Delaware Public Health Laboratory

Combined Laboratory Specimen Collection Procedures

And Bioterrorism Agents

TEST	ORGANISM	TYPE OF SPECIMEN	METHOD	TRANSPORT MEDIUM/ CONTAINER	INSTRUCTIONS FOR TRANSPORT	PROCESSING TIME	OTHER
Acid Fast Bacilli (AFB) smear and culture	*Mycobacterium tuberculosis* complex	Respiratory, tissue, sterile fluids, and stool	Smear: Fluorescent Stain Culture: Conventional and liquid culture	Sterile leak proof container	Refrigerate (2-8° C), deliver to lab within 72 hours	Smear – one workday Culture- 4-6 weeks	Susceptibility for SIRE-PZA
AFB-M TB PCR	Mycobacterium tuberculosis and avium complex	Respiratory (sputum, BAL, etc.)	Real-time PCR	Sterile leak proof container	Refrigerate (2-8° C), deliver to lab within 72 hours	48 hours from receipt	For high risk TB clients
Arboviruses	WNV, EEE ********** Chikungunya Dengue Zika WNV, SLE	Bird brain, kidney, or other organs Chicken Blood (sentinel monitoring program) ********** Serum Serum, urine, amniotic fluid, CSF Serum, CSF	Real-time RT-PCR ELISA IgM EIA-IgM ********** Real time PCR -Real time PCR Microsphere Immunoassay	Sterile leak proof container	Refrigerate (2-8° C), deliver to lab within 72 hours.	PCR 2-3 work days MIA/ELISA 5 work days	Only accept bird organs submitted by DNREC or Tri-State bird rescue Only accept chicken bloods submitted by DNREC ********** Contact Epidemiology at 744-4990 for approval. Method dependent on travel history.
Carbapenemase Resistant Organism	Enterobacteriaceae or Pseudomonas aeruginosa	Pure isolate	mCIM AST Real time PCR	Agar slant or plate	Refrigerate (2-8° C) or Room temp	2-3 working days	Sequencing on request
Covid 19	2019 Novel SARS Coronavirus	Nasal /NP Swab (OP/Oral is acceptable for KF)	Real time PCR	Viral transport Media	Refrigerate (2-8° C), deliver to lab within 72 hours	2-3 working days	Sequencing on request

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Food	Shiga-toxin *E. coli* *Listeria* *Salmonella* *Shigella* *Staph. aureus* BT agents	Food	Culture for organism Real-time PCR or toxin testing	Sterile leak proof container (25-100 grams)	Refrigerate (2-8° C), deliver to lab within 72 hours	5-6 work days	Contact Epidemiology at 744-4990 for prior approval. Must specify target organism on lab slip.
Gonorrhea Culture	*Neisseria gonorrhoeae*	Swab of endocervical, urethral, oropharynx or rectum	Culture for organism	Direct specimen or agar slant or plate	Place in CO_2 container, store in an incubator at 35°C and transport within 24 hours.	2-3 work days	Specimens must be received within 1 day of collection
Hepatitis C	HCV Quantitative Viral Load	serum	Antibody Viral Load	Serum/SST	Refrigerate (2-8° C) immediately, deliver to the lab within 72 hours	2-3 work days Batched every week	Viral load samples should be frozen ASAP
Herpes Simplex Virus	HSV Virus	Swab of vesicle, genital lesion, conjunctiva, throat	Real-time PCR	Viral Transport Media (VTM)	Refrigerate (2-8° C) immediately: deliver as soon as possible	2-5 workdays	
Human Immunodeficiency Virus (HIV 1/2)	Retrovirus	Serum	4th Generation Ag/AB EIA HIV 1/2 Confirmation	Sterile leak proof container or serum separator tube	Refrigerate (2-8° C), deliver to lab within 5 calendar days	2-5 work days	Confirmation testing by Geenius
Legionella	Legionella pneumophila	Urine Respiratory samples	Antigen detection Culture	Sterile leak proof container	Refrigerate (2-8° C), deliver to lab within 72 hours	2-5 workdays	
Miscellaneous culture	Pathogenic organisms Medical Examiner/Autopsy specimens	Sputum, tissues, body fluids Swab of site to be cultured (i.e. eye, endocervical)	Culture for organism	Culturette with transport media in tube or sterile container	Refrigerate (2-8° C), deliver to lab within 72 hours	2-3 work days	Blood and anaerobic cultures not performed Hold ME 5 days
Mumps and/or Measles	Mumps/Measles Virus	Nasopharyngeal /buccal swab Urine	Real-time PCR	NP swab in Viral Transport Media (VTM) or urine	Refrigerate (2-8° C), deliver to lab within 72 hours	2-3 work days	Contact Epidemiology at 744-4990 for prior Approval.
Norovirus	Noroviruses (GI and GII)	Stool or vomit	Real-time PCR	Sterile container	Refrigerate (2-8° C) immediately, deliver to the lab within 72 hours	2-3 work days	Contact Epidemiology at 744-4990 for prior Approval.

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Nucleic Acid Amplification Tests for STD	*Neisseria gonorrhoeae*, *Chlamydia trachomatis*, & *Trichomonas vaginalis*	Swab from oral, rectal, vaginal, endocervical or urethral Urine	TMA Aptima	Hologic collection kit for swab or urine	Refrigerate (2-8° C) or Room temp	2-3 work days	Transfer urine to collection tube
Bordetella species	*Bordetella pertussis, holmseii*, or *parapertussis*	Nasopharyngeal Swab (keep dry)	Real-time PCR	NP Swab, dry	Refrigerate (2-8° C), deliver to lab within 96 hours	2-3 work days	Contact Epidemiology at 744-4990 for prior Approval.
Outbreak Surveillance	*Salmonella, Shigella,* Shiga-toxin *E. coli, Listeria monocytogenes Vibrio* *SARS coronavirus*	Grown culture/transport media	Whole Genome Sequencing	Direct specimens or agar slant/plate	Refrigerate (2-8° C) or Room temp	4-10 work days	Patterns are uploaded to the CDC database/sequencing can be requested
Quantiferon In-Tube PLus	Antibodies to MTB Complex	Blood drawn in Special tubes (4)	Interferon Gamma Release Assays	Four antigen coated tubes from vendor	Refrigerate (2-8° C) or Room temp	4-6 work days	Tubes must be incubated for at least 16 hours at 35°C ambient air
Rabies	Rabies Virus	Mammal brain, must contain brain stem and cerebellum	Fluorescent antibody (FA) Real-time PCR	Secure double bagged or sealed container	Refrigerate (2-8° C), deliver to lab within 72 hours	1-2 work day	Do not freeze! Must have human contact to test. Contact Epidemiology at 744-4990 for prior Approval.
Sequencing	Bacteria or Virus	Pure isolate/viral transport	Targeted or Whole Genome	Organism/direct specimen	Refrigerate (2-8° C) or Room temp	4-10 work days	
Stool Culture	*Campylobacter*, *Salmonella*, *Shigella*, Shiga-toxin *E. coli,* and other enteric pathogens	Stool or rectal swab	Culture for organism Real-time PCR	Cary-Blair or transport media: One marble sized piece or one tablespoon	Refrigerate (2-8° C), deliver to lab within 72 hours	3-4 work days	Other organisms must be requested on the lab slip if desired

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Treponimum pallidum Assay RPR (Rapid Plasma Reagin) TPPA ********** VDRL	*Treponema pallidum*	Serum ********** CSF only (VDRL)	Antigen / Antibody Assay	Blood tubes/sterile container	Refrigerate (2-8° C), Deliver within 5 calendar days of collection	3-5 work days ********** 5 work days	
VZV	*Varicella Zoster Virus*	Swab of vesicle or lesion	Real time PCR	Viral Transport Media (VTM)	Refrigerate (2-8° C), deliver to lab within 72 hours	2-3 work days	
Throat culture	*Beta Strep or significant organisms*	Swab of throat	Culture for organism	Culturette with transport media in tube	Refrigerate (2-8° C), deliver to lab within 72 hours	1-2 work days	
Urine culture	Pathogenic bacteria	Clean catch urine	Culture for organism	Sterile container	Refrigerate (2-8° C), deliver to lab within 72 hours	2-3 work days	
Viral Influenza	Influenza A & B, A subtyping; B genotyping	Nasopharyngeal swab	Real-time RT-PCR	Viral Transport Media (VTM)	Refrigerate, deliver to lab within 72 hours	2-3 work days	Other high risk subtypes are available by Epi approval
Viral Respiratory Panel	Respiratory Syncytial Virus (RSV), Human Metapneumovirus, Rhinovirus, Parainfluenza 1-4, Adenovirus Human coronaviruses 229E, Oc43, HKU1, NL63	Nasopharyngeal swab	Real-time RT-PCR (RUO, not intended for Diagnostic purposes)	Viral Transport Media (VTM)	Refrigerate (2-8˚C) up to 72hrs.	3-5 work days	Contact Epidemiology at 744-4990 for prior Approval.
Wound culture	Pathogenic bacteria	Swab of site Specify area of body	Culture for bacteria	Culturette or sterile container	Refrigerate, deliver to lab within 72 hours	2-3 work days	
Wastewater Samples	SARS-CoV2, Influenza A and B, RSV	Wastewater sample	Digital PCR (dPCR)	Leak proof 8oz container	Deliver to lab on ice with a Temperature control. Temp should be between 2-8°	Samples will be run on the next workday.	Samples are picked up and run twice week.

DISEASE OR AGENT	SPECIMEN SELECTION FROM SAMPLES		TEST METHOD	TRANSPORT MEDIUM/ INSTRUCTIONS	PROCESSING TIME	COMMENTS
Anthrax ***Bacillus anthracis***	**Clinical** ***Cultures from clinical specimens should be performed by the sentinel laboratory**	**Lesion-** collect liquid or material under scab	Real time PCR on original specimen.	clean, sterile, leak proof container or 2 dacron swabs at room temp	8-24 hrs.	**Biopsy in 10% formalin for histochemical stain tested at CDC**
		Blood: whole blood/plasma (EDTA, purple-top tube) or serum (red/black top tube)	Real time PCR on original specimen.	Refrigerate at 2-8°C	8 -24 hrs	Blood cultures cannot be incubated at DPHL May require Chain of Custody
		Bacterial Isolates* –From respiratory specimens, pleural fluid, aspirates, tissue, ascites, CSF, stool, Blood, Etc.	Culture rule out	Grown isolate on agar plate sent at room temp	24-72 hrs	**Sputum & stool have minimal recovery**
			Real time PCR on original specimen.	Refrigerate at 2-8°C	8-24 hrs.	May require Chain of Custody
	Environmental and Non-Clinical	**Swabs, Powder, Wipe, Letter, Seed or Plant Material:** half pea size	Culture	Dacron or polyester swabs or sterile leak proof container	24-72 hrs	
			Real time PCR on original specimen.	Dacron or polyester swabs or sterile leak proof container	8-24 hrs.	
	Food	**Notification of DPHL by DPH Epidemiology Section is necessary as soon as possible due to the large amount of media necessary**	Culture and Real time PCR **Collect large representative sample (25 g).**	Refrigerated samples & those collected at room temperature should be transported at 2-8°C. Transport frozen samples on dry ice.	2-5 days	

Brucellosis ***Brucella melitensis*** ***Brucella abortus*** ***Brucella suis*** ***Brucella canis***	Clinical *	**Bacterial Isolates*-**from body fluids or tissues. Bone marrow, Blood, spleen, liver, abscesses, CSF, joint fluid, lymph nodes, etc.	Culture*: rule-out and confirmation	Grown isolate on agar plate sent at room temp	5-8 days	PCR: requires culture confirmation **Blood culture cannot be performed at DPHL** May require Chain of Custody Speciation will be completed by CDC. Preliminary results will be confirmed by CDC.
			Real time PCR on isolate.	Grown isolate on agar plate sent at room temp	8-24 hrs.	
		Blood: whole blood (EDTA, purple-top tube) or serum (red/black top tube)	Real time PCR on original specimen.	Refrigerate at 2-8°C	8-24 hrs.	
		Blood: serum (red/black top tube) acute and convalescent specimens	Brucella Microagglutination Test (BMAT**) done at CDC**	Refrigerate at 2-8°C	Will need to be sent to CDC	
	Environmental and Non-Clinical	**Swabs, Powder, letter Seed or Plant Material:** half pea size sample in a sterile sealed bag or sterile tube.	Culture	Use Dacron or polyester swabs or a culturette	5-10 days	PCR: requires culture confirmation
			Real time PCR.	Use Dacron or polyester swabs, **no** culturettes	8-24 hrs.	
	Food	**Milk and Cheese** **Notification of DPHL by DPH Epidemiology Section is necessary as soon as possible due to the large amount of media necessary to process food.**	Culture and Real time PCR: available on TSB enrichments Send all suspect food double bagged in a sterile, leak proof container. **Attempt to collect at least 25 grams.**	Refrigerated samples & those collected at room temperature should be transported at 4C. Frozen samples should be transported on dry ice.	5-10 days	

DISEASE AND AGENT	SPECIMEN SELECTION FROM SAMPLES		TEST METHOD	TRANSPORT MEDIUM/ INSTRUCTIONS	PROCESSING TIME	COMMENTS
Glanders ***Burkholderia mallei*** Melioidosis ***Burkholderia pseudomallei***	Clinical*	**Bacterial Isolates*-** From blood, abscess, urine, tissue aspirates, sputum, etc.	Culture*: rule-out and confirmation on grown organism.	Grown isolate on agar plate sent at room temp	4-7 days	PCR requires culture confirmation Blood culture cannot be performed at DPHL May require Chain of Custody
			Real time PCR on isolate.	Grown isolate on agar plate sent at room temp	8-24 hrs.	
		Bone marrow, blood: whole blood (EDTA, purple-top tube) or serum (red/black top tube)	Real time PCR on original specimen.	Refrigerate at 2-8°C	8-24 hrs.	
	Environmental and Non-Clinical	**Swabs, Powder, letter Seed or Plant Material:** half pea size	Culture.	Dacron or polyester swabs -leak proof container	4-7 days	
			Real time PCR on original specimen and isolates	Dacron or polyester swabs, **no** culturettes	8-24 hrs.	
Q fever ***Coxiella burnetti***	Clinical	**Blood (EDTA) collected in acute phase before antibiotic therapy, whole blood or serum**	Real time PCR on original specimen	Refrigerate at 2-8°C	Send to CDC	Contact Epidemiology for prior approval at 744-4990.
Middle Eastern Respiratory Syndrone Coronavirus (MERS-CoV)	Clinical	**Respiratory:** Nasopharyngeal, Oropharyngeal swabs, Aspirates, washes, Sputum in a clean, sterile, leak proof container with viral transport medium.	Real time PCR on original specimen	2-8°C for up to 72 hours If longer, freeze at -70 or below.	Send to CDC	**Contact Epidemiology for prior approval 744-4990. No longer tested at DPHL.**

DISEASE AND AGENT	SPECIMEN SELECTION FROM SAMPLES		TEST METHOD	TRANSPORT MEDIUM/ INSTRUCTIONS	PROCESSING TIME	COMMENTS
Ricin toxin Ricinine biomarker determination	Clinical	**Urine:** Collect minimum 25-50mL in plastic urine specimen cup with o-ring.	LC/MS/MS: available at CDC	Freeze at -20 to -80°C following IATA PI 650 & CDC Chemical Exposure Guidelines	12-36 hrs.	*Method available through LRN network
Ricin toxin Ricin toxin is detected using the TRF method	Environmental	**Swabs, Powder** (cotton, polyester, Dacron, rayon, or foam). Wipes (non-cotton gauze, polyester blend, Handi-Wipes"). Plant material in an envelope, paper, powder, water, soil (2.0±0.1g).	Time-resolved fluorescence assay (TRF).	Place into a leak proof, sealed, **non-glass** transport device. Transport at room temperature.	8-24 hrs.	***Do not collect samples in containers made of glass. If possible avoid collection from any glass surface.** **Chain of Custody required**
	Food	**Food,** drink: collect 2.0±0.1g, place in sterile, leak proof, plastic container. **NO GLASS CONTAINERS.**	Time-resolved fluorescence assay (TRF)	Place into a leak proof, sealed, **non-glass** transport device. Refrigerate at 2-8°C.	8-24 hrs.	***Do not collect samples in containers made of glass. If possible avoid collection from any glass surface.** **Chain of Custody required**
Tularemia ***Francisella tularensis***	Clinical*	**Bacterial Isolates*-** From respiratory specimens, bronchial/tracheal wash, sputum, throat, lesions, tissue	Culture*: rule-out and confirmation on grown organism.	Grown isolate on agar plate sent at room temp	24-72 hrs.	**PCR: requires culture confirmation** **Sputum/throat-Minimal recovery -- not recommended**
			Real time PCR on isolate	Grown isolate on agar plate sent at room temp	8-24 hrs.	
		Blood: whole blood (EDTA, purple-top tube) or serum (red/black top tube)	Real time PCR on original specimen	Refrigerate at 2-8°C	8-24 hrs.	Blood culture cannot be performed at DPHL May require Chain of Custody
	Environmental	**Swabs, Powder, Letter** **Seed or Plant Material:** half pea size sample	Culture	Use Dacron or polyester swabs or a culturette or sterile leak proof container	2-7 days	**Chain of Custody required** PCR: requires culture confirmation
			Real time PCR on original specimen or isolate	Use Dacron or polyester swabs, **no** culturettes	8-24 hrs.	
	Food	**Notification of DPHL by DPH Epidemiology Section is necessary as soon as possible due to the large amount of media necessary to process food.**	Culture and PCR Send all suspect food double bagged in a sterile, leak proof container. **ollect at least 25 grams.**	Store at 4C. Transport frozen samples on dry ice.	2-7 days	**Chain of Custody required** PCR: requires culture confirmation

***Cultures from clinical specimens should be performed by the sentinel laboratory if possible**

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DISEASE AND AGENT	SPECIMEN SELECTION FROM SAMPLES		TEST METHOD	TRANSPORT MEDIUM/ INSTRUCTIONS	PROCESSING TIME	COMMENTS
Vaccinia virus "pox" type virus related to smallpox and is used to induce immunity against smallpox Non Variola Orthopox (vaccinia, cowpox, monkeypox)	Clinical	**Lesions -**vesicular fluid, skin, scab, crust or roof of vesicle. Fresh biopsy of pustule or vesicle. Dry or wet swab of lesion. Viral cell culture lysate in a sterile, leak proof container **(PERFORMED ONLY WHEN VACCINIA IS SUSPECTED, NOT SMALLPOX).**	Real time PCR on original specimen	sterile, leak proof, unbreakable container. Refrigerate at 2-8°C.	12 hours from receipt of sample	**NOTES: These results are preliminary. Positive PCR results must be confirmed by CDC**. **Contact Epidemiology for prior approval at 744-4990.**
	Environmental	**Powder, letter, etc**.: dry powders or substances in sterile non-glass container- two non-cotton swabs in separate sterile non-glass containers	Real time PCR on original specimen	**Do not use viral transport media** Transport at room temperature.	8-24 hrs.	**NOTES: These results are preliminary. Positive PCR results must be confirmed by CDC**. **Chain of Custody required**
Smallpox virus ***Variola major***	Clinical **Low and moderate risk categories according to the criteria in the CDC rash illness protocol:**	**Autopsy specimens:** Including portions of skin containing lesions, liver, kidney, etc., for virus isolation should be frozen in a sterile, leak proof container	Cell culture	Ship frozen on dry ice	4-10 days	Low and moderate risk categories according the CDC rash illness protocol DPHL can perform rule-out tests for Smallpox, which includes vaccinia. Contact Epidemiology for prior approval at 744-4990. **DO NOT ORDER THESE TESTS IF PATEINT FALLS INTO HIGH RISK CATEGORY. REFER TO THE SMALLPOX HIGH RISK CHART!!!!**
		Biopsy: Place dried vesicular fluid on a slide ("touch prep")	Real time PCR on original specimen	Package in slide box, **do not freeze.**	12 hours from receipt of sample	
		Lesions, Vesicles or pustules: scabs, crust or roof of lesion in a sterile, leak proof container	Cell culture	Refrigerate at 2-8°C	4-10 days	
		Blood: whole blood (EDTA, purple-top tube) or serum (red/black top tube)	IFA test for detection of specific antibodies in serum	Refrigerate at 2-8°C	2-24 hours after initial set up	

***CDC Smallpox Draft Guide C, Part 1 Infection Control Measures for Healthcare and Community Settings, Guide F – Environmental Control of Smallpox Virus,
Evaluating Patients for Smallpox: Acute, Generalized Vesicular or Pustular Rash Illness Protocol | Smallpox | CDC

DISEASE AND AGENT	SPECIMEN SELECTION FROM SAMPLES	TEST METHOD	TRANSPORT MEDIUM/ INSTRUCTIONS	PROCESSING TIME	COMMENTS

VHF Viral hemorrhagic fevers	Clinical Contact DPH Epidemiology and CDC EOC immediately for testing needs	**Blood-** whole blood (EDTA, purple-top tube) or serum (red/black top tube)	Real time PCR Further testing can be done at CDC Proper PPE including gloves should be worn while collecting specimen	Decontaminate outside of tube, place in a double leak proof container	8-24 hrs.	**Contact Epidemiology for prior approval at 744-4990.**
Plague ***Yersinia pestis***	Clinical*	**Bacterial Isolates*-**from Respiratory specimens- bronch wash, nasopharyngeal swabs, tissues, fluids	Culture*: rule-out and confirmation on grown organism.	Grown isolate on agar plate sent at room temp	24-72 hrs.	May require Chain of Custody **Sputum throat-Minimal recovery not recommended** **Blood culture cannot be performed at DPHL** PCR requires culture confirmation **Contact Epidemiology for prior approval at 744-4990.**
			Real time PCR: on original specimen and grown organisms.	Refrigerate at 2-8°C	8-24 hrs.	
	Environmental and Non-Clinical	**Environmental swabs, letter, powder or liquids** **Seed or Plant Material:** half pea size sample in a sterile sealed bag or sterile tube.	Culture	Use Dacron or polyester swabs or a culturette	4–7 days	
			Real time PCR: on original specimen and grown organisms.	Use Dacron or polyester swabs, **no** culturettes	8-24 hrs.	
	Food	**Notification of DPHL by DPH Epidemiology Section is necessary as soon as possible due to the large amount of media necessary to process food.**	Culture and Real time PCR Send all suspect food double bagged in a sterile leak proof container. **Attempt to collect at least 25 grams.**	Refrigerated samples & those collected at room temperature should be transported at 4°C. Frozen samples should be transported on dry ice.	2-7 days	

*Cultures from clinical specimens should be performed by the sentinel laboratory if possible
Updated 2/2024