



#### Cleveland Clinic Laboratories

#### Technical Update • May 2019

Cleveland Clinic Laboratories is dedicated to keeping you updated and informed about recent testing changes. This Technical Update is provided on a monthly basis to notify you of any changes to the tests in our catalog.

Recently changed tests are bolded, and they could include revisions to methodology, reference range, days performed, or CPT code. Deleted tests and new tests are listed separately. For your convenience, tests are listed alphabetically and order codes are provided.

To compare the new information with previous test information, refer to the online Test Directory at clevelandcliniclabs. com. Test information is updated in the online Test Directory on the Effective Date stated in the Technical Update. Please update your database as necessary.

For additional detail, contact Client Services at 216.444.5755 or 800.628.6816, or via email at clientservices@ccf.org.

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2	7	5-Fluorouracil Toxicity, Chemo Response, 5 Mut														
2	7	14-3-3 Protein, CSF														
2	7	ACADM PCR, Complete, Tier 2														
4		Acetaminophen														
2	7	Acetylcholinesterase and Fetal Hemoglobin, Amniotic Fluid														
20	)	Allergen, Food, Orris Root IgE														
20	)	Allergen, Fungi and Molds, Chaetomium globosum IgE														
20	)	Allergen, Occupational, Tobacco														
4		Amikacin, Post Dose														
4		Amikacin, Pre Dose														
4		Amikacin, Random														
4		Amino Acids, Urine w/ Basic Interpretation														
5		Amino Acids, Urine w/ No Interpretation														
5		Arsenic, Fractionated Urine														
5		Bilirubin, Urine														
5		Cadmium, Urine														
5		CALR (Calreticulin) Exon 9 Mutation Blood														
5		Campylobacter Antigen														
6		Chromium, Urine														
6		Clobazam														
6		Cobalt, Blood														

#### **Summary of Changes** by Test Name

Na re	Summary of Changes by Test Name	let Code	Change	New Yest	ntimed	Tration (III	itement.	noc neels)	tology	Range	reported	Stability	CRY	
6	Cobalt, Serum or Plasma													
7	Complement Deficiency Assay													
21	CYP2C19 (Cytochrome P450 2C19)													
22–23	CYP2D6 (Cytochrome P450 2D6)													
27	Cytochrome P450 2D6 (CYP2D6) Geno													
27	Cyto P450 2C19 - 9 Variants													
7	Disopyramide (Norpace)													
7–9	Drug Detection Panel, TOF-MS, Umbilical Cord Tissue													
9	Drug Detection Panel, Umbilical Cord Tissue, with Marijuana Metabolite													
10	Ethosuximide													
27	Fats, Urine													
27	Ganglioside Antibody Panel													
27	Gaucher Disease Mutation, Fluid													
10	Gaucher Disease Mutation, Whole Blood													
10	Gentamicin, Post Dose													
10	Gentamicin, Random													
10	Heavy Metals, Urine													
10	Heavy Metals with Cadmium, Ur													
10	Hemoglobin Electrophoresis													
10	Hemoglobin Evaluation Cascade													
10	Hemoglobin S and F Monitoring													
11	Hemoglobin, Urine													
11	HemoQuant, Fecal													
11	Hepatitis Be Antigen													
23	Hepatitis B Virus (HBV) Drug Resistance, Genotype and BCP/Precore Mutations by Sequencing													
11	Histamine													
12	Histamine, Plasma													
12	Histamine, Urine													
12	HIV-1 Integrase Genotype													
23–24	Iron, Liver													
27	Iron, Tissue													
12	Lead, Urine 24 Hour													
24	Lipoprotein Fractionation NMR with Lipids													
25	Lipoprotein Fractionation NMR without Lipids													
12	Lp-PLA2 Activity													
13, 27	Lung Cancer Hot Spot Panel v2 NGS 2 gene													
13	Manganese, Urine													ĺ
13	Marijuana Metabolite, Umbilical Cord Tissue, Qualitative													
13	Maternal Cell Contamination, Integrated Genetics													

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## Summary of Changes by Test Name

# Days Performed Reported Nethodology Reference Range Specimen Requirement Change Special Information Special Information Report Change Name Change Name Code Order Code

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13	Maraury Urina 24 Haur							
	Mercury, Urine 24 Hour							
13, 27	MET Gene Analysis						ı	
13	Methotrexate							
14	MRSA Culture Screen							
14	MRSA/Staph aureus Culture Screen							
14	Nicotine & Metabolites, Urine							
27	NMR LipoProfile							
27	NMR LipoProfile without Lipid Panel							
14–15	Organic Acids Ur, Quant w/ Basic Interpretation							
15	Organic Acids Ur, Quant w/ No Interpretation							
16	Oxcarbazepine							
25	Pan-Solid Tumor NGS Panel							
16	Parenteral Nutrition Package							
25	Products of Conception Chromosome Analysis with Reflex SNP Array							
16	Protein, Urine Qualitative							
16	Prothrombin Time and PTT Elevation Diagnostic Panel							
16	PTH, Intact							
16	PTT Elevation Diagnostic Panel							
17	PTT Incubated Mixing Study							
17	Selenium, Plasma or Serum							
18	Specific Gravity, Urine							
18	Thallium, Urine							
18	Tobramycin, Post Dose							
18	Tobramycin, Random							
18	Trypsinogen							
18	Tryptase							
18	Urinalysis with Microscopic							
18	Urobilinogen Screen, Urine							
18	Varicella Zoster by PCR							
19	Vitamin B5 (Pantothenic Acid) Bioassay							
26	Warfarin Sensitivity (CYP2C8, CYP2C9, CYP4F2, VKORC1) Genotyping							
27	Warfarin Sensitivity Genotyping							

#### Test Changes

Test Name	Order Code	Change	Effective Date
Acetaminophen	ACETM	Reference Range: 0–99 Years: $10$ –30 $\mu$ g/mL Urgent Range: 0–99 Years: > 150 $\mu$ g/mL (4 hours post ingestion)	7/9/19
Amikacin, Post Dose	AMIKPO	Reference Range: 0–99 Years: Peak: 15.0–40.0 $\mu$ g/mL Urgent Range: 0–99 Years: > 40.0 $\mu$ g/mL	7/9/19
Amikacin, Pre Dose	AMIKPR	Reference Range: 0–99 Years: Pre: 5.0– <b>8.0</b> μg/mL  Urgent Range: 0–99 Years: > <b>8.0</b> μg/mL	7/9/19
Amikacin, Random	AMIKRA	Reference Range: 0–99 Years: Random: $5.0$ – $40.0 \mu g/mL$ Urgent Range: 0–99 Years: $> 40.0 \mu g/mL$	7/9/19
Amino Acids, Urine w/ Basic Interpretation	UAABI	For Interfaced Clients Only: Test build may need to be modified Includes: Leucine Taurine Aspartic Acid Hydroxyproline Threonine Serine Proline Citrulline Valine Cystine Methionine Isoleucine Tyrosine Ornithine Lysine Histidine Arginine Glutamic Acid Alpha Aminoadipic Acid Sarcosine Asparagine Glutamine Glutamine Hydroxylysine Alanine Phenylalanine Hydroxylysine Basic Interpretation Urine, Creatinine	7/2/19

Test Name	Order Code	Change	Effective Date
Amino Acids, Urine w/ No Interpretation	UAANI	For Interfaced Clients Only: Test build may need to be modified Includes: Leucine Taurine Aspartic Acid Hydroxyproline Threonine Serine Proline Citrulline Valine Cystine Methionine Isoleucine Tyrosine Ornithine Lysine Histidine Arginine Glutamic Acid Alpha Aminoadipic Acid Sarcosine Asparagine Glutamine Glycine Alanine Phenylalanine Hydroxylysine Amino Acid, Urine Note Urine, Creatinine	7/2/19
Arsenic, Fractionated Urine	UASFR	Days Performed: Sunday, Tuesday, Thursday, Saturday Reported: 2–11 days	5/20/19
Bilirubin, Urine	UBIL	Specimen Requirement: 10 mL random urine in a clean container; Minimum: 5 mL; Refrigerated  *OR* 7 mL random urine in a BD Urine Preservative tube (yellow); Minimum: 7 mL; Ambient  Stability:  Ambient: Clean container–2 hours; BD Urine Preservative tube (yellow)–72 hours  Refrigerated: Clean container–24 hours; BD Urine Preservative tube (yellow)–72 hours	7/2/19
Cadmium, Urine	URCAD	Days Performed: Sunday–Saturday Reported: 2–6 days	5/20/19
CALR (Calreticulin) Exon 9 Mutation Blood	CALR	For Interfaced Clients Only: Test build may need to be modified	7/2/19
Campylobacter Antigen	CAMPAG	Special Information: Specimens in any transport media other than indicated will be rejected.  Specimen Requirement: 5 g stool in a clean container (No preservatives); Minimum: 1 g; Refrigerated  *OR* 5 g stool placed in enteric transport media (Cary-Blair) within 1 hour of collection; Minimum: 1 g; Refrigerated  Stability:  Ambient: Unpreserved stool: Unacceptable; Cary-Blair/C&S media: 4 days Refrigerated: Unpreserved stool: 4 days; Cary-Blair/C&S media: 4 days Frozen: Unpreserved stool: 1 week; Cary-Blair/C&S media: Unacceptable Methodology: Enzyme Immunoassay (EIA)  CPT: 87449 x 1	5/20/19

Test Name	Order Code	Change	Effective Date
Chromium, Urine	UCHRO	Days Performed: Sunday–Saturday Reported: 2–6 days	5/20/19
Clobazam	CLOBAZ	CPT: 80339 x 1	Effective immediately
Cobalt, Blood	COBALB	Special Information: Specimens collected and/or transported in containers other than specified will be rejected. Clotted specimens are unacceptable.  Clinical Information: Blood cobalt levels can be used in the assessment of occupational exposure or toxic ingestion. Symptoms associated with cobalt toxicity vary based on route of exposure and may include cardiomyopathy, allergic dermatitis, pulmonary fibrosis, cough, and dyspnea. Blood is the preferred specimen type for evaluating metal ion release from metal-on-metal joint arthroplasty.  Elevated results may be due to skin or collection-related contamination, including the use of a noncertified metal-free collection/transport tube. If contamination concerns exist due to elevated levels of blood cobalt, confirmation with a second specimen collected in a certified metal-free tube is recommended.  Specimen Requirement: 6 mL whole blood in an EDTA (royal blue) tube; Minimum: 0.5 mL; 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); Transport specimen in original collection tube; Ambient  Stability:  Ambient: Indefinitely Refrigerated: Indefinitely Frozen: Unacceptable	5/20/19
Cobalt, Serum or Plasma	COBALT	Special Information: Patient Prep: 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). Specimens collected and/or transported in containers other than specified will be rejected. This test is New York DOH approved.  Clinical Information: Occupational exposure or toxic ingestion monitoring. Whole blood is the preferred test for evaluating metal ion release from metal-on-metal joint arthroplasty. Serum levels may be increased in asymptomatic patients with metal-on-metal prosthetics and should be considered in the context of the overall clinical scenario. Symptoms associated with cobalt toxicity vary based on 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 a noncertified metal-free collection/transport tube. If contamination concerns exist due to elevated levels of serum/plasma cobalt, confirmation with a second specimen collected in a certified metal-free tube is recommended.  Specimen Requirement: 2 mL serum from a plain no additive (navy blue) tube; Minimum: 0.5 mL; Patient Prep: 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); Do not use serum separator tubes; Remove serum from cells ASAP or within 2 hours of collection and aliquot into a trace metal-free transport tube (ARUP #43116); Ambient  *OR* 2 mL plasma from an EDTA (royal blue) tube; Minimum: 0.5 mL;  Patient Prep: Diet, medication and nutritional supplements may introduce interfering substances; Patients should be encouraged to discontinue nutritional supplements, vitamins, minerals and non-e	5/20/19

Test Name	Order Code	Change	Effective Date
Complement Deficiency Assay	COMPD	Note: Changes for COMPD were previously announced in the April Technical Update. Please note the following updates.  Special Information: Samples must be collected in a red-top tube, without serum separator. If frozen, samples should be kept at minus 20 °C or colder (minus 70 °C or colder is preferred).  Specimen Requirement: 1 mL serum from a plain no additive (red) tube; Minimum: 0.25 mL; Allow sample to clot, separate serum from cells as soon as possible; Centrifuge, then remove serum and freeze at minus 20 °C or colder (minus 70 °C or colder is preferred); Frozen  Stability:  Ambient: 4 Hours Refrigerated: 24 Hours Frozen: 7 days at minus 20 °C (acceptable); 30 days at minus 70 °C (preferred)  Days Performed: Monday, Wednesday, Friday  Reported: 1–4 days	5/29/19
Disopyramide (Norpace)	DISOP	For Interfaced Clients Only: Test build may need to be modified Special Information: Draw specimen prior to next dose—at steady state concentration. Unacceptable conditions: Whole blood, gel separator tubes, sodium citrate (light blue) tubes, SPS or ACD solution (yellow) tubes. This test is New York DOH approved.  Specimen Requirement: 1 mL serum from a plain no additive (red) tube; Minimum: 0.5 mL; Collect: Pre-dose (trough) draw—At a steady state concentration; Do not use serum separator tubes; Separate from cells ASAP or within 2 hours of collection and transfer into standard aliquot tube; Refrigerated  *OR* 1 mL plasma from an EDTA (lavender) tube; Minimum: 0.5 mL; Collect: Pre-dose (trough) draw—At a steady state concentration; Do not use plasma separator tubes; Separate from cells ASAP or within 2 hours of collection and transfer into standard aliquot tube; Refrigerated	5/20/19
Drug Detection Panel, TOF-MS, Umbilical Cord Tissue	DRGTOF	For Interfaced Clients Only: Test build may need to be modified Includes:  Buprenorphine Norbuprenorphine Codeine Dihydrocodeine Fentanyl Hydrocodone Norhydrocodone Hydromorphone Meperidine Methadone metabolite 6-Acetylmorphine Morphine Naloxone Oxycodone Noroxycodone Noroxycodone Noroxymorphone Propoxyphene Tapentadol Tramadol N-desmethyltramadol O-desmethyltramadol Amphetamine Benzoylecgonine m-OH-Benzoylecgonine Cocaethylene Cocaethylene Cocaethylene Cocaine MDMA-Ecstasy Methamphetamine Phentermine  (continued on page 8)	5/20/19

Test Name	Order Code	Change	Effective Date
Drug Detection Panel, TOF-MS, Umbilical Cord Tissue (continued from page 7)		Alprazolam Alpha-OH-Alprazolam Butalbital Clonazepam 7-Aminoclonazepam Diazepam Lorazepam Midazolam Alpha-OH-Midazolam Nordiazepam Oxazepam Phenobarbital Temazepam Zolpidem Phencyclidine-PCP Gabapentin (Note: Buprenorphine-G will be removed)	
		<b>Special Information:</b> Cords soaking in blood or other fluids are unacceptable. Formalin-fixed specimens or tissue that is obviously decomposed will not be accepted. This test is New York DOH approved.	
		Clinical Information: Detection of drugs in umbilical cord tissue is intended to reflect maternal drug use during approximately the last trimester of a full-term pregnancy. The pattern and frequency of drug(s) used by the mother cannot be determined by this test. A negative result does not exclude the possibility that a mother used drugs during pregnancy. Detection of drugs in umbilical cord tissue depends on extent of maternal drug use, as well as drug stability, unique characteristics of drug deposition in umbilical cord tissue, and the performance of the analytical method. Drugs administered during labor and delivery may be detected. Detection of drugs in umbilical cord tissue does not insinuate impairment and may not affect outcomes for the infant. Interpretive questions should be directed to the laboratory.	
		Specimen Requirement: At least 8 inches of umbilical cord (approximately the width of a sheet of paper) in a clean container; Minimum: 6 inches (Absolute minimum); Drain and discard any blood; Rinse the exterior of the cord segment with normal saline or water; Pat the cord dry and transport at least 8 inches of umbilical cord in a routine urine collection cup or use the Security Kit for Meconium/Umbilical Drug Detection (ARUP supply #51548); Refrigerated	
		Reference Range: Buprenorphine: cutoff 1 ng/g Norbuprenorphine: cutoff 0.5 ng/g Codeine: cutoff 0.5 ng/g Dihydrocodeine: cutoff 1 ng/g Fentanyl: cutoff 0.5 ng/g Hydrocodone: cutoff 0.5 ng/g Hydrocodone: cutoff 0.5 ng/g Hydromorphone: cutoff 0.5 ng/g Meperidine: cutoff 2 ng/g Methadone: cutoff 2 ng/g Methadone: cutoff 1 ng/g Morphine: cutoff 1 ng/g Morphine: cutoff 0.5 ng/g Naloxone: cutoff 0.5 ng/g Naloxone: cutoff 1 ng/g Oxycodone: cutoff 1 ng/g Oxycodone: cutoff 0.5 ng/g Noroxycodone: cutoff 0.5 ng/g Noroxymorphone: cutoff 0.5 ng/g Noroxymorphone: cutoff 0.5 ng/g Noroxymorphone: cutoff 0.5 ng/g Noroxymorphone: cutoff 1 ng/g Capentadol: cutoff 2 ng/g Tramadol: cutoff 2 ng/g N-desmethyltramadol: cutoff 2 ng/g Amphetamine: cutoff 5 ng/g	

(continued on page 9)

Test Name	Order Code	Change	Effective Date
Drug Detection Panel, TOF-MS, Umbilical Cord Tissue (continued from page 8)		Benzoylecgonine: cutoff 0.5 ng/g m-OH-Benzoylecgonine: cutoff 1 ng/g Cocaethylene: cutoff 1 ng/g Cocaine: cutoff 0.5 ng/g MDMA-Ecstasy: cutoff 5 ng/g Methamphetamine: cutoff 5 ng/g Phentermine: cutoff 8 ng/g Alprazolam: cutoff 0.5 ng/g Alpha-OH-Alprazolam: cutoff 0.5 ng/g Butalbital: cutoff 25 ng/g Clonazepam: cutoff 1 ng/g 7-Aminoclonazepam: cutoff 1 ng/g Diazepam: cutoff 1 ng/g Lorazepam: cutoff 5 ng/g Midazolam: cutoff 1 ng/g Alpha-OH-Midazolam: cutoff 2 ng/g Nordiazepam: cutoff 1 ng/g Oxazepam: cutoff 1 ng/g Coxazepam: cutoff 1 ng/g Oxazepam: cutoff 1 ng/g Phenobarbital: cutoff 75 ng/g Temazepam: cutoff 1 ng/g Zolpidem: cutoff 0.5 ng/g Phencyclidine—PCP: cutoff 1 ng/g Gabapentin: cutoff 10 ng/g	
Drug Detection Panel, Umbilical Cord Tissue, with Marijuana Metabolite	DTOFMP	For Interfaced Clients Only: Test build may need to be modified  Note: Refer to Drug Detection Panel, TOF-MS, Umbilical Cord Tissue (DRGTOF).  Special Information: Cords soaking in blood or other fluids will be rejected. Formalin-fixed specimens or tissue that is obviously decomposed will not be accepted. This test is New York DOH approved.  Clinical Information: Detection of drugs in umbilical cord tissue is intended to reflect maternal drug use during approximately the last trimester of a full term pregnancy. The pattern and frequency of drug(s) used by the mother cannot be determined by this test. A negative result does not exclude the possibility that a mother used drugs during pregnancy. Detection of drugs in umbilical cord tissue depends on extent of maternal drug use, as well as drug stability, unique characteristics of drug deposition in umbilical cord tissue, and the performance of the analytical method. Drugs administered during labor and delivery may be detected. Detection of drugs in umbilical cord tissue does not insinuate impairment and may not affect outcomes for the infant.  Specimen Requirement: At least 8 inches of umbilical cord (approximately the width of a sheet of paper) in a clean container; Minimum: 8 inches (Absolute minimum); Drain and discard any blood; Rinse the exterior of the cord segment with normal saline or water; Pat the cord dry and transport at least 8 inches of umbilical cord in a routine urine collection cup or use the Security Kit for Meconium/Umbilical Drug Detection (ARUP supply #51548); NOTE: Only a single sample is required; Refrigerated  Stability:  Ambient: 1 week Refrigerated: 3 weeks Frozen: 1 year  Reference Range: Refer to Drug Detection Panel, TOF-MS, Umbilical Cord Tissue (DRGTOF).	5/20/19

Test Name	Order Code	Change	Effective Date
Ethosuximide	ETHOS	For Interfaced Clients Only: Test build may need to be modified  Special Information: Timing of specimen collection: Pre-dose (trough) draw-At steady state concentration. Unacceptable conditions: Whole blood, gel separator tubes, citrate (light blue) tubes, SPS or ACD solution (yellow) tubes. This test is New York DOH approved.  Clinical Information: Used to optimize drug therapy and monitor patient adherence.  Specimen Requirement: 1 mL serum from a plain no additive (red) tube; Minimum: 0.5 mL; Timing of specimen collection: Pre-dose (trough) draw-At steady state concentration; Do not use serum separator tubes; Separate from cells ASAP or within 2 hours of collection and transfer into standard aliquot tube; Refrigerated *OR* 1 mL plasma from an EDTA (lavender) tube; Minimum: 0.5 mL; Timing of specimen collection: Pre-dose (trough) draw-At steady state concentration; Do not use plasma separator tubes; Separate from cells ASAP or within 2 hours of collection and transfer into standard aliquot tube; Refrigerated  Days Performed: Sunday-Saturday  Reported: 2-6 days	5/20/19
Gaucher Disease Mutation, Whole Blood	GAUCHR	Special Information: Frozen specimens will be rejected. Hemolyzed specimens are unacceptable. Samples with insufficient quantities or in improper containers will be rejected.  Specimen Requirement: 10 mL whole blood in an ACD A (yellow) tube; Minimum: 10 mL; Ambient  *OR* 10 mL whole blood in an EDTA (lavender) tube; Minimum: 10 mL; Ambient  Stability:  Ambient: 21 days, preferred Refrigerated: 21 days Frozen: Unacceptable  Days Performed: Tuesday  Reported: 8–15 days	7/2/19
Gentamicin, Post Dose	GENTPO	Reference Range: 0–99 Years: 4.0– <b>20.0</b> μg/mL Urgent Range: 0–99 Years: > <b>20.0</b> μg/mL	7/9/19
Gentamicin, Random	GENTRA	Reference Range: 0–99 Years: 1.0–20.0 μg/mL Urgent Range: 0–99 Years: > 20.0 μg/mL	7/9/19
Heavy Metals, Urine	UTXM3	Days Performed: Sunday–Saturday Reported: 2–6 days	5/20/19
Heavy Metals with Cadmium, Ur	UTXM4	Days Performed: Sunday–Saturday Reported: 2–6 days	5/20/19
Hemoglobin Electrophoresis	HBELSA	For Interfaced Clients Only: Test build may need to be modified  Reference Range: Hemoglobin A2: 2.0–3.1% Hemoglobin Fetal: 0.0–0.9% (Note: Hb A Percent = 96.2–98.0%)	7/2/19
Hemoglobin Evaluation Cascade	HBEVAL	For Interfaced Clients Only: Test build may need to be modified Reference Range:  Hemoglobin Fetal: 0.0–0.9%  Hemoglobin A2 Percent (0–99 Years): 2.0–3.1%  (Note: Hb A Percent = 96.2–98.0%)	7/2/19
Hemoglobin S and F Monitoring	HBSFMO	Reference Range: Hemoglobin Fetal: 0.0–0.9% (Note: Hb S Percent = 0.0%)	7/2/19

Test Name	Order Code	Change	Effective Date
Hemoglobin, Urine	UHGB	Specimen Requirement: 10 mL random urine in a clean container; Minimum: 5 mL; Refrigerated *OR* 7 mL random urine in a BD Urine Preservative tube (yellow); Minimum: 7 mL; Ambient Stability: Ambient: Clean container–2 hours; BD Urine Preservative tube (yellow)–72 hours Refrigerated: Clean container–24 hours; BD Urine Preservative tube (yellow)–72 hours	7/2/19
HemoQuant, Fecal	HEMOQN	Special Information: Collect random specimen from a single defecation. Patient should not ingest red meat or aspirin for at least 72 hours prior to collection.  Clinical Information: The HemoQuant test is the most reliable, noninvasive test currently available for detecting bleeding of the esophago-GI tract. Unlike other tests for blood in feces, this test detects both intact heme and porphyrins from partly degraded heme. Additionally, test results are not complicated by either the water content of the specimen or the presence of reducing or oxidizing substances. Additionally, HemoQuant testing is sensitive to both proximal and distal sources of occult GI bleeding. Elevated levels are an indicator of the presence of blood in the feces, either from benign or malignant causes. This test is not specific for bowel cancer. Cautions: Heme from ingested red meat will increase HemoQuant test values. Patients should be advised to avoid eating red meat for 3 days before collecting specimens. Fish and poultry may be substituted. The elevated porphyrias of intoxication porphyria, erythrocytic protoporphyria, and variegate porphyria may raise HemoQuant values in the absence of gut bleeding. Recent studies indicate that cancerous lesions in their early stages often do not bleed or bleed only intermittently.  Stability:  Ambient: 7 days Refrigerated: 7 days, preferred Frozen: Acceptable  Days Performed: Monday–Saturday  Reported: 2–3 days	5/20/19
Hepatitis Be Antigen	HBEAG	Clinical Information: HBeAg test should only be done in patients with positive HBsAg result and be used as an aid to determine the level of infectiousness and for monitoring chronic Hepatitis B activity over time as an important prognostic test. HBeAg may test negative in HBV-infected individuals with precore or basal core promoter mutations. Anti-HBe antibody test should be considered in conjunction with HBeAg test.	5/1/19
Histamine	BHISTA	Special Information: Critical frozen. Separate specimens must be submitted when multiple tests are ordered. This test is New York DOH approved.  Clinical Information: Aid in evaluation of patient with allergic signs and symptoms (e.g., anaphylaxis). May assist in the diagnosis and monitoring of mast-cell activation disorders.  Specimen Requirement: 1 mL whole blood in a sodium or lithium heparin (green) tube: Minimum: 0.5 mL; Transfer 1 mL well-mixed whole blood to a standard aliquot tube and freeze; Separate specimens must be submitted when multiple tests are ordered; Critical Frozen  Stability:  Ambient: Unacceptable Refrigerated: Unacceptable Frozen: 6 months  Methodology: Enzyme-Linked Immunosorbent Assay (ELISA)  Days Performed: Monday, Thursday  Reported: 2–6 days	5/20/19

Test Name	Order Code	Change	Effective Date
Histamine, Plasma	PHISTA	Special Information: Critical Frozen. Separate specimens must be submitted when multiple tests are ordered. Unacceptable conditions: Lipemic or hemolyzed specimens. This test is New York DOH approved.  Clinical Information: Aid in evaluation of patient with allergic signs and symptoms (e.g., anaphylaxis). May assist in the diagnosis and monitoring of mast-cell activation disorders.  Specimen Requirement: 1 mL plasma from an EDTA (lavender) tube; Minimum: 0.5 mL; Collect in a pre-chilled tube and on ice; Centrifuge refrigerated and separate upper two-thirds of plasma within 20 minutes and freeze immediately in a standard aliquot tube; Separate specimens must be submitted when multiple tests are ordered; Critical Frozen  Stability:  Ambient: After separation from cells: Unacceptable Refrigerated: After separation from cells: 6 hours Frozen: After separation from cells: 6 months	5/20/19
Histamine, Urine	UHISTA	Special Information: Critical Frozen. Indicate total volume and collection time interval on transport tube and requisition. If a 24-hour urine is submitted, the excretion will be calculated. If a random urine is submitted, the result will be reported as 'Not applicable.' MUST send frozen. This test is New York DOH approved.  Stability:  Ambient: Unacceptable Refrigerated: 6 hours Frozen: 6 months	5/20/19
HIV-1 Integrase Genotype	HIVIGT	Includes:  Value of Viral Load Date Viral Load Collected Raltegravir Resistance Elvitegravir Resistance Elvitegravir Resistance Bictegravir Resistance Bictegravir Resistance Special Information: Unacceptable conditions: Plasma received frozen in the plasma preparation tube (PPT), serum, whole blood greater than 24 hours old, frozen whole blood Specimen Requirement: 2 mL plasma from an EDTA (lavender) tube; Minimum: 0.6 mL; Freshly drawn whole blood specimens may be stored at 2–25 °C for up to 24 hours prior to centrifugation; Separate plasma from cells into a separate tube within 24 hours of collection; Frozen  *OR* 2 mL plasma from an EDTA (white) plasma preparation tube (PPT); Minimum: 0.6 mL; Freshly drawn whole blood specimens may be stored at 2–25 °C for up to 24 hours prior to centrifugation; Separate plasma from cells into a separate tube within 24 hours of collection; Frozen  *OR* 2 mL cerebrospinal fluid (CSF) in a sterile container; Minimum: 0.6 mL; Transfer CSF to a sterile, leak-proof container; Frozen  *OR* 2 mL cerebrospinal fluid (CSF) in a sterile container; Minimum: 0.6 mL; Transfer CSF to a sterile, leak-proof container; Frozen  Stability:  Ambient: After separation from cells: 24 hours Refrigerated: After separation from cells: 42 days  Days Performed: Monday–Saturday  Reported: 5–9 days	6/24/19
Lead, Urine 24 Hour	ULEADQ	Days Performed: Sunday–Saturday Reported: 2–6 days	5/20/19
Lp-PLA2 Activity	PLAA2	Stability: Ambient: 21 days Refrigerated: 180 days Frozen: 180 days at minus 20 °C; 180 days at minus 70 °C	Effective immediately

Test Name	Order Code	Change	Effective Date
Lung Cancer Hot Spot Panel v2 NGS 2 gene	LNG2GN	For Interfaced Clients Only: Test build may need to be modified  Note: This test will have a new order code.  CPT: 81235 x 1, 81275 x 1, 81276 x 1	7/9/19
Manganese, Urine	UMANG	Days Performed: Sunday–Saturday Reported: 2–6 days	5/20/19
Marijuana Metabolite, Umbilical Cord Tissue, Qualitative	DRGTHC	Special Information: Cords soaking in blood or other fluid will be rejected.  Formalin-fixed specimens are unacceptable. Tissue that is obviously decomposed will be rejected. This test is New York DOH approved.  Clinical Information: This test is designed to detect and document exposure that	5/20/19
		occurred during approximately the last trimester of a full term pregnancy, to a common cannabis (marijuana) metabolite. Other drug exposures can be detected by alternative testing. The pattern and frequency of drug(s) used by the mother cannot be determined by this test. A negative result does not exclude the possibility that a mother used drugs during pregnancy. Detection of drugs in umbilical cord tissue depends on the extent of maternal drug use, as well as drug stability, unique characteristics of drug deposition in umbilical cord tissue, and the performance of the analytical method. Drugs administered during labor and delivery may be detected. Detection of drugs in umbilical cord tissue does not insinuate impairment and may not affect outcomes for the infant.	
		Specimen Requirement: At least 8 inches of umbilical cord (approximately the width of a sheet of paper) in a clean container; Minimum: 6 inches; Drain and discard any blood; Rinse the exterior of the cord segment with normal saline or water; Pat the cord dry and transport at least 8 inches of umbilical cord in a routine urine collection cup or use the Security Kit for Meconium/Umbilical Drug Detection (ARUP supply #51548); Refrigerated	
		Stability: Ambient: 1 week Refrigerated: 3 weeks Frozen: 1 year	
Maternal Cell Contamination, Integrated Genetics	MATRNL	Stability: Ambient: 21 days Refrigerated: 21 days Frozen: Unacceptable	Effective immediately
		Days Performed: Monday–Saturday  Reported: 8–11 days	
Mercury, Urine 24 Hour	UMERC3	Days Performed: Sunday–Saturday Reported: 2–6 days	5/20/19
MET Gene Analysis	METGN	For Interfaced Clients Only: Test build may need to be modified Note: This test will have a new order code.  CPT: 81479 x 1	7/9/19
Methotrexate	МТХ	Specimen Requirement: 1 mL plasma from a sodium or lithium heparin (green) tube; Minimum: 0.5 mL; Do not collect in a gel separator tube; Centrifuge and transfer plasma to a CCL tube and refrigerate; Centrifuge, aliquot and refrigerate *OR* 1 mL serum from a plain no additive (red) tube; Minimum: 0.5 mL; Do not collect in a gel separator tube; Centrifuge and transfer serum to a CCL tube and refrigerate; Centrifuge, aliquot and refrigerate  Stability:  Ambient: After separation from cells: 7 days capped  Refrigerated: After separation from cells: 14 days capped  Frozen: After separation from cells: 14 days capped	7/11/19

Test Name	Order Code	Change	Effective Date
MRSA Culture Screen	MRSASC	Special Information: Methicillin resistant Staphylococcus aureus (MRSA) and methicillin susceptible Staphylococcus aureus (MSSA) screening is also available by polymerase chain reaction (PCR), Staph aureus PCR (SAPCR) for faster turnaround time, but is limited to nares specimens. An alternative culture order is MRSA/Staph aureus Culture Screen (SANSAL) which detects colonization with MRSA and MSSA.  Clinical Limitation: This test should not be used to diagnose and treat infections.  Clinical Information: This test detects colonization with methicillin resistant Staphylococcus aureus (MRSA) by culture. An overnight broth enrichment step is included. Insert a sterile swab into the nose until resistance is met at the level of the turbinates (approximately 1–2 cm into one nostril). Rotate the swab against the nasal mucosa for 3 seconds. Apply slight pressure with a finger on the outside of the nose to ensure good contact between swab and inside of nose. Using the same swab, repeat for the other nostril. Samples from other anatomic sites may be submitted.  Specimen Requirement: One swab(s) from any site is accepted; Collect with dual swab BD CultureSwab collection device with Stuart's Transport Medium; Ambient	6/16/19
MRSA/Staph aureus Culture Screen	SANSAL	Specimen Requirement: One swab(s); Specify site; Collect specimen with dual swab BD CultureSwab collection device with Stuart's Transport Medium; Ambient	6/16/19
Nicotine & Metabolites, Urine	UNICOT	(Note: The directory has been updated to show that 3-OH-COTININE is included. This is not a build change.) Includes: Nicotine Cotinine Anabasine Nornicotine 3-OH-COTININE	Effective immediately
Organic Acids Ur, Quant w/ Basic Interpretation	UORABI	For Interfaced Clients Only: Test build may need to be modified Includes:  Lactate, Urine 2HydroxyButyrate, Ur Oxalic Acid, Urine 3HydroxyButyrate, Ur 2OH-IsoValerate, Ur AcetoAcetate, Urine 3OH2MethButyrate, Ur Malonate, Urine 3-HydroxyIsoValerate MethylMalonate, Urine Benzoic Acid, Urine EthylMalonate, Urine Succinate, Urine MethylSuccinate, Ur Uracil, Urine Fumarate, Urine IsoButyryIGlycine, Ur Malate, Urine Adipic Acid, Urine 5-Oxo-Proline, Urine 3MECrotonyIGlycine, U 3HydroxyGlutaricAcid 2HydroxyGlutaricAcid 2HydroxyGlutaricAcid a-KetoGlutarate, Ur HexanoyIGlycine, Ur 4OHPhenylAcetate, Ur N-AcetylAsparticAcid Suberic Acid, Urine SuccinylAcetone, Ur 2-OxoAdipic Acid, Ur Aconitate, Urine	7/2/19

(continued on page 15)

Test Name	Order Code	Change	Effective Date
Organic Acids Ur, Quant w/ Basic Interpretation (continued from page 14)		IsoCitric Acid, Urine MethylCitrate, Urine Sebacic Acid, Urine 4OHPhenylLactate, Ur N-AcetylTyrosine, Ur SuberylGlycine, Ur Pyruvate, Urine Glutarate, Urine 3MethylGlutarate, Ur ButyrylGlycine, Ur 3-Methylglutaconate Urine, Creatinine Note: The following reference ranges will be applied to the UORABI panel: Urine, Creatinine Male (18–99 Years): 46.8–314.5 mg/dL Female (18–99 Years): 42.2–237.9 mg/dL	
Organic Acids Ur, Quant w/ No Interpretation	UORANI	For Interfaced Clients Only: Test build may need to be modified Includes: Lactate, Urine 2HydroxyButyrate, Ur Oxalic Acid, Urine 3HydroxyButyrate, Ur AcetoAcetate, Urine 3OH2MethButyrate, Ur Malonate, Urine 3-HydroxyJsoValerate MethylMalonate, Urine Benzoic Acid, Urine EthylMalonate, Urine Succinate, Urine MethylSuccinate, Ur Uracil, Urine Fumarate, Urine IsoButyryIGlycine, U Glutarate, Urine 3MethylGlutarate, Ur ButyryIGlycine, Ur 2MEButyryIGlycine, Ur Alate, Urine 3MECrotonyIGlycine, Ur 2HydroxyGlutaric Acid, U 2HydroxyGlutaric Acid, U 2HydroxyGlutaric Acid, U 2-NacetyIAsparticAcid, Ur AcetyIAsparticAcid, Ur Suberic Acid, Urine SuccinyIAcetone, Ur 2-OxoAdipic Acid, Ur Aconitate, Urine Sebacic Acid, Urine MethylCitrate, Urine Sebacic Acid, Urine MolHPhenylLactate, Ur N-AcetylTyrosine, Ur SuberyIGlycine, Ur Subery	7/2/19

Test Name	Order Code	Change	Effective Date
Oxcarbazepine	OXCARB	Days Performed: Monday–Friday Reported: 1–3 days	5/7/19
Parenteral Nutrition Package	TPNTE	Specimen Requirement: 7 mL plasma from an EDTA (royal blue) tube; Minimum: 5 mL; Refrigerated *AND* 7 mL whole blood in an EDTA (royal blue) tube; Minimum: 5 mL; Refrigerated	Effective immediately
Protein, Urine Qualitative	UPROT	Specimen Requirement: 10 mL random urine in a clean container; Minimum: 5 mL; Refrigerated *OR* 7 mL random urine in a BD Urine Preservative tube (yellow); Minimum: 7 mL; Ambient Stability: Ambient: Clean container–2 hours; BD Urine Preservative tube (yellow)–72 hours Refrigerated: Clean container–24 hours; BD Urine Preservative tube (yellow)–72 hours	7/2/19
Prothrombin Time and PTT Elevation Diagnostic Panel	PTPTTE	For Interfaced Clients Only: Test build may need to be modified (Note: Heparin Anti Xa will be removed and replaced with Anti Xa Inhib Assay) Reference Range: Prothrombin Time and PTT Elevation Diagnostic Panel: Refer to individual components	7/2/19
PTH, Intact	РТНІ	<b>Special Information:</b> Note that <b>serum</b> specimens need to be spun immediately after the specimen clots. Patients taking a biotin dose of up to 5 mg/day should refrain from taking biotin for 4 hours prior to sample collection. Patients taking a biotin dose of 5 to 10 mg/day should refrain from taking biotin for 8 hours prior to sample collection. Patients taking a biotin dose > 10 mg/day should consult with their physician or the laboratory prior to having a sample taken. Clinicians should consider biotin interference as a source of error, when clinically suspicious of the laboratory result.	7/2/19
		Specimen Requirement: 1 mL plasma from an EDTA (lavender) tube; Minimum: 0.5 mL; Centrifuge and transfer plasma into a CCL aliquot tube and refrigerate; Centrifuge and refrigerate	
		*OR* 1 mL serum from a serum separator (gold) tube; Minimum: <b>0.5 mL</b> ; Submit in original tube or aliquot specimen into CCL aliquot tube; Centrifuge and refrigerate <b>Stability:</b> Ambient: <b>Plasma: 2 days after separation from cells;</b> Serum: 8 hours after separation from cells Refrigerated: <b>Plasma: 3 days after separation from cells;</b> Serum: 2 days after separation from cells Frozen: <b>Plasma: 6 months after separation from cells;</b> Serum: 6 months after separation from cells	
PTT Elevation Diagnostic Panel	PTTEPL	For Interfaced Clients Only: Test build may need to be modified (Note: Heparin Anti Xa will be removed and replaced with Anti Xa Inhib Assay) Reference Range: PTT Elevation Diagnostic Panel: Refer to individual components	7/2/19

Test Name	Order Code	Change	Effective Date
PTT Incubated Mixing Study	PTTIM	For Interfaced Clients Only: Test build may need to be modified (Note: Heparin Anti Xa will be removed and replaced with Anti Xa Inhib Assay) Includes: PT Screen Anti Xa Inhib Assay APTT Screen Immediate PTT 1:1 Mix Incubated PTT 1:1 Mix Thrombin Time	7/2/19
		Reference Range: PT Screen  0-1 Days: 7.9–14.8 sec 2-5 Days: 7.4–14.2 sec 6–30 Days: 7.2–13.3 sec 1–3 Months: 7.2–13.2 sec 4–11 Months: 8.3–12.9 sec 1–99 Years: < 13.1 sec Anti Xa Inhib Assay: Refer to report APTT Screen 0–1 Days: 28.7–45.1 sec 2–5 Days: 23.3–49.4 sec 6–30 Days: 23.5–45.6 sec 1–3 Months: 22.1–41.4 sec 4–11 Months: 25.8–35.5 sec 1–99 Years: 24.4–33.4 sec Immediate PTT 1:1 Mix 0–99 Years: < 33.2 sec Incubated PTT 1:1 Mix 0–99 Years: < 35.0 sec Thrombin Time 0–1 Days: < 17.4 sec 2–5 Days: < 17.9 sec 6–30 Days: < 17.9 sec 1–3 Months: < 18.2 sec 4–11 Months: < 19.1 sec 1–99 Years: < 18.6 sec	
Selenium, Plasma or Serum	PSELEN	Special Information: Patient Prep: 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). Separator tubes will be rejected. Specimens that are not separated from the red cells or clot within 6 hours are unacceptable.  Specimen Requirement: 2 mL plasma from an EDTA (royal blue) tube; Minimum: 0.5 mL; Do not use plasma separator tubes; 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); Separate plasma from cells ASAP or within 6 hours of collection, and aliquot into trace metal free transport tubes (ARUP #43116); Ambient  *OR* 2 mL serum from a plain no additive (navy blue) tube; Minimum: 0.5 mL; Do not use serum separator tubes; 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); Separate serum from cells ASAP or within 6 hours of collection, and aliquot into trace metal free transport tubes (ARUP #43116); Ambient  Days Performed: Sunday—Saturday  Reported: 2-4 days	5/20/19

Test Name	Order Code	Change	Effective Date
Specific Gravity, Urine	USPG	Specimen Requirement: 10 mL random urine in a clean container; Minimum: 5 mL; Refrigerated  *OR* 7 mL random urine in a BD Urine Preservative tube (yellow); Minimum: 7 mL; Ambient  Stability: Ambient: Clean container–2 hours; BD Urine Preservative tube (yellow)–72 hours Refrigerated: Clean container–24 hours; BD Urine Preservative tube (yellow)–72 hours	7/2/19
Thallium, Urine	UTHAL	Days Performed: Sunday—Saturday Reported: 2–6 days	5/20/19
Tobramycin, Post Dose	TOBRPO	Reference Range: 0–99 Years: 4.0– <b>20.0</b> $\mu$ g/mL Urgent Range: 0–99 Years: > <b>20.0</b> $\mu$ g/mL	7/9/19
Tobramycin, Random	TOBRRA	Reference Range: 0–99 Years: 1.0–20.0 μg/mL Urgent Range: 0–99 Years: > 20.0 μg/mL	7/9/19
Trypsinogen	TRYPSI	Reference Range: 0–17 Years: Not established 18 Years and older: 180.5–885.3 ng/mL Days Performed: Tuesday, Friday Reported: 2–6 days	Effective immediately
Tryptase	TRYPT	Reference Range: $< 8.4 \mu\text{g/L}$	5/29/19
Urinalysis with Microscopic	UAWMIC	Specimen Requirement: 10 mL random urine in a clean container; Minimum: 5 mL; Refrigerated *OR* 7 mL random urine in a BD Urine Preservative tube (yellow); Minimum: 7 mL; Ambient Stability: Ambient: Clean container–2 hours; BD Urine Preservative tube (yellow)–72 hours Refrigerated: Clean container–24 hours; BD Urine Preservative tube (yellow)–72 hours	7/2/19
Urobilinogen Screen, Urine	UUROB	Specimen Requirement: 10 mL random urine in a clean container; Minimum: 5 mL; Refrigerated *OR* 7 mL random urine in a BD Urine Preservative tube (yellow); Minimum: 7 mL; Ambient Stability: Ambient: Clean container–2 hours; BD Urine Preservative tube (yellow)–72 hours Refrigerated: Clean container–24 hours; BD Urine Preservative tube (yellow)–72 hours	7/2/19
Varicella Zoster by PCR	VZPCR	Specimen Requirement: 1 mL cerebrospinal fluid (CSF) in a sterile container; Minimum: 0.5 mL; Specimen source is required; Frozen  *OR* 1 mL plasma from an EDTA (lavender) tube; Minimum: 0.5 mL; Specimen source is required; Frozen  *OR* 1 mL serum from a serum separator (gold) tube; Minimum: 0.5 mL; Specimen source is required; Frozen  *OR* Tissue in a sterile container; Snap frozen; Specimen source is required; Frozen  *OR* 1 mL ocular fluid in a sterile container; Minimum: 0.5 mL; Specimen source is required; Frozen  *OR* 1 mL vesicle fluid swab in M4 or Universal Transport Media (UTM); Minimum: 0.5 mL; Specimen source is required; May also use viral transport media (VTM) (ARUP supply #12884); Frozen	5/7/19

Test Name	Order Code	Change	Effective Date
Vitamin B5 (Pantothenic Acid) Bioassay	VITB5	Special Information: Critical: MUST protect from light. Specimens not protected from light will be rejected. Grossly hemolyzed or lipemic specimens are unacceptable. If possible, specimens from New York clients will be sent out to a New York DOH approved laboratory.	7/2/19
		Specimen Requirement: 1 mL serum from a serum separator (gold) tube; Minimum: 0.5 mL; MUST protect specimen from light; Transfer serum into an amber transport tube; Frozen	
		Stability: Ambient: 24 hours Refrigerated: 1 week Frozen: 3 weeks	
		Reference Range: Refer to report	
		Days Performed: Varies	
		Reported: 4–11 days	

#### New Tests

Test Name	Order Code	Change	Effective Date
Allergen, Food, Orris Root IgE	ORRIS	Special Information: Hemolyzed, icteric, and lipemic specimens are unacceptable.  Specimen Requirement: 0.5 mL serum from a serum separator (gold) tube; Minimum: 0.34 mL; Separate serum from cells ASAP or within 2 hours of collection; Ambient  *OR* 0.5 mL serum from a plain no additive (red) tube; Minimum: 0.34 mL; Separate serum from cells ASAP or within 2 hours of collection; Ambient  Stability: Ambient: 1 month Refrigerated: 1 month Frozen: 1 year  Methodology: Quantitative Radioimmunoassay  Days Performed: Varies  Reported: 4–7 days  CPT: 86003 x 1  Price: \$35.00 (non-discountable)	5/21/19
Allergen, Fungi and Molds, Chaetomium globosum IgE	CHAETG	Special Information: Hemolyzed, icteric, or lipemic specimens are unacceptable.  Clinical Information: 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.  Specimen Requirement: 0.25 mL serum from a serum separator (gold) tube; Minimum: 0.25 mL; Separate serum from cells ASAP or within 2 hours of collection; Refrigerated  Stability:  Ambient: 48 hours Refrigerated: 2 weeks Frozen: 1 year  Methodology: Quantitative ImmunoCAP Fluorescent Enzyme Immunoassay  Days Performed: Sunday—Saturday  Reported: 2–3 days  CPT: 86003 x 1  Price: \$35.00 (non-discountable)	5/21/19
Allergen, Occupational, Tobacco	TOBAC	Special Information: Hemolyzed, icteric, or lipemic specimens are unacceptable.  Clinical Information: 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.  Specimen Requirement: 0.25 mL serum from a serum separator (gold) tube; Minimum: 0.25 mL; Separate serum from cells ASAP or within 2 hours of collection; Refrigerated  Stability:  Ambient: 48 hours Refrigerated: 2 weeks Frozen: 1 year  Methodology: Quantitative ImmunoCAP Fluorescent Enzyme Immunoassay  Days Performed: Sunday—Saturday  Reported: 2–3 days  CPT: 86003 x 1  Price: \$35.00 (non-discountable)	5/21/19

Test Name	Order Code	Change	Effective Date
CYP2C19 (Cytochrome P450 2C19)	2C19CY	Includes: CYP2C19 genotype Interpretation	5/20/19
		<b>Special Information:</b> Plasma or serum will be rejected. Specimens collected in sodium heparin or lithium heparin are unacceptable. Whole blood is the preferred specimen. Saliva samples that yield inadequate DNA quality and/or quantity will be reported as inconclusive if test performance does not meet laboratory-determined criteria for reporting.	
		Clinical Information: Background: Characteristics: The cytochrome P450 (CYP) isozyme 2C19 is involved in the metabolism of many drugs. Variants in the gene that codes for CYP2C19 will influence pharmacokinetics of CYP2C19 substrates, and may predict or explain non-standard dose requirements, therapeutic failure or adverse reactions. Inheritance: Autosomal co-dominant. Cause: CYP2C19 gene variants affect enzyme expression or activity. Variants tested: Negative: No variants detected is predictive of the *1 functional allele. *2 (rs4244285, c.681G>A), *3 (rs4986893, c.636G>A), *4 (rs28399504, c.1A>G), *5 (rs56337013, c.1297C>T), *6 (rs72552267, c.395G>A), *7 (rs72558186, c.819+2T>A), *8 (rs41291556, c.358T>C), *9 (rs17884712, c.431G>A), *10 (rs6413438, c.680C>T), *15 (rs17882687, c.55A>C), *17 (rs12248560, c806C>T), *35 (rs12769205, c.12662A>G). Clinical Sensitivity: Drug-dependent. Methodology: Polymerase chain reaction (PCR) and fluorescence monitoring. Analytical Sensitivity and Specificity: > 99%	
		Clinical Limitation: Only the targeted CYP2C19 variants will be detected by this panel, and assumptions about phase and content are made to assign alleles. Publically available sources such as the www.pharmvar.org or www.pharmgkb.org provide guidance on phenotype predictions and allele frequencies. Diagnostic errors can occur due to rare sequence variations. Risk of therapeutic failure or adverse reactions with CYP2C19 substrates may be affected by genetic and non-genetic factors that are not detected by this test. This result does not replace the need for therapeutic drug or clinical monitoring.	
		Specimen Requirement: 3 mL whole blood in an EDTA (lavender) tube; Minimum: 1 mL; Refrigerated	
		*OR* 3 mL whole blood in an ACD A or B (yellow) tube; Minimum: 1 mL; Refrigerated	
		*OR* Saliva collected using Saliva Collection Device by DNA Genotek (OCD-100, ARUP supply #49295); Ambient	
		Stability: Ambient: Whole blood: 72 hours; Saliva: 2 weeks Refrigerated: Whole blood: 1 week; Saliva: Unacceptable Frozen: Whole blood: 1 month; Saliva: Unacceptable	
		Methodology: Fluorescence Monitoring Polymerase Chain Reaction (PCR)	
		Reference Range: Refer to report	
		Days Performed: Varies	
		Reported: 6–11 days	
		<b>CPT:</b> 81225 x 1	
		Price: \$355.00 (non-discountable)	

Cryptible (Cytherborne P450 206)  Includes: (Cytherborne P450 (Cytherborne P45	CYP2D6 genotype Interpretation  Special Information: Plasms or serum will be rejected. Specimens collected in sodium hepain or itilium hepain are unacceptable. Whole blood is the preferred specimen. Saliva samples that yield imadequate DNA quality and/or quantity will be reported as inconclusive it test performance does not meet laboratory-determined criteria for reporting.  Clinical Information: Background: Characteristics: The cytochrome P450 (CYP) isozyme 2D6 is involved in the metabolism of many drugs. Variants in the gene that codes for CYP2D6 may influence pharmacokinetics of CYP2D6 substrates, and may predict or explain non-standard dose requirement, therapeutic failure or adverse reactions. Inheritance: Autosomal co-dominant. Cause: CYP2D6 gene variants and copy number affect enzyme expression or activity. Variants tested. Negatives reactions. Inheritance: Autosomal co-dominant. Cause: CYP2D6 gene variants and copy number affect enzyme expression or activity. Variants tested. Negative No variants detected is predictive of the *1 functional allele. *2 (rs 16947, c.2850C-T); rs1135840, c.41803-C), *2 (rs169488), c.1584C-C, rs.16947, c.2850C-T); rs1135840, c.41803-C), *3 (rs3074368), c.2549dekl), *4 (rs106487, c.2850C-T); rs135840, c.41803-C), *6 (rs0300655, c.17907-del; rs.1135840, c.41803-C), *7 (rs5030667, 2.2935A, *6 (rs0300655, c.17907-del; rs.1135840, c.41803-C), *7 (rs5030657, 2.2935A, *6 (rs0300655, c.17907-del; rs.1135840, c.41803-C), *7 (rs5030667, 2.2935A, *6 (rs0300656, c.17907-del; rs.1135840, c.41803-C), *12 (rs0303662, c.12465-A; rs.16947, c.2850C-T; rs.1135840, c.41803-C), *12 (rs0303662, c.12465-A; rs.16947, c.2850C-T; rs.1135840, c.41803-C), *12 (rs0303662, c.12465-A; rs.16947, c.2850C-T; rs.1135840, c.41803-C), *13 (rs0303662, c.12465-A; rs.16947, c.2850C-T; rs.1135840, c.41803-C), *25 (rs16947,	Test Name	Order Code	Change	Effective Date
(Continued on page 23)	*OR* Saliva collected using Saliva Collection Device by DNA Genotek (OCD-100, ARUP Supply #49295); Ambient  Stability: Ambient: Whole blood: 72 hours; Saliva: 2 weeks Refrigerated: Whole blood: 1 week; Saliva: Unacceptable Frozen: Whole blood: 1 month; Saliva: Unacceptable	CYP2D6 (Cytochrome		Includes: CYP2D6 genotype Interpretation  Special Information: Plasma or serum will be rejected. Specimens collected in sodium heparin or lithium heparin are unacceptable. Whole blood is the preferred specimen. Saliva samples that yield inadequate DNA quality and/or quantity will be reported as inconclusive if test performance does not meet laboratory-determined criteria for reporting.  Clinical Information: Background: Characteristics: The cytochrome P450 (CYP) isozyme 2D6 is involved in the metabolism of many drugs. Variants in the gene that codes for CYP2D6 may influence pharmacokinetics of CYP2D6 substrates, and may predict or explain non-standard dose requirement, therapeutic failure or adverse reactions. Inheritance: Autosomal co-dominant. Cause: CYP2D6 gene variants and copy number affect enzyme expression or activity. Variants tested: Negative: No variants detected is predictive of the *1 functional allele. *2 (ss16947, c.2850C>T; ss1135840, c.4180G>C), *3 (ss35743686, c.2549delA), *4 (ss1065852, c.100C>T; rs13892097, c.1846G>A; rs1135840, c.4180G>C), *5 (gene deletion), *6 (rs5030655, c.1707dett]; rs1135840, c.4180G>C), *6 (rs5030865, c.15647, c.2850C>T; rs1135840, c.4180G>C), *6 (rs6947, c.2850C>T; rs1135840, c.4180G>C), *6 (rs6947, c.2850C>T; rs1135840, c.4180G>C), *7 (rs5030865, c.15647, c.2850C>T; rs1135840, c.4180G>C), *12 (rs5030862, c.100C>T; rs135840, c.4180G>C), *13 (rs703746; c.100C>T; rs135840, c.4180G>C), *14 (rs703746; c.1046474, c.1046474	

Test Name	Order Code	Change	Effective Date
CYP2D6 (Cytochrome P450 2D6) (continued from page 22)		Methodology: Fluorescence Monitoring Polymerase Chain Reaction (PCR) Reference Range: Refer to report Days Performed: Varies Reported: 6–11 days CPT: 81226 x 1 Price: \$515.00 (non-discountable)	
Hepatitis B Virus (HBV) Drug Resistance, Genotype and BCP/ Precore Mutations by Sequencing	HEPBDR	Includes: HBV Genotype HBV Polymerase Mutations HBV Precore Mutations HBV Basal Core Promoter (BCP) Mutations  Special Information: Procedure should be used for patients with viral loads greater than 600 IU/mL.  Specimen Requirement: 1 mL plasma from an EDTA (white) plasma preparation tube (PPT); Minimum: 0.3 mL; Separate from cells ASAP or within 2 hours of collection; Frozen  *OR* 1 mL plasma from an EDTA (lavender) tube; Minimum: 0.3 mL; Separate from cells ASAP or within 2 hours of collection; Frozen  *OR* 1 mL serum from a serum separator (gold) tube; Minimum: 0.3 mL; Separate from cells ASAP or within 2 hours of collection; Frozen  *OR* 1 mL serum from a serum separator (gold) tube; Minimum: 0.3 mL; Separate from cells ASAP or within 2 hours of collection; Frozen  Stability: Ambient: 72 hours Refrigerated: 1 week Frozen: 1 month  Methodology: Polymerase Chain Reaction/Sequencing  Days Performed: Varies  Reported: 10–14 days  CPT: 87912 x 1  Price: \$405.00 (non-discountable)	5/28/19
Iron, Liver	LIVIRO	Special Information: Specimens less than 0.25 mg (dry weight) are unacceptable. Specimens stored or shipped in saline will be rejected. Age is required on test request form in order to calculate iron index. This test is New York DOH approved.  Clinical Information: Useful in confirming hepatic iron overload, particularly in individuals with hemochromatosis and no common HFE mutations. A Hepatic Iron Index (HII) is not calculated for patients < 14 years of age. Note: HII < 1.0 is consistent with normal iron accumulation; HII 1.0–1.9 is consistent with mild iron accumulation such as in heterozygous hemochromatosis or alcoholic liver disease; HII > 1.9 is consistent with iron overload such as in homozygous hemochromatosis, porphyria cutanea tarda, and cirrhotic liver disease. The HII will decrease with chelation, chronic blood loss, or phlebotomy.  Specimen Requirement: 1 cm long liver tissue specimen; Minimum: 1 cm long; Obtain liver tissue with an 18 gauge needle; At least 1 cm long is required; Tissue can be fresh, dried or paraffin-embedded; Formalin-fixed is also acceptable; Specimens should be stored and transported in a metal-free container (e.g., royal blue with no additive); Age is required on test request form in order to calculate iron index; Refrigerated  Stability:  Ambient: Paraffin block, preserved (formalin), or dried: Indefinitely; Fresh tissue: Unacceptable Refrigerated: Paraffin block, preserved (formalin), or dried: Indefinitely; Fresh tissue: Indefinitely  (continued on page 24)	7/2/19

Test Name	Order Code	Change	Effective Date
Iron, Liver (continued from page 23)		Methodology: Inductively Coupled Plasma / Mass Spectrometry (ICP-MS)  Reference Range: Hepatic Iron Concentration by Weight (HIC) Male: 200–2000 μg/g of tissue Female: 200–1600 μg/g of tissue Hepatic Iron Index (HII) Male: < 1.0 Female: < 1.0  Days Performed: Monday, Wednesday, Thursday, Friday, Saturday Reported: 3–7 days  CPT: 83540 x 1  Price: \$125.00 (non-discountable)	
Lipoprotein Fractionation NMR with Lipids	NMRLPD	Includes: LDL-P Small LDL-P LDL Size HDL-P Large HDL-P Large HDL-P HDL Size LDL Cholesterol HDL Cholesterol HDL Cholesterol Triglycerides Total Cholesterol non-HDL Cholesterol Chol/HDL-C TG/HDL-C Special Information: Patient should be fasting 12 hours prior to collection. Grossly hemolyzed or grossly lipemic specimens will be rejected. Specimens other than the preferred specimen type will also be rejected. Gel separator tubes will not be accepted. Only serum from plain no additive (red) tubes will be accepted. Improper storage/labeling or samples outside of stability limits are unacceptable.  Clinical Information: This test is used to help assess the risk for cardiovascular disease (CVD) in patients with intermediate or high risk based on traditional or emerging risk factors, and to assess therapeutic response in patients undergoing lipid-lowering therapy. The lipid panel is used, along with other tests, during routine assessment to determine an individual's risk of CVD. Additionally, a lipid panel can be used to monitor the efficacy of lifestyle interventions or medications.  Specimen Requirement: 4 mL serum from a plain no additive (red) tube; Minimum: 2 mL; Do not use gel separator tubes; Patient should be fasting 12 hours; Allow specimen to clot at room temperature for 30 minutes, then transfer serum to a standard aliquot tube; Refrigerated Stability:  Ambient: Unacceptable Refrigerated: 7 days Frozen: 10 days Methodology: Nuclear Magnetic Resonance Spectroscopy Photometric Days Performed: 7 days per week Reported: 3-4 days CPT: 80061 x 1, 83704 x 1	7/16/19
		Price: \$95.00 (non-discountable)	

Test Name	Order Code	Change	Effective Date
Lipoprotein Fractionation NMR without Lipids	NMRPRT	Includes: LDL-P Small LDL-P LDL Size HDL-P Large HDL-P Large HDL-P Large HDL-P Large YLDL-P VLDL Size Large VLDL-P VLDL Size Special Information: Patient should be fasting 12 hours prior to collection. Grossly hemolyzed or grossly lipernic specimens will be rejected. Specimens other than the preferred specimen type will also be rejected. Gel separator tubes will not be accepted. Only serum from plain no additive (red) tubes will be accepted. Improper storage/labeling or samples outside of stability limits are unacceptable.  Clinical Information: This test is used to help assess the risk for cardiovascular disease (CVD) in patients with intermediate or high risk based on traditional or emerging risk factors, and to assess therapeutic response in patients undergoing lipid-lowering therapy.  Specimen Requirement: 2 mL serum from a plain no additive (red) tube; Minimum: 2 mL; Do not use gel separator tubes; Patient should be fasting 12 hours; Allow specimen to clot at room temperature for 30 minutes, then transfer serum to a standard aliquot tube; Refrigerated  Stability: Ambient: Unacceptable Refrigerated: 7 days Frozen: 10 days  Methodology: Nuclear Magnetic Resonance Spectroscopy  Days Performed: 7 days per week  Reported: 3–4 days  CPT: 83704 x 1  Price: \$68.00 (non-discountable)	7/16/19
Pan-Solid Tumor NGS Panel	PSTNGS	Note: This test was previously announced in the February and April Technical Updates.  Specimen Requirement: 10 mm square formalin-fixed paraffin-embedded (FFPE) tissue block; FFPE tissue slides; Transport and store slides at ambient temperature; 10 unstained section FFPE tissue on charged, unbaked slides plus one H&E stained section with best tumor area circled by a pathologist; Ambient  *OR* 10 unstained slides cut at 7 microns AND 8 unstained slides cut at 4 microns; Ambient  Price: \$3500.00 (non-discountable)	Effective immediately
Products of Conception Chromosome Analysis with Reflex SNP Array	POCHF	Note: This test was previously announced in the April Technical Update.  Special Information: Long-standing fetal demise, delayed specimen transport and improper handling can increase the risk of tissue culture failure, which leads to no chromosome result. Upon receipt in the lab, a tissue sample will be frozen. In the event of cell culture failure, this sample will be used to isolate DNA and perform chromosomal oligonucleotide and SNP based microarray. If chromosome analysis/karyotype cannot be performed due to cell culture failure, there will be no charge for that test (CPT codes 88233, 88262, 88291). Instead, there will be charge for microarray (CPT code 81229). Rejection criteria: Specimen collected and sent in formalin.	5/21/19

Test Name	Order Code	Change	Effective Date
Warfarin Sensitivity (CYP2C8, CYP2C9, CYP4F2, VKORC1) Genotyping	WRFSEN	Includes: CYP2C8 Genotype CYP2C9 Genotype CYP4F2 Genotype VKORC1 Genotype Interpretation	5/20/19
		<b>Special Information:</b> Plasma or serum will be rejected. Specimens collected in sodium heparin or lithium heparin are unacceptable. Whole blood is the preferred specimen. Saliva samples that yield inadequate DNA quality and/or quantity will be reported as inconclusive if test performance does not meet laboratory-determined criteria for reporting.	
		Clinical Limitation: Only the targeted CYP2C8, CYP2C9, CYP4F2 and VKORC1 variants will be detected by this panel, and assumptions about phase and content are made to assign alleles. Publically available sources such as the www.pharmvar. org or www.pharmgkb.org provide guidance on phenotype predictions and allele frequencies. Diagnostic errors can occur due to rare sequence variations. Risk of therapeutic failure or adverse reactions with CYP2C8 or CYP2C9 substrates may be affected by genetic and non-genetic factors that are not detected by this test. This result does not replace the need for therapeutic drug or clinical monitoring.	
		Clinical Information: Background Information: Characteristics: Warfarin sensitivity can lead to a life-threatening overdose event such as excessive bleeding. Genetic variation is recognized to explain a large proportion of variability in warfarin dose requirements. This test may predict individual warfarin sensitivity and nonstandard dose requirements. The cytochrome P450 (CYP) isozymes 2C8 and 2C9 are involved in the metabolism of many drugs. Variants in the genes that code for CYP2C8 and CYP2C9 may influence pharmacokinetics of substrates such as warfarin, and may predict or explain non-standard dose requirements, therapeutic failure or adverse reactions. Variants in the VKORC1 and CYP4F2 genes may predict sensitivity to warfarin. Genetic information and non-genetic factors can be used in combination with warfarin dose calculators, such as through www.WarfarinDosing.org. Inheritance: Autosomal co-dominant. Cause: CYP2C8, CYP2C9 and CYP4F2 gene variants affect enzyme expression or activity. The VKORC1*2 allele is associated with reduced expression of the warfarin target, vitamin K epoxide reductase (VKOR), and a reduced dose requirement. Variants Tested: Negative: No variants detected is predictive of the *1 functional alleles. CYP2C8*1C (rs17110453, c370T>G), CYP2C8*2 (rs11572103, c.805A>T), CYP2C8*3 (rs10509681, c.1196A>G), CYP2C8*4 (rs1058930, c.792C>G), CYP2C9*2 (rs1799853, c.430C>T), CYP2C9*3 (rs1057910, c.1075A>C), CYP2C9*6 (rs9332131, c.817delA), CYP2C9*8 (rs7900194, c.449G>A), CYP2C9*6 (rs9323231, c1639G>A). CLINICAL SENSITIVITY: Genetic factors and known non-genetic factors account for approximately 50% of the vari	
		$      \textbf{Specimen Requirement:} \   \text{3 mL whole blood in an EDTA (lavender) tube; Minimum:} \\ 1 \   \text{mL}; \   \text{Refrigerated} $	
		*OR* 3 mL whole blood in an ACD A or B (yellow) tube; Minimum: 1 mL; Refrigerated  *OR* Saliva collected using Saliva Collection Device by DNA Genotek (OCD-100,	
		ARUP Supply #49295); Ambient  Stability:	
		Ambient: Whole blood: 72 hours; Saliva: 2 weeks Refrigerated: Whole blood: 1 week; Saliva: Unacceptable Frozen: Whole blood: 1 month; Saliva: Unacceptable	
		Methodology: Fluorescence Monitoring Polymerase Chain Reaction (PCR)	
		Reference Range: Refer to report	
		Days Performed: Varies	
		Reported: 6–11 days	
		<b>CPT:</b> 81227 x 1, 81355 x 1	

#### Fee Reductions

Test Name	Order Code	List Fee	CPT Code	Effective Date
Lung Cancer Hot Spot Panel v2 NGS 2 gene	LNG2GN	\$876.00 (non-discountable)	81235, 81275, 81276	7/9/19
MET Gene Analysis	METGN	\$515.00 (non-discountable)	81479	7/9/19

#### **Discontinued Tests**

Test Name	Order Code	Test Information	Effective Date
5-Fluorouracil Toxicity, Chemo Response, 5 Mut	5FLU0	This test will no longer be available. Suggest ordering Dihydropyrimidine Dehydrogenase (DPYD), 3 Variants (5FUDPD).	5/20/19
14-3-3 Protein, CSF	PR1433	This test will no longer be available.	Effective immediately
ACADM PCR, Complete, Tier 2	ACADM	This test will no longer be available.	7/2/19
Acetylcholinesterase and Fetal Hemoglobin, Amniotic Fluid	ACHFHB	This test will no longer be available.	7/9/19
Cytochrome P450 2D6 (CYP2D6) Geno	2D6GEN	This test will no longer be available. Suggest ordering CYP2D6 (Cytochrome P450 2D6) (2D6GTP).	5/20/19
Cyto P450 2C19 - 9 Variants	2C19PL	This test will no longer be available. Suggest ordering CYP2C19 (Cytochrome P450 2C19) (2C19CY).	5/20/19
Fats, Urine	UFAT	This test will no longer be available.	5/20/19
Ganglioside Antibody Panel	GM1BM	This test will no longer be available. Suggest ordering Ganglioside Antibodies (GANGAB).	Effective immediately
Gaucher Disease Mutation, Fluid	GAUCH	This test will no longer be available.	7/2/19
Iron, Tissue	IRONLV	This test will no longer be available. Suggest ordering Iron, Liver (LIVIRO).	7/2/19
NMR LipoProfile	NMRLIP	This test will no longer be available. Suggest ordering Lipoprotein Fractionation NMR with Lipids (NMRLPD).	7/16/19
NMR LipoProfile without Lipid Panel	NMRPAR	This test will no longer be available. Suggest ordering Lipoprotein Fractionation NMR without Lipids (NMRPRT).	7/16/19
Warfarin Sensitivity Genotyping	WARSEN	This test will no longer be available. Suggest ordering Warfarin Sensitivity (CYP2C8, CYP2C9, CYP4F2, VKORC1) Genotyping (WRFSEN).	5/20/19