Infectious Disease

Client Services Manual

Utah Public Health Laboratory

4431 S. 2700 W.

Taylorsville, Utah 84129

Phone: 801-965-2400

Fax: 801-536-0473

Webpage: https://uphl.utah.gov

GENERAL INSTRUCTIONS

CONTACT US:

Utah Public Health Laboratory
4431 S. 2700 W.
Taylorsville, Utah 84129
Phone: 801-965-2400
Fax: 801-536-0473
Webpage: https://uphl.utah.gov

KEY PERSONNEL

Administrative

Alessandro Rossi, PhD – CLIA Laboratory Director

Infectious Disease

Alessandro Rossi, PhD – Chief Scientist, Infectious Disease
Kim Christensen – Biothreat Laboratory Coordinator

REPORTING:

Ensure the correct Submitter/Provider code is provided. Facility information must be kept current to protect patient information and guarantee test reports are sent to the correct location. Facility address, phone number, point of contact, and report destinations, can be updated by contacting 801-965-2400 or by sending this information to uphlsrid@utah.gov.

REQUISITIONS:

ARLN Test Request Form
BT Environmental Specimen Form
Infectious Disease Test Request Form
Influenza Surveillance Request Form
Rabies Test Request Form

All submitted specimens must be accompanied by a UPHL test requisition form including the provider/submitter code, patient first and last name or unique patient ID, patient date of birth, sample collection date/time, sample source, and the test requested. Certain testing may require additional information, all required information is identified on each test requisition. Submitting incomplete forms may result in testing delays, all required information should be provided on test requisitions when specimens are submitted. If the provider/submitter code is unknown, please call 801-965-2400 for assistance.

SPECIMEN LABELING: At least two unique identifiers must be provided on each sample submitted and must match the accompanying test request form. See individual requirements under specific tests.

***__Note__: Specimen containers from the Utah Public Health Lab have an "outdate" printed on the label. Do not collect any sample in an outdated container. New containers can be ordered using Infectious Disease Collection Kit Order Form.
We do not supply blood collection tubes. ***

MANDATORY SPECIMEN SUBMISSION REQUIREMENTS: Go to Utah Public Health Laboratory (UPHL) specimen submission for additional information.

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Bacteriology

Bacterial Pathogens in Food, Water, and Environmental Samples
Outbreak Testing Only

TEST	Detection of Bacterial Pathogens in Implicated Food or Water
METHOD	Culture
AVAILABLE	Please contact Local or State Epidemiology prior to submitting specimens. DHHS Epidemiology (801)538-6191. Schedule through UPHL: (801) 965-2400
PATIENT PREP	N/A
SPECIMEN	Suspect Foods collect 100-150 gm Raw milk collect 200-250 ml, Recreational Water collect 1 liter Environmental swabs Call Bacteriology section (801) 965-2400 ext 2598 for details
COLLECT IN	Original container or transfer to sterile containers
PROCESSING	Keep food at 2 to 8 degrees C, unless frozen (if frozen then keep it frozen)
TRANSPORT	At refrigerated or frozen temperature as appropriate
SPECIMEN STABILITY	Transport immediately
REJECTION CRITERIA	Specimens that have not been approved for testing
LABEL	Client name, type of food, date collected, and bacteria suspected
REQUISITION	Infectious Disease Test Request Form
TAT	Variable, depends on organism
RESULTS	Presence or absence
REPORTED	Email or fax, as established with provider
NOTE	**Done for investigation of foodborne outbreaks only**
CONTACT	Bacteriology Section (801) 965-2400

Bacteriology

Stool for Enteric Bacterial Pathogens including CIDT positive specimens

TEST	Stool for bacterial pathogens: *Salmonella, Campylobacter, Shigella*, *Escherichia coli* O157, *and other Shiga-toxin* producing *E. coli. Vibrio, Aeromonas, Yersinia*, and *Plesiomonas* may be tested upon request
METHOD	Culture, EIA, Serotyping of pathogen if applicable
AVAILABLE	All clients
PATIENT PREP	If a patient has had a barium gastro/enteric procedure, wait at least 72 hours before collecting a specimen
SPECIMEN	Feces (stool), rectal swab
COLLECT IN	Cary Blair Medium, containers available from Technical Services. If CIDT submit in Cary Blair, MacConkey or GN broth
PROCESSING	Do not fill beyond the red line ("Add specimen to this line"). Mix well with pink medium (instruction sheet enclosed with collection kit). **Do not use the collection device past the expiration date printed on the label (i.e., EXP: 11/10)**
TRANSPORT	Best at 2 to 8 degrees C
SPECIMEN STABILITY	Sample should be received in our lab within 24-72 hours of collection. Specimens in transport media, kept at 4C, will keep for up to 7 days without significant loss of viability (with the exception of Campylobacter and Shigella species which should be transported and set-up as soon as possible)
REJECTION CRITERIA	Specimens received without collection media or in the wrong media, leaking specimen
LABEL	Patient's full name or unique ID number, and collection date (space provided on the container label)
REQUISITION	Infectious Disease Test Request Form If identified through CIDT (Molecular testing) staple original testing slip to test request form
TAT	Variable, Negative usually within 2 working days of receipt. Positive 2-10 days depending on organism
RESULTS	Pathogen isolated (positive) or "No Pathogens [detailed] recovered" (negative)
REPORTED	Email or fax, as established with provider
NOTE	*Shigella* identified and serotyped *Salmonella* identified and serotyped by WGS
CONTACT	Bacteriology Section (801) 965-2400, WGS (801) 965-2512: Jenni Wagner

Bacteriology

Stool and Food for Investigation of Foodborne Toxins - Referral

TEST	Culture and toxin detection *for Bacillus cereus, Staphylococcus aureus* or *Clostridium perfringens*
METHOD	Culture, Toxin testing (referral to CDC) *Bacillus cereus* - https://www.cdc.gov/laboratory/specimen-submission/detail.html?CDCTestCode=CDC-10104 *Clostridium perfringens* - https://www.cdc.gov/laboratory/specimen-submission/detail.html?CDCTestCode=CDC-10111 *Staphylococcus aureus* - https://www.cdc.gov/laboratory/specimen-submission/detail.html?CDCTestCode=CDC-10113
AVAILABLE	State and Local Epidemiology and CDC pre-approval required
PATIENT PREP	If a patient has had a barium gastro/enteric procedure, wait at least 72 hours before collecting a specimen
SPECIMEN	Feces (stool) *Clostridium perfringens - Direct toxin detection requires at least two raw stool specimens. If stool is placed in a transport medium prior to shipment, at least four specimens are required for toxin testing.*
COLLECT IN	Cary-Blair Transport Medium containers available from Technical Services
PROCESSING	Do not fill beyond the red line ("Add specimen to this line"). Mix well with pink medium (instruction sheet enclosed with collection kit). **Do not use the collection device past the expiration date printed on the label (i.e., EXP: 11/10)**.
TRANSPORT	Best at 2 to 8 degrees C
SPECIMEN STABILITY	Sample should be received in our lab within 24 hours of collection
REJECTION CRITERIA	Stool stored longer than two weeks are not acceptable
LABEL	Patient's full name or unique ID number, and collection date (space provided on the container label)
REQUISITION	Infectious Disease Test Request Form
TAT	CDC - 13 weeks
RESULTS	Culture, Toxin detection
REPORTED	Email or fax, as established with provider
NOTE	Toxin testing usually available in outbreak situations only
CONTACT	Bacteriology Section (801) 965-2400

Bacteriology

Enteric Organism Identification and Serotyping

TEST	*Salmonella, Shigella, Campylobacter, Vibrio, Yersinia* (not pestis), *Vibrio,* and Shiga-toxin producing *Escherichia coli*
METHOD	Maldi, Biochemicals, Serotyping of organism if applicable
AVAILABLE	All clients
PATIENT PREP	N/A
SPECIMEN	Pure isolate of the organism
COLLECT IN	Nutrient media slant or plate that supports organism growth
PROCESSING	Fresh subculture
TRANSPORT	2-8^{o}C
SPECIMEN STABILITY	Campylobacter must be received in our lab within 24 hours of subculture, other organisms 24-48 hrs
REJECTION CRITERIA	Mixed isolate
LABEL	Patient's full name or unique ID number, Birthdate, and date of subculture
REQUISITION	Infectious Disease Test Request Form
TAT	Variable (depends on organism)
RESULTS	Organism and serotype
REPORTED	Email or fax, as established with provider
NOTE	*Shigella* identified and serotyped *Salmonella* identified and serotyped by WGS *E. coli* (shigatoxin producing) serotyped by WGS
CONTACT	Bacteriology Section (801) 965-2400, WGS (801) 965-2512: Jenni Wagner

Bacteriology

Haemophilus influenzae

TEST	*Haemophilus influenzae* Identification and Serogrouping
METHOD	Maldi, Agglutination
AVAILABLE	All clients
PATIENT PREP	N/A
SPECIMEN	Pure culture of the organism
COLLECT IN	Appropriate media slant or plate (chocolate agar)
PROCESSING	Fresh subculture
TRANSPORT	2-8^{o}C
SPECIMEN STABILITY	Transport to lab within 24 hours of subculture
REJECTION CRITERIA	Mixed isolate
LABEL	Patient's full name or unique ID number, birthdate, and date of subculture
REQUISITION	Infectious Disease Test Request Form
TAT	Three days from receipt in our lab
RESULTS	*Haemophilus influenzae* (with serotype) or other identification
REPORTED	Email or fax, as established with provider
NOTE	*Haemophilus influenzae* isolates should be from sterile sites only
CONTACT	Bacteriology Section (801) 965-2400

Bacteriology

Legionella

TEST	Identification of *Legionella*
METHOD	Culture, Identification by Maldi, Latex agglutination
AVAILABLE	All Clients
PATIENT PREP	N/A
SPECIMEN	Pure culture of the organism, Sputum
COLLECTION	Sterile container for sputum collection, Pure culture of organism growing on (BCYE)
TRANSPORT	2-8^{o}C
SPECIMEN STABILITY	Transport to lab within 24 hr if sputum, 24-72 hours if an isolate
REJECTION CRITERIA	Mixed isolate
LABEL	Patient's full name or unique ID number, birthdate, and date of subculture
REQUISITION	Infectious Disease Test Request Form
TAT	3-5 calendar days from receipt in our lab
RESULTS	*Legionella pneumophilia, Legionella species,* No *Legionella* recovered
REPORTED	Email or fax, as established with provider
CONTACT	Bacteriology Section (801) 965-2400

Bacteriology

Listeria

TEST	Identification of Listeria
METHOD	Maldi/Biochemicals
AVAILABLE	All Clients
PATIENT PREP	N/A
SPECIMEN	Pure culture of the organism
COLLECT IN	Appropriate media slant or plate
PROCESSING	Fresh subculture
TRANSPORT	2-8^{o}C
SPECIMEN STABILITY	Transport to lab within 24 hours of subculture
REJECTION CRITERIA	Mixed isolate
LABEL	Patient's full name or unique ID number, birthdate, and date of subculture
REQUISITION	Infectious Disease Test Request Form
TAT	3 days from receipt in our lab
RESULTS	*Listeria monocytogenes* or other identification
REPORTED	Email or fax, as established with provider
CONTACT	Bacteriology Section (801) 965-2400

Bacteriology

Neisseria gonorrhoeae

TEST	*Neisseria gonorrhoeae* Confirmation, Susceptibility Testing
METHOD	Maldi, Nucleic Acid Amplification Testing (NAAT), Susceptibility testing performed by E-test
AVAILABLE	All clients
PATIENT PREP	N/A
SPECIMEN	Pure culture of the organism
COLLECT IN	Appropriate media slant or plate (MTM, chocolate agar)
PROCESSING	Fresh subculture <24 hrs old or frozen sample in 10-20% glycerol for identification. See instructions for susceptibility testing
TRANSPORT	RT or 2-8^{o}C for isolate, on dry ice if frozen
SPECIMEN STABILITY	Transport to the lab within 24 hours of subculture if not frozen
REJECTION CRITERIA	Mixed or nonviable organism
LABEL	Patient's full name or unique ID number, birthdate, and date of subculture
TESTING REQUISITION	Infectious Disease Test Request Form
TAT	Identification: 1-2 calendar days. Susceptibility Testing: 10 calendar days from receipt in our lab
RESULTS	*Neisseria gonorrhoeae* recovered or not recovered plus susceptibility results if requested
REPORTED	Email or fax, as established with provider
CONTACT	Bacteriology Section (801) 965-2400

Bacteriology

Neisseria meningitidis

TEST	*Neisseria meningitidis* Identification and Serogrouping
METHOD	Maldi, Agglutination
AVAILABLE	All clients
PATIENT PREP	N/A
SPECIMEN	Pure culture of the organism
COLLECT IN	Appropriate media slant or plate (MTM, chocolate agar)
PROCESSING	Fresh subculture
TRANSPORT	RT or 2-8^{o}C
SPECIMEN STABILITY	Transport to lab within 24 hours of subculture
REJECTION CRITERIA	Mixed isolate
LABEL	Patient's full name or unique ID number, birthdate, and date of subculture
REQUISITION	Infectious Disease Test Request Form
TAT	3 days from receipt in our lab
RESULTS	*Neisseria meningitidis* (with serogroup) or other identification
REPORTED	Email or fax, as established with provider
NOTE	*Neisseria meningitidis* isolates should be from sterile sites only
CONTACT	Bacteriology Section (801) 965-2400

Bacteriology

Carbapenem Resistant Enterobacterales, Extended Susceptibility Testing (exAST)

TESTS	Carbapenemase Testing, Susceptibility Testing, Extended Susceptibility Testing (exAST) for aztreonam/avibactam and ceftazidime/avibactam for IMP-, VIM- and NDM-producing metallo-beta lactamase CRE
METHOD	MALDI, Molecular testing for the presence of carbapenemase genes (KPC, IMP, NDM, VIM, and OXA-48) by CARBA-R, 3D printed plates using Hewlett-Packard D300e digital dispenser testing isolate susceptibility to aztreonam/avibactam, WGS
AVAILABLE	All clients, exAST requires preauthorization
PATIENT PREP	Pre-approval required from filling out the pre-authorization form and emailing ARLNutah@utah.gov
SPECIMEN	Pure culture of the organism
COLLECT IN	Appropriate media slant or plate
PROCESSING	Fresh subculture
TRANSPORT	2-8^{o}C
SPECIMEN STABILITY	Transport to lab within 24 hours of subculture
REJECTION CRITERIA	Mixed isolate
LABEL	Patient's full name or unique ID number, birthdate, and date of subculture
REQUISITION	ARLN States: ARLN Test Request Form
TAT	2-3 working days for carbapenemase testing from receipt in our lab
RESULTS	Carbapenemase Detected or Not Detected, Carbapenemase gene identified, susceptibility
REPORTED	Email or fax, as established with provider
CONTACT	arlnutah@utah.gov, 801-965-2400

Bacteriology

Carbapenem-resistant Enterobacterales (CRE) and Pseudomonas aeruginosa (CRPA) Colonization Screening

GOAL	Detect the presence of carbapenemase-producing organisms in order to intervene and stop the spread
TEST	Detection of Carbapenemase genes KPC, NDM, VIM, OXA-48 like, and IMP)
METHOD	Xpert Carba–R Assay (Cepheid) and/or culture (for genes not detected by Carba-R)
PATIENT PREP	Pre-approval required. Must be approved by the submitter jurisdiction's Healthcare-Associated Infections (HAI) Coordinator prior to submitting to ARLN. HAI will have most current recommendations
SPECIMEN	Rectal swabs for patients with possible exposure to the index patient (your state's HAI program epidemiologists should assist in determining the population at risk)
COLLECTION	Collection instructions
TRANSPORT	Transport immediately at 2-8^{o}C
SPECIMEN STABILITY	Samples must be tested within 5 days of collection
REJECTION CRITERIA	Leaking specimen, overly soiled swab, non-validated swab type
LABEL	Patient's full name or unique ID number, birthdate, and date of collection
REQUISITION	ARLN Test Request Form
TAT	24-48 hrs for carbapenemase testing from receipt in our lab
RESULTS	Carbapenemase gene(s) Detected Carbapenemase gene(s) Not Detected
REPORTING	Results will be returned to the submitting state's PHL, HAI program coordinator and submitting facility within 24-48 hours after completion of testing. If using Lab Web Portal results available in real time
CONTACT	arlnutah@utah.gov, 801-965-2400

Bacteriology

Carbapenem-resistant Acinetobacter baumannii (CRAB) Colonization Screening

GOAL	Determine the presence of carbapenemase-producing or pan-resistant *Acinetobacter baumannii*
TEST	Culture based screening
METHOD	Culture
PATIENT PREP	Pre-approval required. Must be approved by the submitter jurisdiction's Healthcare-Associated Infections (HAI) Coordinator prior to submitting to ARLN. The HAI Coordinator will have most current recommendations
SPECIMEN	Axilla/groin, wound, and/or lower respiratory specimens on patients with possible exposure to the index patient (your state's HAI program epidemiologists should assist in determining the population at risk)
COLLECTION	Collection instructions
TRANSPORT	Transport immediately at 2-8^{o}C
SPECIMEN STABILITY	Samples must be tested within 5 days of collection
REJECTION CRITERIA	Leaking specimen, non-validated swab type
LABEL	Patient's full name or unique ID number, birthdate, and date of collection
REQUISITION	ARLN Test Request Form
TAT	2-5 working days from receipt in our lab
RESULTS	*Acinetobacter baumannii* Recovered Acinetobacter Not Recovered
REPORTING	Results will be returned to the submitting state's PHL, HAI program coordinator and submitting facility within 24-48 hours after completion of testing. If using Lab Web Portal results available in real time
CONTACT	arlnutah@utah.gov, 801-965-2400

Bacteriology

Yeast Identification (not C. albicans)

TEST	Identification/Confirmation of Any Yeast Isolate especially *Candida auris*
METHOD	Maldi/Biochemicals, Colonial morphology, Antifungal Susceptibility available on *Candida* isolates from sterile sites
AVAILABLE	All Clients
PATIENT PREP	N/A
SPECIMEN	Pure culture of the organism
COLLECT IN	SabDex agar or other appropriate media slant or plate
PROCESSING	Fresh subculture
TRANSPORT	Room Temperature
SPECIMEN STABILITY	Time not critical unless *C. auris* is suspected or test intended for clinical use
REJECTION CRITERIA	Mixed isolate
LABEL	Patient's full name or unique ID number, birthdate, and date of subculture
REQUISITION	ARLN Test Request Form
TAT	2-3 Working days from receipt in our lab
RESULTS	Yeast identification Susceptibilities
REPORTED	Email or fax, as established with provider
CONTACT	arlnutah@utah.gov, (801) 965-2400

Bacteriology

Candida auris Colonization Screening

Purpose	Screening test to detect the presence of *Candida auris* yeast
TEST	Candida auris Colonization Screen
METHOD	Qualitative PCR
PATIENT PREP	Pre-approval required. Must be approved by the submitters jurisdiction Healthcare-Associated Infections (HAI) Coordinator prior to submitting to ARLN. HAI will have most current recommendations
SPECIMEN	Axilla/groin swabs
COLLECTION	eSwab Collection instructions
TRANSPORT	Transport immediately at 2-8^{o}C, refrigerated
SPECIMEN STABILITY	Samples must be tested within 4 days of collection
REJECTION CRITERIA	Non-validated swab, leaking sample, incorrect source
LABEL	Patient's full name or unique ID number, birthdate, and date of collection
REQUISITION	ARLN Test Request Form
TURN AROUND TIME	Up to 7 business days from receipt in our lab (M-F)
RESULTS	*Candida auris* detected No *Candida auris* detected Indeterminate
REPORTING	Results will be returned to the submitting state's PHL, HAI program coordinator and submitting facility within 24-48 hours after completion of testing. If using Lab Web Portal results available in real time
CONTACT	arlnutah@utah.gov, 801-965-2400

Biothreat Response

Bacillus anthracis (Anthrax)

TEST	*Bacillus anthracis* (Anthrax)
METHOD	LRN Procedures
AVAILABLE	All clients – Contact Utah Public Health Laboratory prior to submitting specimens
PATIENT PREP	N/A
SPECIMEN	Culture isolate, cutaneous lesions, stool, rectal swab, blood cultures, whole blood, sputum, CSF, tissue, nasal swab and environmental samples
COLLECT IN	See *Bacillus anthracis* in Appendix A
PROCESSING	See *Bacillus anthracis* in Appendix A
TRANSPORT	See *Bacillus anthracis* in Appendix A. Ship suspect isolates as Suspected Category A Infectious Substance.
SPECIMEN STABILITY	Should be received in our laboratory as soon as possible
REJECTION CRITERIA	Leaking sample
LABEL	Patient's full name or unique ID number, patient's date of birth and date of collection or subculture
REQUISITION	Infectious Disease Test Request Form
TAT	1 to 3 days
RESULTS	Recovered or not recovered Detected or not detected
REPORTED	Phone, fax, or email, as established with provider
NOTE	It is mandatory that UPHL be contacted prior to submitting samples for testing.
CONTACT	(801) 965-2561: Kim Christensen or Annette Atkinson

Biothreat Response

Brucella species (Brucellosis)

TEST	*Brucella* species (Brucellosis) *Brucella* Serology
METHOD	LRN Procedures
AVAILABLE	All clients – Contact Utah Public Health Laboratory prior to submitting specimens.
PATIENT PREP	N/A
SPECIMEN	Organism isolate, environmental samples, blood, serum, spleen, liver or abscess
COLLECT IN	See *Brucella* species in Appendix A
PROCESSING	See *Brucella* species in Appendix A
TRANSPORT	See *Brucella* species in Appendix A. Ship suspect isolates as Suspected Category A Infectious Substance.
SPECIMEN STABILITY	Should be received in our laboratory as soon as possible
REJECTION CRITERIA	Leaking sample
LABEL	Patient's full name or unique ID number, patient's date of birth and date of collection or subculture
REQUISITION	Infectious Disease Test Request Form
TAT	*Brucella* species: 1 to 7 days *Brucella* Serology: 3 days
RESULTS	*Brucella* species: Recovered or not recovered Detected or not detected *Brucella* Serology: Serum titer
REPORTED	Phone, fax, or email, as established with provider
NOTE	It is mandatory that UPHL be contacted prior to submitting samples for testing
CONTACT	(801) 965-2561: Kim Christensen or Annette Atkinson

Biothreat Response

Burkholderia mallei and Burkholderia pseudomallei

TEST	*Burkholderia mallei* (Glanders) and *Burkholderia pseudomallei* (Melioidosis)
METHOD	LRN Procedures
AVAILABLE	All clients – Contact Utah Public Health Laboratory prior to submitting specimens.
PATIENT PREP	N/A
SPECIMEN	Organism isolate, blood, serum, urine, abscesses, tissue aspirates, body fluids (throat, nasal, skin or sputum for intentional release exposures)
COLLECT IN	See *Burkholderia mallei* and *Burkholderia pseudomallei* in Appendix A
PROCESSING	See *Burkholderia mallei* and *Burkholderia pseudomallei* in Appendix A
TRANSPORT	See *Burkholderia mallei* and *Burkholderia pseudomallei* in Appendix A. Ship suspect isolates as Suspected Category A Infectious Substance
SPECIMEN STABILITY	Should be received in our laboratory as soon as possible
REJECTION CRITERIA	Leaking sample
LABEL	Patient's full name or unique ID number, patient's date of birth and date of collection or subculture
REQUISITION	Infectious Disease Test Request Form
TAT	1 to 7 days
RESULTS	Recovered or not recovered Detected or not detected
REPORTED	Phone, fax, or email, as established with provider
NOTE	It is mandatory that UPHL be contacted prior to submitting samples for testing.
CONTACT	(801) 965-2561: Kim Christensen or Annette Atkinson

Biothreat Response

Clostridium botulinum

TEST	*Clostridium botulinum* culture and toxin (Botulism)
METHOD	LRN Procedures
AVAILABLE	All Clients – Contact Utah Public Health Laboratory prior to submitting specimens.
PATIENT PREP	If a patient has had barium administered, wait at least 72 hours before collecting a specimen. Do not use a glycerin suppository to collect stool sample
SPECIMEN	Stool, enema fluid (saline or water), gastric aspirate, vomitus, serum, tissue, wound, exudates, organism isolate, postmortem specimens, food and environmental samples
COLLECT IN	See *Clostridium botulinum* in Appendix A
PROCESSING	See *Clostridium botulinum* in Appendix A
TRANSPORT	See *Clostridium botulinum* in Appendix A. Ship suspect isolates as Suspected Category A Infectious Substance
SPECIMEN STABILITY	Should be received in our laboratory as soon as possible
REJECTION CRITERIA	Leaking sample, unapproved specimen
LABEL	Patient's full name or unique ID number, patient's date of birth and date of collection or subculture
REQUISITION	Infectious Disease Test Request Form
TAT	Toxin assay 96 hours, culture up to 14 days
RESULTS	Recovered or not recovered Detected or not detected
REPORTED	Phone, fax, or email, as established with provider
NOTE	It is mandatory that DHHS Epidemiology be contacted prior to submitting samples for testing.
CONTACT	(801) 965-2561: Kim Christensen or Annette Atkinson

Biothreat Response

Coxiella burnetii (Q-fever)

TEST	*Coxiella burnetii* (Q-fever)
METHOD	LRN Procedures
AVAILABLE	All clients – Contact Utah Public Health Laboratory prior to submitting specimens
PATIENT PREP	N/A
SPECIMEN	Environmental samples, blood, serum, nasopharyngeal swab, bronchial/tracheal washing or lesion exudate
COLLECT IN	See *Coxiella burnetii* in Appendix A
PROCESSING	See *Coxiella burnetii* in Appendix A
TRANSPORT	See *Coxiella burnetii* in Appendix A
SPECIMEN STABILITY	Should be received in our laboratory as soon as possible
REJECTION CRITERIA	Leaking specimen
LABEL	Patient's full name or unique ID number, patient's date of birth and date of collection or subculture
REQUISITION	Infectious Disease Test Request Form
TAT	1 day
RESULTS	Detected Not detected
REPORTED	Phone, fax, or email, as established with provider
NOTE	It is mandatory that UPHL be contacted prior to submitting samples for testing.
CONTACT	(801) 965-2561: Kim Christensen or Annette Atkinson

Biothreat Response

Ebola virus

TEST	Ebola virus (Ebola)
METHOD	LRN Procedures
AVAILABLE	**Patient must meet criteria for person under investigation (PUI) including patients with clinical signs, symptoms, AND epidemiologic risk factors for Ebola virus disease**
PATIENT PREP	N/A
SPECIMEN	Whole blood
COLLECT IN	See Ebola virus in Appendix A
PROCESSING	See Ebola virus in Appendix A
TRANSPORT	See Ebola virus in Appendix A
SPECIMEN STABILITY	Should be received in our laboratory as soon as possible
REJECTION CRITERIA	Leaking specimen, unapproved specimen
LABEL	Patient's full name or unique ID number, patient's date of birth and date of collection or subculture
REQUISITION	Infectious Disease Test Request Form
TAT	1 day
RESULTS	Detected Not detected
REPORTED	Phone, fax, or email, as established with provider
NOTE	It is mandatory that UPHL be contacted prior to submitting samples for testing.
CONTACT	(801) 965-2561: Kim Christensen or Annette Atkinson

Biothreat Response

Environmental Sample Multi-Agent Screen

TEST	Environmental Sample Multi-Agent Screen (*Bacillus anthracis, Burkholderia mallei* & *pseudomallei, Francisella tularensis, Yersinia pestis,* Orthopox virus, and Ricin toxin)
METHOD	LRN Procedures
AVAILABLE	All clients – Contact Utah Public Health Laboratory prior to submitting specimens
PATIENT PREP	N/A
SPECIMEN	Environmental samples; MUST be pre-screened for Explosives, Radiologicals, Flammables, Corrosives, and VOCs
COLLECT IN	Original container or sterile, non-glass container **DO NOT send**: glass containers, calcium alginate or cotton swabs, swabs with wooden shaft or dry swabs
PROCESSING	MUST be pre-screened for Explosives, Radiologicals, Flammables, Corrosives, and VOCs. Chain of custody should accompany samples
TRANSPORT	Room temperature. Package and transport according to safe handling, packaging and shipping guidelines
SPECIMEN STABILITY	Should be received in our laboratory as soon as possible
LABEL	Unique ID number/Case ID number, date of collection
REQUISITION	BT Environmental Specimen Form
TAT	1 day for preliminary results, 7 days for culture results
RESULTS	Recovered or not recovered Detected or not detected
REPORTED	Phone, fax, or email, as established with provider
NOTE	It is mandatory that UPHL be contacted prior to submitting samples for testing.
CONTACT	(801) 965-2561: Kim Christensen or Annette Atkinson

Biothreat Response

Francisella tularensis (Tularemia)

TEST **METHOD**	*Francisella tularensis* (Tularemia) LRN Procedures
AVAILABLE	All clients – Contact Utah Public Health Laboratory prior to submitting specimens
PATIENT PREP	N/A
SPECIMEN	Organism isolate, environmental samples, blood cultures, biopsied tissue, ulcer or lesion scraping or aspirate, lesion swabs, sputum, bronchial/tracheal wash
COLLECT IN	See *Francisella tularensis* in Appendix A
PROCESSING	See *Francisella tularensis* in Appendix A
TRANSPORT	See *Francisella tularensis* in Appendix A. Ship suspect isolates as Suspected Category A Infectious Substance.
SPECIMEN STABILITY	Should be received in our laboratory as soon as possible
REJECTION CRITERIA	Leaking specimen
LABEL	Patient's full name or unique ID number, patient's date of birth and date of collection or subculture
REQUISITION	Infectious Disease Test Request Form
TAT	*Francisella tularensis*: 1 to 7 days
RESULTS	*Francisella tularensis*: Recovered or not recovered Detected or not detected
REPORTED	Phone, fax, or email, as established with provider
NOTE	It is mandatory that UPHL be contacted prior to submitting samples for testing
CONTACT	(801) 965-2561: Kim Christensen or Annette Atkinson

Biothreat Response

Middle Eastern Respiratory Virus Syndrome Coronavirus (MERS-CoV)

TEST	Middle Eastern Respiratory Virus Syndrome Coronavirus (MERS-CoV) or 2012 Novel Coronavirus
METHOD	LRN Procedures
AVAILABLE	All clients – Contact DHHS Epidemiology prior to submitting specimens: (801)538-6191
PATIENT PREP	N/A
SPECIMEN	Nasopharyngeal or Oropharyngeal swabs, sputum, lower respiratory tract aspirates/washes, serum **DO NOT send** calcium alginate or cotton swabs, swabs with wooden shafts or dry swabs.
COLLECT IN	Swabs must be placed in Viral Transport Media. Sputum, lower respiratory tract aspirates/washes and serum may be placed in a sterile collection container
PROCESSING	A minimum specimen volume of 500µL is required for testing
TRANSPORT	Keep at 2-8°C for up to 48 hours of collection. If delay is expected, store specimens at -70°C. Samples should be received at UPHL within 48 hours of collection. If this is not possible, specimens may be frozen at -70°C and transported on dry ice
SPECIMEN STABILITY	Should be received in our laboratory as soon as possible, specifically within 48 hours of collection
REJECTION CRITERIA	Leaking specimen
LABEL	Patient's full name or unique ID number, patient's date of birth and date of collection or subculture
REQUISITION	Infectious Disease Test Request Form
TAT	1 day
RESULTS	Detected Not detected Equivocal
REPORTED	Phone, fax, or email, as established with provider
NOTE	It is mandatory that DHHS Epidemiology be contacted prior to submitting samples for testing
CONTACT	(801) 965-2561: Kim Christensen or Annette Atkinson

Biothreat Response

Orthopox viruses
Variola virus, Vaccinia virus, Non-variola Orthopoxvirus

TEST	Orthopox viruses
METHOD	LRN Procedures
AVAILABLE	All Clients – Contact DHHS Epidemiology prior to submitting specimens: (801)538-6191
PATIENT PREP	N/A
SPECIMEN	**Lesion Material** (Skin or crust from roof of vesicle or pustule, slide (touch prep), VTM, EM grid or swab from vesicular or pustular fluid, punch biopsy) **Ocular impressions or swabs** (if conjunctivitis is present) **Serum** (serum alone should never be used to diagnose an orthopox infection if rash is still present)
COLLECT IN	See Orthopox virus in Appendix A
PROCESSING	See Orthopox virus in Appendix A
TRANSPORT	See Orthopox virus in Appendix A
SPECIMEN STABILITY	Should be received in our laboratory as soon as possible
REJECTION CRITERIA	Leaking specimen
LABEL	Patient's full name or unique ID number, patient's date of birth and date of collection or subculture
REQUISITION	Infectious Disease Test Request Form
TAT	1 day
RESULTS	Detected Not detected
REPORTED	Phone, fax, or email, as established with provider
NOTE	It is mandatory that UPHL or DHHS Epidemiology be contacted prior to submitting samples for testing
CONTACT	(801) 965-2561: Kim Christensen or Annette Atkinson

Biothreat Response

Ricin Toxin

TEST	Ricin toxin
METHOD	LRN Procedures
AVAILABLE	Ordered by Epidemiology, Local Health, Local Law, or FBI
PATIENT PREP	N/A
SPECIMEN	Environmental samples
COLLECT IN	Original container or sterile, non-glass container
PROCESSING	Use universal precautions – all manipulations under a Biosafety Cabinet
TRANSPORT	Refer to Safe Handling, Packaging, and Shipping Guidelines
SPECIMEN STABILITY	Should be received in our laboratory as soon as possible
LABEL	Identification, sample description, date of collection
REQUISITION	BT Environmental Specimen Form
TAT	1 day
RESULTS	Reactive Not reactive
REPORTED	Phone, fax, or email, as established with provider
NOTE	It is mandatory that UPHL be contacted prior to submitting samples for testing
CONTACT	(801) 965-2561: Kim Christensen or Annette Atkinson

Biothreat Response

Variola virus (Smallpox)

TEST	*Variola* virus (Smallpox)
METHOD	LRN Procedures
AVAILABLE	All Clients – Contact DHHS Epidemiology prior to submitting specimens: (801)538-6191
PATIENT PREP	N/A
SPECIMEN	Microscope slide touch preps, scabs, dried vesicular fluid, vesicular swabs, vesicular tissue
COLLECT IN	See Orthopox virus in Appendix A
PROCESSING	See Orthopox virus in Appendix A
TRANSPORT	See Orthopox virus in Appendix A. Ship all samples as Suspected Category A Infectious Substance.
SPECIMEN STABILITY	Should be received in our laboratory as soon as possible
REJECTION CRITERIA	Leaking specimen
LABEL	Patient's full name or unique ID number, patient's date of birth and date of collection or subculture
REQUISITION	Infectious Disease Test Request Form
TAT	Call for details
RESULTS	Detected or not detected
REPORTED	Phone, fax, or email, as established with provider
NOTE	It is mandatory that UPHL or DHHS Epidemiology be contacted prior to submitting samples for testing.
CONTACT	(801) 965-2561: Kim Christensen or Annette Atkinson

Biothreat Response

Yersinia pestis (Plague)

TEST	*Yersinia pestis* (Plague)
METHOD	LRN Procedures
AVAILABLE	All clients – Contact Utah Public Health Laboratory prior to submitting specimens
PATIENT PREP	N/A
SPECIMEN	Isolate of organism, environmental samples, bronchial wash, tracheal aspirate, sputum, nasopharyngeal swabs, lymph node aspirates, serum, lesion exudates, tissue smears, blood
COLLECT IN	See *Yersinia pestis* in Appendix A
PROCESSING	See *Yersinia pestis* in Appendix A
TRANSPORT	See *Yersinia pestis* in Appendix A. Ship suspect isolates as Suspected Category A Infectious Substance.
SPECIMEN STABILITY	Should be received in our laboratory as soon as possible
REJECTION CRITERIA	Leaking specimen
LABEL	Patient's full name or unique ID number, patient's date of birth and date of collection or subculture
REQUISITION	Infectious Disease Test Request Form
TAT	*Yersinia pestis*: 1 to 7 days
RESULTS	*Yersinia pestis*: Recovered or not recovered Detected or not detected
REPORTED	Phone, fax, or email, as established with provider
NOTE	It is mandatory that UPHL be contacted prior to submitting samples for testing.
CONTACT	(801) 965-2561: Kim Christensen or Annette Atkinson

Biothreat Response

NGDS Warrior Panel

TEST	*Bacillus anthracis, Coxiella burnetii, Francisella tularensis, Yersinia pestis,* Ebola virus, and Marburg virus.
METHOD	FilmArray/PCR
AVAILABLE	All clients – Contact Utah Public Health Laboratory prior to submitting specimens
PATIENT PREP	N/A
SPECIMEN	Human Whole Blood - Minimum 0.5mL
COLLECT IN	EDTA tube via venipuncture
PROCESSING	Keep at 2 to 8 degrees C for up to 7 days
TRANSPORT	As soon as possible on cold packs
SPECIMEN STABILITY	Refrigerated up to 7 days
REJECTION CRITERIA	Leaking specimen
LABEL	Two identifiers - Patient's full name or unique ID number, and collection date
REQUISITION	Infectious Disease Test Request Form
TAT	1 - 2 days
RESULTS	Detected or Not Detected for each organism
REPORTED	Email or fax, as established with provider
NOTE	It is mandatory that UPHL or DHHS Epidemiology be contacted prior to submitting samples for testing.
CONTACT	(801) 965-2561: Kim Christensen or Annette Atkinson

Immunology

Hantavirus Referral Testing

TEST	Hantavirus IgG and IgM (Sin Nombre Virus)
METHOD	Enzyme-linked Immunosorbent Assay (ELISA)
AVAILABLE	All clients. Prior to submitting specimen, contact DHHS Epidemiology at 801-538-6191
PATIENT PREP	Use aseptic collection technique
SPECIMEN	Minimum of 1 mL serum, 2.5mL preferred. Serum draws near admission and if available a convalescent serum approximately 21 days after first specimen
COLLECT IN	Vacutainer tube (gold, tiger or red top only)
PROCESSING	Allow blood to completely clot, spin at 3200 rpm for 10 minutes to remove lipids and bacterial contaminants. You may submit the blood sample as is if you do not have a centrifuge. **Do not freeze whole blood**
TRANSPORT	Room temperature or refrigerated (do not freeze glass tubes)
SPECIMEN STABILITY	Specimen must be received in our lab within 7 days of collection
REJECTION CRITERIA	**Referred: CDC Hantavirus Testing**
LABEL	Patient's full name or unique ID number, and collection date
REQUISITION	Infectious Disease Test Request Form
TAT	Specimens are referred to CDC for testing.
RESULTS	Negative Indeterminate Positive
REPORTED	Email or fax, as established with provider
NOTE	**No specimens are accepted at CDC without prior consultation.** **Please contact DHHS Epidemiology at 801-538-6191 to begin the referral testing process.**
CONTACT	viro-sero@utah.gov or (801) 965-2584

Immunology

Hepatitis B viruses

TEST	Hepatitis B surface antigen (HBsAg), Hepatitis B surface antigen Confirmation (HBsAg Conf), Hepatitis B surface antibody (HBsAb)
METHOD	Chemiluminescent Microparticle Immunoassay (CMIA)
AVAILABLE	All clients
PATIENT PREP	Use aseptic collection technique
SPECIMEN	Minimum of 1 mL serum **per test**
COLLECT IN	Vacutainer tube (gold, tiger or red top only)
PROCESSING	Allow blood to completely clot, spin at 3200 rpm for 10 mins to remove lipids and bacterial contaminants. You may submit the blood sample as is if you do not have a centrifuge. **Do not freeze whole blood**
TRANSPORT	Room temperature or refrigerated
SPECIMEN STABILITY	Specimen must be received in our lab within 6 days of collection (7 days for HBsAb)
REJECTION CRITERIA	Heparinized plasma. Specimens containing particulate material or obvious microbial contamination. Heat-inactivated, severely hemolyzed, or lipemic specimens.
LABEL	Patient's full name or unique ID number, and collection date
REQUISITION	Infectious Disease Test Request Form
TAT	Tests run on Tuesdays and Thursdays only, 5 days TAT
RESULTS	Negative Grayzone (Indeterminate) Positive
REPORTED	E-mail or fax as established with provider
NOTE	Performance has not been established for the use of cadaveric specimens
CPT CODES	HBsAb 86317, HBsAg 87340, HBsAg Conf 87341
CONTACT	viro-sero@utah.gov or (801) 965-2584

Immunology

Hepatitis C antibody

TEST	Hepatitis C viral antibody (HCVAb)
METHOD	Chemiluminescent Microparticle Immunoassay (CMIA)
AVAILABLE	All clients
PATIENT PREP	Use aseptic collection technique
SPECIMEN	Minimum of 1 mL serum
COLLECT IN	Vacutainer tube (gold, tiger or red top only)
PROCESSING	Allow blood to completely clot, spin at 3200 rpm for 10 mins to remove lipids and bacterial contaminants. You may submit the blood sample if you do not have a centrifuge. **Do not freeze whole blood**
TRANSPORT	Room temperature or refrigerated
SPECIMEN STABILITY	Specimen must be received in our lab within 7 days of collection
REJECTION CRITERIA	Heparinized plasma. Specimens containing particulate material or obvious microbial contamination. Heat-inactivated, severely hemolyzed, or lipemic specimens
LABEL	Patient's full name or unique ID number, and collection date
REQUISITION	Infectious Disease Test Request Form
TAT	Test run Tuesdays and Thursdays, 5 days TAT
RESULTS	Non-reactive Grayzone (Indeterminate) Reactive
REPORTED	E-mail or fax as established with provider
NOTE	HCV Quantitative RNA testing is available as a referred test, however samples must be (1) centrifuged within 24 hours of collection, (2) received within 3 days of collection, (3) ideal volume 2.0mL, or submit additional specimens. Mark "HCV RNA testing if Positive" on test request form or submit additional specimen. Performance has not been established for the use of cadaveric specimens
CPT CODES	86803
CONTACT	viro-sero@utah.gov or (801) 965-2584

Immunology

Hepatitis C Quantitative RNA Referral Testing

TEST	Hepatitis C virus RNA Quantitative Assay
METHOD	Nucleic Acid Amplification Test (NAAT)
AVAILABLE	All clients (reflex from HCVAb test or with previously positive HCVAb patients)
PATIENT PREP	Use aseptic collection technique
SPECIMEN	Minimum of 1 mL serum
COLLECT IN	Vacutainer tube (gold, tiger or red top only)
PROCESSING	Serum or EDTA plasma are acceptable for testing. Whole blood can be stored at 2°C to 25°C and must be centrifuged, according to manufacturer's instructions for the tube used, within 24 hours of specimen collection.
TRANSPORT	Room temperature or refrigerated
SPECIMEN STABILITY	Specimen must be received in our lab within 3 days of collection after centrifugation
REJECTION CRITERIA	Heparinized specimens.
LABEL	Patient's full name or unique ID number, and collection date
REQUISITION	Infectious Disease Test Request Form
TAT	Testing is completed by the Michigan Department of Health and Human Services-Bureau of Laboratories
RESULTS	Negative or Detected with Quantitative RNA result
REPORTED	E-mail or fax as established with provider
NOTE	This test can be performed as a reflex test with the HCVAb test (mark both tests) or a test can be performed with a new sample from a previously positive HCVAb patient (mark "HCV RNA Testing if Positive"). Samples must be (1) centrifuged within 24 hours of collection, (2) received within 3 days of collection, (3) ideal volume 2.0mL, or submit additional specimens.
CPT CODES	87522
CONTACT	viro-sero@utah.gov or (801) 965-2584

Immunology

Human immunodeficiency virus

TEST	HIV Ag/Ab Combo screening test
METHOD	Chemiluminescent Microparticle Immunoassay (CMIA)
AVAILABLE	All clients
PATIENT PREP	Use aseptic blood collection technique
SPECIMEN	2 mL serum
COLLECT IN	Vacutainer tube (gold, tiger or red top only)
PROCESSING	Allow blood to completely clot, spin at 3200 rpm for 10 minutes to remove lipids and bacterial contaminants. You may submit the blood sample as is if you do not have a centrifuge. **Do not freeze whole blood**.
TRANSPORT	Room temperature or refrigerated
SPECIMEN STABILITY	Specimen must be received in our lab within 7 days of collection
REJECTION CRITERIA	Specimens containing particulate material. Heat-inactivated, severely hemolyzed.
LABEL	Patient's full name or unique ID number, and collection date
REQUISITION	Infectious Disease Test Request Form
TAT	Test run Monday, Wednesday and Friday, 3 days TAT
RESULTS	Non-reactive, Reactive
REPORTED	E-mail or fax as established with provider
NOTE	All specimens that are CMIA repeatedly reactive are confirmed positive by Bio-Rad Geenius HIV 1/2 Supplemental Assay. If a repeatedly reactive CMIA assay cannot be confirmed positive by the Geenius assay, or any HIV Indeterminate result, the sample will be referred to a reference laboratory for a HIV-1 RNA test. Performance has not been established for the use of cadaveric specimens
CPT CODES	87389
CONTACT	viro-sero@utah.gov or (801) 965-2584

Immunology

Human immunodeficiency virus

TEST	Geenius HIV 1/2 Supplemental Assay (HIV confirmation test)
METHOD	Immunochromatographic assay
AVAILABLE	All clients with a positive HIV Ag/Ab Combo (screening) test
PATIENT PREP	Use aseptic collection technique
SPECIMEN	Minimum of 2 mL serum
COLLECT IN	Vacutainer tube (gold, tiger or red top only)
PROCESSING	Allow blood to completely clot, spin at 3200 rpm for 10 minutes to remove lipids and bacterial contaminants. You may submit the blood sample as is if you do not have a centrifuge. **Do not freeze whole blood**
TRANSPORT	Room temperature or refrigerated
SPECIMEN STABILITY	Specimen must be received in our lab within 7 days of collection
REJECTION CRITERIA	Specimens containing particulate material. Heat-inactivated, severely hemolyzed
LABEL	Patient's full name or unique ID number, and collection date
REQUISITION	Infectious Disease Test Request Form
TAT	Test run Monday, Wednesday and Friday, 3 days TAT
RESULTS	Non-reactive HIV-1 (or HIV-2) Positive HIV antibodies not confirmed HIV-1 (or HIV-2) Indeterminate HIV Positive - untypable
REPORTED	E-mail or fax as established with provider
CPT CODES	86701 & 86702
CONTACT	viro-sero@utah.gov or (801) 965-2584

Immunology

Syphilis (Treponema pallidum)

TEST	Syphilis TP IgG/IgM
METHOD	Chemiluminescent Microparticle Immunoassay (CMIA)
AVAILABLE	All clients
PATIENT PREP	Use aseptic collection technique
SPECIMEN	Minimum of 1 mL of serum
COLLECT IN	Vacutainer tube (gold, tiger or red top only)
PROCESSING	Allow blood to completely clot, spin at 3200 rpm for 10 mins to remove lipids and bacterial contaminants. You may submit the blood sample as is if you do not have a centrifuge. **Do not freeze whole blood**
TRANSPORT	Room temperature or refrigerated
SPECIMEN STABILITY	Specimen must be received in our lab within 5 days of collection
REJECTION CRITERIA	Contaminated, hemolyzed, or severely lipemic specimens
LABEL	Patient's full name or unique ID number and collection date
REQUISITION	Infectious Disease Test Request Form
TAT	Test run on Monday, Wednesday and Friday (3 days TAT)
RESULTS	Reactive Nonreactive
REPORTED	E-mail or fax as established with provider
NOTES	Specimens with reactive results will be tested by RPR
CPT CODES	86780
CONTACT	viro-sero@utah.gov or (801) 965-2584

Immunology

Syphilis (Treponema pallidum)

TEST	Syphilis Rapid Plasma Reagin (RPR)
METHOD	Nontreponemal flocculation test
AVAILABLE	All clients as part of the Syphilis algorithm (samples that are reactive for TP IgG/IgM CMIA)
PATIENT PREP	Use aseptic collection technique
SPECIMEN	Minimum of 1 mL serum
COLLECT IN	Vacutainer tube (gold, tiger or red top only)
PROCESSING	Allow blood to completely clot, spin at 3200 rpm for 10 minutes to remove lipids and bacterial contaminants. You may submit the blood sample if you do not have a centrifuge. **Do not freeze whole blood**
TRANSPORT	Refrigerated 2-8°C
SPECIMEN STABILITY	Must be received in our lab within 5 days of collection
REJECTION CRITERIA	Contaminated, hemolyzed, or severely lipemic specimens.
LABEL	Patient's full name or unique ID number, and collection date
REQUISITION	Infectious Disease Test Request Form
TAT	Test run on Monday, Wednesday and Friday (3 days TAT)
RESULTS	Negative Reactive with dilution titer (i.e. reactive 1:4)
REPORTED	E-mail or fax as established with provider
NOTE	Specimens with discrepant IgG/IgM & RPR results will be confirmed by TP-PA. Additional fee will apply.
CPT CODES	86592, 86593 (Titer)
CONTACT	viro-sero@utah.gov or (801) 965-2584

Immunology

Syphilis (Treponema pallidum)

TEST	*Treponema pallidum* Particle Agglutination (TP-PA)
METHOD	Qualitative gelatin particle agglutination
AVAILABLE	All clients as part of the Syphilis algorithm (samples with discrepant IgG/IgM & RPR results only)
PATIENT PREP	Use aseptic collection technique
SPECIMEN	Minimum of 1 mL serum
COLLECT IN	Vacutainer tube (gold, tiger or red top only)
PROCESSING	Allow blood to completely clot, spin at 3200 rpm for 10 minutes to remove lipids and bacterial contaminants. You may submit the blood sample as is if you do not have a centrifuge. **Do not freeze whole blood**
TRANSPORT	Refrigerated 2-8°C
SPECIMEN STABILITY	Must be received in our lab within 5 days of collection
REJECTION CRITERIA	Contaminated, hemolyzed, or severely lipemic specimens
LABEL	Patient's full name or unique ID number, and collection date
REQUISITION	Infectious Disease Test Request Form
TAT	Test run Monday, Wednesday and Friday (3 days TAT)
RESULTS	Nonreactive Reactive Indeterminate
REPORTED	E-mail or fax as established with provider
NOTE	For indeterminate test results, it is recommended that the patient be retested in 2 weeks
CPT CODES	86780
CONTACT	viro-sero@utah.gov or (801) 965-2584

Molecular Laboratory

Bordetella pertussis PCR Referral Test

TEST	*Bordetella pertussis* PCR (pertussis, whooping cough) Referral Test See also Virus Identification – Respiratory Panel which includes *Bordetella pertussis*, *Chlamydophila pneumoniae*, and *Mycoplasma pneumoniae*
METHOD	Polymerase Chain Reaction (PCR)
AVAILABLE	All clients
PATIENT PREP	Best if collected following a coughing spasm
SPECIMEN	Nasopharyngeal swab, aspirate, or isolate
COLLECT IN	Nasopharyngeal Swab: Dacron or polyester swab in Universal/Viral Transport Media. Refrigerated as soon as possible after collection Aspirate: sterile, leak-proof container, refrigerated or frozen Isolate: send in Regan-Lowe Transport Media, refrigerated, or on Cryobeads, frozen
PROCESSING	Do not use calcium alginate swabs, swabs with wooden shaft or charcoal based medium
TRANSPORT	Cold packs or dry ice. Refrigerated specimens should be shipped on cold packs. Frozen specimens should be shipped frozen
SPECIMEN STABILITY	Send to UPHL as soon as possible after collection
REJECTION CRITERIA	Leaking specimen, throat and nasal swabs
LABEL	Patient's full name or unique ID number, and date of collection
REQUISITION	Infectious Disease Test Request Form
TAT	Specimens are referred to Minnesota Department of Health-Public Health Laboratory for Bordetella species PCR testing
RESULTS	Bordetella species Detected Bordetella species Not Detected
REPORTED	Results emailed or faxed, as established with provider
NOTE	Throat and nasal swabs are unacceptable samples
CONTACT	viro-sero@utah.gov or (801) 965-2584: Jesse Harbour or Annette Atkinson

Molecular Laboratory

Norovirus PCR Referral Testing

TEST	Norovirus PCR (Outbreak related) Referral Testing
METHOD	Polymerase Chain Reaction (PCR)
AVAILABLE	Local and State Health Department clients. Contact Utah Public Health Laboratory prior to submitting specimens
PATIENT PREP	N/A
SPECIMEN	Stool – A minimum of 2-4 specimens per outbreak required. Each specimen must be from a unique patient
COLLECT IN	Sterile container or Cary-Blair Transport Medium
PROCESSING	A minimum of 0.5mL of stool is required for processing Keep stool refrigerated 2-8^{o}C until transport
TRANSPORT	Cold packs
SPECIMEN STABILITY	Should be received at UPHL within 72 hours of collection
REJECTION CRITERIA	Leaking specimen, unapproved specimen
LABEL	Patient's full name or unique ID number, and date of collection
REQUISITION	Infectious Disease Test Request Form
TAT	Specimens are referred to California Public Health Laboratory
RESULTS	Norovirus RNA detected No Norovirus RNA detected
REPORTED	Results are emailed or faxed, as established with provider
NOTE	Please contact UPHL prior to sending specimens Minimum of 2-4 specimens per outbreak required
CONTACT	(801) 965-2512: Jenni Wagner

Arbovirus Laboratory

Rickettsia rickettsii (Rocky Mountain spotted fever)
Rickettsia prowazekii (epidemic typhus)

TEST	*Rickettsia rickettsii* (Rocky Mountain spotted fever) *Rickettsia prowazekii* (epidemic typhus)
METHOD	LRN Procedures
AVAILABLE	All clients – Contact Utah Public Health Laboratory prior to submitting specimens.
PATIENT PREP	N/A
SPECIMEN	Venous whole blood preserved in EDTA or acid citrate dextrose Solution A.
COLLECT IN	EDTA or Acid citrate dextrose Solution A
PROCESSING	Keep refrigerated 2-8^{o}C
TRANSPORT	Cold packs
SPECIMEN STABILITY	NA
REJECTION CRITERIA	Leaking specimen
LABEL	Patient's full name or unique ID number, patient's date of birth and date of collection
REQUISITION	Infectious Disease Test Request Form
TAT	1 day
RESULTS	Detected or not detected
REPORTED	Phone, fax, or email, as established with provider
NOTE	It is mandatory that UPHL be contacted prior to submitting samples for testing.
CONTACT	(801) 965-2561: Kim Christensen or Annette Atkinson

Arbovirus Laboratory

West Nile Virus (Human) IgM

TEST	West Nile Virus IgM, (Human)
METHOD	CDC West Nile MAC-ELISA
AVAILABLE	All clients. Prior to submitting specimen, contact DHHS Epidemiology at (801)538-6191
PATIENT PREP	N/A
SPECIMEN	Serum or CSF; a minimum specimen volume of 150µL is required for testing
COLLECT IN	Sterile container
PROCESSING	Serum: separate from red blood cells and refrigerate (freeze if transport delayed) CSF: refrigerate
TRANSPORT	Cold packs or dry ice. Refrigerated specimens should be shipped on cold packs. Frozen specimens should be shipped frozen
SPECIMEN STABILITY	NA
REJECTION CRITERIA	Leaking specimen
LABEL	Patient's full name or unique ID number, date of collection
REQUISITION	Infectious Disease Test Request Form
TAT	Within 10 business days
RESULTS	WNV IgM antibody detected by MIA WNV IgM antibody not detected by MIA Inconclusive
REPORTED	Fax, or email, as established with provider
CPT CODES	86788 (CSF), 86789 (Serum)
CONTACT	viro-sero@utah.gov or (801) 965-2584

Arbovirus Laboratory

West Nile Virus, St. Louis Encephalitis Virus, or Western Equine Encephalitis Virus PCR

TEST	West Nile Virus, St. Louis Encephalitis Virus, or Western Equine Encephalitis Virus PCR
METHOD	Polymerase Chain Reaction (PCR)
AVAILABLE	Mosquito Abatement Districts
PATIENT PREP	N/A
SPECIMEN	Mosquitos = 10-100 insects, pooled by species
COLLECT IN	Mosquitoes = tubes from Mosquito Abatement District
PROCESSING	Keep mosquitoes at 2-8°C
TRANSPORT	On cold packs
SPECIMEN STABILITY	As soon as possible after collection
LABEL	Location and date of collection. Species of source animal. Number of insects per tube and species
REQUISITION	Mosquito Abatement Worksheet
TAT	7 days
RESULTS	Virus RNA detected by PCR Virus RNA not detected by PCR
REPORTED	Email
CONTACT	(801) 965-2561: Kim Christensen or Annette Atkinson

Arbovirus Laboratory

Zika virus (Human) IgM

TEST	Zika virus IgM, (Human)
METHOD	ELISA IgM
AVAILABLE	All clients
PATIENT PREP	N/A
SPECIMEN	A minimum of 1 ml serum must be submitted
COLLECT IN	Serum separator tube; sterile container
PROCESSING	Serum: separate from red blood cells and refrigerate (freeze if transport delayed)
TRANSPORT	Cold packs or dry ice. Refrigerated specimens should be shipped on cold packs. Frozen specimens should be shipped frozen
SPECIMEN STABILITY	Sample can be kept at 2-8°C for up to 48 hours and then frozen until testing can be completed
REJECTION CRITERIA	Leaking specimen
LABEL	Patient's full name or unique ID number, date of collection
REQUISITION	Infectious Disease Test Request Form
TAT	7 days
RESULTS	Negative – No evidence of recent Zika virus infection detected Presumptive positive – Serological evidence of possible recent Zika virus infection identified. Additional testing required Inconclusive – Presumptive Other Flavivirus Positive (non-Zika). Specimen sent to CDC for confirmatory testing.
REPORTED	Fax, or email, as established with provider
CPT CODES	86794
CONTACT	viro-sero@utah.gov or (801) 965-2584

Arbovirus Laboratory

Chikungunya, Dengue and Zika virus PCR

TEST	Chikungunya, Dengue and Zika virus PCR
METHOD	CDC Trioplex PCR Assay (PCR)
AVAILABLE	All clients. Prior to submitting the specimen, contact DHHS Epidemiology at (801)538-6191 for testing approval
PATIENT PREP	N/A
SPECIMEN	Serum or serum + urine; urine specimens must be accompanied by a matched serum specimen. Urine will only be tested for Zika virus
COLLECT IN	Serum – Serum separator tube, a minimum of 1 ml volume must be submitted Urine – sterile container, a minimum of 1 ml volume must be submitted
PROCESSING	Serum: Separate from red blood cells and refrigerate (freeze if transport delayed) Urine: Refrigerate 2-8^{o}C (only Zika virus)
TRANSPORT	On cold packs
SPECIMEN STABILITY	As soon as possible after collection
REJECTION CRITERIA	Leaking specimen, unapproved specimen
LABEL	Patient's full name or unique ID number, date of collection
REQUISITION	Infectious Disease Test Request Form
TAT	3 days
RESULTS	Virus RNA detected by PCR Virus RNA not detected by PCR
REPORTED	Fax, or email, as established with provider
NOTE	Testing urine samples for Zika virus requires a patient matched serum sample.
CPT CODES	87662 (Zika serum), 87662 (Zika urine), 86803 (Chikungunya)
CONTACT	viro-sero@utah.gov or (801) 965-2584

Mycobacteriology

Acid-fast bacilli (AFB)

TESTS	AFB Stain with Reflex
METHOD	Comprehensive panel includes acid-fast bacillus culture and stain
AVAILABLE	All clients, a fee is charged for specimens from private laboratories
COLLECT IN	**Sputum or Bronchial washing/lavage:** Collect in sterile 50mL screw cap conical tube (available from Tech Services, Collection Kit Order Form) **CSF, body fluids, tissue, urine:** Collect in sterile, leak proof containers
ACCEPTABLE SPECIMENS	**Sputum:** Optimal volume = 5 - 10 mL, Collect early-morning specimens from deep, productive coughs. Three sputum specimens should be collected at 8-24 hour intervals (24 hours when possible). An individual order must be submitted for each specimen. **Induced sputum***:* use sterile hypertonic saline. Indicate on request if specimen is induced, as these watery specimens resemble saliva **Bronchial washing, lavage** = >5 mL **Tissue:** Collect using aseptic collection technique. Swabs are unacceptable for testing **Urine:** 40 ml Collect first morning specimen with clean catch technique **CSF**: ≥ 5 mL For other specimen types or for drug level testing please contact the TB laboratory
REJECTION CRITERIA	Specimens older than 5 days Samples leaking Samples that are spit or saliva Sputum samples less than 1 mL Samples discolored (not bloody) Samples without two unique identifiers that match the test request form
TRANSPORT	Refrigerated 2-8°C. It is recommended that specimens be delivered to the public health laboratory **within 24** hours of collection. They **must be** received in our lab within **5** days of collection. Specimens over 5 days old will be rejected. **Do not collect samples that will arrive at the lab after 10:00 AM on Fridays.** Those samples will be processed on Monday and risk being rejected.
LABEL	**Two identifiers needed.** Patient's full name or unique ID number and birthdate, plus the collection date.
REQUISITION	Infectious Disease Test Request Form
TAT	<24 hrs
RESULT	No Acid Fast Bacilli observed on smear or 1+ to 4+ Acid Fast Bacilli observed on smear
REPORTED	Email or fax, as established with the provider
CONTACT	TB section (Bacteriology/Mycobacteriology) (801) 965-2400

Mycobacteriology

Acid-fast bacilli (AFB)

TESTS	Mycobacterium tuberculosis Complex Detection and Rifampin Resistance by PCR and Acid-Fast Bacillus (AFB) Culture
METHOD	PCR amplification of M. tuberculosis complex species and rifampin resistance by GeneXpert®
AVAILABLE	All clients, a fee is charged for specimens from private laboratories
COLLECT IN	**Sputum or Bronchial washing/lavage:** Collect in sterile 50mL screw cap conical tube (available from Tech Services, Collection Kit Order Form) **CSF, body fluids, tissue, urine:** Collect in sterile, leak proof containers
ACCEPTABLE SPECIMENS	**Sputum:** Optimal volume = 5 - 10 mL, Collect early-morning specimens from deep, productive coughs. Three sputum specimens should be collected at 8-24 hour intervals (24 hours when possible). An individual order must be submitted for each specimen. **Induced sputum***:* use sterile hypertonic saline. Indicate on request if specimen is induced, as these watery specimens resemble saliva. **Bronchial washing, lavage** = >5 mL **Tissue:** Collect using aseptic collection technique. Swabs are unacceptable for testing **Urine:** 40 ml collect first morning specimen with clean catch technique **CSF**: ≥ 5 mL For other specimen types or for drug level testing please contact the TB laboratory
REJECTION CRITERIA	Specimens older than 5 days, leaking, spit or saliva, Sputum samples less than 1 mL, Samples discolored (not bloody), Samples without two unique identifiers that match the test request form
TRANSPORT	Refrigerated 2-8°C. It is recommended that specimens be delivered to the public health laboratory within 24 hours of collection. They must be received in our lab within 5 days of collection. Specimens over 5 days old will be rejected. Do not collect samples that will arrive at the lab after 11:00 AM on Fridays. Those samples will most likely be too old to be processed on Monday.
LABEL	Patient's full name and unique ID number, and collection date and time.
REQUISITION	Infectious Disease Test Request Form
TAT	**GeneXpert:** 1-2 working days **Negative culture** results available after 7 weeks of incubation **Positive culture** depends on organism isolated (preliminary positive reports sent when AFB growth is detected)
RESULTS	**GeneXpert MTB:** MTB Detected or Not Detected Rifampin Resistance Detected or Not Detected **Culture:** No Acid Fast Bacilli Recovered (negative), or Genus and species/complex (positive)
REPORTED	Email or fax, as established with the provider
CONTACT	TB section (Bacteriology/Mycobacteriology) (801) 965-2400

Virology

Chlamydia trachomatis and Neisseria gonorrhoeae

TEST	*Chlamydia trachomatis* and *Neisseria gonorrhoeae* NAAT
METHOD	Transcription-Mediated Amplification (TMA)
AVAILABLE	All clients
PATIENT PREP	N/A
SPECIMEN	Endocervical, male urethral, rectal, pharyngeal, oral (use unisex swab collection kit) Urine (first catch urine, use urine specimen collection kit) Vaginal (use vaginal swab specimen collection kit - clinician or self-collected) Liquid Pap = specimen transfer kit
COLLECT IN	APTIMA collection kits: Urine volume must fall between the two black lines on the tube. Samples that do not fall within this range canceled
PROCESSING	Keep specimens at 2 to 30°C
TRANSPORT	Transport at 2 to 30°C in Aptima Specimen Collection Tube
SPECIMEN STABILITY	Urine samples, kept 2 to 30°C, must be transferred to the APTIMA urine specimen transport tube within 24 hours of collection. Test must be performed within 30 days of collection Swab samples must be tested within 60 days after collection
REJECTION CRITERIA	Specimens in any transport media other than indicated above. Specimens in swab transport media without a swab. Patient's age is less than 14 years old.
LABEL	Patient's full name or unique ID number, and collection date. Do not cover the black lines on the urine collection tubes with labels
REQUISITION	Infectious Disease Test Request Form
APTIMA TUBES	To order Aptima Collection and Transport tubes
TAT	Monday - Friday, 3 days TAT
RESULTS	Negative, Indeterminate, or Positive
REPORTED	Email or fax, as established with provider
NOTE	Both chlamydia and gonorrhea tests are performed from the same specimen
CPT CODES	87491
CONTACT	viro-sero@utah.gov or (801) 965-2584

Virology

Mycoplasma genitalium

TEST	*Mycoplasma genitalium* NAAT
METHOD	Transcription-Mediated Amplification (TMA)
AVAILABLE	All clients
PATIENT PREP	N/A
SPECIMEN	Endocervical, male urethral, swabs (Unisex Swab Collection kit for Endocervical & Male Urethral Swab Specimens) Urine (first catch urine, Urine Collection Kit) Vaginal (Multitest Swab Specimen Collection kit - clinician or self-collected)
COLLECT IN	APTIMA collection kits: Urine volume must fall between the two black lines on the tube. Samples that do not fall within this range canceled
PROCESSING	Keep specimens at 2 to 30°C
TRANSPORT	Transport at 2 to 30°C in Aptima Specimen Collection Tube
SPECIMEN STABILITY	Urine samples, kept 2 to 30°C, must be transferred to the APTIMA urine specimen transport tube within 24 hours of collection. Test must be performed within 30 days of collection Swab samples must be tested within 60 days after collection
REJECTION CRITERIA	Urine volume outside the two black lines of the urine transport tube. Swab specimen transport tube with no swab, two swabs, a cleaning swab.
LABEL	Patient's full name or unique ID number, and collection date. Do not cover the black lines on the urine collection tubes with labels
REQUISITION	Infectious Disease Test Request Form
APTIMA TUBES	To order Aptima Collection and Transport tubes
TAT	Tests done Wednesday, 7 days
RESULTS	Negative, INVALID, or Positive
REPORTED	Email or fax, as established with provider
CPT CODES	87491
CONTACT	viro-sero@utah.gov or (801) 965-2584

Virology

Influenza virus PCR Surveillance

TEST	*Influenza virus PCR*
METHOD	Polymerase Chain Reaction (PCR)
AVAILABLE	All clients
PATIENT PREP	N/A
SPECIMEN	Positive influenza samples Nasopharyngeal swabs, nasal swabs, throat swabs, dual nasopharyngeal/throat swabs, nasal aspirates, nasal washes, bronchoalveolar lavage, bronchial wash, tracheal aspirate, sputum, lung tissue, and virus culture isolates
COLLECT IN	Swabs must be placed in Viral Transport media. The following may be placed in a sterile collection container: nasal aspirates, nasal washes, bronchoalveolar lavage, bronchial wash, tracheal aspirate, sputum, and lung tissue.
PROCESSING	Keep at 2-8°C for up to 72 hours
TRANSPORT	Transport at 2-8°C or if frozen, transport frozen (do not thaw).
SPECIMEN STABILITY	Samples must be received at UPHL within 72 hours of collection. If it is not possible to transport specimens within 72 hours of collection, specimens may be frozen at ≤ -70°C and transported on dry ice
REJECTION CRITERIA	Swabs not in Viral Transport Media. Swabs with calcium alginate/cotton tips, wooden shafts. Dry swabs
LABEL	Patient's full name or unique ID number, and date of collection
REQUISITION	*Influenza Surveillance Request Form*
TAT	1-7 business days
RESULTS	Influenza A: Not Detected, Detected (will indicate subtype detected), Inconclusive. Influenza B: Not Detected, Detected (will indicate genotype detected), Inconclusive.
REPORTED	Email or fax, as established with provider
NOTE	Do not use calcium alginate or cotton swabs, swabs with wooden shaft, or dry swabs A minimum specimen volume of 500µl is required for testing.
CONTACT	viro-sero@utah.gov or (801) 965-2584

Virology

Mumps PCR

TEST	*Mumps PCR*
METHOD	Polymerase Chain Reaction (PCR)
AVAILABLE	All clients
PATIENT PREP	Please see CDC's Illustration and instructions
SPECIMEN	Buccal or Oral swab.
COLLECT IN	Swabs must be placed in at least 2 ml Viral Transport media
PROCESSING	Keep at 2-8°C
TRANSPORT	Transport on cold pack within 72 hours
SPECIMEN STABILITY	Samples must be received at UPHL within 72 hours of collection on cold packs. If it is not possible to transport specimens within 72 hours of collection, specimens may be frozen at ≤ -70°C and transported on dry ice
REJECTION CRITERIA	Swabs with calcium alginate/cotton tips, wooden shafts, dry swabs.
LABEL	Patient's full name or unique ID number, and date of collection
REQUISITION	Infectious Disease Test Request Form
TAT	1-7 business days
RESULTS	Negative Positive Indeterminate
REPORTED	Email or fax, as established with provider
NOTE	Do not use calcium alginate or cotton swabs, swabs with wooden shaft, or dry swabs A minimum specimen volume of 500µl is required for testing.
CPT CODES	87798
CONTACT	viro-sero@utah.gov or (801) 965-2584

Virology

Herpes simplex virus and Varicella zoster virus

TEST	Herpes simplex virus Type 1/Type 2 (HSV-1/HSV-2) and Varicella Zoster (VZV) by PCR
METHOD	Qualitative Polymerase Chain Reaction
AVAILABLE	All clients
PATIENT PREP	Use aseptic collection technique
SPECIMEN	HSV: Buccal mucosa, eye, genital, rectal, throat or vesicle swabs VZV: CSF, body fluid, buccal mucosa, eye, genital, rectal, throat or vesicle swabs, or vesicle fluid.
COLLECT IN	Swab or body fluid in viral transport media
PROCESSING	Refrigerate immediately after collection
TRANSPORT	2-8°C
SPECIMEN STABILITY	Must be received in our lab within 10 days of collection refrigerated
REJECTION CRITERIA	Swabs not transported in Viral Transport Media
LABEL	Patient's full name or unique ID number, and collection date
REQUISITION	Infectious Disease Test Request Form
TAT	4 days TAT
RESULTS	Detected Not Detected
REPORTED	Email or fax, as established with provider
NOTE	Specimens collected using wood swabs will not be accepted
CPT CODES	87529
CONTACT	viro-sero@utah.gov or (801) 965-2584

Virology

Rabies

TEST	Rabies (animal specimens only)
METHOD	Direct Fluorescent antibody (DFA)
AVAILABLE	Local health departments, animal control agencies and state veterinary diagnostic laboratories only
PATIENT PREP	Animal must be euthanized
SPECIMEN	Bats = entire animal Other animals = head only if >12 inches
COLLECT IN	Absorbent material and leak proof container
PROCESSING	Keep at 2-8°C
TRANSPORT	Keep at 2-8°C
SPECIMEN STABILITY	Must be received in our lab within 24 hours
REJECTION CRITERIA	Severely decomposed tissue, chemical fixation (e.g., formalin)
LABEL	Unique identification number or victim name and collection date
REQUISITION	Rabies Test Request Form
SHIPPING	To order packing and shipping containers
TAT	1-3 days
RESULTS	Negative, positive or inconclusive
REPORTED	Email or fax, as established with provider
NOTE	Testing will incur a fee when national guidelines for submission are not followed
CONTACT	viro-sero@utah.gov or (801) 965-2584 Zoonotic Disease Epidemiologist (801) 538-6191

Virology

SARS-CoV-2

TEST	*SARS-CoV-2 NAAT*
METHOD	Transcription-Mediated Amplification (TMA)
AVAILABLE	All clients
PATIENT PREP	N/A
SPECIMEN	Nasal swabs, and saliva
COLLECT IN	Swabs must be placed Hologic Direct Load Tube Collection Kits media. The following may be placed in a sterile collection container: saliva **Form to request PCR collection kits, Saliva and NP swabs.**
PROCESSING	Keep swab at 2-30°C for up to 6 days. Saliva specimens up to 25°C
TRANSPORT	Saliva specimens are stable at temperatures up to 25°C for 72 hours. Diagnostic respiratory specimens should be transported and stored at 2-30°C up to 6 days after collection or the specimens may be stored at ≤ -70°C and tested at a later time
SPECIMEN STABILITY	Swab samples must be received at UPHL within 6 days of collection. If it is not possible to transport specimens within 6 days of collection, specimens may be frozen at ≤ -70°C and transported on dry ice. Saliva samples must be received within 3 days of collection or frozen at ≤ -70°C and transported on dry ice
REJECTION CRITERIA	Swabs with calcium alginate/cotton tips, wooden shafts, dry swabs, leaking specimens, not refrigerated, older than 72 hours from collection, insufficient specimen (<250 uL), incomplete specimen labeling/documentation
LABEL	Patient's full name or unique ID number, and date of collection
REQUISITION	Infectious Disease Test Request Form
TAT	24-48 hours
RESULTS	Not Detected, Detected, Invalid
REPORTED	Email or fax, as established with provider
NOTE	Hologic Swabs must be placed Hologic Direct Load Tube Collection Kits
CPT CODES	39448
CONTACT	viro-sero@utah.gov or (801) 965-2584

Virology

SARS-CoV-2, Influenza A, Influenza B, RSV

TEST	*SARS-CoV*-2, FluA, FluB, RSV PCR
METHOD	Polymerase Chain Reaction (PCR)
AVAILABLE	All clients
PATIENT PREP	N/A
SPECIMEN COLLECT IN	Nasopharyngeal, anterior nares swabs Swabs must be placed in Viral Transport media or Universal Transport Media **Form to request PCR collection kits, Saliva and NP swabs.**
PROCESSING	Keep at 2-8°C for up to 72 hours
TRANSPORT	Diagnostic respiratory specimens should be transported at 2-30°C and stored refrigerated 2-8°C within 48 hours after collection or the specimens may be stored at ≤ -70°C and tested at a later time
SPECIMEN STABILITY	Samples must be received at UPHL within 6 days of collection. If it is not possible to transport specimens within 6 days of collection, specimens may be frozen at ≤ -70°C and transported on dry ice
REJECTION CRITERIA	Swabs with calcium alginate/cotton tips, wooden shafts, dry swabs, leaking specimens, not refrigerated, older than 6 days from collection, insufficient specimen (<500 uL), incomplete specimen labeling/documentation
LABEL	Patient's full name or unique ID number, and date of collection
REQUISITION	Infectious Disease Test Request Form
TAT	24-48 hours
RESULTS	SARS-CoV2: Not Detected, Detected; Influenza A: Not Detected, Detected; Influenza B: Not Detected, Detected; RSV: Not Detected, Detected
REPORTED	Email or fax, as established with provider
NOTE	Do not use calcium alginate or cotton swabs, swabs with wooden shaft, or dry swabs A minimum specimen volume of 1000µl is required for testing.
CPT CODES	87637
CONTACT	viro-sero@utah.gov or (801) 965-2584

Virology

Virus Identification – Respiratory Panel

TEST	Respiratory Screen (Adenovirus; Coronavirus (229E, HKU1, NL63, OC43); Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2); Human Metapneumovirus; Rhinovirus/Enterovirus; Influenza A and B; Parainfluenza 1-4; Respiratory Syncytial Virus [RSV]; *Bordetella pertussis*; *Bordetella parapertussis; Chlamydia pneumoniae; Mycoplasma pneumoniae*)
METHOD	FilmArray/PCR
AVAILABLE	All clients
PATIENT PREP	N/A
SPECIMEN	Nasopharyngeal swab (NPS)
COLLECT IN	Viral transport Medium (VTM), Universal Transport Medium (UTM), and saline
PROCESSING	Keep at 2-8°C for up to 3 days, or frozen (<-15°C) for up to 30 days
TRANSPORT	On Cold packs if not frozen, on dry ice if frozen
SPECIMEN STABILITY	Must be received in our lab within 72 hrs of collection if not frozen and within 30 days if frozen
REJECTION CRITERIA	Leaking specimen
LABEL	Patient's full name or unique ID number, and collection date
REQUISITION	Infectious Disease Test Request Form
TAT	1 - 2 days
RESULTS	Detected or Not Detected for each organism
REPORTED	Email or fax, as established with provider
NOTE	Specimens collected using wood swabs will not be accepted.
CPT CODES	87632
CONTACT	viro-sero@utah.gov or (801) 965-2584

Virology

Trichomonas vaginalis

TEST	Trichomonas vaginalis NAAT
METHOD	Polymerase Chain Reaction (PCR)
AVAILABLE	All clients
PATIENT PREP	N/A
SPECIMEN	Endocervical, and vaginal swabs, Urine (first catch urine)
COLLECT IN	Swabs: must be collected in Xpert Swab Specimen Collection Kit Urine: sample volume must fall on the dotted line of Xpert Urine Specimen Collection Kit
PROCESSING	Keep specimens at 2 to 30°C in Xpert Collection Kit
TRANSPORT	Transport at 2 to 30°C
SPECIMEN STABILITY	Unprocessed urine: 4 days at 2-8°C, or 4 hours at 15-30°C Urine in Xpert Urine Collection Kit: 28 days at 2-8°C or 14 days at 15-30°C Swabs: 60 days at 2-30°C
REJECTION CRITERIA	Leaking specimen, incomplete specimen labeling/documentation. Patient's age less than 14 years old or more than 78 years old.
LABEL	Patient's full name or unique ID number, and collection date
REQUISITION	Infectious Disease Test Request Form
TAT	1 - 2 days
RESULTS	Detected or Not Detected for each organism, and INVALID
REPORTED	Email or fax, as established with provider
NOTE	Specimens collected using wood swabs will not be accepted.
CPT CODES	87491
CONTACT	viro-sero@utah.gov or (801) 965-2584

Appendix A: Biothreat Specimen Collection and Transport Guidelines

Bacillus anthracis

ACCEPTABLE SPECIMENS: Specimens of choice will be determined by the clinical presentation. *Environmental or nonclinical samples and samples from announced events are not processed by Sentinel Laboratories. Please contact local law enforcement or DHHS directly.*

1. **Cutaneous lesions**
    a. Vesicular stage: aseptically collect vesicular fluid on sterile swabs from previously unopened vesicle. **NOTE:** The anthrax bacilli are most likely to be seen by Gram stain in the vesicular stage.
    b. Eschar stage: collect eschar material by CAREFULLY lifting the eschar's outer edge. Insert a sterile swab, and then slowly rotate for 2-3 seconds beneath the edge of the eschar without removing it. Transport directly to the laboratory at room temperature. For transport time >1 h and < 24 h, transport at 2 to 8°C.
2. **Stool** – Transfer ≥5 grams of stool directly into a clean, dry, sterile, wide-mouth, leak-proof container. Transport unpreserved stool to laboratory within 1 h. For transport time >1h and <24h, refrigerate at 2 to 8°C. Cary-Blair or equivalent transport media is acceptable.
3. **Rectal swab –** For patients unable to pass a specimen, obtain a rectal swab by carefully inserting a swab 1 inch beyond the anal sphincter. Transport directly to the laboratory at room temperature. For transport time >2h and <24h, transport at 4°C.
4. **Blood culture** – Collect appropriate blood volume and number of sets per laboratory protocol. **Note:** In later stages of disease (2-8 days post-exposure), blood cultures may yield the organism, especially if specimens are obtained prior to antibiotic treatment. Transport directly to the laboratory at room temperature.
   Note: Whole blood collected in a purple-top tube may be requested for additional tests.
5. **Sputum –** Collect >1 mL of a lower respiratory specimen into a sterile container. Inhalational anthrax usually does not result in sputum formation. Transport in sterile, screw-capped container at room temperature when transport time is <1 h. For transport time >1 h and <24 h, transport at 4°C.
6. **CSF, tissue, autopsy samples** – Collect aseptically and place in sterile containers. Transport directly to the laboratory at room temperature.

Brucella species

ACCEPTABLE SPECIMENS: *Environmental/nonclinical samples and samples from announced events are not processed by Sentinel Laboratories. Please contact local law enforcement or the DHHS directly.*

1. **Blood or bone marrow** – These are the sources from which *Brucella* spp. is most often isolated. Standard blood culturing systems. Transport at room temperature.
   Note: Whole blood collected in blue, purple or green top tubes may be requested for additional tests.
2. **Serum** – For serologic diagnosis, an acute phase specimen should be collected as soon as possible after onset of disease. A convalescent phase specimen should be collected >14 days after the acute specimen. Preferably send at least 1 mL, refrigerated.
3. **Spleen, Liver, or abscess** – *Brucella* spp. are occasionally isolated from these sources. Selected media can be used for isolation of *Brucella* spp. from specimens with mixed flora. Specimens should be refrigerated at 2-8° C until inoculation. Tissue must be kept moist. Add several drops of sterile saline if necessary.

Burkholderia mallei and Burkholderia pseudomallei

ACCEPTABLE SPECIMENS: *Environmental/nonclinical samples and samples from announced events are not processed by Sentinel Laboratories. Please contact local law enforcement or the DHHS directly.*

1. **Blood** – Collect blood specimens before antibiotics are administered, when possible. Collect appropriate volume and number of sets per laboratory protocol.
2. **Urine** – Collect a midstream clean-catch specimen or a catheterization specimen.
3. **Abscesses, tissue aspirates, fluids** – Collect tissues and fluids rather than swabs, when possible.
4. **Special situations** – Throat, nasal, skin or sputum specimens may be helpful in screening exposed individuals if a release of *B. mallei* or *B. pseudomallei* has been confirmed.

Clostridium botulinum

ACCEPTABLE SPECIMENS – *Environmental/nonclinical samples and samples from announced events are not processed by Sentinel Laboratories. Please contact local law enforcement or DHHS directly.*

Foodborne Botulism
1. Clinical specimens – serum, gastric contents, vomitus, stool, return from a sterile water enema.
2. Autopsy samples – serum gastric and intestinal contents
3. Food samples and/or empty containers with the remnants of the food

Infant Botulism: Child less than 12 months of age.
1. Feces or return from a sterile water enema.
2. Serum – generally not useful since an infant's body mass is small and the toxin is quickly absorbed.
3. Autopsy samples – intestinal contents from different levels of the small and large intestine.
4. Food and environmental (soil and house dust) as appropriate per the investigation.

Wound Botulism
1. Serum
2. Exudate, tissue or swab samples of wound (transported in anaerobic transport media)
3. Isolate of suspect *Clostridium botulinum* submitted in an anaerobic transport vessel
4. Feces or return from a sterile water enema (wound may not be the source)

Intentional toxin release or Laboratory Accident
1. Serum, Nasal swab
2. Feces or return from a sterile water enema
3. Food
4. Environmental swabs

MATERIALS
1. **Media**: Anaerobic media (chopped meat or equivalent). Follow standard laboratory protocols.
2. Supplies
    a. Port-A-Cul vials or equivalent
    b. Leakproof containers (i.e., sealed plastic bags, plastic containers)
    c. Petroleum jelly or petrolatum or equivalent (i.e., Vaseline)
    d. Sterile, non-bacteriostatic water
    e. Packaging materials

PROCEDURE

1. **Collection**
   a. **Feces:** Place into sterile unbreakable container and label carefully. Confirmatory evidence of botulism may be obtained from 10-50 gram quantities (Walnut size); botulism has been confirmed in infants with only "pea-sized" stool samples. The specimen must be kept cool or refrigerated, do not freeze unless an unavoidable delay of several days is anticipated. Freezing does not affect the ability to detect toxin, but does affect the ability to detect the organism.
   b. **Enema:** Place approximately 20 ml into a sterile unbreakable container and label carefully. If an enema must be given because of constipation, a minimal amount of fluid (preferably non-bacteriostatic water) should be used to obtain the specimen so that the toxin will not be unnecessarily diluted. Transport in a Port-A-Cul vial to maintain anaerobiosis. Specimens must be kept cool or refrigerated.
   c. **Gastric aspirate or vomitus:** Place approximately 20 ml into a sterile unbreakable container and label carefully. Transport in a Port-A-Cul vial to maintain anaerobiosis. Specimens must be kept cool or refrigerated.
   d. **Serum:** Use red top or separator type tubes to obtain serum (no anticoagulant). Samples should be obtained as soon as possible after the onset of symptoms and before antitoxin is given. Enough blood should be collected to provide at least 10 mL of serum (approximately 20 mL of whole blood). Serum volumes less than 3 ml will provide inconclusive results. Whole blood should not be sent as it typically undergoes excessive hemolysis during transit. Specimen should be kept cool or refrigerated, do not freeze unless an unavoidable delay of several days is anticipated.
   e. **Tissue, wounds, or exudates:** Place into sterile unbreakable container and label carefully. Specimens should be placed in Port-A-Cul vials and sent to the appropriate laboratory, preferably without refrigeration, for attempted isolation of *C. botulinum*. Swabs of superficial wounds are not acceptable for anaerobic culture. Maintain specimens at room temperature.
   f. **Postmortem:** Obtain specimens of intestinal contents from different levels of small and large intestines. Place approximately 10 grams per specimen into a sterile unbreakable container and label carefully. Obtain gastric content, serum and tissue is/as appropriate.
   g. **Culture:** Ship suspicious isolates anaerobically (overlay liquid media with 2-inch layer of sterile petroleum jelly; melt/temper prior to overlaying culture). Cultures may be shipped at room temperature or refrigerated.
   h. **Food specimens:** Foods should be left in their original containers if possible, or placed in sterile unbreakable containers and labeled carefully. Place containers individually in leakproof containers (i.e., sealed plastic bags) to prevent cross-contamination during shipment. Empty containers with remnants of suspected foods can be examined. Foods most likely to allow growth of *C. botulinum* will have a pH of 3.5-7.0 (usually 5.5-6.5). Possible foods include:
      - Home canned products having a low acidity (pH of 4.6 or greater)
      - Foods with low salt or low sugar content
      - Foods that are held at temperatures that allow the organism to grow (optimal 35°C, but as low as 15°C)
      - Foods that are consumed without prior heating.

      Foods that are commercially processed are rarely incriminated; however, the threat to public health is much greater with a commercial foodstuff. Unopened containers are to be sent to the U.S. Food and Drug administration (FDA), with prior arrangement. Keep the samples cool or refrigerated, do not freeze.
   i. **Swab samples:** Send swabs in an anaerobic transport medium (e.g., Port-A-Cul tubes). For aerosolized botulinum toxin exposure, obtain nasal swabs for culture for *C. botulinum*. For toxin testing, serum should be used. Swabs may be shipped at room temperature or refrigerated.
      ****Specimens that are frozen must remain frozen until it is time to perform the test.**

2. **Transportation**

a. If an unavoidable delay of several days is anticipated, the specimens (serum or stool) should be kept frozen and then packed in an insulated container with dry ice and proper cushioning material for shipment. Freezing does not affect the ability to detect botulinum toxin in specimens; freezing does reduce the probability of recovering *C. botulinum*. Since direct detection of toxin provides the best laboratory confirmation of botulism, priority should be given to preserving preformed toxin prior to transport.
b. The receiving laboratory (UPHL) should be notified in advance by telephone as to when and how specimens will be shipped and when they will arrive.

Coxiella burnetii

ACCEPTABLE SPECIMENS Environmental/nonclinical samples and samples from announced events are not processed by Sentinel Laboratories. Please contact local law enforcement or the DHHS directly.

1. **Serum:** Collect serum (red-top or serum separator tube, tiger-top tube) as soon as possible after onset of symptoms (acute phase) and with a follow-up specimen (convalescent phase) at ≥ 14 days for serological testing.
2. Blood: Collect blood in EDTA (lavender) or sodium citrate (blue) Vacutainer tubes and maintain at 4°C for storage and shipping for PCR or special cultures. If possible, collect specimens prior to antimicrobial therapy.
3. **Tissue, body fluids, nasopharyngeal swabs, tracheal/bronchial washings, lesion exudates:** Specimens can be kept at 2-8°C if transported within 24 hours. Store frozen at -70°C or on dry ice.
4. **Bacterial isolates**

Ebola virus

NOTE: Patient must meet criteria for person under investigation (PUI) including patients with clinical signs, symptoms, AND epidemiologic risk factors for Ebola virus disease.

ACCEPTABLE SPECIMENS Whole blood, serum, and plasma. Please contact UPHL or DHHS directly before sending specimens.

For adults, 2 vials with a minimum volume of 4 mL of whole blood per vial is preferable. For pediatric samples, a minimum of 1 mL of whole blood should be collected in pediatric-sized collection tubes. Blood must be collected in **plastic** collection tubes. Do not transport or ship specimens in glass containers or in heparinized tubes.

Whole blood preserved with EDTA is preferred, but whole blood preserved with sodium polyanethol sulfonate, citrate or with clot activator is also acceptable.

Do not separate or remove serum or plasma from the primary collection container.

Specimens should be packaged and transported at 2^{o}-8^{o}C with cold-packs to the final testing destination.

If necessary, short-term storage of specimens before shipping should be at 4^{o}C or frozen.

Staff who collect specimens from PUIs should wear appropriate PPE and should refer to Guidance on Personal Protective Equipment To Be Used by Healthcare Workers During Management of Patients with Ebola Virus in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing).

ADDITIONAL EBOLA VIRUS GUIDANCE
For additional information regarding Ebola virus testing at UPHL, including specimen packaging and transport, please review the Submitting Samples to UPHL for Ebola Virus Disease (EVD) Testing document.

Francisella tularensis

ACCEPTABLE SPECIMENS: Environmental/nonclinical samples and samples from announced events are not processed by Sentinel Laboratories. Please contact local law enforcement or the DHHS directly.

Specimens of choice will be determined by the clinical presentation.

1. **Blood Culture (Septicemic) –** Collect appropriate blood volume and number of sets per established laboratory protocols. Standard blood culturing system (10-20ml/bottle). Transport directly to Sentinel Laboratory at room temperature. Hold at room temperature until placed onto the blood culture instrument or incubator. Do not refrigerate. Follow established laboratory protocol for processing blood cultures.
2. **Biopsied tissue or scraping/aspirate of ulcer or lesion –** A swab of the ulcer is an acceptable alternative. Submit tissue, scraping, or aspirate in a sterile container. For small tissue samples, add several drops of sterile normal saline to keep the tissue moist. Transport at room temperature for immediate processing. If processing of specimen is delayed, keep the specimen chilled (2-8°C).
3. **Swabs:** Obtain a firm sample of the advancing margin of the lesion. If using a swab transport carrier, the swab should be reinserted into the transport package and the swab fabric moistened with the transport medium inside the packet. Transport at 2-8°C; room temperature is acceptable. If processing of specimen is delayed, keep the specimen chilled (2-8°C).
4. **Lower respiratory tract (pneumonic)** s**putum or aspirate** – Transport specimen (>1 ml) in a sterile, screw-capped container at room temperature if transport will be <2 hours. If transport will be 24 hours or less, store and transport at 4°C.
5. **Serum – for serological diagnosis** – An acute phase specimen should be collected as soon as possible after onset of disease. A convalescent phase specimen should be collected 21 days after the acute specimen. Collect blood (a minimum of 5 ml) by venipuncture into a tube without anticoagulant. Allow blood to clot and then separate serum into a separate tube. Refrigerate and transport as soon as possible.

Orthopox virus

ACCEPTABLE SPECIMENS (for Variola, Vaccinia, Varicella and Non-variola Orthopox) – Samples are not processed by Sentinel Laboratories. Please contact DHHS directly.

1. **Biopsy** – Aseptically place two to four portions of tissue into a sterile, leakproof, freezable container. If transport time will be ≤6 hours, transport at 4°C. Store specimens at -20°C to -70°C.
2. **Scabs** – Aseptically place scrapings/material into a sterile, leak-proof, freezable container. If transport time will be ≤6 hours, transport at 4°C. Store specimens at -20°C to -70°C.
3. **Vesicular fluid** – Collect fluid from separate lesions onto separate sterile swabs. Be sure to include cellular materials from the base of each respective vesicle. If transport time will be ≤6 hours, transport at 4°C. Store specimens at -20°C to -70°C.

Yersinia pestis

ACCEPTABLE SPECIMENS – Environmental/nonclinical samples and samples from announced events are not processed by Sentinel Laboratories. Please contact local law enforcement or DHHS directly.

Specimens of choice will be determined by the clinical presentation.

1. **Lower respiratory tract (pneumonic)** – Bronchial wash or transtracheal aspirate (≥1 ml). Sputum may be examined but it is not advised because of contamination by normal throat flora. Transport specimens in sterile, screw-capped

containers at room temperature to the Sentinel Laboratory. If it is known that material will be transported within 2-24 hours after collection, then store the container and transport at 2-8°C.

2. **Blood (septicemic)** – Collect appropriate blood volume and number of sets per established lab protocol. **Note:** In suspected cases of plague, an additional blood or broth culture (general nutrient broth) should be incubated at room temperature (22-28°C), the temperature at which *Y. pestis* grows faster. Do not shake or rock additional broth culture so that the characteristic growth formation of *Y. pestis* can be clearly visualized. Transport samples directly to the Sentinel Laboratory at ambient temperature. Hold them at ambient temperature until they are placed onto the blood culture instrument or incubator. Do not refrigerate. Follow established laboratory protocol for processing blood cultures.
3. **Aspirate of involved tissue (bubonic) or biopsied specimen** – Liver, spleen, bone marrow, lung. **Note:** Aspirates may yield little material; therefore, a sterile saline flush may be needed to obtain an adequate amount of specimen. Syringe and needle of aspirated sample should be capped, secured by tape, and sent to the Sentinel Laboratory. Submit tissue or aspirate in a sterile container. For small samples, add 1-2 drops of sterile normal saline to keep the tissue moist. Transport the sample at room temperature for immediate processing. Keep the specimen chilled if processing of the specimen will be delayed.
4. **Swabs** – A swab of tissue is not recommended. However, if a swab specimen is taken, the swab should be reinserted into the transport package for transport.

Appendix B: Test List (alphabetical by organism)

Appendix C: Test Request Forms

ARLN Test Request Form
BT Environmental Specimen Form
Infectious Disease Test Request Form
Influenza Surveillance Request Form
Rabies Test Request Form