA-60 (Ro60) (ENA) Antibody, IgG	40 AU/mL or less
	SSB (La) (ENA) Antibody, IgG	40 AU/mL or less

Effective Date: January 20, 2026

TEST CHANGE

Galactosemia (*GALT*) Enzyme Activity and 9 Mutations

0051175, GALTPAN

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA) or pink (K2EDTA)
Specimen Preparation:	Transport 2 mL whole blood (Min: 1 mL).
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Frozen or room temperature specimens.
Remarks:	
Stability:	Room temperature: Unacceptable; Refrigerated: 5 days; Frozen: Unacceptable
Methodology:	Enzymatic Assay / Polymerase Chain Reaction (PCR) / Single Nucleotide Extensions
Note:	
CPT Codes:	82775; 81401
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
One U/g Hb is equivalent to one umol/hour/gram of hemoglobin (umol/hr/g Hb). Refer to report.	
Reference Interval:	
By report	

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

TEST CHANGE

Galactosemia, (*GALT)* 9 Mutations

0051176, GALTDNA

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA) or pink (K2EDTA)
Specimen Preparation:	Transport 2 mL whole blood (Min: 1 mL).
Transport Temperature:	Refrigerated. Also acceptable: Room temperature.
Unacceptable Conditions:	
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 1 month; Frozen: Unacceptable
Methodology:	Polymerase Chain Reaction (PCR) / Single Nucleotide Extensions
Note:	This test is offered to individuals with known familial mutation(s).
CPT Codes:	81401
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 prompt change associated with this test. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Galactosemia (*GALT*) 9 Mutations, Fetal

0051270, GALTDNA FE

Specimen Requirements:	
Patient Preparation:	
Collect:	Fetal: Cultured Amniocytes, Cultured CVS AND Maternal Whole Blood Specimen: Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B).
Specimen Preparation:	Cultured Amniocytes or Cultured CVS: Transfer cultured amniocytes or cultured CVS to two T-25 flasks at 80 percent confluence. (Min: one T-25 flask at 80 percent confluence) Backup cultures must be retained at the client's institution until testing is complete. If ARUP receives a sample below the minimum confluence, Cytogenetics Grow and Send (ARUP test code 0040182) will be added on by ARUP, and additional charges will apply. If clients are unable to culture specimens, Cytogenetics Grow and Send should be added to the initial order. Maternal Whole Blood Specimen: 2 mL whole blood (Min: 1 mL).
Transport Temperature:	Cultured Amniocytes or Cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of collection due to viability of cells. Maternal Whole Blood Specimen: Room temperature
Unacceptable Conditions:	
Remarks:	
Stability:	Cultured Amniocytes or Cultured CVS: Room temperature: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable Maternal Whole Blood Specimen: Room temperature: 7 days; Refrigerated: 1 month; Frozen: Unacceptable
Methodology:	Polymerase Chain Reaction (PCR) / Single Nucleotide Extensions
Note:	This test is offered to individuals with a known familial mutation(s).
CPT Codes:	81401; 81265 Fetal Cell Contamination (FCC)
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 prompt change associated with this test. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

UDP Glucuronosyltransferase 1A1 (*UGT1A1*) Genotyping

0051332, UGT1A1

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B)
Specimen Preparation:	Transport 3 mL whole blood. (Min: 1 mL)
Transport Temperature:	Refrigerated. Also acceptable: Ambient.
Unacceptable Conditions:	
Remarks:	
Stability:	Room temperature: 1 week; Refrigerated: 1 month; Frozen: Unacceptable
Methodology:	Polymerase Chain Reaction (PCR) / Fragment Analysis
Note:	
CPT Codes:	81350
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 prompt change associated with this test. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Connective Tissue Diseases Profile

0051668, CONN

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: 0.5~~3~~ mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Plasma or other body fluids. Bacterially contaminated specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month
Methodology:	Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA) / Semi-Quantitative Multiplex Bead Assay
Note:	
CPT Codes:	86235 x7; 83516 x2
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report.

Component		Interpretation
Smith (ENA) Antibody, IgG	29 AU/mL or less 30-40 AU/mL 41 AU/mL or greater	Negative Equivocal Positive
Smith/RNP (ENA) Antibody, IgG	19 Units or less 20-39 u~~U~~nits 40-80 u~~U~~nits 81 u~~U~~nits or greater	Negative Weak Positive Moderate Positive Strong Positive
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
SSB (La) (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
Ribosomal P Protein Antibody	29 AU/mL or less 30-40 AU/mL 41	Negative Equivocal

	AU/mL or greater	Positive
Centromere 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

Reference Interval:

Test Number	Components	Reference Interval
	Centromere Ab, IgG	0-40 AU/mL
	Jo-1 (Histidyl-tRNA Synthetase) Ab, IgG	40 AU/mL or less
	Ribosome P Antibody, IgG	0-40 AU/mL
	Scleroderma (Scl-70) (ENA) Antibody, IgG	40 AU/mL or less
	Smith (ENA) Antibody, IgG	40 AU/mL or less
	Smith/RNP (ENA) Ab, IgG	19 Units or less
	SSA-52 (Ro52) (ENA) Antibody, IgG	40 AU/mL or less
	SSA-60 (Ro60) (ENA) Antibody, IgG	40 AU/mL or less
	SSB (La) (ENA) Antibody, IgG	40 AU/mL or less

TEST CHANGE

Vitamin B12 with Reflex to Methylmalonic Acid, Serum (Vitamin B12 Status)

0055662, B12 MMA

Specimen Requirements:	
Patient Preparation:	
Collect:	Plain red or serum separator tube. Also acceptable: Green (sodium or lithium heparin).
Specimen Preparation:	Protect from light during collection, storage and shipment. Centrifuge and remove serum from cells within 2 hours of collection. Transfer 1.0~~2~~ mL serum or plasma to an ARUP standard transport tube and refrigerate or freeze immediately. (Min: 0.6~~1.5~~ mL)
Transport Temperature:	Frozen.
Unacceptable Conditions:	EDTA plasma. Room temperature specimens. Grossly hemolyzed or lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: Unacceptable; Refrigerated: 48 hours; Frozen: 1 month
Methodology:	Quantitative Chemiluminescent Immunoassay (CLIA) / Quantitative Liquid Chromatography-Tandem Mass Spectrometry
Note:	If Vitamin B12 is less than 300 pg/mL, then Methylmalonic Acid, Serum (Vitamin B12 Status) will be added. Additional charges apply.
CPT Codes:	82607; if reflexed, add 83921
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Reference Interval:

Available Separately	Components	Reference Interval
Yes (0070150)	Vitamin B{sb:12}	Effective December 2, 2013 180-914 pg/mL
No	Methylmalonic Acid, Serum (Vitamin B{sb:12} Deficiency)	0.00-0.40 umol/L

TEST CHANGE

Chlamydia trachomatis and *Neisseria gonorrhoeae* by Transcription-Mediated Amplification (TMA)

0060241, CGAMD

Specimen Requirements:	
Patient Preparation:	
Collect:	Vaginal, throat, eye or rectal specimen collected with pink swab from Aptima MultiTest Swab Specimen Collection kit (ARUP supply #65761 single collection kit or #55224 pack of ~~PK/~~50 collection kits~~or #55229 PK/10~~) available online through eSupply using ARUP Connect(TM)~~–~~ or contact ARUP Client Services at 800-522-2787. Also acceptable: Cervical, eye or male urethral specimen collected with blue swab from Aptima Unisex Swab Specimen Collection kit (ARUP supply #65759 single collection kit or #28907 pack of ~~PK/~~50 collection kits~~or #54555 PK/10~~) or first-catch urine collected in a sterile container then transferred to Aptima urine tube. Refer to "Sample Collection for the Diagnosis of STD" under Specimen Handling at www.aruplab.com for specific specimen collection and transport instructions.
Specimen Preparation:	Swab: Place swab in Aptima swab specimen transport tube, break shaft off at scoreline, then recap tube. Urine: Transfer 2 mL urine within 24 hours to an Aptima Urine Specimen Transport Tube (ARUP supply #65760 single collection kit or #28908 pack of ~~PK/~~50 collection kits~~or 54556 PK/10~~). Liquid level must be between fill lines on tube.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Large white swab included in Aptima Unisex Swab Specimen Collection kit is for preparatory cleaning of the endocervix and is unacceptable for testing. Specimens in any transport media other than indicated above. Specimens in swab transport media without a swab.
Remarks:	Specimen source is required.
Stability:	MultiTest Swab or Unisex Swab: Ambient: 2 months; Refrigerated: 2 months; Frozen: 1 year Aptima Urine Specimen Transport Tube: Ambient: 1 month; Refrigerated: 1 month; Frozen: 3 months
Methodology:	Qualitative Transcription-Mediated Amplification (TMA)
Note:	
CPT Codes:	87494~~87491; 87591~~
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

This test is intended for medical purposes only and is not valid for the evaluation of suspected sexual abuse or for other forensic purposes. In certain contexts, culture may be required to meet applicable laws and regulations for diagnosis of *C. trachomatis* and *N. gonorrhoeae* infections. Per 2014 CDC recommendations, this test does not include confirmation of positive results by an alternative nucleic acid target.

Reference Interval:

Test Number	Components	Reference Interval
	C. trachomatis by TMA	Negative
	N. gonorrhoeae by TMA	Negative

TEST CHANGE

Herpes Simplex Virus DFA with Reflex to Herpes Simplex Virus Culture

0060280, HSVFAC

Specimen Requirements:	
Patient Preparation:	
Collect:	Buccal mucosa lesion; cervical or genital lesion; eye, throat, or vesicle swab; bronchoalveolar lavage (BAL); tissue or vesicle fluid.
Specimen Preparation:	Fluid: Transfer 3 mL specimen to a sterile container. (Min: 0.5 mL) Also acceptable: Transfer to 3 mL viral transport media (ARUP Supply #12884) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787. Swab or Tissue: Place in 3 mL viral transport media (ARUP Supply #12884) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Bone marrow, CSF, or whole blood. Calcium alginate, eSwab, dry or wood swabs.
Remarks:	Specimen source preferred.
Stability:	Ambient: 4 hours; Refrigerated: 72 hours; Frozen: Unacceptable
Methodology:	Immunofluorescent~~Direct Fluorescent Antibody (DFA)~~ Stain / Cell Culture
Note:	If DFA is negative or inadequate, then an HSV culture will be added. Additional charges apply. Sensitivity of DFA methodology is dependent upon adequacy of the specimen. If specimen contains fewer than 20 cells, then the DFA result will be reported as "inadequate."
CPT Codes:	87274; 87273; if reflexed, add 87255
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	
Negative	

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

Respiratory Viruses DFA with Reflex to Viral Culture, Respiratory

0060281, RSPFAC

Specimen Requirements:	
Patient Preparation:	
Collect:	Respiratory specimen: Bronchoalveolar lavage (BAL), nasopharyngeal (aspirate, swab, or washing), or tracheal aspirate.
Specimen Preparation:	Fluid: Transfer 3 mL specimen to a sterile container. (Min: 0.5 mL) Also acceptable: Transfer to 3 mL viral transport media (ARUP Supply #12884) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787. Swab: Place in 3 mL viral transport media (ARUP Supply #12884) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Calcium alginate, dry or wood swabs. Slides.
Remarks:	Specimen source preferred.
Stability:	Ambient: 2 hours; Refrigerated: 72 hours; Frozen: Unacceptable
Methodology:	Immunofluorescent~~Direct Fluorescent Antibody (DFA)~~ Stain / Cell Culture
Note:	If DFA is negative or inadequate, then a respiratory viral culture will be added. Additional charges apply. Sensitivity of DFA methodology is dependent upon adequacy of the specimen. If specimen contains fewer than 20 cells, then the DFA result will be reported as "inadequate."
CPT Codes:	87276; 87275; 87279 x3; 87280; 87260; 87299; if reflexed add 87252; if definitive identification performed, add 87253.
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Reference Interval:

Test Number	Components	Reference Interval
	Adenovirus - DFA	Negative
	Human Metapneumovirus DFA	Negative
	Influenza A - DFA	Negative
	Influenza B - DFA	Negative
	Parainfluenza Type 1 - DFA	Negative

	Parainfluenza Type 2 - DFA	Negative
	Parainfluenza Type 3 - DFA	Negative
	Respiratory Syncytial Virus - DFA	Negative

~~Negative~~

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

Varicella-Zoster Virus DFA with Reflex to Varicella-Zoster Virus Culture

0060282, VZVFAC

Specimen Requirements:	
Patient Preparation:	Collect vesicle specimen during first three days of rash.
Collect:	Vesicle fluid or swab, tissue, or skin scrapings. Swab should be rolled in base of fresh vesicle to obtain cells.
Specimen Preparation:	Immediately transfer specimen to viral transport media (ARUP Supply #12884) and refrigerate (extremely temperature sensitive). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Bone marrow, CSF, or whole blood. Calcium alginate, eSwab, dry or wood swabs.
Remarks:	Specimen source preferred.
Stability:	Ambient: Unacceptable; Refrigerated: 48 hours; Frozen: Unacceptable
Methodology:	Immunofluorescent~~Direct Fluorescent Antibody (DFA)~~ Stain / Cell Culture
Note:	If DFA is negative or inadequate, then a VZV culture will be added. Additional charges apply. Sensitivity of DFA methodology is dependent upon adequacy of the specimen. If specimen contains fewer than 20 cells, then the DFA result will be reported as "inadequate."
CPT Codes:	87290; if reflexed, add 87252; 87254
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Approximately 20% of samples submitted for VZV are positive for herpes simplex virus. Testing for herpes simplex virus is NOT included in this test.	

Reference Interval:

Test Number	Components	Reference Interval
	Varicella-Zoster Virus, DFA	Negative

~~Negative~~

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

Varicella-Zoster Virus and Herpes Simplex Virus DFA with Reflex to Varicella-Zoster Virus Culture and Herpes Simplex Virus Culture

0060283, VZV HSVFAC

Specimen Requirements:	
Patient Preparation:	Collect vesicle specimen during first 3 days of rash.
Collect:	Vesicle fluid or swab, tissue, or skin scrapings. Swab should be rolled in base of fresh vesicle to obtain cells.
Specimen Preparation:	Immediately transfer specimen to viral transport media (ARUP Supply #12884) and refrigerate (extremely temperature sensitive). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Bone marrow, CSF, or whole blood. Calcium alginate, eSwab, dry or wood swabs.
Remarks:	Specimen source preferred.
Stability:	Ambient: Unacceptable; Refrigerated: 48 hours; Frozen: Unacceptable
Methodology:	Immunofluorescent~~Direct Fluorescent Antibody (DFA)~~ Stain / Cell Culture
Note:	If DFA results are negative or inadequate, then VZV and HSV cultures will be added. Additional charges apply. Sensitivity of DFA methodology is dependent upon adequacy of the specimen. If the specimen contains fewer than 20 cells, then DFA results will be reported as "inadequate."
CPT Codes:	87290; 87274; 87273; if reflexed, add 87252; 87254; 87255
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Reference Interval:

Test Number	Components	Reference Interval
	Herpes Simplex Virus 1, DFA	Negative
	Herpes Simplex Virus 2, DFA	Negative
	Varicella-Zoster Virus, DFA with Reflex	Negative

~~Negative~~

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

Respiratory Syncytial Virus DFA

0060288, RSV

Specimen Requirements:	
Patient Preparation:	
Collect:	Respiratory specimen: Nasopharyngeal aspirate, swab, or washing, or tracheal aspirate.
Specimen Preparation:	Fluid: Transfer 3 mL specimen to a sterile container. (Min: 0.5 mL) Also acceptable: Transfer to 3 mL viral transport media (ARUP Supply #12884) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787. Swab: Place in 3 mL viral transport media (ARUP Supply #12884) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Dry swabs , eSwab.
Remarks:	Specimen source preferred.
Stability:	Ambient: 2 hours; Refrigerated: 72 hours; Frozen: Unacceptable
Methodology:	Immunofluorescent~~Direct Fluorescent Antibody~~ Stain
Note:	Due to high sensitivity (85-95%) and specificity (95-99%), this is the recommended test for the detection of RSV.
CPT Codes:	87280
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	
Negative	

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

Respiratory Viruses DFA

0060289, RSPFA

Specimen Requirements:	
Patient Preparation:	
Collect:	Respiratory specimen: Bronchoalveolar lavage (BAL), nasopharyngeal (aspirate, swab, or washing), or tracheal aspirate.
Specimen Preparation:	Fluid: Transfer 3 mL specimen to a sterile container. (Min: 0.5 mL) Also acceptable: Transfer to 3 mL viral transport media (ARUP Supply #12884) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787. Swab: Place in 3 mL viral transport media (ARUP Supply #12884) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Dry swabs , eSwab. Slides.
Remarks:	Specimen source preferred.
Stability:	Ambient: 2 hours; Refrigerated: 72 hours; Frozen: Unacceptable
Methodology:	Immunofluorescent~~Direct Fluorescent Antibody~~ Stain
Note:	Viral culture of DFA-negative specimens is strongly recommended. Refer to Respiratory Viruses DFA with Reflex to Viral Culture (0060281). The sensitivity of DFA testing for RSV is greater than 95% and does not require culture backup.
CPT Codes:	87276; 87275; 87279 x3; 87280; 87260; 87299
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	
Negative	

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

Varicella-Zoster Virus DFA

0060290, VZVFA

Specimen Requirements:	
Patient Preparation:	Collect vesicle specimen during first 3 days of rash.
Collect:	Vesicle swab, tissue, or skin scrapings. Swab should be rolled in base of fresh vesicle to obtain cells.
Specimen Preparation:	Immediately transfer specimen to viral transport media (ARUP Supply #12884) and refrigerate (extremely temperature sensitive). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Bone marrow, CSF, or whole blood. Calcium alginate, eSwab, dry or wood swabs.
Remarks:	Specimen source preferred.
Stability:	Ambient: 4 hours; Refrigerated: 72 hours; Frozen: Unacceptable
Methodology:	Immunofluorescent~~Direct Fluorescent Antibody (DFA)~~ Stain
Note:	Sensitivity of DFA methodology is dependent upon adequacy of the specimen. If there are fewer than 20 cells, the DFA result will be reported as "sample inadequate." Culture is recommended for any DFA-negative swabs or inadequate samples. Refer to Varicella-Zoster Virus DFA with Reflex to Varicella-Zoster Virus Culture (0060282).
CPT Codes:	87290
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Approximately 20% of samples submitted for VZV are positive for herpes simplex virus. Testing for herpes simplex virus is NOT included in this test.

Reference Interval:

Test Number	Components	Reference Interval
	Varicella-Zoster Virus by DFA	Negative

~~Negative~~

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 Metapneumovirus DFA

0060779, HMPVFA

Specimen Requirements:	
Patient Preparation:	
Collect:	Respiratory specimen: Bronchoalveolar lavage (BAL), nasopharyngeal (aspirate, swab, or washing), or tracheal aspirate.
Specimen Preparation:	Do not freeze. Fluid: Transfer 3 mL specimen to a sterile container. (Min: 0.5 mL) Also acceptable: Transfer to 3 mL viral transport media (ARUP Supply #12884) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787. Swab: Place in 3 mL viral transport media (ARUP Supply #12884) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Calcium alginate, eSwab, dry, or wood swabs. Slides.
Remarks:	Specimen source preferred.
Stability:	Ambient: 2 hours; Refrigerated: 72 hours; Frozen: Unacceptable
Methodology:	Immunofluorescent~~Direct Fluorescent Antibody~~ Stain
Note:	Sensitivity of DFA methodology is dependent upon adequacy of the specimen. If there are fewer than 20 cells, the DFA result will be reported as "sample inadequate."
CPT Codes:	87299
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	
Negative	

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.

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

Effective Date: January 20, 2026

TEST CHANGE

Renin Activity

0070105, RENIN

Specimen Requirements:	
Patient Preparation:	Collect midmorning after patient has been sitting, standing, or walking for at least 2 hours and seated for 5-15 minutes. Refer to the Additional Technical Information for specific patient preparation recommendations.
Collect:	Lavender (EDTA) or pink (K2EDTA~~Pink (K 2 EDTA~~). Do not collect in refrigerated tubes.
Specimen Preparation:	Separate from cells ASAP or within 2 hours of collection. Transfer 2 mL plasma to an ARUP standard transport tube~~Standard Transport Tube~~ and freeze immediately. (Min: 1.2 mL) Storage at refrigerated temperatures may cause falsely elevated results. Do not collect in refrigerated tubes.
Transport Temperature:	CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.
Unacceptable Conditions:	Serum. Specimens collected in citrate, heparin, or oxalate. Hemolyzed specimens.
Remarks:	
Stability:	After separation from cells: Ambient: Unacceptable~~6 hours~~; Refrigerated: Unacceptable; Frozen: 1 month
Methodology:	Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)
Note:	Refer to the Additional Technical Information for Endocrine Society recommendations for patient preparation, specimen collection, medications for hypertension control during confirmatory testing for primary aldosteronism, and factors that may lead to false-positive or false-negative aldosterone-renin ratio (ARR) results.
CPT Codes:	84244
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Plasma renin activity measures enzyme ability to convert angiotensinogen to angiotensin I and is limited by the availability of angiotensinogen. Plasma renin activity is not an accurate indicator of enzyme activity when angiotensinogen is decreased.

~~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
	~~Adult, normal sodium diet~~	~~Children, normal sodium diet, supine:~~	~~Children, normal sodium diet, upright:~~	
	~~Supine: 0.2-1.6 ng/mL/hr~~	~~Newborn (1-7 days): 2.0-35.0 ng/mL/hr~~	~~0-3 years: Not Available~~	
	~~Upright: 0.5-4.0 ng/mL/hr~~	~~Cord blood: 4.0-32.0 ng/mL/hr~~	~~4-5 years: Less than or equal to 15 ng/mL/hr~~	
		~~1-12 months: 2.4-37.0 ng/mL/hr~~	~~6-10 years: Less than or equal to 17 ng/mL/hr~~	
		~~13 months-3 years:1.7-11.2 ng/mL/hr~~	~~11-15 years: Less than or equal to 16 ng/mL/hr~~	
		~~4-5 years:1.0-6.5 ng/mL/hr~~		
		~~6-10 years: 0.5-5.9 ng/mL/hr~~		
		~~11-15 years: 0.5-3.3 ng/mL/hr~~		
Renin Activity				

Deleted Cells

Inserted Cells

		Age	Supine (ng/mL/hr)	Upright (ng/mL/hr)
		Newborn (1-7 days)	2.0-35.0	Not Available
		1-12 months	2.4-37.0	Not Available
		13 months-3 years	1.7-11.2	Not Available
		4-5 years	1.0-6.5	Less than or equal to 15
		6-10 years	0.5-5.9	Less than or equal to 17
		11-15 years	0.5-3.3	Less than or equal to 16
		Adult	0.2-1.6	0.5-4.0

TEST CHANGE

Proinsulin, Intact

0070112, PROINS

Specimen Requirements:	
Patient Preparation:	Patient must fast for 10-12~~-15~~ hours prior to collection.
Collect:	Serum separator tube (SST) or plain red. Also acceptable: Lavender (K2EDTA) or pink (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 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 hours; Frozen: 2 months
Methodology:	Quantitative Chemiluminescent Immunoassay (CLIA)
Note:	
CPT Codes:	84206
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Reference Interval:

Test Number	Components	Reference Interval
	Proinsulin, Intact	
		Age: pmol/L 0-17 year: Not established 18 years and older: Less than or equal to 7.3

TEST CHANGE

Proinsulin , Intact/Insulin Ratio

0070256, PRO INS

Specimen Requirements:	
Patient Preparation:	Patient must be fasting for 10-12~~-15~~ hours prior to collection.
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 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 hours; Frozen: 2 months (avoid repeated freeze/thaw cycles)
Methodology:	Quantitative Chemiluminescent Immunoassay (CLIA) / Quantitative Chemiluminescent Immunoassay (CLIA)
Note:	
CPT Codes:	84206; 83525
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Insulin, fasting: 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.

Reference Interval:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Insulin, Fasting</td><td>3-25 microIU/mL</td></tr>
<tr><td></td><td>Proinsulin, Intact</td><td></td></tr>
<tr><td></td><td></td><td><table><tr><td>Age</td><td>pmol/L</td></tr><tr><td>0-17 year</td><td>Not established</td></tr><tr><td>18 years and older</td><td>Less than or equal to 7.3</td></tr></table></td></tr>
<tr><td></td><td>Proinsulin, Intact/Insulin Ratio Calc</td><td></td></tr>
<tr><td></td><td></td><td><table><tr><td>Age</td><td>Ratio (%)</td></tr><tr><td>0-17 years</td><td>Not established</td></tr><tr><td>18 years and older</td><td>0.8-21.7</td></tr></table></td></tr>
</table>

TEST CHANGE

Methylmalonic Acid (MMA) Quantitative, Urine

0083918, MMA U

Specimen Requirements:	
Patient Preparation:	
Collect:	24-hour or random urine. Refrigerate 24-hour specimens during collection.
Specimen Preparation:	Transfer a 14 mL aliquot from a well-mixed 24-hour or random urine collection to an ARUP standard transport tube~~Standard Transport Tube~~ and refrigerate or freeze immediately. (Min: 0.3~~1~~ mL) Record total volume and collection time interval on transport tube and test request form.
Transport Temperature:	Frozen.
Unacceptable Conditions:	Room temperature specimens.
Remarks:	
Stability:	Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 1 month
Methodology:	Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry
Note:	
CPT Codes:	83921
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Urinary methylmalonic acid, when increased, is an early and sensitive indicator of vitamin B12 (cobalamin) deficiency. This test can also be used to monitor patients with methylmalonic aciduria. Diagnosis of methylmalonic aciduria requires an organic acid panel and appropriate clinical history.

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

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
	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
	MMA - ratio to CRT	0.0-3.6 mmol/mol CRT		

TEST CHANGE

Drug Profile, Screen With Reflex to Quantitation, Serum or Plasma

0092420, DRUG SCRSP

Specimen Requirements:	
Patient Preparation:	
Collect:	Gray (sodium fluoride/potassium oxalate). Also acceptable: Plain red, green (sodium heparin), lavender (EDTA), or pink (K2EDTA).
Specimen Preparation:	Remove plasma from cells ASAP or within 2 hours of collection. Transfer 4 mL plasma to an ARUP standard transport tube. (Min: 3 mL) Also acceptable: Serum.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Specimens exposed to repeated freeze/thaw cycles. Separator tubes. Plasma or whole blood collected in lt. blue (sodium citrate). Hemolyzed specimens.
Remarks:	Cocaine and cocaethylene are more stable in fluoride-preserved plasma than serum.
Stability:	After separation from cells: Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 3 years
Methodology:	Qualitative Enzyme-Linked Immunosorbent Assay (ELISA) / Quantitative Gas Chromatography-Mass Spectrometry (GC-MS) / Quantitative Liquid Chromatography-Tandem Mass Spectrometry
Note:	Screen-positive specimens are automatically confirmed by GC/MS and/or LC-MS/MS; additional charges may apply.
CPT Codes:	80307; if reflexed, add 80324; 80354; 80345; 80346; 80348; 80349; 80353; 80358; 80359; 80361; 80365; 83992 (Reflexed Alt Code: G0480)
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Drugs/drug classes reported as "Positive" are automatically reflexed to mass spectrometry confirmation/quantitation. An unconfirmed positive immunoassay screen result may be useful for medical purposes but does not meet forensic standards. The absence of expected drug(s) and/or drug metabolite(s) may indicate noncompliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, or limitations of testing. The concentration at which the screening test can detect a drug or metabolite varies within a drug class. Specimens for which drugs or drug classes are detected by the screen are automatically reflexed to a second, more specific technology (GC/MS and/or LC-MS/MS). 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.

For medical purposes only; not valid for forensic use.

Reference Interval:

Test Number	Components	Reference Interval
	Amphetamines Screen, S/P	Positive Cutoff: 20 ng/mL
	Barbiturates Screen, S/P	Positive Cutoff: 50 ng/mL
	Benzodiazepines Screen, S/P	Positive Cutoff: 50 ng/mL
	Buprenorphine Screen, S/P	Positive Cutoff: 1 ng/mL
	Carboxy-THC Screen, S/P	Positive Cutoff: 20 ng/mL
	Cocaine Screen, S/P	Positive Cutoff: 20 ng/mL
	Fentanyl Screen, S/P	Positive Cutoff: 1 ng/mL
	Methadone Screen, S/P	Positive Cutoff: 25 ng/mL
	Methamphetamine Screen, S/P	Positive Cutoff: 20 ng/mL
	Opiates Screen, S/P	Positive Cutoff: 20 ng/mL
	Oxycodone/Oxymorphone Screen, S/P	Positive Cutoff: 20 ng/mL
	Phencyclidine Screen, S/P	Positive Cutoff: 10 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.

TEST CHANGE

Ribosomal P Protein Antibody

0099249, RIBPP

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube or red tube.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.5~~2~~ mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Plasma or other body fluids. Bacterially contaminated 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 Multiplex Bead Assay
Note:	
CPT Codes:	83516
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Autoantibodies reacting with cytoplasmic ribosomes are highly specific for systemic lupus erythematosus. Ribosomal-P antibodies are found in approximately 12% of patients with systemic lupus erythematosus (SLE) and in 90% of patients with lupus psychosis; titers often increase more than fivefold during and before active phases of psychosis.

Component	Interpretation
Ribosomal P Protein Antibody	29 AU/mL or less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive

Reference Interval:

Test Number	Components	Reference Interval
	Ribosome P Antibody, IgG	0-40 AU/mL

TEST CHANGE

Methylmalonic Acid, Serum or Plasma (Vitamin B12 Status)

0099431, MMA QNT-P

Specimen Requirements:	
Patient Preparation:	
Collect:	Plain red or serum separator tube. Also acceptable: Green (sodium heparin), green (lithium heparin), lavender (EDTA), or pink (K2EDTA).
Specimen Preparation:	Centrifuge and remove serum or plasma from cells within 2 hours of collection. Transfer 1.02 ~~2~~ mL serum or plasma to an ARUP standard transport tube and refrigerate or freeze immediately. (Min: 0.36 ~~6~~ mL)
Transport Temperature:	Frozen.
Unacceptable Conditions:	Room temperature specimens. ~~Grossly hemolyzed or lipemic specimens.~~
Remarks:	
Stability:	After separation from cells: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 1 month
Methodology:	Quantitative Liquid Chromatography-Tandem Mass Spectrometry
Note:	
CPT Codes:	83921
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	
0.00-0.40 µ mol/L	

TEST CHANGE

Heavy Metals Panel 3, Urine with Reflex to Arsenic Fractionated

0099475, HY MET U

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, nonessential~~non-essential~~ over-the-counter medications (upon the advice of their physician), and avoid shellfish and seafood for 48 to 72 hours. High concentrations of iodine may interfere with elemental testing. Collection of urine specimens from patients receiving iodinated or gadolinium-based contrast media should be avoided for a minimum of 72 hours post-exposure. Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post-contrast media exposure.
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 8 mL aliquot 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 72 hours after administration of iodinated or gadolinium-based contrast media. Acid preserved urine. Specimens contaminated with blood or fecal material. Specimens transported in nontrace~~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: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	If total arsenic concentration is found to be elevated based on reference intervals, then Arsenic, Fractionated, will be added to determine the proportion of organic, inorganic, and methylated forms. Additional charges apply.
CPT Codes:	82175; 83655; 83825; if reflexed, add 82175
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Quantification of urine excretion rates before or after chelation therapy has been used as an indicator of lead exposure. Urinary excretion of >125 mg of lead per 24 hours is usually associated with related evidence of lead toxicity.

Urinary mercury concentrations~~levels~~ predominantly reflect acute or chronic elemental or inorganic mercury exposure. Urine concentrations in unexposed individuals are typically less than 10 ug/L. 24 hour urine concentrations of 30 to 100 ug/L may be associated with subclinical neuropsychiatric symptoms and tremor while concentrations greater than 100 ug/L can be associated with overt neuropsychiatric disturbances and tremors. Urine mercury levels may be useful in monitoring chelation therapy.

The ACGIH Biological Exposure Index (BEI) for arsenic in urine is 35 ug/L measured at the end of the work week.~~.~~ The ACGIH BEI is based on the sum of inorganic and methylated species. For specimens with elevated total arsenic results, fractionation is automatically performed to determine the proportions of inorganic, methylated and organic species.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

~~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:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Arsenic, Urine - per 24h</td><td>Less than or equal to 0.0-49.9 microg/d</td></tr>
<tr><td></td><td>Arsenic, Urine - per volume</td><td>Less than or equal to 0.0-34.9 microg/L</td></tr>
<tr><td></td><td>Arsenic, Urine - ratio to CRT</td><td>Less than or equal to 0.0-29.9 microg/g CRT</td></tr>
<tr><td></td><td>Creatinine, Urine - per 24h</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Male (mg/d)</th><th>Female (mg/d)</th></tr>
<tr><td>3-8 years</td><td>140-700</td><td>140-700</td></tr>
<tr><td>9-12 years</td><td>300-1300</td><td>300-1300</td></tr>
<tr><td>13-17 years</td><td>500-2300</td><td>400-1600</td></tr>
<tr><td>18-50 years</td><td>1000-2500</td><td>700-1600</td></tr>
<tr><td>51-80 years</td><td>800-2100</td><td>500-1400</td></tr>
<tr><td>81 years and older</td><td>600-2000</td><td>400-1300</td></tr>
</table>
</td></tr>
<tr><td></td><td>Lead, Urine - per 24h</td><td>Less than or equal to 0.0-8.1 microg/d</td></tr>
<tr><td></td><td>Lead, Urine - per volume</td><td>Less than or equal to 0.0-5.0 microg/L</td></tr>
<tr><td></td><td>Lead, Urine - ratio to CRT</td><td>Less than or equal to 0.0-5.0 microg/g CRT</td></tr>
<tr><td></td><td>Mercury, Urine - per 24h</td><td>Less than or equal to 0.0-20.0 microg/d</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td>Mercury, Urine - per volume</td><td>Less than or equal to 0.0-5.0 microg/L</td></tr>
<tr><td></td><td>Mercury, Urine - ratio to CRT</td><td>Less than or equal to 0.0-20.0 microg/g CRT</td></tr>
</table>

TEST CHANGE

Jo-1 Antibody, IgG

0099592, ANTI-JO

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube or red tube.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.5~~2~~ mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Plasma or other body fluids.
Remarks:	
Stability:	After separation from the cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Multiplex Bead Assay
Note:	Presence of Jo-1 antibody is found in patients with pure polymyositis, pure dermatomyositis, or myositis associated with another rheumatic disease or with interstitial lung disease.
CPT Codes:	86235
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Presence of Jo-1 (antihistidyl transfer RNA [t-RNA] synthetase) antibody is associated with polymyositis and may also be seen in patients with dermatomyositis. Jo-1 antibody is associated with pulmonary involvement (interstitial lung disease), Raynaud phenomenon, arthritis, and mechanic's hands (implicated in antisynthetase syndrome).

Component	Interpretation
Jo-1 Antibody, IgG	29 AU/mL or less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive

Reference Interval:

Test Number	Components	Reference Interval
	Jo-1 (Histidyl-tRNA Synthetase) Ab, IgG	40 AU/mL or less

TEST CHANGE

Hemophilia A (*F8*) 2 Inversions, Fetal

2001755, F8 INV FE

Specimen Requirements:	
Patient Preparation:	
Collect:	Fetal Cultured Amniocytes or Cultured CVS AND Maternal Whole Blood Specimen: Lavender (EDTA) or yellow (ACD solution A or B).
Specimen Preparation:	Cultured Amniocytes or Cultured CVS: Transfer cultured amniocytes or cultured CVS to two T-25 flasks at 80 percent confluence: (Min: one T-25 flask at 80 percent confluence). Backup cultures must be retained at the client's institution until testing is complete. If ARUP receives a sample below the minimum confluence, Cytogenetics Grow and Send (ARUP test code 0040182) will be added on by ARUP, and additional charges will apply. If clients are unable to culture specimens, Cytogenetics Grow and Send should be added to initial order. Maternal Whole Blood Specimen: Transport 2 mL whole blood (Min: 1 mL)
Transport Temperature:	Cultured Amniocytes or Cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of collection due to viability of cells. Maternal Whole Blood Specimen: Room temperature.
Unacceptable Conditions:	
Remarks:	
Stability:	Cultured Amniocytes or Cultured CVS: Room temperature: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable Maternal Whole Blood Specimen: Room temperature: 7 days; Refrigerated: 1 month; Frozen: Unacceptable
Methodology:	Inverse Polymerase Chain Reaction / Electrophoresis
Note:	
CPT Codes:	81403; 81265 Fetal Cell Contamination (FCC)
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:

Background Information for Hemophilia A (F8) 2 Inversions, Fetal:
Characteristics: Severe deficiency of factor VIII clotting activity leading to spontaneous joint or deep muscle bleeding. Moderate to mild deficiency is associated with prolonged bleeding after tooth extractions, surgery, or injuries and recurrent or delayed wound healing.
Incidence: 1 in 4,000-5,000 live male births worldwide, rare in females.
Inheritance: X-linked recessive. Of simplex cases, 85 percent of mothers are carriers and 10-15 percent of boys have a de novo mutation.
Penetrance: 100 percent in males and 10 percent in females.

Cause: Deleterious F8 gene mutations.
Clinical Sensitivity: 51 percent of mutations causing severe hemophilia A are detected by F8 inversion testing. This assay does not detect F8 mutations associated with mild or moderate hemophilia A in males.
Methodology: Intron 22-A and intron 1 inversions detected by inverse PCR and electrophoresis.
Analytical Sensitivity and Specificity: 99 percent.
Limitations: Diagnostic errors can occur due to rare sequence variations. F8 mutations, other than the F8 intron 22-A and intron 1 inversions, will not be detected.

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

Reference Interval:

Refer to~~By~~ report

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

TEST CHANGE

Hemophilia A (*F8*) 2 Inversions

2001759, F8 INV

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B)
Specimen Preparation:	Transport 2 mL whole blood. (Min: 1 mL)
Transport Temperature:	Refrigerated. Also acceptable: Ambient.
Unacceptable Conditions:	
Remarks:	
Stability:	Room temperature: 1 week; Refrigerated: 1 month; Frozen: Unacceptable
Methodology:	Inverse Polymerase Chain Reaction / Electrophoresis
Note:	
CPT Codes:	81403
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report	
Reference Interval:	

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

TEST CHANGE

Respiratory Viruses DFA with Reflex to Respiratory Virus Mini Panel by PCR

2002565, RSPFAPCR

Specimen Requirements:	
Patient Preparation:	
Collect:	Nasal aspirate or nasopharyngeal swab.
Specimen Preparation:	Fluid: Transfer 3 mL specimen to a sterile container. (Min: 1 mL) Also acceptable: Transfer to 3 mL viral transport media (ARUP Supply #12884) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787. Swab: Place in 3 mL viral transport media (ARUP Supply #12884) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Calcium alginate, eSwab, dry or wood swabs. Slides.
Remarks:	Specimen source preferred.
Stability:	Ambient: 2 hours; Refrigerated: 72 hours; Frozen: Unacceptable
Methodology:	Immunofluorescent~~Direct Fluorescent Antibody~~ Stain / Qualitative Reverse Transcription Polymerase Chain Reaction
Note:	If DFA is negative or inadequate for influenza, then Respiratory Virus Mini Panel by PCR (ARUP test code 0060764) will be added. Additional charges apply. Sensitivity of DFA methodology is dependent upon adequacy of the specimen. If the specimen contains fewer than 20 cells, then DFA result s will be reported as "inadequate."
CPT Codes:	87276; 87275; 87279 x3; 87280; 87260; 87299; if reflexed, add 87631
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Reference Interval:

Refer to report~~Negative~~

Test Number	Components	Reference Interval
	Adenovirus - DFA	Negative
	Human Metapneumovirus DFA	Negative
	Influenza A - DFA	Negative
	Influenza B - DFA	Negative
	Parainfluenza Type 1 - DFA	Negative

	Parainfluenza Type 2 - DFA	Negative
	Parainfluenza Type 3 - DFA	Negative
	Respiratory Syncytial Virus - DFA	Negative

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

Methylmalonic Acid, Serum or Plasma (Metabolic Disorders)

2005255, MMA METD

Specimen Requirements:	
Patient Preparation:	
Collect:	Plain red or serum separator tube. Also acceptable: Green (sodium or lithium heparin), lavender (EDTA), or pink (K 2 EDTA).
Specimen Preparation:	Centrifuge and remove serum or plasma from cells within 2 hours of collection. Immediately transfer 1.02~~2~~ mL serum or plasma to an ARUP standard transport tube~~Standard Transport Tube~~ and refrigerate or freeze. (Min: 0.3~~6~~ mL)
Transport Temperature:	Frozen.
Unacceptable Conditions:	Room temperature specimens. ~~Grossly hemolyzed or lipemic specimens.~~
Remarks:	
Stability:	After separation from cells: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 1 month
Methodology:	Quantitative Liquid Chromatography-Tandem Mass Spectrometry
Note:	
CPT Codes:	83921
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:	
Effective July 18, 2011 0.00-0.40 µ mol/L	

TEST CHANGE

Trichomonas vaginalis by Transcription-Mediated Amplification (TMA)

2005506, TVAG AMD

Specimen Requirements:	
Patient Preparation:	Swab or ThinPrep Collection: Patient must be 14 years of age or older.
Collect:	~~Refer to "Sample Collection for the Diagnosis of STD" under Specimen Handling at www.aruplab.com for specific specimen collection and transport instructions.~~ Vaginal specimen collected with pink swab from Aptima MultiTest Swab Collection kit (ARUP supply #65761 single collection kit ~~55224 PK/50~~ or #55224 pack of 50 collection kits~~55229 PK/10~~) available online through eSupply using ARUP Connect(TM) or contact Client Services at 800-522-2787. Cervical specimen collected with blue swab from Aptima Unisex Swab Specimen Collection kit (ARUP supply #65759 single collection kits or #28907 pack of ~~PK/~~50 collection kits~~or #54555 PK/10~~) First catch urine collected in sterile container then transferred to Aptima Urine tube Cervical brush in ThinPrep Pap test collection kit.
Specimen Preparation:	Swab: Place swab in Swab Specimen Transport Tube, break shaft off at scoreline then recap tube. Urine: Within 24 hours, transfer 2 mL urine to Aptima Urine Specimen Transport Tube (ARUP supply #65760 single collection kit or #28908 pack of ~~PK/~~50 collection kits~~or #54556 PK/10~~). Liquid level must be between fill lines on tube. ThinPrep: Vortex ThinPrep PreservCyt solution and transfer 1 mL to an Aptima Specimen Transfer Tube (ARUP supply #42711).
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Large white swab included in Aptima Unisex Swab Specimen Collection kit is for preparatory cleaning of the endocervix and is unacceptable for testing. Specimens in any transport media other than indicated above. Specimen in swab transport media without a swab.
Remarks:	Specimen source required.
Stability:	MultiTest or Unisex Swab: Ambient: 2 months; Refrigerated: 2 months; Frozen: 1 year Aptima Urine Specimen Transport Tube: Ambient: 1 month; Refrigerated: 1 month; Frozen: 1 year Aptima Specimen Transfer Tube: Ambient: 2 weeks; Refrigerated: 1 month; Frozen: 1 year ThinPrep: Ambient: 1 month; Refrigerated: 1 month; Frozen:

	Unacceptable
Methodology:	Qualitative Nucleic Acid Amplification Test (NAAT)
Note:	
CPT Codes:	87661
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

A negative result does not completely rule out infection with *T. vaginalis*.

Results should be interpreted in conjunction with other clinical data.

This test is intended for medical purposes only and is not valid for the evaluation of suspected sexual abuse or for other forensic purposes.

Reference Interval:

Negative.

Test Number	Components	Reference Interval
	T. vaginalis by TMA	Negative

TEST CHANGE

Sexually Transmitted Disease Panel 1 by Transcription-Mediated Amplification

2006258, STD PANEL1

Specimen Requirements:	
Patient Preparation:	Swab or ThinPrep Collection: Patient must be 14 years of age or older.
Collect:	Refer to "Sample Collection for the Diagnosis of STD" under Specimen Handling at www.aruplab.com for specific specimen collection and transport instructions. Vaginal specimen collected with pink swab from Aptima MultiTest Swab Collection kit (ARUP supply #65761 single collection kit or #55224 pack of ~~PK/~~50 collection kits~~or #55229 PK/10~~) available online through eSupply using ARUP Connect(TM) or contact Client Services at 800-522-2787. Cervical specimen collected with blue swab from Aptima Unisex Swab Specimen Collection kit (ARUP supply #65759 single collection kit or #28907 pack of ~~PK/~~50 collection kits~~or #54555 PK/10~~) First catch urine collected in sterile container and then transferred to Aptima Urine tube Cervical brush in ThinPrep Pap test collection kit.
Specimen Preparation:	Swab: Place swab in Swab Specimen Transport Tube, break shaft off at scoreline then recap tube. Urine: Within 24 hours, transfer 2 mL urine to Aptima Urine Specimen Transport Tube (ARUP supply #65760 single collection kit or #28908 pack of ~~PK/~~50 collection kits~~or #54556 PK/10~~). Liquid level must be between fill lines on tube. ThinPrep: Vortex ThinPrep PreservCyt solution and transfer 1 mL to an Aptima Specimen Transfer Tube (ARUP supply #42711).
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Large white swab included in Aptima Unisex Swab Specimen Collection kit is for preparatory cleaning of the endocervix and is unacceptable for testing. Specimens in any transport media other than indicated above. Specimen in swab transport media without a swab.
Remarks:	Specimen source is required.
Stability:	MultiTest or Unisex Swab: Ambient: 2 months; Refrigerated: 2 months; Frozen: 1 year Aptima Urine Specimen Transport Tube: Ambient: 1 month; Refrigerated: 1 month; Frozen: 3 months Aptima Specimen Transfer Tube: Ambient: 2 weeks; Refrigerated: 1 month; Frozen: 1 year ThinPrep: Ambient: 1 month; Refrigerated: 1 month; Frozen: Unacceptable

Methodology:	Qualitative Nucleic Acid Amplification Test (NAAT)
Note:	
CPT Codes:	87494~~87491; 87591~~; 87661
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to report.

Reference Interval:

Test Number	Components	Reference Interval
	C. trachomatis by TMA	Negative
	N. gonorrhoeae by TMA	Negative
	T. vaginalis by TMA	Negative

TEST CHANGE

X-Chromosome Inactivation Analysis

2006352, XCI

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B)
Specimen Preparation:	Transport 2 mL whole blood. (Min: 1 mL)
Transport Temperature:	Refrigerated. Also acceptable: Ambient.
Unacceptable Conditions:	
Remarks:	
Stability:	Room temperature: 1 week; Refrigerated: 1 month; Frozen: Unacceptable
Methodology:	Restriction Enzyme Digestion / Polymerase Chain Reaction (PCR) / Fragment Analysis
Note:	
CPT Codes:	81204
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: There is a prompt change associated with this test. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Iodine, Urine

2007465, IODINE U

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, nonessential over-the-counter medications for 48 hours (upon the advice of their physician). In addition, the administration of iodine-based contrast media and drugs containing Iodine may yield elevated results. Specimen must be collected in a plastic container and should be refrigerated after collection.
Collect:	24-hour or random urine collection.
Specimen Preparation:	Transfer an 8 mL aliquot from a well-mixed collection to ARUP Trace Element-Free Tubes (ARUP supply #43116) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787. (Min: 1 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Acid preserved urine. Specimens collected within 72 hours after administration of iodinated or gadolinium-based contrast media. 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 the total volume and collection time interval on transport tube and on test request form.
Stability:	Ambient: 2 months; Refrigerated: 2 months; Frozen: 2 months
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	
CPT Codes:	83018
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Values greater than 1000 ug/L may indicate dietary excess, but more frequently suggest recent drug or contrast media exposure.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

Per 24h calculations are provided to aid interpretation for collections with a duration of 24

hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

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:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Creatinine, Urine - per 24h</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Male (mg/d)</th><th>Female (mg/d)</th></tr>
<tr><td>3-8 years</td><td>140-700</td><td>140-700</td></tr>
<tr><td>9-12 years</td><td>300-1300</td><td>300-1300</td></tr>
<tr><td>13-17 years</td><td>500-2300</td><td>400-1600</td></tr>
<tr><td>18-50 years</td><td>1000-2500</td><td>700-1600</td></tr>
<tr><td>51-80 years</td><td>800-2100</td><td>500-1400</td></tr>
<tr><td>81 years and older</td><td>600-2000</td><td>400-1300</td></tr>
</table>
</td></tr>
<tr><td></td><td>~~Iodine, per gram of CRT~~</td><td>~~35.0-540.0 microg/g CRT~~</td></tr>
<tr><td></td><td>Iodine, Urine - per 24h</td><td>16 years and older: 93.0-1125.0 microg/d</td></tr>
<tr><td></td><td>Iodine, Urine - per volume</td><td>16 years and older: 26.0-705.0 microg/L</td></tr>
<tr><td></td><td>Iodine, Urine - ratio to CRT</td><td>35.0-540.0 microg/g CRT</td></tr>
</table>

TEST CHANGE

Adenovirus by Qualitative PCR

2007473, ADENOPCR

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), pink (K2EDTA), serum separator tube, or urine. Also acceptable: Bronchoalveolar lavage (BAL), CSF, nasopharyngeal swab, sputum, or tissue.
Specimen Preparation:	Do not freeze whole blood specimens. Transfer 1 mL whole blood, serum, plasma, BAL, CSF, sputum, or urine to a sterile container. (Min: 0.5 mL) Swabs : Transfer to viral transport media (ARUP supply #12884). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787. Tissue: Transfer to a sterile container and freeze immediately.
Transport Temperature:	Whole blood: Refrigerated. All others: Frozen.
Unacceptable Conditions:	Heparinized specimens, tissues in optimal cutting temperature compound.
Remarks:	Specimen source required.
Stability:	Tissue: Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 3 months Urine: Ambient: 3 days; Refrigerated: 14 days; Frozen: 14 days. All others : Ambient: 24 hours; Refrigerated: 5 days; Frozen: 1 year
Methodology:	Qualitative Real-Time Polymerase Chain Reaction
Note:	
CPT Codes:	87798
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	

HOTLINE NOTE: There is a price change associated with this test. Please contact ARUP Client Services at (800) 522-2787 for additional information.

TEST CHANGE

Ehrlichia and *Anaplasma* Species by PCR

2007862, EHR ANAPCR

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA) or Pink (K2EDTA).
Specimen Preparation:	Transport 1 mL whole blood. (Min: 0.6 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Serum, plasma, and heparinized specimens.
Remarks:	
Stability:	Ambient: 24 hours; Refrigerated: 1 week; Frozen: 1 week
Methodology:	Qualitative Polymerase Chain Reaction (PCR)
Note:	This test detects and speciates *Anaplasma phagocytophilum; Ehrlichia chaffeensis*; *E. ewingii/E. canis; E. muris*-like. The nucleic acid detected from *E. ewingii* and *E. canis* cannot be differentiated by this test. A result of "Detected" for *E. ewingii/canis* indicates the presence of either of these two organisms in the specimen.
CPT Codes:	87468; 87484; 87798 x2
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

A negative result does not rule out the presence of PCR inhibitors in the patient specimen or test-specific nucleic acid in concentrations below the level of detection by this test.

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:

HOTLINE NOTE: There is a price change associated with this test. Please contact ARUP Client Services at (800) 522-2787 for additional information.

TEST CHANGE

Tick-Borne Disease Panel by PCR, Blood

2008670, TICKPCR

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA) or Pink (K2EDTA).
Specimen Preparation:	Transport 1 mL whole blood. (Min: 0.6 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Serum, plasma, and heparinized specimens.
Remarks:	
Stability:	Ambient: 24 hours; Refrigerated: 1 week; Frozen: 1 week
Methodology:	Qualitative Polymerase Chain Reaction (PCR)
Note:	
CPT Codes:	87468; 87484; 87798 x3; 87469
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Refer to individual components.

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:

Available Separately	Components	Reference Interval
Yes (2008665)	Babesia Species by PCR	Refer to report
Yes (2007862)	Ehrlichia and Anaplasma Species by PCR	Refer to report

HOTLINE NOTE: There is a price change associated with this test. Please contact ARUP Client Services at (800) 522-2787 for additional information.

TEST CHANGE

DOG1 by Immunohistochemistry

2010168, DOG1 IHC

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 cellblock). Protect paraffin block and/or slides from excessive heat.Transport tissue block or 5 unstained (4-micron thick sections), positively charged slides in a tissue transport kit (ARUP supply #47808 recommended but not required) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787. (Min: 3 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:	Specimens submitted with non-representative tissue type. Depleted specimens.
Remarks:	
Stability:	Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable
Methodology:	Immunohistochemistry
Note:	This test is performed as a stain and return (technical) service only.
CPT Codes:	88342
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:	

HOTLINE NOTE: There is a price change associated with this test. Please contact ARUP Client Services at (800) 522-2787 for additional information.

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

Effective Date: January 20, 2026

TEST CHANGE

Chlamydia trachomatis and *Neisseria gonorrhoeae* (CTNG) by Transcription-Mediated Amplification (TMA) with Reflex to CT/NG Confirmation

2011164, CTNG CONF

Specimen Requirements:	
Patient Preparation:	
Collect:	Vaginal, throat or rectal specimen collected with pink swab from Aptima MultiTest Swab Specimen Collection kit (ARUP supply #65761 single collection kit or #55224 pack of ~~PK/~~50 collection kits~~or #55229 PK/10~~) available online through eSupply using ARUP Connect({TM)} or contact ARUP Client Services at 800-522-2787. Also acceptable: First catch urine in sterile container then transferred to Aptima urine tube.~~.~~ Refer to "Sample Collection for the Diagnosis of STD" under Specimen Handling at www.aruplab.com for specific specimen collection and transport instructions.
Specimen Preparation:	Swab: Place swab in Swab Specimen Transport Tube, break shaft off at scoreline, then recap tube. Urine: Transfer 2 mL urine within 24 hours to Aptima Urine Specimen Transport Tube (ARUP supply #65760 single collection kit or #28908 pack of ~~PK/~~50 collection kits~~or #54556 PK/10~~) available online through eSupply using ARUP Connect({TM)} or contact ARUP Client Services at 800-522-2787. Liquid level must be between fill lines on tube.
Transport Temperature:	Refrigerated
Unacceptable Conditions:	Sample collected with large white cleaning swab from the Aptima Unisex collection kit. Specimens in any transport media other than indicated above. Specimens in swab transport media without a swab.
Remarks:	Specimen source is required.
Stability:	MultiTest Swab: Ambient: 2 months; Refrigerated: 2 months; Frozen: 2 months Aptima Urine Specimen Transport Tube: Ambient: 14 days~~1 month~~; Refrigerated: 1 month; Frozen: 1 month
Methodology:	Qualitative Transcription-Mediated Amplification (TMA)
Note:	If *Chlamydia trachomatis* and/or *Neisseria gonorrhoeae* by TMA is positive, then chlamydia and/or gonorrhea alternate target TMA will be added for confirmation. Additional charges apply.
CPT Codes:	87494; if~~87491; 87591. If~~ reflexed, add 87491~~; or~~ 87591

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

Interpretive Data:

This test is intended for medical purposes only. It is not intended for the evaluation of suspected sexual abuse or for other medicolegal indications. Refer to the most recent CDC recommendations for patients in whom a false-positive result may have adverse psychosocial impact.
Positive results will be confirmed with alternative nucleic acid target assay.

Reference Interval:

~~Negative~~

Deleted Cells

TEST CHANGE

Heavy Metals Panel 3, Random Urine with Reflex to Arsenic Fractionated

2011304, HYMETU RND

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, nonessential~~non-essential~~ over-the-counter medications (upon the advice of their physician), and avoid shellfish and seafood for 48 to 72 hours. High concentrations of iodine may interfere with elemental testing. Collection of urine specimens from patients receiving iodinated or gadolinium-based contrast media should be avoided for a minimum of 72 hours post-exposure. Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post-contrast media exposure.
Collect:	Random urine.
Specimen Preparation:	Transfer an 8 mL aliquot from a well-mixed collection to ARUP Trace Element-Free Transport Tubes (ARUP supply #43116), available online through eSupply using ARUP Connect(TM) or~~Connector~~ 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 72 hours after administration of iodinated or gadolinium-based contrast media. Acid-preserved urine. Specimens contaminated with blood or fecal material. Specimens transported in nontrace~~non-trace~~ element-free transport tube (with the exception of the original device).
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	If total arsenic concentration is found to be elevated based on reference intervals, then Arsenic, Fractionated, will be added to determine the proportion of organic, inorganic, and methylated forms. Additional charges apply.
CPT Codes:	82175; 83655; 83825; if reflexed, add 82175
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Urinary mercury concentrations~~Quantification of urine excretion rates before or after chelation therapy has been used as an indicator of lead exposure. Urinary excretion on >125 mg of lead per 24 hours is usually associated with related evidence of lead toxicity.~~

~~Urinary mercury levels~~ predominantly reflect acute or chronic elemental or inorganic mercury exposure. Urine concentrations in unexposed individuals are typically less than 10 ug/L. 24 hour urine concentrations of 30 to 100 ug/L may be associated with subclinical neuropsychiatric symptoms and tremors. Concentrations greater than 100 ug/L can be associated with overt neuropsychiatric disturbances and tremors. Urine mercury levels may be useful in monitoring chelation therapy.

The ACGIH Biological Exposure Index (BEI) for arsenic in urine is 35 ug/L measured at the end of the work week. The ACGIH BEI is based on the sum of inorganic and methylated species. For specimens with elevated total arsenic results, fractionation is automatically performed to determine the proportions of inorganic, methylated and organic species.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

Reference Interval:

Test Number	Components	Reference Interval
	Arsenic, Urine - per volume	Less than or equal to ~~0.0~~ 34.9 microg/L
	Arsenic, Urine - ratio to CRT	Less than or equal to ~~0.0~~ 29.9 microg/g CRT
	Lead, Urine - per volume	Less than or equal to ~~0.0~~ 5.0 microg/L
	Lead, Urine - ratio to CRT	Less than or equal to ~~0.0~~ 5.0 microg/g CRT
	Mercury, Urine - per volume	Less than or equal to ~~0.0~~ 5.0 microg/L
	Mercury, Urine - ratio to CRT	Less than or equal to ~~0.0~~ 20.0 microg/g CRT

TEST CHANGE

Arsenic, Random Urine with Reflex to Fractionated

2011478, U ARS RAND

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, nonessential over-the-counter medications (upon the advice of their physician), and avoid shellfish and seafood for 48 to 72 hours. High concentrations of iodine may interfere with elemental testing. Collection of urine specimens from patients receiving iodinated or gadolinium-based contrast media should be avoided for a minimum of 72 hours post-exposure. Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post contrast media exposure.
Collect:	Random urine.
Specimen Preparation:	Transfer an 8 mL aliquot from a well-mixed collection to ARUP Trace Element-Free Transport Tubes (ARUP supply #43116), available online through eSupply using ARUP Connect(TM) or~~Connector~~ contact ARUP Client Services at ~~(~~800-~~)~~ 522-2787. (Min: 2 mL)
Transport Temperature:	Refrigerated. Also acceptable: Room temperature or frozen.
Unacceptable Conditions:	Acid -preserved urine. Specimens collected within 72 hours after administration of iodinated or gadolinium-based contrast media.
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative High Performance Liquid Chromatography (HPLC) / Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	If total arsenic concentration is found to be elevated based on reference intervals, then Arsenic, Fractionated, will be added to determine the proportion of organic, inorganic, and methylated forms. Additional charges apply.
CPT Codes:	82175; if reflexed, add 82175
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

The ACGIH Biological Exposure Index (BEI) for arsenic in urine is 35 ug/L measured at the end of the work week. The ACGIH BEI is based on the sum of inorganic and methylated species. For specimens with elevated total arsenic results, fractionation is automatically performed to determine the proportions of inorganic, methylated and organic species.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

~~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, Urine - per volume	Less than or equal to ~~0.0~~ 34.9 microg/L
	Arsenic, Urine - ratio to CRT	Less than or equal to ~~0.0~~ 29.9 microg/g CRT

TEST CHANGE

Cadmium, Random Urine

2011479, U CAD RAND

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, and nonessential~~non-essential~~ over-the-counter medications (upon the advice of their physician). High concentrations of iodine may interfere with elemental testing. Abstinence from iodine-containing medications or contrast agents for at least 1 month prior to collecting specimens for elemental testing is recommended.
Collect:	Random urine.
Specimen Preparation:	Transfer an 8 mL aliquot to ARUP Trace Element-Free Transport Tubes (ARUP supply #43116), available online through eSupply using ARUP Connect(TM) or~~Connector~~ contact ARUP Client Services at ~~(~~800~~-)~~ 522-2787. (Min: 1 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.
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	
CPT Codes:	82300
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Urine cadmium concentrations~~levels~~ can be used to assess cadmium body burden. In chronic exposures, the kidneys are the primary target organ. Symptoms associated with cadmium toxicity vary based upon route of exposure and may include tubular proteinuria, fever, headache, dyspnea, chest pain, conjunctivitis, rhinitis, sore throat and cough. Ingestion of cadmium in high concentration may cause vomiting, diarrhea, salivation, cramps, and abdominal pain.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)

Reference Interval:

Test Number	Components	Reference Interval
	Cadmium, Urine - per volume	Less than or equal to 1.0 microg/L
	Cadmium, Urine - ratio to CRT	Less than or equal to 3.2 microg/g CRT

~~Effective November 13,2017~~

~~Test Number~~	~~Components~~	~~Reference Interval~~
	~~Cadmium Rnd Urn ratio/CRT nonoccupation~~	~~0.0-3.2 microg/gCRT~~
	~~Cadmium, Urine - per volume~~	~~0.0-1.0 microg/L~~

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

Copper, Random Urine

2011480, U COP RAND

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, and nonessential over-the-counter medications (upon the advice of their physician). Collection from patients receiving iodinated or gadolinium-based contrast media must be avoided for a minimum of 72 hours post exposure.~~postexposure.~~ Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post contrast~~postcontrast~~ media exposure.
Collect:	Random urine.
Specimen Preparation:	Transfer an 8 mL aliquot from a well-mixed collection to ARUP Trace Element-Free Transport Tubes (ARUP supply #43116), available online through eSupply using ARUP Connect(TM) or~~Connector~~ contact ARUP Client Services at 800-522-2787. (Min: 1 mL)
Transport Temperature:	Refrigerated. Also acceptable: Room temperature or frozen.
Unacceptable Conditions:	Specimens collected within 72 hours after administration of iodinated or gadolinium-based contrast media. Acid preserved urine. Specimens transported in containers other than specified. Specimens contaminated with blood or fecal material.
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	High concentrations of iodine or gadolinium may interfere with elemental testing.
CPT Codes:	82525
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Individuals with symptomatic Wilson disease usually excrete more than 100 ug copper per day. Other conditions associated with elevated urine copper include cholestatic liver disease, proteinuria, and some medications.~~,~~ and contaminated specimens.
Although random specimens may contain diagnostic information, a 24-hour collection is a more consistent indicator of urine copper.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is

suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)~~copper.~~

Reference Interval:

Effective February 16, 2021

Test Number	Components	Reference Interval
	Copper, Urine - per volume	Less than or equal to 3.2 microg/dL
	Copper, Urine - ratio to CRT	10.0-45.0 microg/g CRT

TEST CHANGE

Mercury, Random Urine

2011481, U MERCRAND

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, and nonessential~~non-essential~~ over-the-counter medications (upon the advice of their physician), and avoid shellfish and seafood for 48 to 72 hours. High concentrations of iodine may interfere with elemental testing. Collection of urine specimens from patients receiving iodinated or gadolinium-based contrast media should be avoided for a minimum of 72 hours post-exposure. Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post-contrast media exposure.
Collect:	Random urine.
Specimen Preparation:	Transfer an 8 mL aliquot from a well-mixed collection to ARUP Trace Element-Free Transport Tubes (ARUP supply #43116), available online through eSupply using ARUP Connect(TM) or~~Connector~~ contact ARUP Client Services at ~~(~~800-~~)~~ 522-2787. (Min: 1 mL).
Transport Temperature:	Refrigerated. Also acceptable: Room temperature or frozen.
Unacceptable Conditions:	Urine collected within 72 hours after administration of iodinated or gadolinium-based contrast media. Acid preserved urine. Specimens contaminated with blood or fecal material. Specimens transported in nontrace~~non-trace~~ element free transport tube (with the exception of the original device).
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	
CPT Codes:	83825
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Urine~~ary~~ mercury concentrations~~levels~~ predominantly reflect acute or chronic elemental or inorganic mercury exposure. Urine concentrations in unexposed individuals are typically less than 10 ug/L. 24-hour urine concentrations of 30 to 100 ug/L may be associated with subclinical neuropsychiatric symptoms and tremors. Concentrations greater than 100 ug/L can be associated with overt neuropsychiatric disturbances and tremors. Urine mercury levels may be useful in monitoring chelation therapy.

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

~~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 12,2018

Test Number	Components	Reference Interval
	Mercury, Urine - per volume	Less than or equal to ~~0.0~~ 5.0 microg/L
	Mercury, Urine - ratio to CRT	Less than or equal to ~~0.0~~ 20.0 microg/g CRT

TEST CHANGE

Lead, Random Urine

2011482, U LEADRAND

Specimen Requirements:	
Patient Preparation:	Diet, medication, and nutritional supplements may introduce interfering substances. Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals, and nonessential~~non-essential~~ over-the-counter medications (upon the advice of their physician). High concentrations of iodine may interfere with elemental testing. Collection of urine specimens from patients receiving iodinated or gadolinium-based contrast media should be avoided for a minimum of 72 hours post-exposure. Collection from patients with impaired kidney function should be avoided for a minimum of 14 days post-contrast media exposure.
Collect:	Random urine.
Specimen Preparation:	Transfer an 8 mL aliquot from a well-mixed collection to ARUP Trace Element-Free Transport Tubes (ARUP supply #43116), available online through eSupply using ARUP Connect(TM) or~~Connector~~ contact ARUP Client Services at ~~(~~800~~-~~) ~~522-2787. (Min: 1 mL)
Transport Temperature:	Refrigerated. Also acceptable: Room temperature or frozen.
Unacceptable Conditions:	Urine collected within 72 hours after administration of iodinated or gadolinium-based contrast media.
Remarks:	
Stability:	Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 year
Methodology:	Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)
Note:	
CPT Codes:	83655
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Elevated results may be due to skin or collection-related contamination, including the use of collection containers that are not certified to be trace element-free. If an elevated result is suspected to be due to contamination, confirmation with a second specimen collected in a certified trace element-free container is recommended.

Methodology: Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)~~Quantification of urine excretion rates before or after chelation therapy has been used as an indicator of lead exposure. Urinary excretion of >125 mg of lead per 24 hours is usually associated with related evidence of lead toxicity.~~

~~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 12,2018

Test Number	Components	Reference Interval
	Lead, Urine - per volume	Less than or equal to ~~0.0~~ 5.0 microg/L
	Lead, Urine - ratio to CRT	Less than or equal to ~~0.0~~ 5.0 microg/g CRT

TEST CHANGE

SSA 52 and 60 (Ro) (ENA) Antibodies, IgG

2012074, SSA RO

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube (SST).
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: 0.5~~2~~ mL)
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: 1 year (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Multiplex Bead Assay
Note:	
CPT Codes:	86235 x2
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

SSA-52 (Ro52) and/or SSA-60 (Ro60) antibodies are associated with a diagnosis of Sjogren syndrome, systemic lupus erythematosus (SLE), and systemic sclerosis. SSA-52 antibody overlaps significantly with the major SSc-related antibodies. SSA-52 (Ro52) antibody occurs frequently in patients with inflammatory myopathies, often in the presence of interstitial lung disease.

Component	Interpretation
SSA-52 (Ro52) (ENA) Antibody, IgG	29 AU/mL or ~~L~~less: Negative 30-40 AU/mL: Equivocal 41 AU/mL or greater: Positive
SSA-60 (Ro60) (ENA) Antibody, IgG	29 AU/mL or ~~L~~less: Negative 30-40 AU/mL: Equivocal 41 AU/mL or greater: Positive

Reference Interval:

Test Number	Components	Reference Interval
	SSA-52 (Ro52) (ENA) Antibody, IgG	40 AU/mL or less
	SSA-60 (Ro60) (ENA) Antibody, IgG	40 AU/mL or less

TEST CHANGE

Human Herpesvirus 8 (HHV-8) by Quantitative PCR

2013089, HHV8 QNT

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), Pink (K2 EDTA), or Serum Separator Tube (SST).
Specimen Preparation:	Separate serum or plasma from cells. Transport 1 mL plasma, serum, or whole blood in a sterile container. (Min: 0.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Heparinized specimens, tissues in optimal cutting temperature compound.
Remarks:	Specimen source required.
Stability:	Ambient: 24 hours; Refrigerated: 1 week; Frozen: 1 year
Methodology:	Quantitative Polymerase Chain Reaction (PCR)
Note:	The limit of quantification for this DNA test is 3.8 log copies/mL (6,670 copies/mL). If the test DID NOT DETECT the virus, the test result will be reported as "< 3.8 log copies/mL (< 6,670 copies/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."
CPT Codes:	87799
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

The quantitative range of this assay is 3.8-8.8 log copies/mL (6,670 - 667,000,000 copies/mL).

A negative result (less than 3.8 log copies/mL or less than 6,670 copies/mL) does not rule out the presence of PCR inhibitors in the patient specimen or HHV8 DNA concentrations below the level of detection of the test. Inhibition may also lead to underestimation of viral quantitation.

No international standard is currently available for calibration of this assay. Caution should be taken when interpreting results generated by different assay methodologies.

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:

Not detected

HOTLINE NOTE: There is a price change associated with this test. Please contact ARUP Client Services at (800) 522-2787 for additional information.

TEST CHANGE

Spinal Muscular Atrophy (SMA) Copy Number Analysis

2013436, SMA DD

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B)
Specimen Preparation:	Transport 2 mL whole blood. (Min: 1 mL)
Transport Temperature:	Refrigerated. Also acceptable: Ambient.
Unacceptable Conditions:	
Remarks:	
Stability:	Room Temperature: 1 week; Refrigerated: 1 month; Frozen: Unacceptable.
Methodology:	Multiplex Ligation-Dependent Probe Amplification (MLPA)
Note:	
CPT Codes:	81329
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 prompt change associated with this test. Refer to the Hotline Test Mix for interface build information.

TEST CHANGE

Fatty Acids Profile, Essential Serum or Plasma

2013518, FA PRO SP

Specimen Requirements:	
Patient Preparation:	Patient must fast overnight for 12-14 hours. Patient must not consume any alcohol for 24 hours prior to collection.
Collect:	Plasma: Green (sodium or lithium heparin) or Lavender (EDTA). Serum: Plain Red or Serum Separator Tube (SST).
Specimen Preparation:	Separate from cells ASAP or within 45 minutes of draw. Transfer 0.5 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.15 mL) Freeze immediately.
Transport Temperature:	Frozen.
Unacceptable Conditions:	Grossly hemolyzed, lipemic, or nonfasting specimens.
Remarks:	Patient age is required on the test request form. Include information regarding treatment, family history, and tentative diagnosis.
Stability:	Ambient: 48 hours; Refrigerated: 1 week; Frozen: 3 months
Methodology:	Gas Chromatography-Mass Spectrometry (GC-MS)
Note:	
CPT Codes:	82542
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

This test does not screen for disorders of peroxisomal biogenesis/function.

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:

By Report

HOTLINE NOTE: There is a price change associated with this test. Please contact ARUP Client Services at (800) 522-2787 for additional information.

TEST CHANGE

Candida Species by PCR

2013798, CANDPCR

Specimen Requirements:	
Patient Preparation:	
Collect:	Body fluid (peritoneal, pleural, ascites, abdominal, synovial, and abscess), ~~,~~ lavender (K2EDTA) or pink (K2EDTA).
Specimen Preparation:	Body Fluid: Transfer 1 mL body fluid to a sterile container. (Min: 0.5 mL). Whole Blood: Transfer 2 mL whole blood to a sterile container. (Min: 1 mL).
Transport Temperature:	Frozen
Unacceptable Conditions:	Plasma or serum, tissues.
Remarks:	Specimen source required.
Stability:	Body Fluid: Ambient: Unacceptable; Refrigerated: 2 weeks; Frozen: 2 weeks Whole Blood: Ambient: Unacceptable; Refrigerated; 1 week; Frozen: 1 week
Methodology:	Qualitative Polymerase Chain Reaction (PCR)
Note:	This test detects and differentiates *C. albicans, C. glabrata, C. parapsilosis* complex (*C. parapsilosis*, *C. orthopsilosis, C. metapsilosis), C. tropicalis*, *C. krusei,* and *C. dubliniensis.*
CPT Codes:	87481 x5
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

A negative result does not rule out the presence of PCR inhibitors in the patient specimen or test-specific nucleic acid in concentrations below the level of detection by the test.

~~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:

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

Effective Date: January 20, 2026

TEST CHANGE

BRAF V600E Mutation Detection in Circulating Cell-Free DNA by Digital Droplet PCR

2013921, BRAF CFDNA

Specimen Requirements:	
Patient Preparation:	
Collect:	Whole blood in two 10mL cell-freeCell-Free DNA (cfDNA) BCT tTubes. Specimens must be collected using the Kit, Cell-Free DNA Blood Collection Tube (ARUP Supply #52358) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800-) 522-2787.
Specimen Preparation:	Transport 20 mL whole blood in cfDNA BCT tTubes. (Min: 1 tube with 1016 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	FFPE tissue. Whole blood collected in non-cfDNA BCT tubes.
Remarks:	
Stability:	Ambient: 5 days; Refrigerated: 5 days; Frozen: Unacceptable
Methodology:	Polymerase Chain Reaction (PCR)
Note:	
CPT Codes:	81210
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:	
Refer to report.	

Deleted Cells

Deleted Cells

TEST CHANGE

Genetic Carrier Screen, (CF, FXS, and SMA) with Reflex to Methylation

3000258, CF FX SMA

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (K2EDTA). Also acceptable: Pink (K2EDTA).
Specimen Preparation:	Transport 5 mL whole blood. (Min: 3 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Plasma or serum. Specimens collected in sodium heparin, yellow (ACD solution A), or lithium heparin tubes. Frozen specimens in glass collection tubes.
Remarks:	
Stability:	Ambient: 72 hours; Refrigerated: 1 week; Frozen: unacceptable
Methodology:	Matrix-Assisted Laser Desorption Ionization-Time of Flight (MALDI-TOF) Mass Spectrometry / Polymerase Chain Reaction (PCR) / Capillary Electrophoresis / Multiplex Ligation-Dependent Probe Amplification (MLPA)
Note:	Fragile X: If a CGG repeat of 100 or greater is detected by PCR and capillary electrophoresis; methylation analysis will be added. Additional charges apply.
CPT Codes:	81220; 81329; 81243; if reflexed, add 81244
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report.	
Reference Interval:	
Refer to~~By~~ report	

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

TEST CHANGE

Smith and Smith/RNP (ENA) Antibodies, IgG

3000460, SMITH_RNP

Specimen Requirements:	
Patient Preparation:	
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.~~ (Min: 0.52 mL)
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: 1 month (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA) / Semi-Quantitative Multiplex Bead Assay
Note:	
CPT Codes:	86235 x2
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Components	Interpretation
Smith/RNP (ENA) Antibody, IgG	19 Units or less: Negative 20-39 Units: Weak Positive 40-80 Units: Moderate Positive 81 Units or greater: Strong Positive
Smith (ENA) Antibody, IgG	29 AU/mL or less: Negative 30-40 AU/mL: Equivocal 41 AU/mL or greater: Positive

Reference Interval:

Test Number	Components	Reference Interval
	Smith (ENA) Antibody, IgG	40 AU/mL or less
	Smith/RNP (ENA) Ab, IgG	19 Units or less

TEST CHANGE

Criteria Systemic Sclerosis Panel

3000479, SSC PANEL

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 to an ARUP standard transport tube. (Min: 1.5~~0.25~~ mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Contaminated, hemolyzed, or severely lipemic specimens.
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Indirect Fluorescent Antibody (IFA) / Semi-Quantitative Multiplex Bead Assay / Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)
Note:	
CPT Codes:	86039; 86235; 83516
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Component	Interpretation
Scleroderma (Scl-70) (ENA) Antibody, IgG	29 AU/mL or less: Negative 30-40 AU/mL: Equivocal 41 AU/mL or greater: Positive
RNA Polymerase III Antibody, IgG	19 Units or less: Negative 20-39 Units: Weak Positive 40-80 Units: Moderate Positive 81 Units or greater: Strong Positive

Reference Interval:

Test Number	Components	Reference Interval
	Antinuclear Antibody (ANA), HEp-2, IgG	Less than 1:80
	RNA Polymerase III Antibody, IgG	19 Units or less
	Scleroderma (Scl-70) (ENA) Antibody, IgG	40 AU/mL or less

TEST CHANGE

Mumps Virus by PCR

3000523, MPSPCR

Specimen Requirements:	
Patient Preparation:	Patient should not eat, drink, smoke or chew gum for 30 minutes before collecting oral sample.
Collect:	Buccal swab.
Specimen Preparation:	Transfer buccal swab to viral transport media (ARUP supply #12884) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787. (Min: 0.5 mL)
Transport Temperature:	Frozen.
Unacceptable Conditions:	Urine. Nasopharyngeal swab.
Remarks:	Specimen source required.
Stability:	Ambient: 48 hours; Refrigerated: 1 week; Frozen: 1 week
Methodology:	Qualitative Polymerase Chain Reaction
Note:	
CPT Codes:	87798
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:	

HOTLINE NOTE: There is a price change associated with this test. Please contact ARUP Client Services at (800) 522-2787 for additional information.

TEST CHANGE

Connective Tissue Disease First Line Panel with Reflex

3002463, CTD PAN

Specimen Requirements:	
Patient Preparation:	
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.~~ (Min: 0.5~~6~~ mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Specimen types other than those listed. Specimens containing fibrin clots. Contaminated, grossly hemolyzed, heat-inactivated, 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 Enzyme-Linked Immunosorbent Assay (ELISA) / Semi-Quantitative Indirect Fluorescent Antibody (IFA) / Semi-Quantitative Multiplex Bead Assay
Note:	If Double-Stranded DNA (dsDNA) Antibody, IgG by ELISA is detected, then Double-Stranded DNA (dsDNA) Antibody, IgG by IFA (using *Crithidia luciliae*) will be added. Additional charges apply.
CPT Codes:	86235 x7 and 86225; if reflexed, add 86256
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Refer to report.

Component	Interpretation
Double-Stranded DNA (dsDNA) Antibody, IgG by ELISA with Reflex to dsDNA Antibody, IgG by IFA	24 IU or less Negative 25-30 IU Borderline Positive 30-60 IU Low Positive 60-200 IU Positive 201 IU or greater Strong Positive
Smith/RNP (ENA) Antibody, IgG	19 Units or less Negative 20-39 Units Weak Positive 40-80 Units Moderate Positive 81 Units or greater Strong Positive
Smith (ENA) Antibody, IgG	29 AU/mL or less Negative 30-40

	AU/mL Equivocal 41 AU/mL or greater Positive
SSA-52 (Ro52) (ENA) Antibody, IgG	29 AU/mL or ~~L~~less: Negative 30-40 AU/mL: Equivocal 41 AU/mL or greater: Positive
SSA-60 (Ro60) (ENA) Antibody, IgG	29 AU/mL or ~~L~~less: Negative 30-40 AU/mL: Equivocal 41 AU/mL or greater: Positive
SSB (La) (ENA) Antibody, IgG	29 AU/mL or less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive
Jo-1 Antibody, IgG	29 AU/mL or less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive
Scleroderma (Scl-70) (ENA) Antibody, IgG	29 AU/mL or less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive

Reference Interval:

Test Number	Components	Reference Interval
	Double-Stranded DNA (dsDNA) Ab IgG ELISA	24 IUs or less
	Jo-1 (Histidyl-tRNA Synthetase) Ab, IgG	40 AU/mL or less
	Scleroderma (Scl-70) (ENA) Antibody, IgG	40 AU/mL or less
	Smith (ENA) Antibody, IgG	40 AU/mL or less
	Smith/RNP (ENA) Ab, IgG	19 Units or less
	SSA-52 (Ro52) (ENA) Antibody, IgG	40 AU/mL or less
	SSA-60 (Ro60) (ENA) Antibody, IgG	40 AU/mL or less
	SSB (La) (ENA) Antibody, IgG	40 AU/mL or less

TEST CHANGE

Vaginitis Panel by TMA

3002581, VPAN TMA

Specimen Requirements:	
Patient Preparation:	Patient must be 14 years of age or older.
Collect:	Vaginal specimen collected with pink swab from Aptima MultiTest Swab Collection kit (ARUP supply #65761 single collection kit ~~#55224 PK/50~~ or #55224 pack of 50 collection kits~~55229 PK/10~~) available online through eSupply using ARUP Connect(TM) or contact Client Services at ~~(~~800~~-)~~ 522-2787.
Specimen Preparation:	Place swab in MultiTest Swab Specimen Transport Tube, break shaft at scoreline, then recap tube.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Specimens in any transport media other than indicated above. Specimen in MultiTest swab transport media without a swab.
Remarks:	
Stability:	Ambient: 30 days; Refrigerated: 30 days; Frozen: 90 days
Methodology:	Qualitative Transcription-Mediated Amplification (TMA)
Note:	
CPT Codes:	81513; 87481 x2; 87661
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
See report	

Reference Interval:

Test Number	Components	Reference Interval
	Bacterial Vaginosis by TMA	Negative
		~~Negative~~
	Candida glabrata by TMA	Negative
		~~Negative~~
	Candida species (other) by TMA	Negative
		~~Negative~~
	Trichomonas vaginalis by TMA	Negative
		~~Negative~~

TEST CHANGE

Bacterial Vaginosis by TMA

3002582, BV TMA

Specimen Requirements:	
Patient Preparation:	Patient must be 14 years of age or older.
Collect:	Vaginal specimen collected with pink swab from Aptima MultiTest Swab Collection kit (ARUP supply #65761 single collection kit ~~55224 PK/50~~ or #55224 pack of 50 collection kits~~55229 PK/10~~) available online through eSupply using ARUP Connect(TM) or contact Client Services at ~~(~~800~~-)~~ 522-2787.
Specimen Preparation:	Place swab in MultiTest Swab Specimen Transport Tube, break shaft at scoreline then recap tube.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Specimens in any transport media other than indicated above. Specimen in MultiTest swab transport media without a swab.
Remarks:	
Stability:	Ambient: 30 days; Refrigerated: 30 days; Frozen: 90 days
Methodology:	Qualitative Transcription-Mediated Amplification (TMA)
Note:	
CPT Codes:	81513
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

A negative result does not preclude a possible infection.

A single qualitative result is determined based on relative amounts of the following target organisms: *Lactobacillus* (*L. gasseri, L. crispatus*, and *L. jensenii*), *Gardnerella vaginalis*, and *Atopobium vaginae*. This assay does not report individual organisms.

Results should be interpreted in conjunction with other clinical data. This test has not been validated for use with specimens collected by patients at home.

This test is intended for medical purposes only and is not valid for the evaluation of suspected sexual abuse or for other forensic purposes.

Reference Interval:

Test Number	Components	Reference Interval
	Bacterial Vaginosis by TMA	Negative
		~~Negative~~

TEST CHANGE

Candida glabrata, Candida species, and Trichomonas vaginalis by TMA

3002583, CVTV TMA

Specimen Requirements:	
Patient Preparation:	Patient must be 14 years of age or older.
Collect:	Vaginal specimen collected with pink swab from Aptima MultiTest Swab Collection kit (ARUP supply #65761 single collection kit ~~55224 PK/50~~ or #55224 pack of 50 collection kits~~55229 PK/10~~) available online through eSupply using ARUP Connect(TM) or contact Client Services at ~~(~~800~~-)~~ 522-2787.
Specimen Preparation:	Place swab in MultiTest Swab Specimen Transport Tube, break shaft at scoreline then recap tube.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Specimens in any transport media other than indicated above. Specimen in MultiTest swab transport media without a swab.
Remarks:	
Stability:	Ambient: 30 days; Refrigerated: 30 days; Frozen: 90 days
Methodology:	Qualitative Transcription-Mediated Amplification (TMA)
Note:	
CPT Codes:	87481 x2; 87661
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

A negative result does not preclude a possible infection.

This test detects *Trichomonas vaginalis*, *Candida glabrata*, and other *Candida* species (*C. albicans*, *C. parapsilosis*, *C. dubliniensis*, and *C. tropicalis*). The assay does not differentiate among organisms in the *Candida* species group.

Results should be interpreted in conjunction with other clinical data. This test has not been validated for use with specimens collected by patients at home.

This test is intended for medical purposes only and is not valid for the evaluation of suspected sexual abuse or for other forensic purposes.

Reference Interval:

Test Number	Components	Reference Interval
	Candida glabrata by TMA	Negative
		~~Negative~~
	Candida species (other) by TMA	Negative
		~~Negative~~
	Trichomonas vaginalis by TMA	Negative
		~~Negative~~

TEST CHANGE

Chimerism, Posttransplant, Sorted Cells (T Cells)

3005393, STRPOST-T

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B). OR bone marrow in lavender (EDTA).
Specimen Preparation:	Transport 2 mL whole blood. (Min: 2 mL) OR 1 mL bone marrow (Min: 1 mL). Ship overnight. If cell sorting is required, specimens should be received within 24 hours of collection for optimal isolation of the requested cell line(s).
Transport Temperature:	Refrigerated. Also acceptable: Ambient.
Unacceptable Conditions:	Clotted or hemolyzed specimens.
Remarks:	Posttransplant genotypes will be compared to pretransplant recipient and donor genotypes. Therefore, donor and recipient specimens must be obtained and genotyped before the transplant event occurs. Please provide the results and date of the patient's most recent WBC and differential counts. When submitting bone marrow specimens for cell sorting, please provide information regarding the general cellularity of the patient's bone marrow. See Cell Isolation Request for Chimerism, Posttransplant, Sorted Cells.
Stability:	Ambient: 72 hours; Refrigerated: 72 hours; Frozen: Unacceptable
Methodology:	Polymerase Chain Reaction (PCR) / Fragment Analysis / Immunomagnetic Cell Separation
Note:	Type Donor: Donor cells only. Type Recipient: Recipient cells only. Mixed: Donor and recipient cells present. Semiquantitative results of percentage of donor and recipient cells will be reported.
CPT Codes:	81268
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Background Information: Chimerism, Posttransplant, Sorted Cells (T Cells)
Indication: Monitoring for bone marrow transplant patients; correlation with clinical status and consideration of the interval between bone marrow transplantation and testing is necessary for proper interpretation of results.
Methodology: PCR followed by capillary electrophoresis. Specimens are analyzed using 15 autosomal markers (D8S1179, D21S11, D7S820, CSF1PO, D3S1358, THO1, D13S317, D16S539, D2S1338, D19S433, vWa, TPOX, D18S51, D5S818, and FGA) and one gender marker (amelogenin).
Limit of Detection: 2 percent of minor cell population.

Limitations: Diagnostic errors can occur due to rare sequence variations.

Reference Interval:

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

TEST CHANGE

Chimerism, Posttransplant, Sorted Cells (B Cells)

3005401, STRPOST-B

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B). OR bone marrow in lavender (EDTA).
Specimen Preparation:	Transport 2 mL whole blood. (Min: 2 mL) OR 1 mL bone marrow (Min: 1 mL). Ship overnight. If cell sorting is required, specimens should be received within 24 hours of collection for optimal isolation of the requested cell line(s).
Transport Temperature:	Refrigerated. Also acceptable: Ambient.
Unacceptable Conditions:	Clotted or hemolyzed specimens.
Remarks:	Posttransplant genotypes will be compared to pretransplant recipient and donor genotypes. Therefore, donor and recipient specimens must be obtained and genotyped before the transplant event occurs. Please provide the results and date of the patient's most recent WBC and differential counts. When submitting bone marrow specimens for cell sorting, please provide information regarding the general cellularity of the patient's bone marrow. See Cell Isolation Request for Chimerism, Posttransplant, Sorted Cells.
Stability:	Ambient: 72 hours; Refrigerated: 72 hours; Frozen: Unacceptable
Methodology:	Qualitative Polymerase Chain Reaction (PCR) / Qualitative Fragment Analysis / Qualitative Immunomagnetic Cell Separation
Note:	Type Donor: Donor cells only. Type Recipient: Recipient cells only. Mixed: Donor and recipient cells present. Semiquantitative results of percentage of donor and recipient cells will be reported.
CPT Codes:	81268
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Background Information: Chimerism, Posttransplant, Sorted Cells (B Cells)
Indication: Monitoring for bone marrow transplant patients; correlation with clinical status and consideration of the interval between bone marrow transplantation and testing is necessary for proper interpretation of results.
Methodology: PCR followed by capillary electrophoresis. Specimens are analyzed using 15 autosomal markers (D8S1179, D21S11, D7S820, CSF1PO, D3S1358, THO1, D13S317, D16S539, D2S1338, D19S433, vWa, TPOX, D18S51, D5S818, and FGA) and one gender marker (amelogenin).

Limit of Detection: 2 percent of minor cell population.
Limitations: Diagnostic errors can occur due to rare sequence variations.

Reference Interval:

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

TEST CHANGE

Chimerism, Posttransplant, Sorted Cells (CD33+ Cells)

3005409, STRPOST-33

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B). OR bone marrow in lavender (EDTA).
Specimen Preparation:	Transport 2 mL whole blood. (Min: 2 mL) OR 1 mL bone marrow (Min: 1 mL). Ship overnight. If cell sorting is required, specimens should be received within 24 hours of collection for optimal isolation of the requested cell line(s).
Transport Temperature:	Refrigerated. Also acceptable: Ambient.
Unacceptable Conditions:	Clotted or hemolyzed specimens.
Remarks:	Posttransplant genotypes will be compared to pretransplant recipient and donor genotypes. Therefore, donor and recipient specimens must be obtained and genotyped before the transplant event occurs. Please provide the results and date of the patient's most recent WBC and differential counts. When submitting bone marrow specimens for cell sorting, please provide information regarding the general cellularity of the patient's bone marrow. See Cell Isolation Request for Chimerism, Posttransplant, Sorted Cells.
Stability:	Ambient: 72 hours; Refrigerated: 72 hours; Frozen: Unacceptable
Methodology:	Polymerase Chain Reaction (PCR) / Fragment Analysis / Immunomagnetic Cell Separation
Note:	Type Donor: Donor cells only. Type Recipient: Recipient cells only. Mixed: Donor and recipient cells present. Semiquantitative results of percentage of donor and recipient cells will be reported.
CPT Codes:	81268
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Background Information: Chimerism, Posttransplant, Sorted Cells (CD33+ Cells)
Indication: Monitoring for bone marrow transplant patients; correlation with clinical status and consideration of the interval between bone marrow transplantation and testing is necessary for proper interpretation of results.
Methodology: PCR followed by capillary electrophoresis. Specimens are analyzed using 15 autosomal markers (D8S1179, D21S11, D7S820, CSF1PO, D3S1358, THO1, D13S317, D16S539, D2S1338, D19S433, vWa, TPOX, D18S51, D5S818, and FGA) and one gender marker (amelogenin).
Limit of Detection: 2 percent of minor cell population.

Limitations: Diagnostic errors can occur due to rare sequence variations.

Reference Interval:

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

TEST CHANGE

Chimerism, Posttransplant, Sorted Cells (Granulocytes)

3005417, STRPOST-GR

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B). OR bone marrow in lavender (EDTA).
Specimen Preparation:	Transport 2 mL whole blood. (Min: 2 mL) OR 1 mL bone marrow (Min: 1 mL). Ship overnight. If cell sorting is required, specimens should be received within 24 hours of collection for optimal isolation of the requested cell line(s).
Transport Temperature:	Refrigerated. Also acceptable: Ambient.
Unacceptable Conditions:	Clotted or hemolyzed specimens.
Remarks:	Posttransplant genotypes will be compared to pretransplant recipient and donor genotypes. Therefore, donor and recipient specimens must be obtained and genotyped before the transplant event occurs. Please provide the results and date of the patient's most recent WBC and differential counts. When submitting bone marrow specimens for cell sorting, please provide information regarding the general cellularity of the patient's bone marrow. See Cell Isolation Request for Chimerism, Posttransplant, Sorted Cells.
Stability:	Ambient: 72 hours; Refrigerated: 72 hours; Frozen: Unacceptable
Methodology:	Polymerase Chain Reaction (PCR) / Fragment Analysis / Immunomagnetic Cell Separation
Note:	Type Donor: Donor cells only. Type Recipient: Recipient cells only. Mixed: Donor and recipient cells present. Semiquantitative results of percentage of donor and recipient cells will be reported.
CPT Codes:	81268
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Background Information: Chimerism, Posttransplant, Sorted Cells (Granulocytes)
Indication: Monitoring for bone marrow transplant patients; correlation with clinical status and consideration of the interval between bone marrow transplantation and testing is necessary for proper interpretation of results.
Methodology: PCR followed by capillary electrophoresis. Specimens are analyzed using 15 autosomal markers (D8S1179, D21S11, D7S820, CSF1PO, D3S1358, THO1, D13S317, D16S539, D2S1338, D19S433, vWa, TPOX, D18S51, D5S818, and FGA) and one gender marker (amelogenin).
Limit of Detection: 2 percent of minor cell population.

Limitations: Diagnostic errors can occur due to rare sequence variations.

Reference Interval:

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

TEST CHANGE

Chimerism, Posttransplant, Sorted Cells (CD34+ Cells)

3005433, STRPOST-34

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B). OR bone marrow in lavender (EDTA).
Specimen Preparation:	Transport 2 mL whole blood. (Min: 2 mL) OR 1 mL bone marrow (Min: 1 mL). Ship overnight. If cell sorting is required, specimens should be received within 24 hours of collection for optimal isolation of the requested cell line(s).
Transport Temperature:	Refrigerated. Also acceptable: Ambient.
Unacceptable Conditions:	Clotted or hemolyzed specimens.
Remarks:	Posttransplant genotypes will be compared to pretransplant recipient and donor genotypes. Therefore, donor and recipient specimens must be obtained and genotyped before the transplant event occurs. Please provide the results and date of the patient's most recent WBC and differential counts. When submitting bone marrow specimens for cell sorting, please provide information regarding the general cellularity of the patient's bone marrow. See Cell Isolation Request for Chimerism, Posttransplant, Sorted Cells.
Stability:	Room temperature: 72 hours; Refrigerated: 72 hours; Frozen: Unacceptable
Methodology:	Polymerase Chain Reaction (PCR) / Fragment Analysis / Fluorescence-Activated Cell Sorting (FACS)
Note:	Type Donor: Donor cells only. Type Recipient: Recipient cells only. Mixed: Donor and recipient cells present. Semiquantitative results of percentage of donor and recipient cells will be reported.
CPT Codes:	81268
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Background Information: Chimerism, Posttransplant, Sorted Cells (CD34+ Cells)
Indication: Monitoring for bone marrow transplant patients; correlation with clinical status and consideration of the interval between bone marrow transplantation and testing is necessary for proper interpretation of results.
Methodology: PCR followed by capillary electrophoresis. Specimens are analyzed using 15 autosomal markers (D8S1179, D21S11, D7S820, CSF1PO, D3S1358, THO1, D13S317, D16S539, D2S1338, D19S433, vWa, TPOX, D18S51, D5S818, and FGA) and one gender marker (amelogenin).
Limit of Detection: 2 percent of minor cell population.

Limitations: Diagnostic errors can occur due to rare sequence variations.

Reference Interval:

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

TEST CHANGE

Chimerism, Posttransplant, Sorted Cells (CD 56+ Cells)

3005441, STRPOST-56

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B). OR bone marrow in lavender (EDTA).
Specimen Preparation:	Transport 2 mL whole blood. (Min: 2 mL) OR 1 mL bone marrow (Min: 1 mL). Ship overnight. If cell sorting is required, specimens should be received within 24 hours of collection for optimal isolation of the requested cell line(s).
Transport Temperature:	Refrigerated. Also acceptable: Ambient.
Unacceptable Conditions:	Clotted or hemolyzed specimens.
Remarks:	Posttransplant genotypes will be compared to pretransplant recipient and donor genotypes. Therefore, donor and recipient specimens must be obtained and genotyped before the transplant event occurs. Please provide the results and date of the patient's most recent WBC and differential counts. When submitting bone marrow specimens for cell sorting, please provide information regarding the general cellularity of the patient's bone marrow. See Cell Isolation Request for Chimerism, Posttransplant, Sorted Cells.
Stability:	Room temperature: 72 hours; Refrigerated: 72 hours; Frozen: Unacceptable
Methodology:	Polymerase Chain Reaction (PCR) / Fragment Analysis / Fluorescence-Activated Cell Sorting (FACS)
Note:	Type Donor: Donor cells only. Type Recipient: Recipient cells only. Mixed: Donor and recipient cells present. Semiquantitative results of percentage of donor and recipient cells will be reported.
CPT Codes:	81268
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Background Information: Chimerism, Posttransplant, Sorted Cells (CD56+ Cells)
Indication: Monitoring for bone marrow transplant patients; correlation with clinical status and consideration of the interval between bone marrow transplantation and testing is necessary for proper interpretation of results.
Methodology: PCR followed by capillary electrophoresis. Specimens are analyzed using 15 autosomal markers (D8S1179, D21S11, D7S820, CSF1PO, D3S1358, THO1, D13S317, D16S539, D2S1338, D19S433, vWa, TPOX, D18S51, D5S818, and FGA) and one gender marker (amelogenin).
Limit of Detection: 2 percent of minor cell population.

Limitations: Diagnostic errors can occur due to rare sequence variations.

Reference Interval:

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

TEST CHANGE

Chimerism, Recipient, Pretransplant

3005449, STR_PRE

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B). OR bone marrow in lavender (EDTA). OR buccal brushes from recipient (Chimerism Recipient Pretransplant Collection Brush Kit (ARUP Supply #64627)).
Specimen Preparation:	Transport 2 mL whole blood (Min: 1 mL), OR 1 mL bone marrow (Min: 1 mL), OR 2 buccal brushes in a sterile, dry tube. (Min: 2 brushes)
Transport Temperature:	Refrigerated. Also acceptable: Ambient.
Unacceptable Conditions:	
Remarks:	Posttransplant results will be compared to pretransplant recipient and donor genotypes, therefore, donor and recipient specimens must be obtained and genotyped before the transplant event occurs. If transplant event occurred prior to specimen collection, dry buccal brushes (not bloody) are acceptable.
Stability:	Room temperature: 1 week; Refrigerated: 1 month; Frozen: Unacceptable
Methodology:	Polymerase Chain Reaction (PCR) / Fragment Analysis
Note:	
CPT Codes:	81265
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report.	
Reference Interval:	

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

TEST CHANGE

Chimerism, Posttransplant

3005454, STR_POST

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B). OR bone marrow in lavender (EDTA).
Specimen Preparation:	Transport 2 mL whole blood (Min: 1 mL) OR 1 mL bone marrow (Min: 1 mL).
Transport Temperature:	Refrigerated. Also acceptable: Ambient.
Unacceptable Conditions:	
Remarks:	Posttransplant results will be compared to pretransplant recipient and donor genotypes, therefore, donor and recipient specimens must be obtained and genotyped before the transplant event occurs. If cell sorting is required, refer to: Chimerism, Posttransplant, Sorted Cells (T Cells) (3005393) or Chimerism, Posttransplant, Sorted Cells (B Cells) (3005401) or Chimerism, Posttransplant, Sorted Cells (CD33+ Cells) (3005409) or Chimerism, Posttransplant, Sorted Cells (Granulocytes) (3005417) or Chimerism, Posttransplant, Sorted Cells (Monocytes) (3005425) or Chimerism, Posttransplant, Sorted Cells (CD34+ Cells) (3005433) or Chimerism, Posttransplant, Sorted Cells (56+ Cells) (3005441)
Stability:	Room temperature: 1 week; Refrigerated: 1 month; Frozen: Unacceptable
Methodology:	Polymerase Chain Reaction (PCR) / Fragment Analysis
Note:	Type Donor: Donor cells only. Type Recipient: Recipient cells only. Mixed: Donor and recipient cells present. Semiquantitative results of percentage of donor and recipient cells will be reported.
CPT Codes:	81267
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report	
Reference Interval:	

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

TEST CHANGE

Chimerism, Donor

3005462, STR_DONOR

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B) OR bone marrow in lavender (EDTA) OR buccal brushes from donor.
Specimen Preparation:	Transport 2 mL whole blood (Min: 1 mL) OR 1 mL bone marrow (Min: 1 mL) OR 2 buccal brushes in a sterile, dry tube. (Min: 2 brushes)
Transport Temperature:	Refrigerated. Also acceptable: Ambient.
Unacceptable Conditions:	
Remarks:	Posttransplant results will be compared to pretransplant recipient and donor genotypes, therefore, donor and recipient samples must be obtained and genotyped before the transplant event occurs.
Stability:	Room temperature: 1 week; Refrigerated: 1 month; Frozen: Unacceptable
Methodology:	Polymerase Chain Reaction (PCR) / Fragment Analysis
Note:	
CPT Codes:	See CPT codes under Chimerism, Recipient, Pretransplant (3005449)
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Background Information: Chimerism, Donor
Indication: Monitoring for bone marrow transplant patients; interval between bone marrow transplantation and testing is necessary for proper interpretation of results.
Methodology: PCR followed by capillary electrophoresis. Specimens are analyzed using 15 autosomal markers (D8S1179, D21S11, D7S820, CSF1PO, D3S1358, THO1, D13S317, D16S539, D2S1338, D19S433, vWa, TPOX, D18S51, D5S818 and FGA) and one gender marker (amelogenin).
Limitations: Diagnostic errors can occur due to rare sequence variations.

Reference Interval:

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

TEST CHANGE

Chimerism, Additional Donor

3005468, STR AD DON

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B). OR Bone marrow in lavender (EDTA). OR Buccal brushes from donor.
Specimen Preparation:	Transport 2 mL whole blood. (Min: 1 mL). OR Transport 1 mL bone marrow. (Min: 1 mL). OR Transport 2 buccal brushes in a sterile, dry tube. (Min: 2 brushes)
Transport Temperature:	Refrigerated. Also acceptable: Ambient.
Unacceptable Conditions:	
Remarks:	Posttransplant results will be compared to pretransplant recipient and donor genotypes, therefore, donor and recipient samples must be obtained and genotyped before the transplant event occurs.
Stability:	Room Temperature: 1 week; Refrigerated: 1 month; Frozen: Unacceptable
Methodology:	Polymerase Chain Reaction (PCR) / Fragment Analysis
Note:	
CPT Codes:	81266
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

Background Information: Chimerism, Additional Donor
Indication: Monitoring for bone marrow transplant patients; interval between bone marrow transplantation and testing is necessary for proper interpretation of results.
Methodology: PCR followed by capillary electrophoresis. Specimens are analyzed using 15 autosomal markers (D8S1179, D21S11, D7S820, CSF1PO, D3S1358, THO1, D13S317, D16S539, D2S1338, D19S433, vWa, TPOX, D18S51, D5S818 and FGA) and one gender marker (amelogenin).
Limitations: Diagnostic errors can occur due to rare sequence variations.

Reference Interval:

HOTLINE NOTE: There is a prompt change associated with this test. 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; please release test order to ARUP upon order. 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 Exome/Genome Reanalysis (REQUIRED): fax to Genetic Counselors at 801-584-5236.
Stability:	
Methodology:	Bioinformatic Processing and Variant Analysis
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 of secondary findings~~ACMG variants~~ was originally provided. Please see the Exome/Genome Reanalysis Patient History form for a description of variant types reported at reanalysis.
CPT Codes:	814217
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

BK Virus by Quantitative NAAT, Urine

3006075, BKQ U

Specimen Requirements:	
Patient Preparation:	
Collect:	Urine.
Specimen Preparation:	Immediately transfer urine to a cobas(R) PCR Urine Sample Tube~~urine sample tube~~ (ARUP supply #65762 single collection kit or #58056 pack of ~~PK/~~100 cobas PCR urine kits~~or #58084 PK/10~~) available online through eSupply using ARUP Connect(TM) or contact Client Services at 800-522-2787. Liquid level must be between the black fill lines on the tube.
Transport Temperature:	Refrigerated
Unacceptable Conditions:	Under- or over-filled tubes. Specimens in any transport media other than indicated above. Neat urine. Plasma (refer to BK Virus by Quantitative NAAT, Plasma, ARUP test code 3006076).
Remarks:	
Stability:	Urine in media: Ambient: 90 days; Refrigerated: 90 days; Frozen: Unacceptable.
Methodology:	Quantitative Polymerase Chain Reaction (PCR)
Note:	The limit of quantification for this assay is 2.30 log IU/mL (200 IU/mL). If the assay DETECTED the presence of the virus but was not able to accurately quantify the viral load, the test result will be reported as "Not Quantified, Detected."~~.~~
CPT Codes:	87799
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

The quantitative range of this assay is 2.30-8.00 log IU/mL (200-100,000,000 IU/mL).

An interpretation of "Not Detected" does not rule out the presence of inhibitors or BKV DNA concentration below the level of detection of the assay. Care should be taken in the interpretation of any single viral load determination.

International standardization has improved comparability of assay results across laboratories, but discrepancies still exist due to commutability issues with the standard.

Reference Interval:

Test Number	Components	Reference Interval
	BK Qnt by NAAT, Urine Interp	Not detected

~~Not detected~~

TEST CHANGE

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: 30 days~~4 months~~ (avoid repeated freeze/thaw cycles)
Methodology:	Qualitative Enzyme Immunoassay (EIA) / Quantitative Polymerase Chain Reaction (PCR)
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 87523
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

TEST CHANGE

Prolonged Clot Time Reflexive Profile

3006383, CLOT RFLX

Specimen Requirements:	
Patient Preparation:	N/A
Collect:	At least five light blue (sodium citrate) tubes. Refer to Specimen Handling at aruplab.com for hemostasis/thrombosis specimen handling guidelines.
Specimen Preparation:	Transfer five 1 mL aliquots of platelet-poor plasma to five ARUP standard transport tubes and label as sodium citrate. (Min: 1 mL/aliquot and 5 mL total)
Transport Temperature:	CRITICAL FROZEN. Separate specimens must be submitted when additional tests codes are ordered.
Unacceptable Conditions:	Anything other than sodium citrated plasma. Specimens containing anticoagulant medications. Clotted or hemolyzed specimens.
Remarks:	Submit the Patient History form for the Prolonged Clot Time Reflexive Profile.
Stability:	Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen at -20C: 2 weeks
Methodology:	Electromagnetic Mechanical Clot Detection / Immunoturbidimetry / Microlatex Particle-Mediated Immunoassay / Chromogenic Assay / Platelet Agglutination ~~/ Chromogenic Assay~~
Note:	Submission of a completed Patient History form with test order will allow for optimal panel interpretation. The Patient History form for the Prolonged Clot Time Reflexive Profile is available on the ARUP web site or by contacting ARUP Client Services at 800-522-2787. Initial testing will include D-Dimer (0030057), Fibrinogen (0030130), and Lupus Anticoagulant Reflex Panel (3017009). Depending on these initial findings, a pathologist will order one or more reflexive tests to provide a comprehensive interpretation. Additional testing may include Factor II, Activity (Prothrombin) (0030007); Factor V, Activity (0030075); Factor VII Activity (0030080), Factor VIII Activity (0030095), Chromogenic Factor VIII, Activity (3002343); Factor VIII Activity with Reflex to Bethesda Quantitative, Factor VIII (0030026); Factor IX, Activity (0030100); Factor IX Activity with Reflex to Bethesda Quantitative, Factor IX (0030032); Factor X, Activity (0030105); Factor XI, Activity (0030110); Factor XII, Activity (0030115); von Willebrand Factor Activity (Ristocetin Cofactor) (0030250); von Willebrand Factor (VWF) GPIbM Activity

	(3019671); von Willebrand Factor Antigen (0030285); Fibrinogen Antigen (0030135); Inhibitor Assay, PT with Reflex to PT 1:1 Mix (2003260); and Inhibitor Assay, PTT with Reflex to PTT 1:1 Mix, with Reflex to 1-Hour Incubation (2003266). Additional charges apply.
CPT Codes:	85390-26; additional CPT codes may apply: 85210; 85220; 85230; 85240; 85245; 85246; 85250; 85260; 85270; 85280; 85335; 85379; 85384; 85385; 85397; 85520; 85525; 85598; 85610; 85611; 85613; 85670; 85730; 85732.
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Refer to report.	
Reference Interval:	
Refer to individual components.	

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

NEW TEST – Available Now

Click for Pricing

Somatic *TP53* Mutations in Formalin-Fixed, Paraffin-Embedded (FFPE) Tissue

3017688, TP53 FFPE

Specimen Requirements:	
Patient Preparation:	
Collect:	Tumor tissue. New York State Clients: Paraffin-embedded tissue.
Specimen Preparation:	Formalin-fixed (10 percent neutral buffered formalin) and paraffin-embedded tissue. Diff-Quik- and Papanicolaou-stained cytology smears are also acceptable. Number of slides needed for testing is dependent on the tumor cellularity of the smear. Slide(s) will be destroyed during testing process and will not be returned to client. Protect from excessive heat. Transport block and/or slides in a tissue transport kit (ARUP supply #47808) available online through eSupply using ARUP Connectὐ or contact ARUP Client Services at 800-522-2787. Resections: Transport 8 unstained 5-micron slides. (Min: 5 slides) Small Biopsies: Transport 15 unstained 5-micron slides. (Min: 10 slides) New York State Clients: Submit 7-10 unstained slides cut at 10 microns thick.
Transport Temperature:	Room temperature. Also acceptable: Refrigerated. Ship in cooled container during summer months. New York State Clients: Refrigerated. Also acceptable: Room temperature.
Unacceptable Conditions:	Less than 10 percent tumor. Specimens fixed in any fixative other than 10 percent neutral buffered formalin. Decalcified specimens processed in a non-EDTA decalcifier. FNA smears with less than 50 tumor cells.
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 Massively Parallel Sequencing
Note:	Gene Tested: *TP53* (NM_000546.5) exons 2-11
CPT Codes:	81351, 81352
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 – Available Now

Click for Pricing

Somatic *TP53* Mutations in Whole Blood and Bone Marrow

3017691, TP53 WBBM

Specimen Requirements:	
Patient Preparation:	
Collect:	Lavender (EDTA), green (sodium heparin), bone marrow (EDTA), or bone marrow (sodium heparin). New York State Clients: Lavender (EDTA) or pink (K2EDTA)
Specimen Preparation:	Transport 3 mL whole blood or bone marrow. (Min: 1.5 mL for whole blood, 1.0 mL for bone marrow) Separate specimens must be submitted when multiple tests are ordered. New York State Clients: Transport 6 mL whole blood (Min: 3 mL) OR 3 mL bone marrow (Min: 1 mL). Test is not performed at ARUP; separate specimens must be submitted when multiple tests are ordered.
Transport Temperature:	Refrigerated
Unacceptable Conditions:	Serum, plasma, grossly hemolyzed specimens, buccal brush or swab, FFPE tissue.
Remarks:	Specimen source is required.
Stability:	Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable
Methodology:	Qualitative Massively Parallel Sequencing
Note:	Gene tested: *TP53* (NM_000546), all coding exons
CPT Codes:	81351, 81352
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.

TEST CHANGE

Hepatitis B Virus Surface Antigen With Reflex to Confirmation and Reflex to Hepatitis Delta Virus Antibody by ELISA With Reflex to Hepatitis Delta Virus by Quantitative PCR

3018776, HBSAGRDABQ

Specimen Requirements:	
Patient Preparation:	
Collect:	Serum separator tube (SST).
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 3 mL serum to an ARUP standard transport tube. (Min: 2 mL). This test requires a dedicated transport tube submitted only for HBSAGRDABQ testing. Separate specimens must be submitted when multiple tests are ordered.
Transport Temperature:	Frozen
Unacceptable Conditions:	Specimens containing particulate material or obvious microbial contamination. Heat-inactivated, severely hemolyzed, or lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 24 hours; Refrigerated: 5 days; Frozen: 30 days~~4 months~~ (avoid repeated freeze/thaw cycles)
Methodology:	Qualitative Chemiluminescent Immunoassay (CLIA) / Qualitative Enzyme Immunoassay (EIA)
Note:	Performed and Reported times indicated are for screening of the HBsAg. If results for HBsAg screen are repeatedly reactive with an index value between 1.00 and 50.00, then HBsAg Confirmation will be added. If positive for hepatitis B surface antigen, Hepatitis Delta Virus Antibody by ELISA With Reflex to Hepatitis Delta Virus by Quantitative PCR (ARUP test code 3006379) will be added. If the anti-HDV screening result is positive, Hepatitis Delta Virus by Quantitative PCR (ARUP test code 2013881) will be added. 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. Additional charges apply each time a reflexive test is indicated and added.
CPT Codes:	87340; if reflexed, add 87341; 86692; 87523
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	

This panel of assays 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
	Hepatitis B Surface Antigen	Negative

NEW TEST

Click for Pricing

PML::*RARA* Detection by RT-PCR, Quantitative

3018922, PMLQNT

Specimen Requirements:	
Patient Preparation:	
Collect:	Whole blood or bone marrow in lavender (EDTA).
Specimen Preparation:	Whole Blood: Transport 5 mL whole blood. (Min: 3 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.
Transport Temperature:	Whole Blood and Bone Marrow: CRITICAL REFRIGERATED. Separate specimens must be submitted when multiple tests are ordered.
Unacceptable Conditions:	Serum, plasma, extracted DNA, CSF, FFPE tissue, ambient whole blood, or frozen whole blood or bone marrow. Specimens collected in anticoagulants other than EDTA. Severely hemolyzed or clotted specimens. Ambient bone marrow specimens received >7 days post collection will be canceled. Refrigerated whole blood or bone marrow specimens received >7 days post collection will be canceled.
Remarks:	
Stability:	Ambient: Unacceptable; Refrigerated: 48 hours; Frozen: Unacceptable
Methodology:	Quantitative Reverse Transcription Polymerase Chain Reaction
Note:	
CPT Codes:	81315
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

Chimerism, Recipient, Pretransplant Process and Hold

3018940, STR PRE PR

Specimen Requirements:	
Patient Preparation:	
Collect:	Whole blood or bone marrow in lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B). OR buccal brushes from recipient.
Specimen Preparation:	Transport 2 mL whole blood (Min: 1 mL), OR 1 mL bone marrow (Min: 1 mL) refrigerated, OR 2 buccal brushes (cytology brushes) in a sterile, dry tube ambient. (Min: 2 brushes)
Transport Temperature:	Whole blood: Refrigerated. Buccal brush: Ambient.
Unacceptable Conditions:	Whole blood, bone marrow, buccal swab, or saliva posttransplant. Plasma, serum
Remarks:	Posttransplant results will be compared to pretransplant recipient and donor genotypes, therefore, donor and recipient specimens must be obtained and genotyped before the transplant event occurs. If transplant event occurred prior to specimen collection, dry buccal brushes (not bloody) are acceptable.
Stability:	Whole Blood: Room temperature: 1 week; Refrigerated: 1 month; Frozen: Unacceptable Buccal Brush: Room temperature: 1 week
Methodology:	Quantitative Polymerase Chain Reaction (PCR)
Note:	Extract and hold.
CPT Codes:	NA
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:	

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

TEST CHANGE

Measles Virus by Qualitative NAAT

3019269, MEASLESPCR

Specimen Requirements:	
Patient Preparation:	
Collect:	Preferred: Respiratory swab (nasal, nasopharyngeal, oropharyngeal, and throat) Also Acceptable: Urine in Aptima Urine Collection Kit.
Specimen Preparation:	Swab: Place swab in viral transport media (ARUP Supply #12884). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787. Urine: Transfer 2 mL urine within 24 hours to an Aptima Urine Specimen Transport Tube (ARUP supply #65760 single collection kit or #28908 pack of ~~PK/~~50 collection kits~~or 54556 PK/10~~). Liquid level must be between fill lines on tube.
Transport Temperature:	Frozen
Unacceptable Conditions:	Swabs not in viral transport media.
Remarks:	
Stability:	Ambient: 3 days; Refrigerated: 7 days; Frozen: 30 days
Methodology:	Qualitative Nucleic Acid Amplification Test (NAAT)
Note:	
CPT Codes:	87798 x2
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

A negative result does not rule out the presence of PCR inhibitors in the patient specimen or assay-specific nucleic acid in
concentrations below the level of detection by this assay.

Reference Interval:

Test Number	Components	Reference Interval
	Measles Virus Vaccine Strain, NAAT	Not Detected
	Measles Virus, NAAT	Not Detected

NEW TEST – Available Now

Click for Pricing

POU2F3 by Immunohistochemistry

3019895, POU2F3_IHC

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 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). 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.
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:	Immunohistochemistry (IHC)
Note:	This test is performed as a stain and return (technical) service only.
CPT Codes:	88342
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	

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

NEW TEST

Click for Pricing

Plasmalogens (Red Blood Cells)

3019936, PLSMGN RBC

Specimen Requirements:	
Patient Preparation:	
Collect:	Green (sodium heparin or lithium heparin), lavender (K2EDTA), or yellow (ACD solution A)
Specimen Preparation:	DO NOT FREEZE. Transport 6 mL whole blood. (Min: 2 mL)
Transport Temperature:	Refrigerated
Unacceptable Conditions:	Gross hemolysis, frozen whole blood
Remarks:	Patient age is required on the test request form. Include information regarding treatment, family history, and tentative diagnosis
Stability:	Ambient: 3 days; Refrigerated: 7 days; Frozen: Unacceptable
Methodology:	Quantitative Liquid Chromatography-Tandem Mass Spectrometry
Note:	
CPT Codes:	82542
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 measures eighteen individual phosphoethanolamine plasmalogen species by LC-MS/MS. Total values calculated by adding each of the six 16:0, 18:0 or 18:1 species and total plasmalogens, obtained by adding all 18 species, are reported.

Reference Interval:

Test Number	Components	Reference Interval
	16:0(plasm)-PE Total	
		Age: 0-3 months — 89.09-165.13 nmol/mL; 4 months-18 years — 104.89-205.55 nmol/mL; Greater than 18 years — 89.67-189.15 nmol/mL
	18:0(plasm)-PE Total	
		Age: 0-2 months — 124.85-251.80 nmol/mL; Greater than 2 months — 170.31-282.19 nmol/mL
	18:1(plasm)-PE Total	
		Age: 0-2 months — 45.38-111.35 nmol/mL; 3 months-2 years — 51.22-165.89 nmol/mL; Greater than 2 years — 50.70-97.43 nmol/mL
	NC_(plasm)20:4-PE Total	
		Age: 0-2 months — 116.79-225.18 nmol/mL; Greater than 2 months — 148.52-272.56 nmol/mL
	NC_(plasm)22:6-PE Total	
		Age: 0-2 months — 45.36-115.58 nmol/mL; 3 months-2 years — 39.66-153.20 nmol/mL; Greater than 2 years — 32.85-107.65 nmol/mL
	NC_16:0(plasm)-18:1-PE	

		Age	Reference Intervals
		0-2 months	10.69-26.60 nmol/mL
		3 months-18 years	15.06-32.06 nmol/mL
		Greater than 18 years	10.98-27.72 nmol/mL
	NC_16:0(plasm)-18:2-PE		
		Age	Reference Intervals
		0-17 days	less than or equal to 2.65 nmol/mL
		18 days-3 months	1.57-4.44 nmol/mL
		4 months-18 years	3.30-9.93 nmol/mL
		Greater than 18 years	2.31-9.06 nmol/mL
	NC_16:0(plasm)-20:4-PE		
		Age	Reference Intervals
		0-2 months	33.11-71.59 nmol/mL
		3 months-18 years	40.49-95.50 nmol/mL
		Greater than 18 years	35.37-81.74 nmol/mL
	NC_16:0(plasm)-20:5-PE		
		Age	Reference Intervals
		0-2 months	less than or equal to 2.30 nmol/mL
		Greater than 2 months	1.18-9.70 nmol/mL
	NC_16:0(plasm)-22:4-PE		
		Age	Reference Intervals
		0-2 years	15.18-45.01 nmol/mL
		Greater than 2 years	24.05-55.85 nmol/mL
	NC_16:0(plasm)-22:6-PE		
		Age	Reference Intervals
		0-18 months	12.71-38.30 nmol/mL
		Greater than 18 months	8.32-27.62 nmol/mL

	NC_18:0(plasm)-18:1-PE	
		Age: Reference Intervals 0-46 days: 7.40-22.55 nmol/mL Greater than 46 days: 10.07-23.46 nmol/mL
	NC_18:0(plasm)-18:2-PE	
		Age: Reference Intervals 0-49 days: 0.57-2.09 nmol/mL 50 days-1 year: 1.11-3.16 nmol/mL 2 years-7 years: 1.82-4.71 nmol/mL 8 years-22 years: 2.06-4.64 nmol/mL Greater than 23 years: 1.21-4.58 nmol/mL
	NC_18:0(plasm)-20:4-PE	
		Age: Reference Intervals 0-2 months: 56.14-125.60 nmol/mL 3 months-2 years: 68.89-162.78 nmol/mL 3 years-13 years: 94.33-153.88 nmol/mL 14 years-18 years: 85.21-140.94 nmol/mL Greater than 18 years: 76.87-141.38 nmol/mL
	NC_18:0(plasm)-20:5-PE	less than or equal to 5.42 nmol/mL
	NC_18:0(plasm)-22:4-PE	
		Age: Reference Intervals 0-3 months: 25.42-59.80 nmol/mL Greater than 3 months: 29.53-74.90 nmol/mL
	NC_18:0(plasm)-22:6-PE	
		Age: Reference Intervals 0-2 months: 21.81-57.87 nmol/mL 3 months-18 months: 23.94-78.09 nmol/mL Greater than 18: 17.75-60.30

		months: nmol/mL
	NC_18:1(plasm)-18:1-PE	
		Age: Reference Intervals 0-2 months: 4.19-12.62 nmol/mL 3 months-2 years: 5.24-17.10 nmol/mL Greater than 2 years: 5.35-12.60 nmol/mL
	NC_18:1(plasm)-18:2-PE	
		Age: Reference Intervals 0-2 months: less than or equal to 2.92 nmol/mL 3 months-5 years: 1.33-4.08 nmol/mL Greater than 5 years: 0.91-3.55 nmol/mL
	NC_18:1(plasm)-20:4-PE	
		Age: Reference Intervals 0-2 months: 18.68-57.57 nmol/mL 3 months-2 years: 23.31-76.57 nmol/mL Greater than 2 years: 23.10-47.35 nmol/mL
	NC_18:1(plasm)-20:5-PE	less than or equal to 4.32 nmol/mL
	NC_18:1(plasm)-22:4-PE	
		Age: Reference Intervals 0-2 months: 6.09-16.99 nmol/mL 3 months-1 year: 8.32-28.30 nmol/mL Greater than 1 year: 7.16-17.33 nmol/mL
	NC_18:1(plasm)-22:6-PE	

		Age	Reference Intervals
		0-2 months	7.30-26.99 nmol/mL
		3 months-2 years	5.55-40.29 nmol/mL
		3 years-18 years	5.32-19.07 nmol/mL
		Greater than 18 years	5.15-24.07 nmol/mL
	Total Plasmalogen PE (RBC)		
		Age	Reference Intervals
		0-2 months	275.36-484.68 nmol/mL
		Greater than 2 months	338.70-575.65 nmol/mL

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

NEW TEST – Available Now

Click for Pricing

Genome Sequencing

3019943, WGS PRO

Specimen Requirements:	
Patient Preparation:	
Collect:	Preferred: Whole blood in lavender (EDTA) or pink (EDTA) Acceptable: Oragene(TM) saliva collection kit, or equivalent saliva collection device, collected in accordance with manufacturer instructions. Saliva in collection device suitable for human DNA extraction. 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: 0.5 mL) or 2 mL saliva.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	
Remarks:	Refer to Genome Sequencing, Familial Comparator (ARUP test code 3019951) for comparator specimen requirements. Parental comparator samples are recommended for optimal whole genome analysis. Comparator samples must be submitted within 7 days of the proband's sample.
Stability:	Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable
Methodology:	Qualitative Massively Parallel Sequencing
Note:	The ability to identify causative variant(s) for the patient's presentation is strongly influenced by the quality of the clinical information provided. Contact ARUP's genetic counselors at 800-242-2787 ext. 2141 with questions about test submission.
CPT Codes:	81425; 81460; add 81426; 81460 per familial comparator
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 – Available Now

Click for Pricing

Rapid Genome Sequencing

3019947, RWGS PRO

Specimen Requirements:	
Patient Preparation:	
Collect:	Preferred: Whole blood in lavender (EDTA) or pink (EDTA) Acceptable: Oragene(TM) saliva collection kit, or equivalent saliva collection device, collected in accordance with manufacturer instructions. Saliva in collection device suitable for human DNA extraction. 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: 0.5 mL) or 2 mL saliva.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	
Remarks:	Refer to Rapid Genome Sequencing, Familial Comparator (ARUP test code 3019953) for comparator specimen requirements. Parental comparator samples are required for optimal whole genome analysis. Comparator samples must be submitted within 7 days of the proband's sample.
Stability:	Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable
Methodology:	Qualitative Massively Parallel Sequencing
Note:	The ability to identify causative variant(s) for the patient's presentation is strongly influenced by the quality of the clinical information required. Contact ARUP's genetic counselors at 800-242-2787 ext. 2141 with questions about test submission.
CPT Codes:	81425; 81460; add 81426; 81460 per familial comparator
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 – Available Now

Click for Pricing

Genome Sequencing, Familial Comparator

3019951, WGS FM

Specimen Requirements:	
Patient Preparation:	
Collect:	Preferred: Whole blood in lavender (EDTA) or pink (EDTA) Acceptable: Oragene(TM) saliva collection kit, or equivalent saliva collection device, collected in accordance with manufacturer instructions. Saliva in collection device suitable for human DNA extraction. 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: 0.5 mL) or 2 mL saliva.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	
Remarks:	Refer to Genome Sequencing (ARUP test code 3019943) for proband specimen requirements. This test is used for parental or other familial comparator samples associated with a proband sample submitted for Genome Sequencing (ARUP test code 3019943). Comparator samples must be submitted within 7 days of the proband's sample. Please list the name/DOB of submitted familial comparators on the proband's Genome Sequencing Intake Form. If reporting of secondary findings is desired for comparator individual(s), indicate opt-in status on the proband's Genome Sequencing Intake Form (additional charges apply).
Stability:	Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable
Methodology:	Qualitative Massively Parallel Sequencing
Note:	Parental or other familial comparator samples are used to aid interpretation of the proband's genome sequencing data. Contact ARUP's genetic counselors at 800-242-2787 ext. 2141 with questions about test submission.

CPT Codes:	NA
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 – Available Now

Click for Pricing

Rapid Genome Sequencing, Familial Comparator

3019953, RWGS FM

Specimen Requirements:	
Patient Preparation:	
Collect:	Preferred: Whole blood in lavender (EDTA) or pink (EDTA) Acceptable: Oragene(TM) saliva collection kit, or equivalent saliva collection device, collected in accordance with manufacturer instructions. Saliva in collection device suitable for human DNA extraction. 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: 0.5 mL) or 2 mL saliva.
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	
Remarks:	Refer to Rapid Genome Sequencing (ARUP test code 3019947) for proband specimen requirements. This test is used for parental or other familial comparator samples associated with a proband sample submitted for Rapid Genome Sequencing (ARUP test code 3019947). Comparator samples must be submitted within 7 days of the proband's sample. Please list the name/DOB of submitted familial comparators on the proband's Genome Sequencing Intake Form. If reporting of secondary findings is desired for comparator individual(s), indicate opt-in status on the proband's Genome Sequencing Intake Form (additional charges apply).
Stability:	Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable
Methodology:	Qualitative Massively Parallel Sequencing
Note:	Parental or other familial comparator samples are used to aid interpretation of the proband's genome sequencing data. Contact ARUP's genetic counselors at 800-242-2787 ext. 2141 with questions about test submission.
CPT Codes:	NA

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

FISH Interphase

3020127, FISH INT

Specimen Requirements:	
Patient Preparation:	
Collect:	Nondiluted bone marrow aspirate collected in a heparinized syringe. Also acceptable: Bone marrow or whole blood collected in green (sodium heparin).
Specimen Preparation:	Transfer 3 mL bone marrow to a green (sodium heparin) (Min: 1 mL) OR transport 5 mL whole blood (Min: 2 mL)
Transport Temperature:	Preferred transport temp: Room temperature.
Unacceptable Conditions:	Paraffin-embedded specimens. Clotted specimens.
Remarks:	Desired FISH probe(s), specimen type, and pertinent clinical diagnosis are required with test order. Testing will not be performed until probe(s), specimen type, and diagnosis are provided; absence of this information will delay turnaround time.
Stability:	Ambient: 2 days; Refrigerated: 2 days; Frozen: Unacceptable
Methodology:	Fluorescence in situ Hybridization (FISH)
Note:	Time required for testing can vary depending on specimen type and probes ordered. Please indicate the names of probes needed for testing and specimen type. See Molecular Cytogenetics (FISH) Probe list in Additional Technical Information link. Contact ARUP Genetics Service Support at extension 3301 to add a probe to a current specimen. If more than one FISH probe is ordered, additional probe and analysis charges will be applied per probe. Other specimen types may be acceptable, contact ARUP Genetics Support Services at extension 3301 for specific specimen collection and transportation instructions. If chromosome analysis is not performed at ARUP on the same sample, Bone Marrow/PBL Culture Processing Fee (0093271) will be added to account for sample processing, and an additional charge will apply. If multiple FISH tests are ordered, 0093271 will only be applied to one of the FISH tests. If cell pellets or dropped cytogenetic slides are submitted, processing

	fee will not apply. This test must be ordered using Oncology test request form #43099 or through your ARUP interface.
CPT Codes:	88271; 88275
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	
By report	

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

NEW TEST – Available Now

Click for Pricing

Pit1 by Immunohistochemistry

3020130, PIT1 IHC

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 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). 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.
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:	Immunohistochemistry (IHC)
Note:	This test is performed as a stain and return (technical) service only.
CPT Codes:	88342
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	

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

NEW TEST – Available Now

Click for Pricing

Tpit by Immunohistochemistry

3020158, TPIT IHC

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 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). 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.
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:	Immunohistochemistry (IHC)
Note:	This test is performed as a stain and return (technical) service only.
CPT Codes:	88342
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	

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

NEW TEST

Click for Pricing

von Willebrand Factor Panel

3020169, VW PAN

Specimen Requirements:	
Patient Preparation:	
Collect:	Lt. blue (sodium citrate). Refer to Specimen Handling at aruplab.com for hemostasis/thrombosis specimen handling guidelines.
Specimen Preparation:	Transfer 3 mL platelet-poor plasma to an ARUP standard transport tube. (Min: 1 mL)
Transport Temperature:	CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.
Unacceptable Conditions:	Serum, EDTA plasma, clotted or hemolyzed specimens.
Remarks:	
Stability:	Ambient: 4 hours; Refrigerated: Unacceptable; Frozen: 3 months
Methodology:	Electromagnetic Mechanical Clot Detection / Microlatex Particle-Mediated Immunoassay / Quantitative Immunoturbidimetry
Note:	
CPT Codes:	85240; 85246; 85397
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Factor VIII, Activity</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Reference Interval (%)</th></tr>
<tr><td>0-6 years</td><td>56-191</td></tr>
<tr><td>7-9 years</td><td>76-199</td></tr>
<tr><td>10-11 years</td><td>80-209</td></tr>
<tr><td>12-13 years</td><td>72-198</td></tr>
<tr><td>14-15 years</td><td>69-237</td></tr>
<tr><td>16-17 years</td><td>63-221</td></tr>
<tr><td>18 years and older</td><td>56-191</td></tr>
</table>
</td></tr>
<tr><td></td><td>von Willebrand Factor, Activity (GPIbM)</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Female</th><th>Male</th></tr>
<tr><td>6 months-6 years</td><td>500-1800 pg/mL</td><td>500-1700 pg/mL</td></tr>
<tr><td>7-9 years</td><td>566-1690 pg/mL</td><td>522-1682 pg/mL</td></tr>
<tr><td>10-12 years</td><td>503-2077 pg/mL</td><td>553-2071 pg/mL</td></tr>
<tr><td>13-15 years</td><td>160-1590 pg/mL</td><td>485-2468 pg/mL</td></tr>
<tr><td>16-17 years</td><td>167-933 pg/mL</td><td>276-1546 pg/mL</td></tr>
<tr><td>18-29 years</td><td></td><td>238-1019 pg/mL</td></tr>
<tr><td>30-39 years</td><td></td><td>225-936 pg/mL</td></tr>
<tr><td>40-49 years</td><td></td><td>182-801 pg/mL</td></tr>
<tr><td>50-59 years</td><td></td><td>161-737 pg/mL</td></tr>
<tr><td>60-69 years</td><td></td><td>132-752 pg/mL</td></tr>
<tr><td>70 years or greater</td><td></td><td>118-776 pg/mL</td></tr>
<tr><td>Premenopausal</td><td>136-689 pg/mL</td><td></td></tr>
<tr><td>Postmenopausal</td><td>177-1015 pg/mL</td><td></td></tr>
</table>
<table>
<tr><th>Age</th><th>Reference Intervals (%)</th></tr>
<tr><td>0-6 years</td><td>51-215</td></tr>
<tr><td>7-9 years</td><td>52-176</td></tr>
<tr><td>10-11 years</td><td>60-195</td></tr>
<tr><td>12-13 years</td><td>50-184</td></tr>
<tr><td>14-15 years</td><td>50-203</td></tr>
<tr><td>16-17 years</td><td>49-204</td></tr>
<tr><td>18 years and older</td><td>51-215</td></tr>
</table>
</td></tr>
</table>

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

NEW TEST

Click for Pricing

von Willebrand Factor Panel With Reflex to von Willebrand Multimers

3020170, VW RFLX

Specimen Requirements:	
Patient Preparation:	
Collect:	Lt. blue (sodium citrate). Refer to Specimen Handling at aruplab.com for hemostasis/thrombosis specimen handling guidelines.
Specimen Preparation:	Transfer 3 mL platelet-poor plasma to an ARUP standard transport tube. (Min: 1.5 mL)
Transport Temperature:	CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.
Unacceptable Conditions:	Serum. Clotted. Nonfrozen or hemolyzed specimens.
Remarks:	
Stability:	Ambient: 4 hours; Refrigerated: Unacceptable; Frozen: 3 months
Methodology:	Electrophoresis / Clotting / Microlatex Particle-Mediated Immunoassay / Quantitative Immunoturbidimetry
Note:	If von Willebrand factor (VWF) GPIbM activity or von Willebrand factor antigen (vWF Ag) or Factor VIII is low, von Willebrand Multimeric Analysis testing will be added.
CPT Codes:	85240; 85246; 85397; if reflexed, add 85247
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Factor VIII, Activity</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Reference Interval (%)</th></tr>
<tr><td>0-6 years</td><td>56-191</td></tr>
<tr><td>7-9 years</td><td>76-199</td></tr>
<tr><td>10-11 years</td><td>80-209</td></tr>
<tr><td>12-13 years</td><td>72-198</td></tr>
<tr><td>14-15 years</td><td>69-237</td></tr>
<tr><td>16-17 years</td><td>63-221</td></tr>
<tr><td>18 years and older</td><td>56-191</td></tr>
</table>
</td></tr>
<tr><td></td><td>von Willebrand Factor, Activity (GPIbM)</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Female</th><th>Male</th></tr>
<tr><td>6 months-6 years</td><td>500-1800 pg/mL</td><td>500-1700 pg/mL</td></tr>
<tr><td>7-9 years</td><td>566-1690 pg/mL</td><td>522-1682 pg/mL</td></tr>
<tr><td>10-12 years</td><td>503-2077 pg/mL</td><td>553-2071 pg/mL</td></tr>
<tr><td>13-15 years</td><td>160-1590 pg/mL</td><td>485-2468 pg/mL</td></tr>
<tr><td>16-17 years</td><td>167-933 pg/mL</td><td>276-1546 pg/mL</td></tr>
<tr><td>18-29 years</td><td></td><td>238-1019 pg/mL</td></tr>
<tr><td>30-39 years</td><td></td><td>225-936 pg/mL</td></tr>
<tr><td>40-49 years</td><td></td><td>182-801 pg/mL</td></tr>
<tr><td>50-59 years</td><td></td><td>161-737 pg/mL</td></tr>
<tr><td>60-69 years</td><td></td><td>132-752 pg/mL</td></tr>
<tr><td>70 years or greater</td><td></td><td>118-776 pg/mL</td></tr>
<tr><td>Premenopausal</td><td>136-689 pg/mL</td><td></td></tr>
<tr><td>Postmenopausal</td><td>177-1015 pg/mL</td><td></td></tr>
</table>
<table>
<tr><th>Age</th><th>Reference Intervals (%)</th></tr>
<tr><td>0-6 years</td><td>51-215</td></tr>
<tr><td>7-9 years</td><td>52-176</td></tr>
<tr><td>10-11 years</td><td>60-195</td></tr>
<tr><td>12-13 years</td><td>50-184</td></tr>
<tr><td>14-15 years</td><td>50-203</td></tr>
<tr><td>16-17 years</td><td>49-204</td></tr>
<tr><td>18 years and older</td><td>51-215</td></tr>
</table>
</td></tr>
</table>

	VWF:GPIbM / vWF Antigen Ratio	Greater than or equal to 0.7

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

NEW TEST

Click for Pricing

von Willebrand Factor Multimeric Panel

3020171, VW COMP

Specimen Requirements:	
Patient Preparation:	
Collect:	Lt. blue (sodium citrate). refer to Specimen Handling at aruplab.com for hemostasis/thrombosis specimen handling guidelines.
Specimen Preparation:	Transfer 3 mL platelet-poor plasma to an ARUP standard transport tube. (Min: 1.5 mL)
Transport Temperature:	CRITCIAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.
Unacceptable Conditions:	Serum, EDTA plasma, clotted or hemolyzed specimens.
Remarks:	
Stability:	Ambient: 4 hours; Refrigerated: Unacceptable; Frozen: 3 months.
Methodology:	Clotting / Microlatex Particle-Mediated Immunoassay / Quantitative Immunoturbidimetry
Note:	von Willebrand Factor Multimers (0092281) is automatically added to all orders and is reported and charged separately.
CPT Codes:	85240; 85246; 85397; VW multimers added separately 85247
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

von Willebrand Factor Multimers (0092281) is added automatically to all orders and is performed along with the panel. However, due to the longer turnaround time for multimers testing, the multimers result is reported and charged separately.

Reference Interval:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Factor VIII, Activity</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Reference Interval (%)</th></tr>
<tr><td>0-6 years</td><td>56-191</td></tr>
<tr><td>7-9 years</td><td>76-199</td></tr>
<tr><td>10-11 years</td><td>80-209</td></tr>
<tr><td>12-13 years</td><td>72-198</td></tr>
<tr><td>14-15 years</td><td>69-237</td></tr>
<tr><td>16-17 years</td><td>63-221</td></tr>
<tr><td>18 years and older</td><td>56-191</td></tr>
</table>
</td></tr>
<tr><td></td><td>von Willebrand Factor, Activity (GPIbM)</td><td></td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Female</th><th>Male</th></tr>
<tr><td>6 months-6 years</td><td>500-1800 pg/mL</td><td>500-1700 pg/mL</td></tr>
<tr><td>7-9 years</td><td>566-1690 pg/mL</td><td>522-1682 pg/mL</td></tr>
<tr><td>10-12 years</td><td>503-2077 pg/mL</td><td>553-2071 pg/mL</td></tr>
<tr><td>13-15 years</td><td>160-1590 pg/mL</td><td>485-2468 pg/mL</td></tr>
<tr><td>16-17 years</td><td>167-933 pg/mL</td><td>276-1546 pg/mL</td></tr>
<tr><td>18-29 years</td><td></td><td>238-1019 pg/mL</td></tr>
<tr><td>30-39 years</td><td></td><td>225-936 pg/mL</td></tr>
<tr><td>40-49 years</td><td></td><td>182-801 pg/mL</td></tr>
<tr><td>50-59 years</td><td></td><td>161-737 pg/mL</td></tr>
<tr><td>60-69 years</td><td></td><td>132-752 pg/mL</td></tr>
<tr><td>70 years or greater</td><td></td><td>118-776 pg/mL</td></tr>
<tr><td>Premenopausal</td><td>136-689 pg/mL</td><td></td></tr>
<tr><td>Postmenopausal</td><td>177-1015 pg/mL</td><td></td></tr>
</table>
<table>
<tr><th>Age</th><th>Reference Intervals (%)</th></tr>
<tr><td>0-6 years</td><td>51-215</td></tr>
<tr><td>7-9 years</td><td>52-176</td></tr>
<tr><td>10-11 years</td><td>60-195</td></tr>
<tr><td>12-13 years</td><td>50-184</td></tr>
<tr><td>14-15 years</td><td>50-203</td></tr>
<tr><td>16-17 years</td><td>49-204</td></tr>
<tr><td>18 years and older</td><td>51-215</td></tr>
</table>
</td></tr>
</table>

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

NEW TEST

Click for Pricing

Allergen, Hymenoptera Venoms With Components

3020335, VENOMS-COM

Specimen Requirements:	
Patient Preparation:	Multiple patient encounters should be avoided.
Collect:	Serum separator tube.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 3.0 mL serum to an ARUP standard transport tube. (Min: 1.5 mL). For multiple allergen orders refer to Allergen Specimen Collection Instructions at www.aruplab.com/testing/resources/specimen.
Transport Temperature:	Frozen.
Unacceptable Conditions:	Postmortem samples
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 72 hours; Frozen: 1 month
Methodology:	Quantitative ImmunoCAP Fluorescent Enzyme Immunoassay
Note:	
CPT Codes:	83520; 86003 x3; 86008 x8
New York DOH Approval Status:	This test is New York DOH approved.

Interpretive Data:

Results should be interpreted in the context of the patient's clinical history. Specific IgE (sIgE) to the honeybee venom (HBV) components Api m 1, Api m 3, and Api m 10 may indicate primary sensitization to HBV. The Api m 5 HBV component can be cross-reactive to vespid (e.g., yellow jacket) and paper wasp venom components. Api m 2 is reported to have limited cross-reactivity to vespid/paper wasp venom components.

Ves v 1 and Ves v 5 are yellow jacket venom (YJV) components that serve as markers for vespid venom sensitization. Pol d 5, a component of European paper wasp venom, is a marker of sensitization to paper wasp venoms (PWV). Specific IgE to these components can help distinguish between YJV/PWV and HBV sensitization. The YJV and paper wasp venom components included in this panel can be cross-reactive, preventing their use as markers to discriminate between YJV and PWV sensitization if both are positive.

Severe allergic reactions to insect venoms may be associated with elevated serum baseline tryptase due underlying mast cell activation or clonal disorders. Measurement of basal serum tryptase should be considered in all patients who are candidates for venom immunotherapy.

Allergen results of 0.10-0.34 kU/L are intended for specialist use as the clinical relevance is undetermined. Even though increasing ranges are reflective of increasing concentrations of allergen-specific IgE, these concentrations may not correlate with the degree of clinical response or skin testing results when challenged with a specific allergen. The correlation of

allergy laboratory results with clinical history and in vivo reactivity to specific allergens is essential. A negative test may not rule out clinical allergy or even anaphylaxis.

Reference Interval:

Test Number	Components	Reference Interval
	Allergen, Insect, Honey Bee Venom IgE	Less than or equal to 0.34 kU/L
	Allergen, Insect, Paper Wasp IgE	Less than or equal to 0.34 kU/L
	Allergen, Insect, Yellow Jacket Ven IgE	Less than or equal to 0.34 kU/L
	Honeybee Venom component, Api m 1	Less than or equal to 0.09 KU/L
	Honeybee Venom component, Api m 10	Less than or equal to 0.09 KU/L
	Honeybee Venom component, Api m 2	Less than or equal to 0.09 KU/L
	Honeybee Venom component, Api m 3	Less than or equal to 0.09 KU/L
	Honeybee Venom component, Api m 5	Less than or equal to 0.09 KU/L
	Paper Wasp Venom component, Pol d 5	Less than or equal to 0.09 KU/L
	Tryptase	Less than or equal to 10.9 ug/L
	Yellow Jacket Venom component, Ves v 1	Less than or equal to 0.09 KU/L
	Yellow Jacket Venom component, Ves v 5	Less than or equal to 0.09 KU/L

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

NEW TEST

Click for Pricing

Vitamin B5 (Pantothenic Acid), Serum or Plasma

3020431, VIT B5 SP

Specimen Requirements:	
Patient Preparation:	
Collect:	Plain red, lavender (K2EDTA), or pink (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. (Min: 0.3 mL) Test is not performed at ARUP; separate specimens must be submitted when multiple tests are ordered.
Transport Temperature:	Frozen. Also acceptable: Refrigerated
Unacceptable Conditions:	Polymer gel separation tube (SST or PST)
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month
Methodology:	Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry
Note:	
CPT Codes:	84591
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	

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

NEW TEST

Click for Pricing

Vitamin B7 (Biotin), Serum or Plasma

3020435, VITAMB7 SP

Specimen Requirements:	
Patient Preparation:	
Collect:	Plain red, lavender (K2EDTA), or pink (K2EDTA)
Specimen Preparation:	Separate from cells ASAP or within 2 hours of collection. Transfer 2 mL serum or plasma to an ARUP standard transport tube. (Min: 0.7 mL) Test is not performed at ARUP; separate specimens must be submitted when multiple tests are ordered.
Transport Temperature:	Frozen
Unacceptable Conditions:	Polymer gel separation tube (SST or PST).
Remarks:	
Stability:	Ambient: Unacceptable; Refrigerated: 24 hours; Frozen: 2 weeks
Methodology:	Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry
Note:	
CPT Codes:	84591
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:	
Refer to report	

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 January 20, 2026
Replacement test options are indicated when applicable.

Test Number	Test Name	Refer to Replacement Test
0030002	von Willebrand Multimeric Panel	von Willebrand Comprehensive Profile (3020171)
0030125	von Willebrand Panel	von Willebrand Panel (3020169)
0030284	von Willebrand Modified Panel	
2002298	Chromosome FISH, Interphase	FISH Interphase (3020127)
2002871	PML-RARA Detection by RT-PCR, Quantitative (Test on Referral as of 1/17/2023)	PML::RARA Detection by RT-PCR, Quantitative (3018922)
2003387	von Willebrand Panel with Reflex to von Willebrand Multimeric Analysis	von Willebrand Reflex Profile (3020170)
2003824	Carcinoembryonic Antigen, Monoclonal (CEA M) by Immunohistochemistry	
2004055	Ewing Sarcoma (O13) by Immunohistochemistry	
2004124	Renal Cell Carcinoma (RCC) Antigen by Immunohistochemistry	
2006982	Vitamin B5 (Pantothenic Acid), Serum	Vitamin B5 (Pantothenic Acid), Serum or Plasma (3020431)
2013484	TP53 Somatic Mutation, Prognostic	Somatic TP53 Mutations in Whole Blood and Bone Marrow (3017691), Somatic TP53 Mutations in Formalin-Fixed, Paraffin-Embedded (FFPE) Tissue (3017688)
3005928	Rapid Whole Genome Sequencing, Familial Control	Rapid Genome Sequencing, Familial Comparator (3019953)

Test Number	Test Name	Refer to Replacement Test
3005933	Rapid Whole Genome Sequencing, Familial Control with Report	Rapid Genome Sequencing, Familial Comparator (3019953)
3005935	Rapid Whole Genome Sequencing	Rapid Genome Sequencing (3019947)
3016493	Whole Genome Sequencing	Genome Sequencing (3019943)
3016497	Whole Genome Sequencing, Familial Control	Genome Sequencing, Familial Comparator (3019951)
3016932	Vitamin B7, Serum or Plasma	Vitamin B7 (Biotin), Serum or Plasma (3020435)