TEST	CODE	COLLECT	TRANSPORT AND HANDLING FOR OFF SITE LOCATIONS	TEMP	NOTES
HEMATOLOGY					
CBC	CBC	1 EDTA tube	Whole blood: (lavender top) gently mix	Refrigerate	
Hemoglobin	HGB	1 EDTA tube	Whole blood: (lavender top) gently mix	Refrigerate	
Hematocrit	HCT	1 EDTA tube	Whole blood: (lavender top) gently mix	Refrigerate	
Platelets	PLTC	1 EDTA tube	Whole blood: (lavender top) gently mix	Refrigerate	
RBC	RBC	1 EDTA tube	Whole blood: (lavender top) gently mix	Refrigerate	
Reticulocyte Count	RETIC	1 EDTA tube	Whole blood: (lavender top) gently mix	Refrigerate	
Sedimentation Rate	ESR	1 sed rate tube or 1 EDTA tube	Whole blood: (sed rate or lavender top) gently mix 6 to 8 times	Refrigerate	
WBC	WBC	1 EDTA tube	Whole blood: (lavender top) gently mix	Refrigerate	
COAGULATION			**Follow procedure for platelet-poor plasma for coagulation**		
PT:Prothrombin time	PT	1 Sodium Citrate Tube	(Light blue top) fill to vacuum capacity, whole blood	Room Temperature	If transport will be greater than 24 hours, separate and send plasma frozen
APTT:Activated Partial Thromboplastin Time	PTT	1 Sodium Citrate Tube	(Light blue top) fill to vacuum capacity, centrifuge, transfer plasma to a plastic tube	Frozen	If transport will be greater than 4 hours, separate within 1 hour and freeze.
D-Dimer	DD	1 Sodium Citrate Tube	(Light blue top) fill to vacuum capacity, centrifuge, transfer plasma to a plastic tube	Frozen	
Fibrinogen	FIB	1 Sodium Citrate Tube	(Light blue top) fill to vacuum capacity, centrifuge, transfer plasma to a plastic tube	Frozen	
Heparin Xa	HEP	1 Sodium Citrate Tube	(Light blue top) fill to vacuum capacity, centrifuge, transfer plasma to a plastic tube	Frozen	Room temp stability is 2 hours, freeze as soon as possible
CHEMISTRY AND SEROLOGY			**PST:** Plasma Separation Tube (Green) Li Hep **SST:** Serum Separation Tube (Red, red marble or gold) gel barrier, no additives **Plain Red:** no gel, no additives		
Albumin	ALB	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube within 1 hour	Refrigerate	
Alkaline Phosphatase	ALP	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Alpha Fetoprotein (Tumor Marker)	AFP	1 SST, or 1 plain red top	Centrifuge: Transfer serum to transfer tube	Frozen	
ALT (Alanine Aminotransferase	ALT	1 SST, 1 plain red top, or 1 PST	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	

Ammonia	NH3	Plasma: 1 PST or EDTA	Centrifuge: Transfer plasma to transfer tube freeze immediately	Frozen	Collect blood from stasis-free vein, fasting, sample should be placed on ice immediately after drawing
Amylase	AMY	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
AST (Aspartate Aminotransferase)	AST	1 SST, 1 plain red top, or 1 PST	Centrifuge: Transfer serum to transfer tube	Refrigerate	
Basic Metabolic Panel	BMP	1 PST, 1 SST	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Bilirubin, direct	BILDT	1 SST, 1 plain red top, or 1 PST	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	Protect specimen from exposure to light
Bilirubin, total	BILT	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
B-Type Natriuretic Peptide	BNP	1 EDTA tube	Centrifuge, separate plasma from cells and freeze within 4 hours of draw	Frozen	
BUN	BUN	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
CA 125	CA125	1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Frozen	
Calcium	CA	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
C-Reactive Protein	CRP	1 PST (Li), 1 SST, or 1 plain red top, EDTA	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
C-Reactive Protein-high sensitivity	hsCRP	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Calcium Ionized	CAI	1 SST	Centrifuge, **do not remove stopper**	Refrigerate	Centrifuge within 1 hour
Carboxyhemoglobin (Carbon Monoxide)	CO	Whole Blood (Dry Li or Na Heparin)	Whole Blood: Do not open tube after collection.	Refrigerate	Transport to lab as soon as possible
Carcinoembryonic Antigen	CEA`	1 SST, or 1 plain red top	Centrifuge: Transfer serum to transfer tube	Refrigerate	
Chloride	CL	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Cholesterol	CHOL	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
CK	CPK	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
CKMB	CKMB	1 PST	Centrifuge: Transfer serum or plasma to transfer tube	Frozen	
CO2 (Bicarbonate Liquid	CO2	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	

Comprehensive Metabolic Panel	CMP	1 PST, 1 SST	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Cortisol	CORT	1 PST, 1 SST, 1plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Frozen	
Creatinine	CRE	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Ethanol-ETOH	ETOH	1 PST, 1 SST, 1 plain red top, EDTA, or Citrate	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	Do not use alcohol or volatile disinfectant
Ferritin	FER	1 SST, 1 plain red top, or 1 PST	Centrifuge: Transfer serum or plasma to transfer tube	Frozen	
FSH	FSH	1 SST, or 1 plain red top, or 1 PST	Centrifuge: Transfer serum or plasma to transfer tube	Frozen	
Folic Acid (folate)	FOL	1 SST, or 1 plain red top	Centrifuge: Transfer serum to transfer tube	Frozen	Critical frozen
Gamma GT	GGT	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Glucose	GLU	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
HCG (screen)	HCGS	1 SST, or 1 plain red top Standard urine container	Centrifuge: Transfer serum to transfer tube	Frozen	Plasma samples are unacceptable Urine stability: Room Temp- 8 hours Refrig- 72 hours
HCGβ (quantitative)	HCGQ	1 SST, or 1 plain red top, or 1 PST	Centrifuge: Transfer serum or plasma to transfer tube	Frozen	
H. Pylori IgG Antibodies	HPYLORI	EDTA (preferred), 1 SST, PST, or CPDA-1	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	Freeze if testing is delayed for 48 hours
Hemoglobin A1C	HGBA1C	1 EDTA	Whole blood, purple top tube	Refrigerate	
HDL Cholesterol	HDL	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Hepatitis B Surface Antigen	HBSAG	1 SST, or 1 plain red top	Centrifuge: Transfer serum to transfer tube	Refrigerate	Heparin samples are not acceptable
Hepatitis B Surface Antibody	HBSAB	1 SST, or 1 plain red top	Centrifuge: Transfer serum to transfer tube	Refrigerate	
Hepatitis C Antibody	HCV	1 SST, or 1 plain red top	Centrifuge: Transfer serum to transfer tube	Refrigerate	
Hepatitis Panel-Acute	HEPAP	1 SST, or 1 plain red top	Centrifuge: Transfer serum to transfer tube	Refrigerate	Min. 2.5 ml serum. Heparin samples are not acceptable
HIV Screen	HIV	Serum (SST or Red), EDTA plasma, Heparin plasma (Na or Li)	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Influenza A and B	INFA or INFB	NP Swab or nasal washing/aspirates	Transport nasal washes in standard container. Transport swabs to lab within 1 hour	Refrigerate	Calcium alginate swabs are not recommended. Eluted swab samples acceptable at 2-8°C for up to 24 hours
Iron	FE		Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	

LDH	LDH	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Ambient	
LDL	LDLDIR	1 SST, or 1 plain red top, or 1 PST	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Legionella Urinary Antigen	LEGAG-U	Standard urine collection container	Transport in a leakproof container	Frozen	Stability: Refrig-24 hours Freeze if testing is delayed > 24 hrs
LH (Luteinizing Hormone)	LH	1 SST, or 1 plain red top, or 1 PST	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Lipase	LIP	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Lithium	LI	1 SST, or 1 plain red top	Centrifuge: Transfer serum to transfer tube	Refrigerate	Draw approximately 12 hours after last dose
Magnesium	MG	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Mono	MONO	1 PST, 1 SST, 1 plain red top, EDTA	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	Freeze if testing is delayed for 48 hours
Osmolality	OSMO	1 SST, or 1 plain red top 1 PST	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
PH	PH	Whole blood, heparin	Place on ice and send to lab immediately	Refrigerate	Done on I-Stat
PTH (Parathyroid Hormone	PTHI	1 SST, 1plain red top, or 1 EDTA	Centrifuge: Transfer serum or plasma to transfer tube	Frozen	
Phosphorus	PHOS	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Potassium	K	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Prolactin	PROL	1 SST, or 1 plain red top, or 1 PST	Centrifuge: Transfer serum or plasma to transfer tube	Frozen	
Prealbumin	PREALB	1 SST, or 1 plain red top	Centrifuge: Transfer serum to transfer tube	Refrigerate	
Rheumatoid Factor	RF	1 SST, 1PST, 1plain red	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Prostatic Specific Antigen (PSA)	PSA	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Frozen	
RPR	RPR	1 PST, 1 SST, or 1 plain red top, EDTA , sodium citrate, CPDA-1	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Rubella	RUBEG	1 SST, or 1 PST	Centrifuge: Transfer serum or plasma to transfer tube	Frozen	
Rubeola (Measles)	MEASLESM MEASLESG	1 SST	Centrifuge: Transfer serum to transfer tube	Refrigerate	Stability: Refrig- 48 hours Freeze if > 48 hours
Streptococcus pneumoniae Urinary Antigen	STREPNEUAG-UR	Standard urine collection container	Transport in a leak proof container	Refrigerate or Frozen	

Sodium	NA	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	Stability: Urine: Room Temp- 24 hours
Testosterone	TESTO	1 SST, or 1 plain red top 1 PST	Centrifuge: Transfer serum to transfer tube	Frozen	
Protein Total	TP	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
T4 (Thyroxine)	T4	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Frozen	
T3	T3	1 SST, or 1 plain red top, or 1 PST	Centrifuge: Transfer serum or plasma to transfer tube	Frozen	
T3 Free	FT3	1 SST, or 1 plain red top, or 1 PST	Centrifuge: Transfer serum or plasma to transfer tube	Frozen	
T4 Free	FT4	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Frozen	
TSH	TSH	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Triglycerides	TRIG	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
TIBC	TIBC	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Troponin I	TNI	1 PST	Centrifuge: Transfer plasma to transfer tube	Frozen	
Uric Acid	URIC	1 PST, 1 SST, or 1 plain red top	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
Vitamin B12	B12	1 SST, or 1 plain red top 1 PST	Centrifuge: Transfer serum or plasma to transfer tube	Frozen	
Vitamin D, 25-OH	VITDHYD or VITD	Serum (SST or red) Heparin (Li)	Centrifuge: Transfer serum or plasma to transfer tube	Refrigerate	
BODY FLUIDS					
Synovial Fluid Exam	SYEXAM	Heparinized tube, EDTA, and sterile plastic tube for microbiology and other tests if needed	Stability: Ambient 4 hours Refrigerated 12 hours Includes: Source, Color, Appearance, Clot, Viscosity, WBC, RBC, Diff, Crystals Need to order cultures separately	Refrigerate	Heparinized tube can be used for hematology
Synovial Fluid Crystal Exam	CRYSY	Heparinized tube Red tube, no gel also acceptable	Stability: Ambient 4 hours Refrigerated 12 hours	Refrigerated	

MICROBIOLOGY				
Acid Fast Bacilli culture and/or smear		any source	white swab or sterile container, refrigerate	State
Anaerobic culture		see collection manual for approved sources	blue anaerobic swab or sterile container, ambient	
Blood culture		10 ml blood, each bottle	10 ml blood, each bottle	
Aerobic culture		any source	white swab or sterile container, ambient	
Fungus culture		sterile body fluids	sterile container, ambient	McKennan
		non-sterile sites	white swab or sterile container, refrigerate	
Genital culture		vaginal, cervical or urethral	white swab, ambient	
GC culture		vaginal, cervical or urethral	white swab, ambient	
Chlamydia culture		vaginal, cervical or urethral	white swab, ambient	ARUP
Chlamydia or Neissera gonorrhea by Amplified detection		endocervical or urethral use Unisex Collection Kit (blue swab), ambient urine use Urine Collection Kit, ambient	Aptima GenProbe Collection Kit	McKennan
Sputum culture		sputum	sterile container, refrigerate	
Stool culture		stool	orange top, C & S transport media, ambient	
Throat culture		throat	white swab, ambient	
Urine culture		urine	grey top, urine transport media, ambient	
Viral culture		any source	white swab or sterile container, refrigerate Send to ARUP in M/U transport media (UTM) CSF is sent to ARUP in sterile container	ARUP
Mycoplasma/Ureaplasma culture	MYCURC	Cervical or urethral swab, tissue, urine, body fluid, CSF	Swab or specimen in M/U transport media (UTM) frozen	ARUP
Vaginal Pathogens DNA (not culture) includes:Candida sp., Gardnerella vag., Trichomonas vag.	VDP	Vaginal fluid, swab	Transport swab in BD Affirm VPIII ambient temperature transport system. For specimen media call lab.	McKennan

Wet prep	WET	Vaginal, cervical, or urethral	Two white swabs, ambient	
ED sexual Assault Order Set		Instruct ED to use their order set	Chlamydia and GC must be done by culture, not Aptima	

TEST	CODE	COLLECT AND DRAW TIME	TEMP	NOTES
THERAPEUTIC DRUG TESTS		**1 Plain Red Top, or 1 SST** **We do not recommend the use of heparin separator gel tubes for collection of therapeutic drug testing.** **Transfer serum to transport tube**	**Freeze serum if transport /storage will exceed 48 hours**	
Acetaminophen	ACET	Therapeutic testing: Draw 30-60 minutes after oral dose Overdose: Draw 4 hours after ingestion		
Amikacin	AMIK.N AMIKP.N AMIKT.N	Therapeutic testing: Trough: Draw five to 90 minutes before IV dose Peak: Draw 30 minutes after IV		
Carbamazepine	CARB			
Digoxin	DIG	Therapeutic testing: Draw 6-8 hours after oral dose Draw 4 hours after IV dose Random testing: Draw any time		
Dilantin (Phenytoin)	PHENY	Can be drawn anytime		
Gentamicin	GENT GENP GENR GENRODD	Therapeutic testing: Trough: Draw right before IV dose Peak: Draw 30 minutes after IV Random testing: Draw any time Once Daily Dosing: Draw 7 hours after start of infusion		
Phenobarbital	PHNO	Can be drawn anytime		
Salicylate	SAL	Therapeutic testing: Draw 2 hours after oral dose		
Theophlylline	THEO	Uncoated Tablets or Liquid: (Slo-phyllin, Theolair, Somophyllin, Elixophyllin); 1 hour after dose Sustained Release; (Theodur, Slobid, Gyrocaps, Theodur sprinkle); 4 hours after dose Bolus IV dose; 12-24 hours after the end of 30 minute infusion Continuous IV dose; 12-24 hours after initiation of infusion Pediatric Patient; 2 hours after the dose		
Tobramycin	TOBT TOBP TOBR TOBODD	Therapeutic testing: Trough; Draw right before IV dose Peak; Draw 30 minutes after IV dose Random testing; Draw any time Once Daily Dosing: Draw 7 hours after start of infusion		
Valproic Acid	VALP	Prior to dose, preferably in the fasting state		
Vancomycin	VANT VANP VANR	Therapeutic testing: Trough; Draw just prior to IV dose Peak; Draw 1 hour after IV dose Random testing: Draw any time		

Stool Specimens Tests and Transport

Test	Fresh stool	C & S media	10% formalin	Proto-fix
H pylori antigen	2-8C 72 hours Frozen >72 hours			
Stool culture	within 2 hours	room temp 96 hrs 2-8C 96 hrs		
C diff PCR **(specimen must take shape of container)** **(no more than 1 every 7 days per patient)**	room temp 24 hours 2-8C 5 days			
Giardia/crypto antigens	30 minutes	2-8C 2 weeks frozen 2 months	room temp 2 months 2-8C 2 months frozen 2 months	room temp 2 months 2-8C 2 months
Shiga toxin 1 & 2	2-8C 2 hours	2-8C 72 hours frozen >72 hours		
Rotavirus	2-8C 72 hours frozen >72 hours			
Ova & parasite with trichrome stain **(extensive panel or O&P comprehensive)**				room temp 9 months
Viral culture	2-8C 3 days			
Norovirus PCR	2-8C 3 days			
Stool WBC	2-8C 12 hours (If >12 hrs, make 2 thin smears & submit with original specimen)			
Cyclospora			room temp 9 months 2-8C 9 months	

Quick reference for common Urine chemistry tests requiring pH adjustments.

In House: Urine Test	Chemical to use	pH requirement
U24CA Random or 24°	6N HCL	3.0-4.0
U24 MG 24° only	6N HCL	1.0
U24 PHOS Random or 24°	6N HCL	<3.0
U24URIC Random or 24° If refrigerated during collection, allow the specmen to warm before pulling aliquot.	5% NaOH	8.0
ARUP: Common send out tests		
OXALATE: 24° only	6N HCL ARUP comment: Approximately 10 mL acid for 24° urine, volume 1000-2000mL	1.5-2.0
CITRATE: Random or 24°	6N HCL	$\leq$ 2.0
CATECHOLAMINES: Random or 24°	6N HCL	2.0-3.0
METANEPHRINES: Random or 24°	6N HCL	2.0-3.0
MYOGLOBIN: Random or 24°	10% NA_2CO_3 may substitute with 10% $NAHCO_3$ (Baking Soda)	8.0-9.0

Reference:

1. ARUP Laboratory collection manual
2. Roche Package insert