

Microbiology Collection & Transport Guide

Overview

Focus Diagnostics offers routine and special cultures for bacteria, viruses, mycobacteria and fungi. (Please refer to pages 9-11 for detailed information on Virology Collection and Transport procedures.) The Microbiology Department utilizes a variety of methods for identification including, but not limited to, traditional biochemicals and enzyme-based methods, serotyping, genetic probes, microscopy and High Performance Liquid Chromatography (HPLC). Antimicrobial susceptibility testing is available for bacteria, fungi, Herpes Simplex Virus, and mycobacteria. Antimicrobial, antifungal, antiviral, and antiretroviral drug level testing is performed with bioassay, HPLC, and spectrophotometric methods. It is the goal of the Microbiology Department to utilize the most current methods available to provide you with an accurate and rapid result.

Test Request Information

Focus' Microbiology Department requests that as much information as possible be provided. This should include source, date collected, antibiotics that the patient is currently taking, and organism identification when appropriate.

Collection, Transportation and Storage Guidelines

Specimens should be collected in the acute phase of infection. Transport all specimens to the laboratory as soon as possible, usually within 24 hours post collection. The charts included in this section describe specimen collection and optimum transport procedures by body site and by organism. This information serves as a guide only. Please do not hesitate to contact Focus' Microbiology Department for further details regarding the collection and transport of specimens.

Reporting

The availability of preliminary and final reports varies according to the type of culture.



Microbiology Specimen Collection & Transport by Organism

(See Pages 6 to 11 for Mycology, AFB, and Virology Specimens)

Organism	Test	Specimen Source	Optimum Transport Procedure <i>(Transport all specimens within 24 hours or overnight unless otherwise specified.)</i>
Acanthamoeba	Acanthamoeba Culture	Corneal scrapings, conjunctival scrapings, contact lens and contact lens fluid (recommended)	Place scrapings or tissue in sterile saline. Room Temperature
Anaerobes	Culture, Anaerobe	Deep wounds, sterile fluids, abscess material, trans-tracheal aspirates, and tissue	Anaerobic transport Room Temperature
Bartonella	Bacterial Culture, Special	Whole blood (EDTA), tissue, CSF, lymph node aspirate, or joint fluid	Blood preferred; tissue in BHI or Thioglycollate. Room Temperature
Bordetella pertussis/ parapertussis	Bordetella pertussis/ parapertussis Culture	NP swab is the preferred specimen. Other acceptable sources are bronchial or NP secretions or aspirates and transtracheal aspirates on appropriate transport swab. Use calcium alginate or Dacron-tipped NP swabs only.	Charcoal transport swab Room Temperature <i>Note: A PCR is strongly recommended if the specimen is not received <24h post collection. Alternatively, a DFA may be run but is less sensitive.</i>
Borrelia spp.	Borrelia burgdorferi (Lyme) Culture Borrelia hermsii Culture	Blood (preferred), skin biopsy at lesion periphery, CSF, joint fluid or live tick	Blood preferred. Room Temperature
Brucella	Bacterial Culture, Special	Blood, bone marrow, lymph node aspirates, synovial fluid, CSF, abscess aspirates, and liver or spleen biopsy	Room Temperature <i>Note: anticoagulants may affect organism viability upon prolonged storage.</i>
Campylobacter	Bacterial Culture, Aerobic (Stool)	Stool, rectal swab	Cary-Blair transport medium 2-8° C
E. coli	E. coli, Enterohemorrhagic E. coli, Enteroinvasive E coli, Enteropathogenic E. coli, Enterotoxigenic	Pure isolate	Room Temperature
Francisella tularensis	Bacterial Culture, Special	Lymph node aspirate, sputum, throat swab, bronchial washing, lesion biopsy	FREEZE , or Amies gel swab at Room Temperature.
Haemophilous ducryei	Bacterial Culture, Special	Genital lesion	Amies gel swab preferred 2-8° C

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Microbiology Specimen Collection & Transport by Organism

Organism	Test	Specimen Source	Optimum Transport Procedure <i>(Transport all specimens within 24 hours or overnight unless otherwise specified.)</i>
Helicobacter pylori	H. pylori Culture	Gastric biopsy	20% glycerol medium (preferred), or Stuart's or Cary Blair transport medium. 2-8° C
Legionella spp.	Legionella Culture	Sputum, transtracheal aspirate, bronchoscopy specimen, biopsy, CSF, pericardial fluid, pleural fluid, peritoneal fluid	Sterile container 2-8° C
Leptospira spp.	Leptospira Culture	Blood (heparin, oxalate or citrate), CSF (first week of illness), urine (after first week of illness).	Sterile container. Neutralize urine to pH of 7.0 by adding sterile dilute acid or base. 5-20° C
Listeria monocytogenes	Bacterial Culture, Special	Blood, CSF, amniotic fluid, placenta or fetal tissue	2-8° C
Mycoplasma pneumoniae	Mycoplasma pneumoniae Culture	Throat or nasopharyngeal swab/wash, sputum, tracheal aspirate	Mycoplasma transport medium 2-8° C
Neisseria gonorrhoeae	Bacterial Culture, Special	Genital tract, urine, anal area, oropharynx, conjunctiva, Bartholin's gland, fallopian tubes, endometrium, blood, joint fluid, skin lesions, or gastric contents of neonates.	N. gonorrhoeae transport system Room Temperature
Streptobacillus moniliformis	Bacterial Culture, Special	Blood or joint fluid	Blood in non-SPS medium, ASAP, Room Temperature
Ureaplasma urealyticum/ Mycoplasma hominis	Mycoplasma Culture, Genital	Urethral, vaginal or cervical swab, urine, abscess, prostatic secretions, placenta, fetal tissue from spontaneous abortions or still births, endometrial washings or tissue biopsy, fallopian tube tissue, respiratory specimens	Mycoplasma transport medium 2-8° C
Vibrio	Bacterial Culture, Special	Stool prior to antibiotic therapy	Cary-Blair transport medium 2-8° C
Yersinia pestis	Bacterial Culture, Special	Lymph node aspirate, sputum, blood, throat swab/washings, CSF	2-8° C

*Please note that this is a suggested specimen collection guide.
For specimen types that are not listed, please contact Focus' Scientific Director of Microbiology.*

Bacteriology Specimen Collection & Transport by Source

Specimen Source	Collection Procedure	Optimum Transport Procedure <i>(Transport all specimens within 24 hours or overnight unless otherwise specified.)</i>
Abscess Open Closed	Swab transport system Anaerobic transport system, ≥1mL	Room Temperature Room Temperature
Bite Wound – See Abscess		
Blood Culture *Focus does not use BC instrumentation	Blood culture bottle Adult, 10-20mL/set Infant, 1-2mL/set	Room Temperature
Catheter	Sterile screw-cap tube	2-8° C
Cellulitis	Sterile tube, tissue or agar gel swab transport	Room Temperature
CSF	>1mL in sterile screw-cap tube	Room Temperature
Decubitus ulcer	Swab transport or anaerobic system	Room Temperature
Dental Culture Gingival, periodontal, periapical, Vincent's stomatitis	Anaerobic transport system	Room Temperature
Ear Inner Outer	Sterile tube, swab transport medium or anaerobic system Swab transport	Room Temperature Room Temperature
Eye Conjunctiva Corneal scrapings	Swab transport medium	Room Temperature Room Temperature
Fistula- See Abscess		
Fluids Abdominal, ascites, bile, joint, pericardial, peritoneal, pleural, synovial	Sterile screw-cap tube or anaerobic transport system >1mL	Room Temperature
Gangrenous tissue- See Abscess		
Gastric Wash or lavage fluid	Sterile, leakproof container	Room Temperature
Genital: female Amniotic Bartholin Cervix Cul-de-sac Endometrium Products of conception Urethra Vagina	Anaerobic transport system, >1mL Anaerobic transport system, >1mL Swab transport Anaerobic transport system, >1mL Anaerobic transport system, >1mL Sterile tube or anaerobic transport system Swab transport Swab transport	Room Temperature Room Temperature Room Temperature Room Temperature Room Temperature Room Temperature Room Temperature Room Temperature

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Bacteriology Specimen Collection & Transport by Source

Specimen Source	Collection Procedure	Optimum Transport Procedure (Transport all specimens within 24 hours or overnight unless otherwise specified.)
Genital: male Prostate Urethra	Swab transport or sterile tube Swab transport	Room Temperature Room Temperature
Pilonidal cyst – See Abscess		
Respiratory tract – lower BAL, lung biopsy, bronchial brushing/washing, tracheal aspirate	Sterile container, >1mL	2-8° C
Respiratory tract-upper Oral Nasal Nasopharynx Throat	Swab transport Swab transport Swab transport Swab transport	Room Temperature Room Temperature Room Temperature Room Temperature
Sputum Expectorated or Induced	Sterile container, >1mL	2-8° C
Stool Routine culture	>2g in sterile, leakproof container or enteric transport system	2-8° C Enteric transport: <48h, Room Temperature
Clostridium difficile culture	>5mL in sterile, anaerobic, leakproof container	2-8° C >24h, FROZEN
Escherichia coli	>2mL in sterile, leakproof container or enteric transport system	Room Temperature Enteric transport: Room Temperature
Rectal swab	Swab transport	2-8° C
Tissue Aerobic	Swab Transport System or sterile container with sterile saline	Room Temperature
Anaerobic	Anaerobic Transport System	Room Temperature
Urine Female, midstream	Sterile leakproof container, >1mL or urine transport kit	Unpreserved: 2-8° C Preserved: Room Temperature
Male, midstream	Sterile leakproof container, >1mL or urine transport kit	Unpreserved: 2-8° C Preserved: Room Temperature
Straight catheter	Sterile leakproof container	Unpreserved: 2-8° C Preserved: Room Temperature
Indwelling catheter	Sterile leakproof container	Unpreserved: 2-8° C Preserved; Room Temperature
Wound (See abscess)		

*Please note that this is a suggested specimen collection guide.
For specimen types that are not listed, please contact Focus' Scientific Director of Microbiology*

Mycology Specimen Selection by Organism

Superficial Fungal Infections

<i>Fungus</i>	<i>Specimen Source</i>
Dermatophytes	Hair, nails, skin

Systemic Fungal Infections

<i>Fungus</i>	<i>Specimen Source</i>
Aspergillus spp.	Respiratory secretions, lung, skin, bone, oropharyngeal ulcers, prostate, tissue biopsy, nasal sinus
Blastomyces dermatitidis	Respiratory secretions, lung, skin, bone, oropharyngeal ulcers, prostate, tissue biopsy, urine
Candida spp.	Respiratory secretions, blood, stool, transtracheal aspiration, CSF, bone, peritoneal fluid, urine, skin
Coccidioides immitis	Respiratory secretions, lung, skin, bone, CSF, synovial fluid, urine, tissue biopsy, blood
Cryptococcus neoformans	Respiratory secretions, lung, skin, bone, CSF, synovial fluid, urine, blood
Fusarium spp.	Skin, respiratory secretions, eye, nasal sinus
Histoplasma capsulatum	Respiratory secretions, lung, bone marrow, blood, urine, skin, CSF, eye, pleural fluid, liver, tissue biopsy, lymph node
Mucor spp.	Respiratory secretions, lung, skin, nose, brain, stool, wounds, ear, exudates, eye, nasal sinus
Nocardia spp.	Respiratory secretions, lung, skin, blood, brain, conjunctiva, bone, CSF
Paracoccidioides brasiliensis	Respiratory secretions, lung, biopsy, pus, skin
Rhizopus spp.	Respiratory secretions, skin, nose, brain, stool, eye, wounds, nasal sinus
Scedosporium apiospermum (<i>Pseudallescheria boydii</i>)	Respiratory secretions, skin, eye, bone, brain, CSF, nasal sinus
Sporothrix schenckii	Respiratory secretions, skin, subcutaneous tissue, sinuses, blood, bone marrow, CSF, synovial fluid, lymph nodes

Mycology Specimen Collection & Transport by Source

<i>Specimen Source</i>	<i>Collection Procedure</i>	<i>Optimum Transport Procedure</i>
Blood	8 mL in a yellow top (ACD) tube or Isolator tube.	Room Temperature
Bone Marrow	5-10 mL in a green top (Heparin) tube.	Room Temperature
CSF	Sterile container.	2-8° C
Eye	Corneal scrapings, intraocular fluid or biopsy.	2-8° C
Hair	Select infected area. Remove at least 10 hairs. Entire hair shaft is necessary.	Room Temperature Place hairs between two clean glass slides or in a clean envelope labeled with the patient's data.
Nails	Clean nail with 70% alcohol, scrape away the outer portion and obtain scrapings from the deeper infected areas.	Room Temperature
Nose	Necrotic material or biopsy.	2-8° C
Respiratory	Induced sputum, tracheal aspirate, lung biopsy, bronchoscopy specimens.	2-8° C
Skin and interspaces	Clean skin with 70% alcohol. Scrape the entire lesion(s) and both sides of interspaces.	Room Temperature
Tissue Biopsy	Collect tissue aseptically from the center and edge of the lesion. Place specimens between moist gauze squares, add a small amount of sterile water or saline to keep tissue from drying out.	2-8° C
Urine	Catheterized specimen is preferred. Early morning clean-catch is also acceptable.	2-8° C

Acid-Fast Bacilli Specimen Collection & Transport by Source

<i>Specimen Source</i>	<i>Collection Procedure</i>	<i>Optimum Transport Procedure</i> <i>(Transport all specimens within 24 hours or overnight unless otherwise specified.)</i>
Aspirate	Sterile container	2-8° C
Blood	5-10 mL in ACD or Heparin	Room Temperature
Body Fluids	Sterile container	2-8° C
Bone Marrow	Collect in sterile tube or Heparin tube	Room Temperature
Bronchoalveolar lavage, bronchial washings, bronchial brushings	Sterile container	2-8° C
CSF	Sterile container	2-8° C
Gastric Lavage	Sterile container. Specimen pH adjusted to 7.0 if transport to lab is >1 hour post collection.	2-8° C
Sputum	Sterile container	2-8° C
Stool	2 gm in sterile container	2-8° C
Tissue	1 gm in sterile container. Keep moist with sterile saline.	2-8° C
Urine	Sterile container	2-8° C

Virology Collection & Transport Guide

Overview

Focus Diagnostics offers comprehensive viral cultures as well as culture (conventional and rapid) for specific viruses. When a routine comprehensive culture is requested, attempts will be made to isolate culturable viruses. The different substrates for viral isolation include up to six different cell lines. Not all cell lines will be included in all cases; determining factors include season of the year, patient history, and current epidemiology relevant to the area of the country from which the specimen originated. Specific viral cultures are performed for HSV, CMV, and VZV. Also, many techniques for rapid diagnosis of viral infections have been developed for routine laboratory application.

Test Request Information

The Virology Laboratory requests that as much information as possible be provided. This should include: source, date collected, date of onset of symptoms, and the clinical background, including antiviral therapy. It is especially important to advise us when Poxvirus, Rubella, Measles, Rhinoviruses or Arboviruses are suspected.

Collection Time and Viral Recovery

Specimens should be collected early in the acute phase of infection. Herpes Simplex virus and Varicella-Zoster virus may not be recovered from lesions beyond 5 days after onset of clinical manifestations of disease. Respiratory viruses are recovered during the 3-7 day viral shedding period following infection. Isolation of an enterovirus (Coxsackie virus, Echovirus) from the CSF is most productive within 2-3 days after onset of the CNS manifestations.

Reporting

The availability of preliminary and final reports varies according to the type of culture. Preliminary negative reports on routine virus cultures are sent out after two weeks; final negative reports are sent out at the end of three weeks. Herpes simplex rapid culture reports are reported routinely after a 48 hour test procedure. For further information see Herpes Simplex Virus Rapid Culture, Focus Unit Code 81095. Rapid cultures for CMV are stained for presence of the immediate-early nuclear antigen, as described under Cytomegalovirus Rapid Culture, Focus Unit Code 81065, and reported in 48 hours. Rapid cultures for Influenza viruses (Focus Unit Code 51758) and Respiratory viruses (Focus Unit Code 51743) are reported routinely after a 36 hour and 72 hour test procedure, respectively. Rapid cultures for Varicella-Zoster Virus, Focus Unit Code 82133, are reported in 96 hours.

Collection, Transportation and Storage Guidelines

- Most viral specimens should be held at 2-8°C rather than frozen for short term (<48 hours) transit and storage. For delays exceeding 48 hours, freeze viral specimens at -70°C or below. Do not freeze at -20°C.
- Sterile body fluids such as cerebrospinal fluid do not require any transport medium and should not be diluted.
- Many suitable holding media for use with swabs and washings are commercially available as an immediate alternative to in-house transport media.
- Avoid using calcium alginate swabs when collecting specimens for Herpes and Chlamydia cultures. The fibers may inactivate these agents.
- Avoid any wooden shafted swabs, which may be inhibitory to viruses.
- It is usually not possible to isolate Arboviruses from clinical specimens. In such cases serological studies are helpful.
- **Chlamydial specimens** should be held at 2-8° C for short term (<48 hours) transit and storage. For delays exceeding 48 hours, freeze at -70° C or below.

Virology Specimen Selection

<i>Disease</i>	<i>Associated Viruses</i>	<i>Recommended Specimen</i>
Congenital and Neonatal Infections	Rubella Cytomegalovirus Herpes Simplex Virus Enterovirus Varicella-Zoster Virus	CSF, throat, urine Urine, throat, blood, tissue, CSF CSF, throat, brain biopsy, vesicle CSF, throat, stool, brain biopsy, autopsy Vesicle, throat
Conjunctivitis and Corneal Lesions	Adenovirus Cytomegalovirus Enterovirus Herpes Simplex Virus Varicella-Zoster Virus	Eye swab Eye swab Eye swab Corneal or conjunctival scrapings Eye swab, corneal or conjunctival scrapings
Encephalopathies Aseptic Meningitis and Encephalitis	Adenovirus Arbovirus Cytomegalovirus Enterovirus Herpes Simplex Virus LCM Measles Mumps Parechovirus Varicella-Zoster Virus	CSF, brain biopsy, blood CSF, brain biopsy, blood Brain biopsy, CSF CSF, throat swab, stool, brain biopsy CSF, brain biopsy, blood Serological testing only CSF, urine CSF, urine CSF, stool CSF, brain biopsy, skin lesions
Exanthems and Enanthems	Enterovirus Herpes Simplex Virus HHV-6 Measles Parvovirus B19 Rubella Varicella-Zoster Virus	Vesicle swab, throat swab, stool Vesicle swab Serology/PCR Blood, throat swab Serology/PCR Throat swab, CSF, urine Scrapings from fresh vesicle
Gastroenteritis	Adenovirus Astrovirus Norovirus Rotavirus	Stool Stool Stool Stool
Genital Infections	Herpes Simplex Virus	Genital swab, vesicle swab, vesicle fluid
Malaise Syndrome	Cytomegalovirus Epstein-Barr Virus	Blood, urine, throat swab Serological testing only
Myocarditis and Pericarditis	Coxsackie B 1-5 Echovirus	Pericardial fluid, throat swab Pericardial fluid, throat swab
Pneumonia	Adenovirus Cytomegalovirus Herpes Simplex Virus human Metapneumovirus Influenza A/B Parainfluenza 1/2/3 RSV SARS Varicella-Zoster Virus	Throat swab, nasopharyngeal (NP), bronchial wash, tissue Urine, throat swab, lung tissue, blood, bronchial wash Throat swab, bronchial wash, lung tissue, oral lesion, blood NP, throat swab, bronchial wash, lung tissue Throat wash, sputum, lung tissue, NP, bronchial wash Throat swab, sputum, lung tissue, NP, bronchial wash NP, bronchial wash, lung tissue NP, throat swab, bronchial wash, lung tissue Lung tissue, bronchial wash, skin lesions, blood
Respiratory Tract Infections	Adenovirus Enterovirus human Metapneumovirus Influenza A/B Parainfluenza 1/2/3 Rhinovirus RSV SARS	NP swab, transtracheal aspirate, throat swab NP swab, throat swab NP, throat swab, bronchial wash, lung tissue NP, throat swab, sputum NP, throat swab NP, throat swab NP swab, aspirate or wash NP, throat swab, bronchial wash, lung tissue

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Virology Collection & Transport by Source

<i>Specimen Source</i>	<i>Collection Procedure</i>	<i>Optimum Transport Procedure</i>
Blood	Collect 1 tube (4-7 mL) of heparinized (green top) or EDTA (purple top) blood.	Room Temperature
Body fluids other than blood or urine	Collect 2-3 mL in a sterile container	Up to 48 hours at 2-8° C (Refrigerated) Over 48 hours at -70° C (FROZEN)
Bone marrow	Collect 2 mL in Heparin or EDTA	Up to 48 hours at 2-8° C (Refrigerated) Over 48 hours at -70° C (FROZEN)
Bronchial wash/brush or alveolar lavages	Collect 2-3 mL and place in viral transport medium	Up to 48 hours at 2-8° C (Refrigerated) Over 48 hours at -70° C (FROZEN)
CSF	Collect 1mL in a sterile container. Do not dilute in VTM	Up to 48 hours at 2-8° C (Refrigerated) Over 48 hours at -70° C (FROZEN)
Eye swab or scraping	Swab the inflamed conjunctiva or corneal lesions. Place swabs or scrapings in viral transport medium.	Up to 48 hours at 2-8° C (Refrigerated) Over 48 hours at -70° C (FROZEN)
Nasopharyngeal	Collect 2 nasopharyngeal swabs. Place both swabs in viral transport medium.	Up to 48 hours at 2-8° C (Refrigerated) Over 48 hours at -70° C (FROZEN)
Sputum	Collect in a sterile container	Up to 48 hours at 2-8° C (Refrigerated) Over 48 hours at -70° C (FROZEN)
Stool	Collect 1-2 grams of fresh stool	Up to 48 hours at 2-8° C (Refrigerated) Over 48 hours at -70° C (FROZEN)
Swab	Collect on sterile swab and place in viral transport medium. Do not use wooden-shafted swabs or calcium alginate swabs.	Up to 48 hours at 2-8° C (Refrigerated) Over 48 hours at -70° C (FROZEN)
Throat	Collect on sterile swab and place in viral transport medium.	Up to 48 hours at 2-8° C (Refrigerated) Over 48 hours at -70° C (FROZEN)
Tissue	Place in viral transport medium.	Up to 48 hours at 2-8° C (Refrigerated) Over 48 hours at -70° C (FROZEN)
Urine	Collect 5 mL in a sterile container.	Up to 48 hours at 2-8° C (Refrigerated) Over 48 hours at -70° C (FROZEN)
Vesicular lesion	Collect the fluid and cellular material from the base of several fresh vesicles. Place in viral transport medium. Do not use calcium alginate swabs or swabs with wooden shafts.	Up to 48 hours at 2-8° C (Refrigerated) Over 48 hours at -70° C (FROZEN)

Molecular Diagnostics Specimen Selection Guide

Overview

Focus Diagnostics offers a growing number of molecular-based assays for the detection, quantitation, and genomic analysis of different infectious pathogens. Focus is continually expanding its molecular diagnostics test menu to provide more advanced tools for disease management, as described in the medical and scientific literature. New assays are developed for emerging pathogens and also for known pathogens, where more sensitive detection or specific genomic information is desired.

At Focus Diagnostics, our reputation stands on the quality of our test results. We therefore go the extra mile to provide a test result that is as accurate as possible. In addition to positive and negative target amplification controls, Focus Diagnostics incorporates additional quality controls. An internal amplification control is evaluated for each specimen that verifies the successful DNA/RNA extraction and amplification from the patient's specimen. Each assay run includes controls to detect possible contamination not only during amplification and detection, but also during the specimen processing step. These controls, used in conjunction with physical containment barriers, minimize false-positive and false-negative results.

PCR

For clinical studies and diagnostic use, PCR testing is considered by many to be the gold standard. In an effort to provide test results in as timely a manner as possible, Focus Diagnostics utilizes Real-Time PCR technology in many of its molecular assays to decrease test turn-around-time. Real-Time PCR combines the amplification and detection steps of the molecular assay to provide faster results with greater standardization.

Test Request Information

Focus' Molecular Diagnostics Department requests that as much information as possible be provided with each specimen. This should include specimen source, patient age and date of birth, and physician name.

Collection Time, Transportation and Storage Guidelines

Specimens should ideally be collected in the acute phase of infection and transported to the laboratory as soon as possible, usually 24 hours post collection. The charts included in this section describe optimal collection and transport procedures by organism. This information serves as a guide only. Please do not hesitate to call Focus' Client Service Representatives or Molecular Diagnostics Department for further details regarding the selection, collection and transport of specimens.

Molecular Diagnostics Specimen Selection & Transport Guide

Refer to individual assays for exact specimen requirements and transport temperatures.

Assay	Validated Specimens	Unacceptable Specimens¹
Adenovirus DNA, Qualitative and Quantitative	Whole blood or Plasma (EDTA, ACD), Serum, CSF, Urine, BAL, Sputum, Respiratory swab in transport media	Calcium alginate swabs, Tissue unacceptable for quantitation.
Anaplasma phagocytophilum DNA	Whole blood (EDTA, ACD), Ticks	
Aspergillus DNA	Whole blood (EDTA, ACD), BAL, Serum, Tissue	
Atypical Pneumonia Panel <i>Panel includes:</i> Chlamydia Legionella Mycoplasma	BAL/wash, Sputum, Respiratory specimen in transport media	Calcium alginate swabs
Avian Influenza Virus H5 Gene RNA	NPA/wash, NP/throat swab; Sputum	Tissue
Babesia microti DNA	Whole Blood (ACD, EDTA), Ticks	
Bartonella DNA	Whole Blood (ACD, EDTA), Tissue	
BK Virus DNA, Qualitative and Quantitative BK and JC Virus DNA	Whole blood and Plasma (EDTA, ACD), Urine, Serum, CSF Whole blood and Plasma (EDTA, ACD), Urine, Serum, Plasma, CSF	Tissue unacceptable for Quantitation
Bordetella pertussis/ parapertussis DNA	NPA/wash, Nasal swab	Calcium alginate swabs
Borrelia burgdorferi DNA	Whole blood, (EDTA, ACD), Tick; Synovial fluid, CSF, Urine	
Chlamydia pneumoniae DNA	BAL/wash, Sputum, Respiratory specimen in transport media	Calcium alginate swabs
Clostridium difficile (Toxigenic) DNA	Stool	
Cytomegalovirus DNA, Qualitative and Quantitative	Whole blood, Plasma, Serum, CSF, Amniotic fluid, Urine, Tissue	Tissue unacceptable for quantitation
Cytomegalovirus Genotyping	Whole blood and Plasma (EDTA, ACD), CSF, BAL, Buffy coat, Cultured cells, Specimen in transport media	All other specimens
Coronavirus (Non-SARS) RNA	NPA, BAL, NP/Throat swab	Calcium alginate swabs, Tissue
Dengue Virus RNA	Serum	Tissue

1. All specimens (Whole Blood, Plasma, Bone Marrow) using Heparin as the anticoagulant are unacceptable.

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Molecular Diagnostics Specimen Selection & Transport Guide

<i>Assay</i>	<i>Validated Specimens</i>	<i>Unacceptable Specimens</i>
Ehrlichia chaffeensis DNA	Whole blood, Tick	
Ehrlichia ewingii DNA	Whole blood, Tick	
Enterovirus RNA	CSF, Plasma (EDTA, PPT, ACD), Stool, Throat/rectal swab	Calcium alginate swabs, Tissue
Epstein-Barr Virus DNA, Qualitative and Quantitative	Whole blood and Plasma (EDTA, ACD), Serum, Bone marrow, CSF, Tissue	Tissue unacceptable for quantitation
Hepatitis B Virus DNA, Qualitative and Quantitative	Serum, Plasma (EDTA, PPT, ACD)	Tissue and Whole blood are unacceptable for quantitation
Hepatitis C Virus Genotyping	Plasma (EDTA, PPT, ACD), Serum	All other specimens
Hepatitis C Virus RNA, Qualitative and Quantitative	Plasma (EDTA, PPT, ACD), Serum	All other specimens
Hepatitis D Virus RNA	Serum	Tissue
Hepatitis G Virus RNA	Serum, Plasma (EDTA, PPT, ACD)	Tissue
Herpes Simplex Virus 1/2 DNA, Qualitative and Quantitative	CSF, Serum, Tissue, Swab, Pleural fluid, Pericardial fluid, Amniotic fluid, Vitreous fluid	Tissue unacceptable for quantitation
Herpesvirus-6 DNA, Qualitative and Quantitative	Whole blood and Plasma (EDTA, ACD), Serum, CSF	Tissue unacceptable for quantitation
Herpesvirus-7 DNA, Quantitative	Whole blood and Plasma (EDTA, ACD), Serum	Tissue
Herpesvirus-8 DNA, Qualitative and Quantitative	Whole blood and Plasma (EDTA, ACD), Serum	Tissue unacceptable for quantitation
Histoplasma capsulatum DNA	Whole blood (EDTA, ACD), BAL, CSF, Urine, Tissue	
HIV-1 Proviral DNA	Whole blood (EDTA, ACD)	All other specimens
HIV-1 Genotype	Plasma (EDTA, PPT, ACD), Serum	All other specimens
HIV-1 RNA, Quantitative	Plasma (EDTA, PPT, ACD)	All other specimens
HIV-2 DNA/RNA	Whole blood (EDTA, ACD)	
HTLV I/II DNA	Whole blood (EDTA, ACD)	All other specimens
Human metapneumovirus RNA	NP aspirate or swab, BAL	Tissue, Calcium alginate swabs

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Molecular Diagnostics Specimen Selection & Transport Guide

Assay	Validated Specimens	Unacceptable Specimens
Influenza Virus A/B RNA	BAL/wash, Sputum, Respiratory specimen in transport media	Tissue, Calcium alginate swabs
JC Virus DNA, Qualitative and Quantitative	CSF, Plasma (EDTA, PPT, ACD), Serum, Urine	Tissue unacceptable for quantitation
Legionella pneumophila DNA	BAL/wash, Sputum, Respiratory specimen in transport media	Calcium alginate swabs
Mycobacterium tuberculosis (MTB) DNA	Respiratory specimen, CSF or tissue	Whole blood, Serum, Plasma, Bone marrow, Bactec bottles, Urine
Mycoplasma pneumoniae DNA	BAL/wash, Sputum, Respiratory specimen in transport media	Calcium alginate swabs
Norovirus RNA	Stool	Tissue
Parainfluenza Virus RNA	BAL/wash, Sputum, Respiratory specimen in transport media	Tissue, Calcium alginate swabs
Parechovirus RNA	CSF, Stool	Tissue
Parvovirus B19 DNA Qualitative and Quantitative	Whole blood, Plasma, Serum, Amniotic fluid, Tissue, Bone Marrow	Tissue unacceptable for quantitation
Respiratory Syncytial Virus RNA	BAL/wash, Sputum, Respiratory specimen in transport media	Tissue, Calcium alginate swabs
Respiratory Virus Panel <i>Panel includes:</i> Influenza Virus A/B RNA Respiratory Syncytial Virus RNA Parainfluenza Virus RNA Adenovirus DNA	BAL/wash, Sputum, Respiratory specimen in transport media	Tissue, Calcium alginate swabs
Rhinovirus RNA	NPA or swab, BAL	Tissue
Rickettsia rickettsii	Whole blood (EDTA, ACD), Tick	
SARS Coronavirus RNA	NPA/Swab, BAL, Sputum, Rectal swab	Tissue, Calcium alginate swabs

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Molecular Diagnostics Specimen Selection & Transport Guide

<i>Assay</i>	<i>Validated Specimens</i>	<i>Unacceptable Specimens</i>
Tick Borne Disease Panel <i>Panel includes:</i> Anaplasma phagocytophilum DNA Babesia microti DNA Borrelia burgdorferi DNA Erlichia chaffeensis DNA	Whole blood (EDTA, ACD), Tick	
Toxoplasma gondii DNA, Qualitative and Quantitative	Amniotic fluid, CSF, Whole blood and Plasma (EDTA, ACD), Serum, Vitreous fluid, Tissue	Tissue unacceptable for quantitation
Tropheryma whipplei DNA	Whole blood (EDTA, ACD), CSF, Tissue	
Varicella Zoster Virus DNA, Qualitative and Quantitative	Whole blood (EDTA, ACD), CSF, Bronchial Wash/Brush, Swab in transport media, Tissue	Calcium alginate swabs, Tissue unacceptable for quantitation
West Nile Virus RNA	CSF, Plasma (EDTA, PPT, ACD), Serum	Tissue