Quest Diagnostics™

2018-2019

Specimen Collection & Transport Guide

Visit our online version at QuestDiagnostics.com/TestDirectory

Blood Collection

ORDER OF DRAW

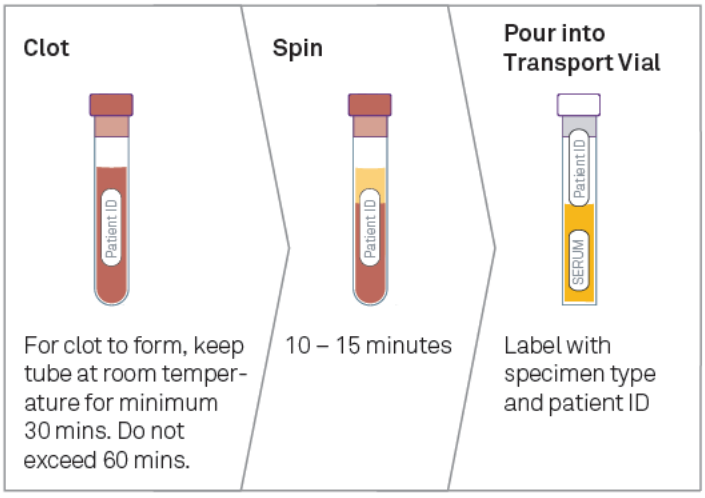
	First	Bottle/Stopper		Additive	Notes
1			Culture Bottles	See bottle label	
2			Light Blue	Citrate	**Tube must be filled completely.** Note: When using a winged blood collection set and a coagulation (citrate) tube is the first specimen, begin by drawing another partially-filled citrate tube. This discard tube is used to fill the winged set tubing's "dead space" and helps ensure a proper blood-to-additive ratio.
3			Gold	Gel, serum	**Do not use gel tubes for toxicology or drug testing.**
4			Red	No gel, serum	
5			Green or Tan	Heparin	
6			Lavender or Tan	EDTA	
7			Royal Blue	EDTA	
8			Gray	Sodium Fluoride (Glucose)	
		Tubes with Other Additives			
9	*Last*		Yellow	Citrate ACD	**This tube is drawn last.**

MIXING CHART

BD Vacutainer™ Tube Type	Stopper Color	Number of Inversions
EDTA	Lavender	8 – 10
Citrate	Light Blue	3 – 4
SST® with gel	Red/Black	5
Serum	Red	5
Sodium Fluoride	Gray	8 – 10
Heparin	Green	8 – 10

SEPARATION

For serum (no gel) tubes only.



For other blood, serum or plasma separation instructions, see the Specimen Collection and Handling section of this directory.

Return to Table of Contents

Specimen Collection Tubes

BLOOD SPECIMENS

Always refer to tube label to confirm tube type – never rely on the stopper color alone.

Stopper/Label Color		Laboratory Use	Additives/Inversions at Collection
1	 **Culture Bottles**	For detection of microbial growth from blood specimens.	• Soybean-casein digest broth ***8-10 gentle inversions*** unless otherwise noted
2	 **Light Blue**	For coagulation determinations. ***Note:*** Certain tests may require chilled/refrigerated specimens. Follow recommended procedures for collection and transport. Inversions prevent clotting.	• 0.105 M sodium citrate (3.2%) ***3-4 inversions***
3	 **Gold**	Serum Separator Tube (SST®) for serum determinations in chemistry and serology. Contains separator gel and should not be used for toxicology or drug testing. Inversions ensure mixing of clot activator with blood. Blood clotting time 30 minutes.	• Clot activator and gel for serum separation ***5 inversions***
4	 **Red**	For serum determinations in chemistry and serology, and for toxicology and drug testing. Glass serum tubes are recommended for blood banking. Plastic tubes contain clot activator and are **not** recommended for blood banking. Inversions ensure mixing of clot activator with blood and clotting within 30-60 minutes.	• Clot activator ***5 inversions (plastic)*** ***None (glass)***
5/6	 **Green**	For plasma determinations in chemistry. Inversions prevent clotting. Use **only** sodium heparin green-top tubes for all cytogenetic testing.	• Sodium heparin • Lithium heparin ***8-10 gentle inversions***
5/6	 **Tan**	For lead determinations. This tube is certified to contain less than 0.01 µg/mL (ppm) lead. Inversions prevent clotting.	• K_2 EDTA (plastic) ***8-10 gentle inversions***
5/6	 **Lavender**	K_2 EDTA for whole-blood hematology determinations and immunohematology testing (ABO grouping, Rh typing, antibody screening). Inversions prevent clotting.	• Spray-dried K_2 EDTA ***8 – 10 gentle inversions***
7	 **Royal Blue**	K2 EDTA for whole-blood hematology determinations and immunohematology testing (ABO grouping, Rh typing, antibody screening). Inversions prevent clotting.	• Spray-dried K_2 EDTA ***8-10 gentle inversions***
8	 **Gray**	For glucose determinations. Oxalate and EDTA anticoagulants will give plasma samples. Sodium fluoride is the antiglycolytic agent. Inversions ensure proper mixing of additive and blood.	• Potassium oxalate/sodium fluoride • Sodium fluoride/Na_2 EDTA ***8-10 gentle inversions***
9	 **Yellow** and white label	Glass tube with liquid ACD for use in blood bank studies, HLA phenotyping, DNA, paternity testing, etc.	• Acid Citrate Dextrose (ACD) solutions A/B additives –Trisodium citrate 22.0/13.2, citric acid 8.0/4.8 and dextrose 24.5/14.7 (in g/L) ***8-10 gentle inversions***

Note: *The QuantiFERON®-TB Gold collection tube set includes lavender, gray and purple capped tubes that are not listed or indicated on this chart*

URINE SPECIMENS

Stopper/Label Color		Laboratory Use	Additives/Inversions at Collection
	Gray and yellow label	For culture and sensitivity (C&S) urine testing. **Minimum urine volume is 4 mL.** For lower volumes, submit refrigerated urine in a sterile container without preservatives.	• Boric acid, sodium formate ***Shake vigorously***
	Yellow plastic and yellow label	For urinalysis testing. Inversions ensure preservative is properly mixed. **Note the fill lines. Do not under fill (<2 mL) or over fill (>10 mL).**	• Preservative ***8-10 gentle inversions***

For questions regarding specimen collection tubes not shown here, contact Client Services or your Sales Representative.

Specimen Collection & Transport Guide 2018-2019

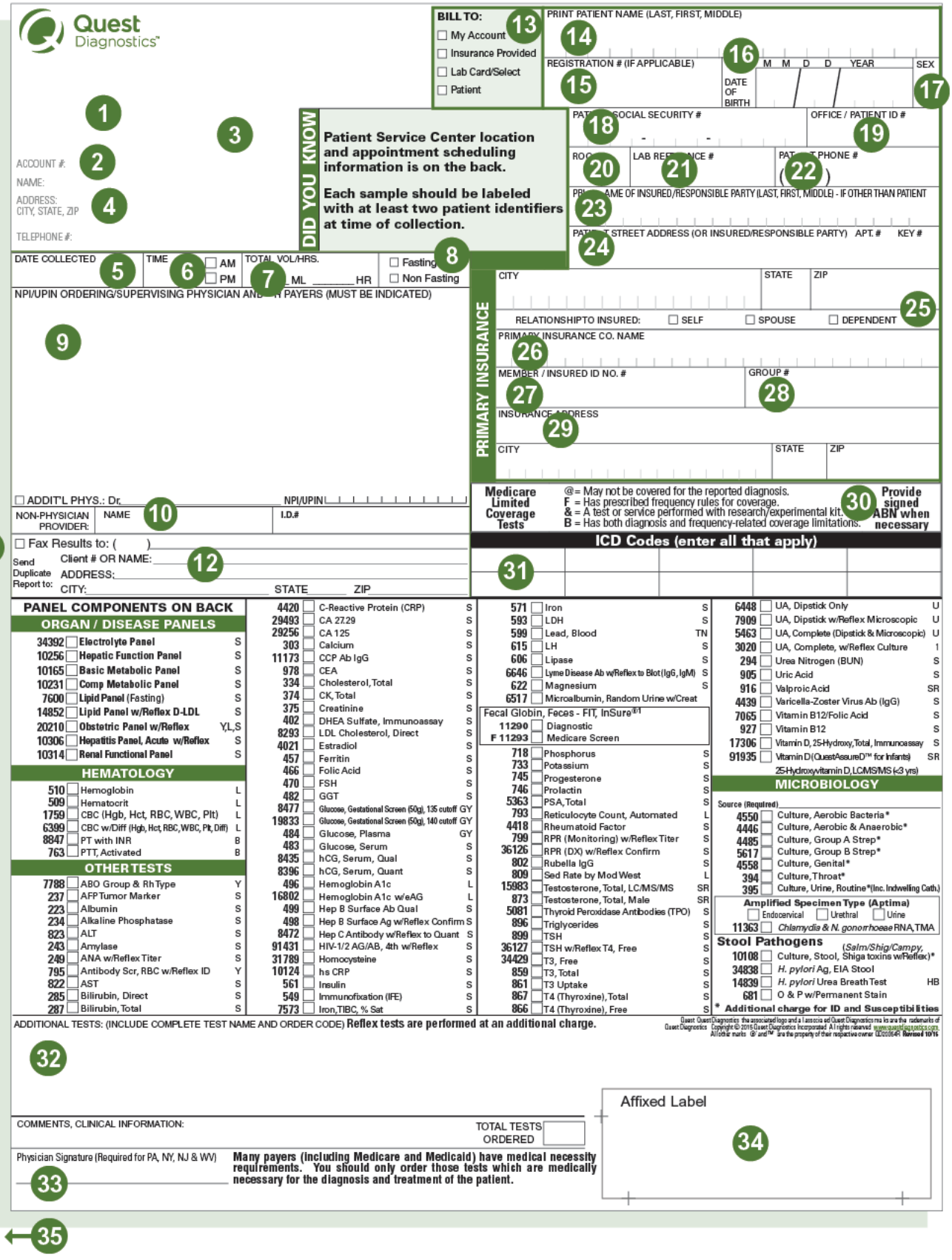
QuestDiagnostics.com

The CPT® codes provided in this document are based on AMA guidelines and are for informational purposes only. CPT® coding is the sole responsibility of the billing party. Please direct any questions regarding coding to the payer being billed.

Table of Contents

Table of Contents

Sample Test Requisition – Physician



Quest Diagnostics™

1 ACCOUNT #:
2 NAME:
3
4 ADDRESS: CITY, STATE, ZIP
TELEPHONE #:

DID YOU KNOW
Patient Service Center location and appointment scheduling information is on the back.
Each sample should be labeled with at least two patient identifiers at time of collection.

BILL TO: 13
☐ My Account
☐ Insurance Provided
☐ Lab Card/Select
☐ Patient

14 PRINT PATIENT NAME (LAST, FIRST, MIDDLE)
15 REGISTRATION # (IF APPLICABLE)
16 DATE OF BIRTH M M D D YEAR
17 SEX
18 PAT SOCIAL SECURITY # - -
19 OFFICE / PATIENT ID #
20 ROO
21 LAB REF NCE #
22 PAT T PHONE # ( )
23 PRI AME OF INSURED/RESPONSIBLE PARTY (LAST, FIRST, MIDDLE) - IF OTHER THAN PATIENT
24 PAT T STREET ADDRESS (OR INSURED/RESPONSIBLE PARTY) APT. # KEY #

DATE COLLECTED 5 | TIME 6 ☐ AM ☐ PM | TOTAL VOL/HRS. 7 _ ML _____ HR | 8 ☐ Fasting ☐ Non Fasting

NPI/UPIN ORDERING/SUPERVISING PHYSICIAN AND R PAYERS (MUST BE INDICATED)
9

PRIMARY INSURANCE
CITY | STATE | ZIP
25 RELATIONSHIP TO INSURED: ☐ SELF ☐ SPOUSE ☐ DEPENDENT
26 PRIMARY INSURANCE CO. NAME
27 MEMBER / INSURED ID NO. #
28 GROUP #
29 INSURANCE ADDRESS
CITY | STATE | ZIP

☐ ADDIT'L PHYS.: Dr. _____ NPI/UPIN
NON-PHYSICIAN PROVIDER: NAME 10 | I.D.#

Medicare Limited Coverage Tests
@ = May not be covered for the reported diagnosis.
F = Has prescribed frequency rules for coverage.
& = A test or service performed with research/experimental kit.
B = Has both diagnosis and frequency-related coverage limitations.
30 Provide signed ABN when necessary

11 ☐ Fax Results to: ( )
Send Duplicate Report to: Client # OR NAME: 12
ADDRESS:
CITY: _____ STATE ZIP

ICD Codes (enter all that apply)
31

PANEL COMPONENTS ON BACK

ORGAN / DISEASE PANELS

34392	☐ Electrolyte Panel	S
10256	☐ Hepatic Function Panel	S
10165	☐ Basic Metabolic Panel	S
10231	☐ Comp Metabolic Panel	S
7600	☐ Lipid Panel (Fasting)	S
14852	☐ Lipid Panel w/Reflex D-LDL	S
20210	☐ Obstetric Panel w/Reflex	Y,L,S
10306	☐ Hepatitis Panel, Acute w/Reflex	S
10314	☐ Renal Functional Panel	S

HEMATOLOGY

510	☐ Hemoglobin	L
509	☐ Hematocrit	L
1759	☐ CBC (Hgb, Hct, RBC, WBC, Plt)	L
6399	☐ CBC w/Diff (Hgb, Hct, RBC, WBC, Plt, Diff)	L
8847	☐ PT with INR	B
763	☐ PTT, Activated	B

OTHER TESTS

7788	☐ ABO Group & Rh Type	Y
237	☐ AFP Tumor Marker	S
223	☐ Albumin	S
234	☐ Alkaline Phosphatase	S
823	☐ ALT	S
243	☐ Amylase	S
249	☐ ANA w/Reflex Titer	S
795	☐ Antibody Scr, RBC w/Reflex ID	Y
822	☐ AST	S
285	☐ Bilirubin, Direct	S
287	☐ Bilirubin, Total	S
4420	☐ C-Reactive Protein (CRP)	S
29493	☐ CA 27.29	S
29256	☐ CA 125	S
303	☐ Calcium	S
11173	☐ CCP Ab IgG	S
978	☐ CEA	S
334	☐ Cholesterol, Total	S
374	☐ CK, Total	S
375	☐ Creatinine	S
402	☐ DHEA Sulfate, Immunoassay	S
8293	☐ LDL Cholesterol, Direct	S
4021	☐ Estradiol	S
457	☐ Ferritin	S
466	☐ Folic Acid	S
470	☐ FSH	S
482	☐ GGT	S
8477	☐ Glucose, Gestational Screen (50g), 135 cutoff	GY
19833	☐ Glucose, Gestational Screen (50g), 140 cutoff	GY
484	☐ Glucose, Plasma	GY
483	☐ Glucose, Serum	S
8435	☐ hCG, Serum, Qual	S
8396	☐ hCG, Serum, Quant	S
496	☐ Hemoglobin A1c	L
16802	☐ Hemoglobin A1c w/eAG	L
499	☐ Hep B Surface Ab Qual	S
498	☐ Hep B Surface Ag w/Reflex Confirm	S
8472	☐ Hep C Antibody w/Reflex to Quant	S
91431	☐ HIV-1/2 AG/AB, 4th w/Reflex	S
31789	☐ Homocysteine	S
10124	☐ hs CRP	S
561	☐ Insulin	S
549	☐ Immunofixation (IFE)	S
7573	☐ Iron, TIBC, % Sat	S
571	☐ Iron	S
593	☐ LDH	S
599	☐ Lead, Blood	TN
615	☐ LH	S
606	☐ Lipase	S
6646	☐ Lyme Disease Ab w/Reflex to Blot (IgG, IgM)	S
622	☐ Magnesium	S
6517	☐ Microalbumin, Random Urine w/Creat	
	Fecal Globin, Feces - FIT, InSure®†	
11290	☐ Diagnostic	
F 11293	☐ Medicare Screen	
718	☐ Phosphorus	S
733	☐ Potassium	S
745	☐ Progesterone	S
746	☐ Prolactin	S
5363	☐ PSA, Total	S
793	☐ Reticulocyte Count, Automated	L
4418	☐ Rheumatoid Factor	S
799	☐ RPR (Monitoring) w/Reflex Titer	S
36126	☐ RPR (DX) w/Reflex Confirm	S
802	☐ Rubella IgG	S
809	☐ Sed Rate by Mod West	L
15983	☐ Testosterone, Total, LC/MS/MS	SR
873	☐ Testosterone, Total, Male	SR
5081	☐ Thyroid Peroxidase Antibodies (TPO)	S
896	☐ Triglycerides	S
899	☐ TSH	S
36127	☐ TSH w/Reflex T4, Free	S
34429	☐ T3, Free	S
859	☐ T3, Total	S
861	☐ T3 Uptake	S
867	☐ T4 (Thyroxine), Total	S
866	☐ T4 (Thyroxine), Free	S
6448	☐ UA, Dipstick Only	U
7909	☐ UA, Dipstick w/Reflex Microscopic	U
5463	☐ UA, Complete (Dipstick & Microscopic)	U
3020	☐ UA, Complete, w/Reflex Culture	1
294	☐ Urea Nitrogen (BUN)	S
905	☐ Uric Acid	S
916	☐ Valproic Acid	SR
4439	☐ Varicella-Zoster Virus Ab (IgG)	S
7065	☐ Vitamin B12/Folic Acid	S
927	☐ Vitamin B12	S
17306	☐ Vitamin D, 25-Hydroxy, Total, Immunoassay	S
91935	☐ Vitamin D (QuestAssureD™ for Infants) 25-Hydroxyvitamin D, LC/MS/MS (<3 yrs)	SR

MICROBIOLOGY

Source (Required) _____

4550	☐ Culture, Aerobic Bacteria*	
4446	☐ Culture, Aerobic & Anaerobic*	
4485	☐ Culture, Group A Strep*	
5617	☐ Culture, Group B Strep*	
4558	☐ Culture, Genital*	
394	☐ Culture, Throat*	
395	☐ Culture, Urine, Routine* (Inc. Indwelling Cath.)	

Amplified Specimen Type (Aptima)
☐ Endocervical ☐ Urethral ☐ Urine

11363	☐ *Chlamydia & N. gonorrhoeae* RNA, TMA	

Stool Pathogens (*Salm/Shig/Campy,*

10108	☐ Culture, Stool, Shiga toxins w/Reflex)*	
34838	☐ *H. pylori* Ag, EIA Stool	
14839	☐ *H. pylori* Urea Breath Test	HB
681	☐ O & P w/Permanent Stain	

* Additional charge for ID and Susceptibilities

ADDITIONAL TESTS: (INCLUDE COMPLETE TEST NAME AND ORDER CODE) **Reflex tests are performed at an additional charge.**
32

COMMENTS, CLINICAL INFORMATION:
TOTAL TESTS ORDERED

Physician Signature (Required for PA, NY, NJ & WV)
33

Many payers (including Medicare and Medicaid) have medical necessity requirements. You should only order those tests which are medically necessary for the diagnosis and treatment of the patient.

Affixed Label
34

35

Test Requisition

Test Requisition Instructions – Physician

Return to Table of Contents

1. **Bar Code Section**
   Contains the pre-assigned requisition numbers.
2. **Account #**
   Identifies the Quest Diagnostics unique client number.
3. **Requisition Number**
   Identifies the specific patient order.
4. **Client Address Section**
   Client name, address and phone appear here.
5. **Date Collected**
   Indicate date specimen is collected.
6. **Time**
   Indicate the collection time. Check AM or PM.
7. **Total VOL/HRS**
   Indicate the total volume (mL) of specimen and the hours of collection (HR).
8. **Fasting or Non-Fasting**
   Indicate by checking the box if fasting or non-fasting is applicable for this patient.
9. **NPI/UPIN Ordering Supervising Physician and/or Payers**
   Check the name and NPI or UPIN of the referring physician listed. If not indicated, please write the information into the area provided.
10. **Non-Physician Provider**
    When tests are ordered by a Non-Physician Provider, please complete this area, as well as, section 9a.
11. **Fax Results**
    Check the box if results are to be faxed. Include your fax number, starting with area code.
12. **Duplicate Report**
    Fill in the complete name and address of physician(s) to receive duplicate report, or fill in an established client number, preceded by the # sign. Incomplete information will cause delays in duplicate test results reporting.
13. **Bill To**
    In the Bill To box, check the box which indicates the type of billing requested.
14. **Patient Name**
    Print last name, first name and middle initial.
15. **Quest Diagnostics Registration Number**
    Indicate # here for Quest Diagnostics registered patients, if applicable.
16. **Date of Birth**
    Date of Birth - Month, Day, Year (MM/DD/YYYY).
17. **Sex**
    Indicate M-Male or F-Female.
18. **Patient Social Security Number**
    Indicate the patient's social security number.
19. **Office/Patient ID Number**
    Indicate any patient ID to be printed on the report or client bill.
20. **Room Number**
    Indicate room number.
21. **Lab Reference Number**
    Indicate your additional internal reference number to be printed on the report.
22. **Patient Phone Number**
    Indicate the patient's phone number, starting with area code.
23. **Name of Responsible Party, if Other than Patient**
    Indicate the responsible party if other than the patient. Indicate last name, first name, and middle initial.
24. **Patient or Responsible Party Address**
    Indicate the address of the patient or responsible party. Include the street address, apartment number (key number, if applicable), city, state and zip.
25. **Relationship to Insured**
    Indicate the relationship to insured by checking one of the following boxes labeled:
    Self Spouse Dependent
26. **Insurance Company Name**
    Indicate the name of the insurance company and insurance plan or product.
27. **Member/Insured ID Number**
    Indicate the member or subscriber number as it is listed on the insurance card.
28. **Group Number**
    Indicate the group number as it is listed on the insurance card.
29. **Insurance Address**
    Indicate the insurance company's address as it is listed on the insurance card. If there is more than one address listed on the card, use the claims office address.
30. **Advance Beneficiary Notice (ABN)**
    Medicare will only pay for services that it determines to be reasonable and necessary under section 1862 (a)(1) of the Medicare Law. If Medicare determines that a particular service, although it would otherwise be covered, is not **reasonable** and **necessary** under the Medicare Program Standards, Medicare will deny payment for that service. By signing an ABN, the patient or responsible party is confirming agreement to assume financial responsibility for payment of these tests. Tests identified on requisitions with an "@" are likely to be denied payment if the diagnosis does not meet the reimbursement rules. Those tests identified with "&" are likely to be denied because the test is non-FDA approved/experimental. Tests designated with "F" are likely to be denied for payment because Medicare will pay for screening with these tests but only once every twelve months. Tests marked with "B" have both diagnosis and frequency-related coverage limitations.
31. **ICD Diagnosis Code(s)**
    Indicate all applicable codes in the boxes provided. Do not include descriptive diagnosis. ICD codes are for billing purposes only and will not be considered as clinical history in the evaluation of Pap Smears.
32. **Additional Tests**
    Indicate all Quest Diagnostics Order Codes for additional tests required that are not preprinted on the Test Requisition; and/or indicate "STAT" if STAT testing is required. (STAT testing is available only for a limited number of test offerings, please contact the laboratory for further information. Note: Additional fees will be assessed for this expedited service.)
33. **Physician Signature**
    Physician signature required for Medicaid billing in specific states.
34. **Affixed Label**
    This is an area for labels that are impact printed containing the requisition number and the account number.
35. **Specimen Key on Back**
    The back of the requisition lists a Specimen Key.

Sample Test Requisition – Hospital

Return to Table of Contents

Quest Diagnostics

HOSPITAL

DID YOU KNOW

To Request Or Mark Test(s)?

To Provide Order Code(s) For Handwritten Tests?

ACCOUNT #:
NAME:
ADDRESS:
CITY, STATE, ZIP
TELEPHONE #:

PATIENT INFORMATION - PLEASE PRINT
PRINT NAME (LAST, FIRST, MIDDLE) OR REGISTRATION NO

Inpatient Outpatient Non-patient
ROOM # BED # LOCATION
WARD MRN # CHART ID
AMD DATE REGISTRATION # LAB
DOB (MM/DD/YYYY) SEX M
REFERRING PHYSICIAN
DATE COLLECTED TIME AM PM Fasting (Hours)
Serum Plasma Blood Urine Frozen Other

24 Call Results to: ( ) 25 Fax Results to: ( )
Report Comments: 26
Internal Comments: 27

PANELS

4451	CK Isoenzyme Panel (Total + Isoenzymes)	FS
10306	Hepatitis Panel, Acute w/reflex (HBsAg w/reflex confirm, HC Ab, HA Ab IgM, HBcAb IgM)	S
7083	Immunoglobulins (IgG, IgA, IgM)	S
4411	LDH Isoenzyme Panel (Total + Isoenzymes)	S
7079	Lupus Anticoagulant (PTT-LA w/refl confirm, dRVVT w/refl confirm)	1
7924	Lymphocyte Subset Panel (CD4, CD8)	
30741	Testosterone Panel (Total, Free and Weakly Bound, Albumin, SHBG)	1
7260	Thyroid Autoantibodies (Thyroglobulin and Thyroid Peroxidase)	S
7065	Vitamin B12/Folic Acid	1

TESTS

237	AFP Tumor Marker	S
223	Albumin	S
227	Aldolase	F
230	Aldosterone	S
249	ANA w/reflex Titer	S
683	Angiotensin Convert Enzyme	S
4420	C-Reactive Protein CRP	S
10124	Cardio CRP	S
29256	CA 125	S
5819	CA 15-3	S
4698	CA 19-9	S
29493	CA 27.29	S
306	Calcium, Ionized	1
329	Carbamazepine	1
4661	Cardiolipin IgA Ab	S
4662	Cardiolipin IgG Ab	S
4663	Cardiolipin IgM Ab	S
36189	Cardiolipin Screen w/reflex To IgG, IgA, IgM	S
978	CEA	S
377	CK Isoenzymes	FS
374	CK, Total	S
351	Complement C3	FS
353	Complement C4	FS
618	Complement, Total (CH50)	FS
367	Cortisol	S
402	DHEA Sulfate Immunoassay	S
255	DNA (DS) ABS	S
15447	EBV-EA, IgG Ab	S
8564	EBV Anti-EBNA	S
8474	EBV Anti-VCA IgG	S
8426	EBV Anti-VCA IgM	S
427	Erythropoietin	S
4021	Estradiol	S
457	Ferritin	S
467	Folic Acid, RBC	1
466	Folic Acid, Serum	1
470	FSH	S
4112	FTA-ABS	S
478	Gastrin	Fs
29407	H. Pylori IgG, Qual	S
29408	H. Pylori IgG, Quant	S
502	Haptoglobin	S
496	Hemoglobin A1c	L
35489	Hemoglobinopathy Eval.	L
508	Hep A Ab - Total	S
512	Hep A IgM Ab	S
501	Hep B Core Ab, Total	S
4848	Hep B Core IgM Ab	S
499	Hep B Surface Ab Qual	S
8475	Hep B Surface Ab Quant	S
498	Hep B Surface Ag w/reflex Confirm	S
35645	Hep C RNA, QN, Real-Time PCR	
8472	Hep C Virus Ab	S
19728	HIV-1/HIV-2 Screen w/reflexes	S
31789	Homocysteine, Cardiovascular	S
539	Immunoglobulin A	S
542	Immunoglobulin E	S
543	Immunoglobulin G	S
545	Immunoglobulin M	S
561	Insulin	S
571	Iron, Total	S
7573	Iron, Total, IBC, % Sat	S
597	LDH Isoenzymes	S
593	LDH	S
599	Lead (B)	TN
6687	Legionella Pneumo Ab 1-6	S
615	LH	S
606	Lipase	S
613	Lithium	1
6646	Lyme Disease Ab-wB Conf	S
4555	Microalbumin 24 H (UR)	1
6517	Microalbumin Random UR w/creat	U
259	Mitochondrial Ab w/reflex Titer	S
8624	Mumps Virus IgG	S
659	Myco Pneumoniae IgG Ab	S
272	Nortriptyline	1
4847	Prealbumin	1
745	Progesterone	S
746	Prolactin	S
747	Protein Electro, Inc Total Protein	S
754	Protein, Total	S
5363	PSA, Total	S
31348	PSA Free and Total	FS
8847	PT With INR	B
8837	PTH, Intact (ICMA) w/calcium	FS
4418	Rheumatoid Factor	S
799	RPR (Monitoring) w/reflex Titer	S
36126	RPR (DX) w/reflex Titer And Confirm	S
802	Rubella IgG	S
964	Rubeola IgG Ab	S
30740	SHBG	1
7832	Sjogren's Abs	S
263	Smooth Muscle Ab w/reflex Titer	S
30261	Stone Analysis, Kidney	1
30260	Stone Analysis, Other	1
34429	T-3, Free	S
859	T-3, Total	S
861	T-3, Uptake	S
867	T-4 (Thyroxine)	S
866	T-4, Free	S
34482	Tacrolimus	1
873	Testosterone, Total	S
15983	Testosterone Total (Woman & Children)	SR
36170	Testosterone Free and Total (LC/MS/MS)	SR
267	Thyroglobulin Ab	S
5081	Thyroid Peroxidase Ab	S
891	Transferrin	S
899	TSH	S
36127	TSH w/reflex T-4, Free	S
916	Valproic Acid	SR
4439	Varicella-Zoster IgG Ab	S
4128	VDRL, CSF	1
927	Vitamin B12	S
17306	Vitamin D, 25 Hydroxy, LC/MS/MS	SR
934	VMA (U)	1

MICROBIOLOGY

SOURCE: _____

37212	C Difficile Toxin A & B	1
389	Culture, Blood*	1
690	Culture, Chlamydia Trach	1
4553	Culture, Fungus*	1
2692	Culture, HSV (Rapid)	1
2649	Culture, HSV with Typing	1
4554	Culture, Mycobacterium*	1
395	Culture, Urine Routine*	1
689	Culture, Virus Comprehensive*	1

Amplified Specimen Type (please check one)
Endocervical Urethral Urine
17305 Chlamydia & N. gonorrhoeae DNA, SDA

28

30264	Shiga Toxins, Eia Stool	1
681	Ova & Parasites	1

*Additional Charge For ID And Susceptibilities
1 = Consult Directory Of Services For Special Instructions

ADDITIONAL TESTS: (MUST INCLUDE COMPLETE TEST NAME AND ORDER CODE) Reflex tests are performed at an additional charge.

29

TOTAL TESTS ORDERED

Test Requisition

Test Requisition Instructions – Hospital

Return to Table of Contents

1. **Bar Code Section**
   Contains the pre-assigned client requisition numbers.
2. **Account #**
   Identifies your Quest Diagnostics unique client identification number.
3. **Requisition Number**
   Identifies the specific patient order.
4. **Hospital Address Section**
   Hospital name, address and phone appear here.
5. **Patient Information**
   Indicate patient name and address. Include the hospital stamp.
6. **Patient Room Number**
   (if applicable)
7. **Bed #**
   (if applicable)
8. **Location**
9. **Ward**
   (if applicable)
10. **MRN #**
    Unique Medical Record Number
11. **Chart ID**
    Unique Chart identification for the patient
12. **AMD Date**
    Date of admission for the patient
13. **Registration Number**
    Indicate the Quest Diagnostics registered patient number, if applicable.
14. **Lab reference number**
    Indicate your additional internal reference number to be printed on the report.
15. **Date of Birth**
    Date of Birth - Month, Day, Year (MM/DD/YYYY)
16. **Sex**
    Indicate M-Male or F-Female
17. **Patient ID #**
    Indicate any ID number to be printed on the form.
18. **Referring Physician**
    Indicate name of referring physician here.
19. **Referring Physician Provider Number**
    Indicate any referring physician Provider number to be printed on the report or client bill.
20. **Date Collected**
    Indicate date specimen is collected (MM/DD/YYYY).
21. **Time**
    Indicate the collection time. Circle AM or PM.
22. **Fasting (Hours)**
    Indicate by checking the box if fasting is applicable for this patient.Indicate the number of hours.
23. **Specimen Type**
    Check off the box of the specimen type(s) supplied. If not listed, check off “other” and provide the specimen type.
24. **Call Results to**
    Check the box if results are to be called. Include phone number.
25. **Fax Results to**
    Check the box if results are to be faxed. Include fax number.
26. **Report Comments**
    Record any comments to printed on the report.
27. **Internal Comments**
    Record any additional information you feel we need to know regarding your test requests.
28. **Amplified Specimen Type**
    Check off the box of the specimen type(s) supplied.
29. **Additional Tests**
    Indicate all Quest Diagnostics Order Codes for additional tests required that are not preprinted on the Test Requisition.

Specimen Collection and Handling

The meaningfulness of clinical laboratory results are directly related to the quality of the specimen submitted for analysis. Specimens can be collected by you and by your staff, or at a Quest Diagnostics Patient Service Center (PSC). Specimen requirements for each test are included in the **General Test Listing** section. Expanded instructions for selected tests are included in this **Specimen Collection and Handling** section. If needed, please contact the laboratory for clarification prior to specimen collection.

It is critical that an adequate specimen volume is submitted for analysis. The volume requested in this Directory is sufficient for initial analysis and for any confirmatory tests that might be needed. If initial, repeat or confirmatory tests cannot be performed, the laboratory report will indicate that the specimen quantity submitted was QNS (Quantity Not Sufficient for testing).

Health and Safety Precautions

Use standard precautions when handling specimens containing blood or other potentially infectious material. Work areas contaminated with potentially infectious material must be disinfected immediately with an appropriate disinfectant such as a 10% dilution of household bleach (0.5% hypochlorite at final concentration). In the event of an exposure, administer first aid immediately, notify your manager or supervisor and seek prompt medical attention. First aid includes washing cuts and needle sticks with soap and water; flushing splashes to the nose, mouth, or skin with copious amounts of water; and irrigating eyes with clean water, saline, or sterile irrigants.

Specimens should be handled in a safe manner and according to applicable legal requirements or guidance. Information on safe specimen handling may be obtained from the U.S. Occupational Safety and Health Administration (OSHA) and the Centers for Disease Control and Prevention (CDC). In handling human specimens, the goal is to protect healthcare workers from exposure to blood and to other potentially infectious body fluids.

Supplies

We provide certain supplies necessary to collect and submit specimens for analysis by our laboratories. The type and quantity of items must correlate with the number of specimens you submit to us for testing. Please refer to the supply ordering options on page 8 for instruction.

Specimen collection devices supplied by us are to be used only for the collection of specimens processed by us. Such supplies are not to be used to store or dispose of biological materials, including sharp instruments, or for any activity not connected with the collection of specimens for processing by us.

Patient Preparation

Many tests require specific patient preparation (e.g., fasting, diets, urinary voidings). If you have questions about patient preparation for any test, please consult this Directory or call Client Services for further assistance.

Fasting Requirements

A fasting specimen is preferred for the majority of tests performed on serum, plasma or whole blood. Non-fasting specimens often contain fat particles that can interfere with many analytical procedures. See Common Causes of Unacceptable Blood Specimens and Inaccurate Test Results (Turbidity) in the **Blood, Urine and Stool** section. Fasting is defined as no consumption of food or beverage, other than water, for 9–12 hours before testing. When fasting is required as part of patient preparation, the patient should also be advised to refrain from strenuous exercise during the fasting period; individuals should not become dehydrated, create acute inflammation, or other alterations that may alter the interpretation of a test.

Note: Quest performs the Martin-Hopkins calculation for the Lipid Panel (test code 7600), the Lipid Panel with Reflex to Direct LDL-C (test code 14852) and all other LDL-C containing tests. The methodology is not affected by food, so the fasting requirement is not necessary prior to the blood draw for an LDL-C containing test.

Provocation Tests

Some tests require the patient to ingest a substance. The most common tests are the Glucose Tolerance Tests, where the patient drinks a solution containing glucose, and blood specimens are obtained before and at various times after the drink, to measure the concentration of glucose in plasma or serum. In the standard Glucose Tolerance Tests, adults ingest 75 g (10 ounces) of a glucose solution (Glucola™). Children ingest an amount of glucose proportional to their body weight (1.75 grams of glucose per kilograms of body weight, up to 75 g of glucose).

Weight of Patient (in pounds)	Glucola* (in fluid ounces)
24 to 32	3
33 to 42	4
43 to 51	5
52 to 61	6
62 to 70	7
71 to 80	8
81 to 89	9
90 to 95	10

* From a 10-ounce Glucola bottle containing 75 g glucose.

See Glucose Tolerance Testing in the General Test Listing.

Important note: If patient is to be drawn at Quest Diagnostics PSC for a Lactose Tolerance Test (NTC 7675), the test must be scheduled at a PSC capable of administrating the dose. Please call 866-MYQUEST (866-697-8378) to schedule.

Proper Identification of Specimens

Specimen Labels

All specimens should be labeled at the time of collection with at least **2 patient identifiers that must also appear on the requisition.**

1. The patient's name (full last name, then full first name or initial) or a unique ID code is always required.

2. The second patient identifier may be one of the following:

- Date of birth (month/day/year)
- Other unique patient identifier, e.g., hospital or office ID code or file number
- Quest Diagnostics requisition number or specimen barcode label provided on our requisition
- Other barcode labels can be used if barcode matches the unique identifiers on the printed requisition

NOTE: Location-based identifiers are NOT acceptable, e.g., hospital room number or street address.

Each specimen must have a securely affixed label with the following information:

- The patient's name written exactly as it appears on the test requisition (e.g., Doe, Jane)
- A second patient identifier as noted above

If the label is handwritten, use a ballpoint pen. Do not use a felt tip pen. If glass slides are submitted, use a pencil for labeling the frosted end. Two identifiers are preferred, although patient's name alone is acceptable.

When using one of our electronically generated test requisitions, place the label lengthwise on the tube. When submitting a specimen in a container other than the tube used to draw the sample (e.g., transfer vials), also indicate specimen type on the label (e.g., serum, plasma, urine). When submitting specimens for microbiological testing (e.g., cultures, bacterial antigen, microscopic examination), the nature and anatomic source of the sample and the specific organism(s) to be detected, if any, should be specified.

Test Requisition

Specimens must be accompanied by a paper requisition, prepared either by hand or printed from an electronic ordering system. At a minimum, the requisition should contain the following information:

- Adequate patient identification (e.g., name, address, telephone number, medical record number)
- Patient gender
- Patient date of birth, or age
- Name and address of physician ordering the test
- Test(s) requested
- Date of specimen collection, when appropriate
- Source and type of specimen and time of collection, when appropriate
- Clinical information, when appropriate

Complete the "Patient Information" and "Insurance Information" sections on the requisition. Select the tests to be performed. Legibly print patient information and indicate with a check mark which party will be responsible for payment in the "Bill To" section of the requisition. Enter the ICD diagnosis code that reflects the patient's symptoms, condition, or diagnosis and provide medical justification for the tests ordered. Complete billing information.

When ordering **tests in a series** (e.g., growth-hormone stimulation, glucose tolerance):

1. Use one test requisition.
2. Label each specimen with the patient's name, date and time of collection, or site (if applicable).
3. Write the number of specimens on the test requisition.
4. Submit all specimens within a series together in one specimen bag.

Specimens that are improperly labeled will be rejected.

Irreplaceable Specimen Handling

We define an irreplaceable specimen as one which requires an invasive procedure for specimen collection, or one that cannot be recollected. This would include:

- Tissue biopsies or bone marrow submitted for testing (other than routine histopathology)
- Fine needle biopsies / aspirations
- Body cavity fluids (amniotic, pleural, synovial, ascites)
- Products of conception
- Lavages, washings or brushings
- Cerebrospinal fluid
- Cord blood
- Kidney stones
- Meconium for drug screening

1. Place the collected specimen into the front pocket of the purple bag labeled "Irreplaceable Specimen."
2. Fold the requisition and place it into the rear pocket of the bag so the barcode label is viewed in the envelope window; this is critical to enable tracking.
3. Your specimen will be tracked accordingly.

Purple Bag for Irreplaceable Specimens

Notes:

- The current routine tissue tracking process for histopathology will not change. Introduction of the purple bag applies to all other irreplaceable specimens.
- If you have run out of your supply of Irreplaceable Specimen bags and have a specimen to submit to the laboratory, please place the specimen and requisition into a routine bag that is separate from other routine specimens for pickup. Inform the Logistic staff that it

is an Irreplaceable Specimen, so it may still be tracked as such during transport into the testing laboratory.

4. When ordering through our Quanum site for Healthcare Professionals, please use the purple bag, as well as, the “Irreplaceable Specimen” labels.
5. For Nichols direct clients, place the purple bag containing the irreplaceable specimen inside a routine specimen bag with the appropriate Nichols location. Ensure that the proper temperature bag is selected.

2 Options to Request Irreplaceable Specimen bags

- Order through Quanum for Healthcare Professionals (supplies section)
- Call Client Services at 1-866-**MYQUEST (1-866-697-8378)**; select Option #1, followed by Option #4, and ask for Item 170704

Packaging

The following are the minimum specimen packaging guidelines that should be followed when submitting specimens using one of our couriers.

1. Ensure that all specimen container caps and lids are properly tightened to prevent leakage.
2. Properly complete the requisition.
3. Collect the specimen(s) and transfer to a proper transport container, if needed. Double check the specimen container to ensure that the device is not beyond its stated expiration date.
4. If using a manual test requisition, remove a self-stick label from the bottom of the pre-printed paper test requisition and affix this label to the specimen transport container. Place on the container so that the label does not cover the handwritten patient name.
5. Fold the top copy (original) of the test requisition in half widthwise (top to bottom) with the patient’s name and bar code facing out. Retain the second copy for your files.
6. The specimen transport bag has two pouches. Place the specimen container(s) in the front pocket. Insert the requisition into the rear pocket The requisition bar code must be visible through the bag to allow for proper scanning.
7. Frozen specimens should be transported in plastic screw-cap containers only. Frozen specimens must be placed i**n a separate specimen bag** along with **a separate test requisition. Frozen specimens cannot be split for other tests.** If more than one test is ordered on a single frozen sample, we will call you to authorize which of the tests ordered you want performed before testing can proceed.
8. Remove the protective strip and seal the specimen bag. The protective strip must not obstruct the bar code. This will protect the test requisition from leakage and help ensure that the patient information can be entered directly into the laboratory computer by scanning of the bar code.
9. If the specimen has been classified as an “infectious substance,” transport in a bag designed to withstand 95kPa of pressure to meet the ICAO/IATA and DOT requirements. These boxes are available from the local laboratory (see the Infectious Substances in the **Microbiology** section). Please inform Quest Diagnostics prior to or at the time of our Logistics Representative pickup, so that proper transport arrangements can be made.
10. Any updates to these guidelines (or to the specimen transport supplies) will be communicated through your local sales or logistics representative.

Holding and Securing Specimens

While awaiting pickup by one of our Logistics Representatives, maintain specimens at room temperature or on cold packs, unless otherwise noted under the “Transport Temperature” or other specimen requirement in this section or in the **General Test Listing** section.

We will provide a lock box for specimens awaiting pickup by one of our Logistics Representatives. However, customers are responsible for the security of specimens prior to pickup.

Frozen Specimens

Frozen specimens must be transported in insulated containers surrounded by an ample amount of dry ice to keep the specimen frozen until it reaches the laboratory. Thawed specimens are unsuitable for analysis. In the event a thawed specimen is received, you will be asked to resubmit an adequate specimen.

If you would like more information about sending specimens to us, please contact your Client Service Representative. Any updates to these guidelines will be communicated through the Laboratory Update and/or by your local Sales Representative.

Needles, Sharps or Medical Waste

Do not send any needles or other sharp or breakable objects. Do not send medical waste as a diagnostic specimen; it may violate the law and create a health hazard. Properly discard used needles or other sharps prior to transport.

Please note that for tests requiring the submission of syringes, the needle must be removed and the syringe capped before sending to the laboratory. Ensure that there is no leakage from or visible contamination outside the specimen container.

Blood, Serum or Plasma

Phlebotomy

Most blood specimens can be obtained using routine phlebotomy techniques; however, there are some exceptions. The use of a tourniquet can cause stress and is not recommended in some cases. Patients should be instructed not to clench their fist(s) prior to or during the phlebotomy procedure as this may alter some of the patient's laboratory results, such as the concentration of potassium in serum. The patient's posture (sitting, standing or supine), or the time of day of phlebotomy can be important factors for some tests (e.g., therapeutic drug monitoring and hormone tests). If in doubt, please consult this section and the **General Test Listing** section of this Directory before scheduling the patient for phlebotomy. **The inside front and back covers of this Directory display blood collection tube types and important details of proper phlebotomy technique.**

Serum, Plasma or Whole Blood Collection

Draw blood in the color-coded Vacutainer® tube indicated in the alphabetical test listing. For serum or plasma, draw approximately 2 1/2 times the requested volume. For serum, completely fill the Vacutainer® and allow the blood to clot in an upright position for at least 30 minutes, but not longer than 1 hour before centrifugation. For plasma and whole blood, completely fill the Vacutainer® whenever possible to eliminate dilution from the anticoagulant or preservative and immediately mix the blood by gently and thoroughly inverting the tube 5 to 10 times. Separate plasma by centrifugation. Transfer the serum, plasma, or whole blood to a plastic transport tube (see the **Standard Maximum Blood Draw for Patients Under 14 Years** chart for pediatric collections). To prevent injury and exposure to potentially infectious material, do not ship frozen serum, plasma, or whole blood received in glass tubes or SST® (glass or plastic).

The color-coded Vacutainer® tubes on the inside cover are recommended unless otherwise indicated in the alphabetical test listing. Vacutainer® tubes are designed for use for both Pediatric and Adult populations.

Handle all biologic samples and blood collection "sharps" (lancets, needles, Luer adapters and blood collection sets) according to the policies and procedures of your facility. Obtain appropriate medical attention in the event of any exposure to biologic samples (for example, through a puncture injury), since they may transmit viral hepatitis, HIV, or other infectious diseases. Use any safety engineered single use needle protector, if the blood collection device provides one. Reshielding/recapping of used needles is prohibited. Discard any blood collection "sharps" in biohazard containers approved for their disposal.

Pediatric Collection Volumes

When infants and children are to be drawn for laboratory testing, consideration should be given to collect the necessary and minimum volume needed for requested tests. To ensure that the circulatory integrity of the younger patient is not compromised, follow the recommended maximum draw volumes in the following table.

Standard Maximum Blood Draw for Patients Under 14 Years

Weight (lbs)	Weight (kg)	Maximum Amount Drawn at One Time (mL)	Maximum Amount Drawn at One Month (mL)
6.0–7.9	2.70–3.62	2.5	23
8.0–9.9	3.63–4.53	3.5	30
10.0–15.9	4.54–7.25	5	40
16.0–20.9	7.26–9.52	10	60
21.0–25.9	9.53–11.78	10	70
26.0–30.9	11.79–14.05	10	80
31.0–35.9	14.06–16.32	10	100
36.0–40.9	16.33–18.59	10	130
41.0–45.9	18.60–20.86	20	140
46.0–50.9	20.87–23.12	20	160
51.0–55.9	23.13–25.39	20	180
56.0–60.9	25.40–27.66	20	200
61.0–65.9	27.67–29.93	25	220
66.0–69.9	29.94–32.20	30	240
70.0–75.9	32.21–34.46	30	250
76.0–80.9	34.47–36.73	30	270
81.0–85.9	36.74–39.00	30	290
86.0–90.9	39.01–41.27	30	310
91.0–95.9	41.28–43.53	30	330
96.0–100.9	43.54–45.80	30	350

Adapted from Becan-Mcbride K: Textbook Of Clinical Laboratory Supervision, New York, Appleton-Century-Crofts, 1982, with permission.
Phlebotomy Handbook, By Diane Garza and Kathleen Becan-McBride. Copyright 1984 By Appleton-Century-Crofts, East Norwalk, CT.
Nelson Textbook of Pediatrics, 16th Edition, Edited by R.E. Behrman, R.M. Kliegman, and H.B. Jenson, © 2000 by W.B. Saunders Co., Philadelphia, PA.
Saunders Manual of Pediatric Practice, Edited by L. Finberg, Copyright 1998 by W.B. Saunders Co., Philadelphia, PA.
Children's Hospital of Seattle Maximum Allowable Blood Draw Volumes, by Rona Jack, Ph.D.
Maximum Amounts of Blood to be Drawn From Patients Younger than 14 Years, available online at Drgreene.com/article/how-much-blood-too-much-guideline

Whole Blood

The most common test using anticoagulated whole blood is the Complete Blood Count (CBC) and blood morphology, which should be collected using a lavender-top (EDTA) plastic vacuum tube. Other tests might require anticoagulants such as heparin (green-top) or sodium citrate (light blue-top) tube. Follow instructions for the individual test.

Collect an adequate volume of blood. Fill the tube to capacity, since partial filling will result in distortions caused by the osmolality of the anticoagulant. Under filled or overfilled blood collection tubes will not be accepted for testing.

Immediately mix the blood thoroughly with the additives by gently **inverting eight (8) times, or four (4) times when using light blue-top (sodium citrate) tubes.** Incomplete mixing or delay in mixing after phlebotomy will result in microscopic partial clotting of the sample, which can cause spuriously low platelet counts.

Maintain the specimen at room temperature or on cold packs before submitting to our laboratory, unless instructed otherwise by the specimen requirement information in this Directory or by the laboratory. Never freeze whole blood unless it is specifically instructed in the specimen requirement instructions.

If you store cold packs in the freezer, be sure to allow sufficient time for them to warm to refrigerator temperature before placing whole blood specimens near them. To minimize the risk of hemolysis, do not place whole blood specimens in direct contact with cold packs.

Plasma

Evacuated tubes used to collect plasma specimens contain anticoagulant (e.g., light blue-top tubes contain sodium citrate, green-top tubes contain sodium or lithium heparin, lavender-top tubes contain potassium EDTA). Consult the individual test specimen requirements to determine the correct additive/tube to use.

Collect a volume of blood that is 2–2½ times the volume of plasma needed for the test. Fill the tube to capacity, since partial filling will result in dilution of the sample. Do not overfill the tube since it will result in a lower concentration of anticoagulant and activation of clotting. Under filled or overfilled collection tubes may not be acceptable for testing.

1. Following the blood collection, immediately mix the tube by inverting the tube gently **four (4) times when using light blue-top (sodium citrate) tubes** (further inversions might cause activation of clotting factors) and **eight (8) times for all others.**
2. Centrifuge for at least 10 minutes (horizontal) or 15 minutes (fixed-angle) in a device with a rotor diameter and speed [RPM] capacity able to develop a relative centrifugal force equivalent to 1250–1600 times *g* [the force of gravity: 9.80665 m/s^2]. Centrifuges supplied by us can develop a relative centrifugal force equivalent to between 1450 (fixed-angle rotor) and 1600 times *g* (horizontal rotor) when operating within the instrument manufacturer's specifications. If using other centrifuges,

$$g = 11.18 \times r \times \left(\frac{n}{1000}\right)^2$$

determine RCF by referring to the following formula:
where: r = radius in centimeters
n = speed in RPM

3. Transfer plasma to a properly labeled, clean plastic and tightly capped vial and attach the label from the lower portion of the Test Requisition, if applicable. Do not transfer red cells to the vial. Assure cap is firmly in place to prevent leakage.
4. Write "PLASMA" on the plastic screw-cap vial label and on the Test Requisition.

Serum

For most analyses performed on serum other than therapeutic drug monitoring, we recommend the use of plastic Serum Separator Tubes (SST®s) or plain red-top tubes. **Please check individual specimen requirements for restrictions.** SST®s should not be used to collect specimens for drug testing. See Therapeutic Drug Monitoring or Toxicological Analysis in this section.

1. Perform venipuncture.
2. Collect a volume of blood that is 2–2½ times the volume of serum needed for the test in an appropriate collection tube. Fill the tube to capacity, since partial filling will result in higher serum concentration of tube additives, which are known to alter the results of some tests.
3. Immediately mix by inverting the tube gently **no less than eight (8) times and no more than ten (10) times. Less than five inversions will result in incomplete clotting** and incomplete separation of red cells from serum. Hemolysis of even a small number of red cells remaining above the gel in contact with serum will spuriously elevate results of tests, such as serum potassium and LD.
4. Do not remove the stopper at any time. Do not centrifuge immediately after drawing blood. Allow the blood to clot in an upright position for at least 30 minutes, but not longer than 1 hour before centrifugation.
5. Centrifuge for at least 10 minutes (horizontal) or 15 minutes (fixed-angle) at 1250 to 1600 RCF (relative centrifuge force) within 1 hour of collection. Centrifuges supplied by us produce between 1450 (fixed-angle rotor) and 1600 RCF (horizontal rotor) when operating within the instrument manufacturer's specifications. This equates to 3450 and 3380 +/– 50 RPM (revolutions per minute), respectively. If using other centrifuges, determine RCF by referring to the following formula:

where: r = radius in centimeters
n = speed in RPM

$$g = 11.18 \times r \times \left(\frac{n}{1000}\right)^2$$

6. Spun SST® tubes may be submitted without transfer to vials for most room temperature and refrigerated transport temperatures.
7. Transfer the clear serum to a properly labeled and tightly capped vial. Attach the label from the lower portion of the Test Requisition, if applicable.
8. Write "SERUM" on the plastic capped vial label and on the Test Requisition.

Therapeutic Drug Monitoring or Toxicological Analysis

Do not use Serum Separator Tubes (SST®s) for therapeutic drug monitoring, LC/MS/MS or toxicological analysis. The polyester in the separator gel can extract lipophilic substances (most drugs), and can cause a falsely low drug concentration result. Instead, collect the specimen in a red-top tube containing no gel. Collect and process as described above and after centrifugation, transfer the serum with a pipette to a properly labeled plastic vial. Serum should be clear and free of red cells.

Frozen Serum or Plasma Specimens

Serum or plasma specimens need to be frozen when specifically stated. It is essential to freeze the plasma or serum as soon as it is separated from the cells and transferred to a plastic vial. Allow 1-2 mL of space to allow for expansion during freezing. Do not freeze

specimens in glass tubes; **always freeze them in plastic vials or tubes—unless instructed otherwise.** Do not freeze plastic Serum Separator Tubes (SST®s).

Lay the tube at a 45° angle to avoid tube breakage caused by expansion during freezing. Hold the specimens before pickup in a freezer or dry ice container. **Do not use frost-free freezers.** The automatic defrost cycle will cause the specimen to partially thaw, and then freeze again. The results of many tests are affected by such freeze-thaw cycles.

Extreme cold may cause ordinary plastic labels to become brittle and detach from the specimen tube. Use clear tape to secure the label to a specimen transport tube.

I**f more than 1 test is requested on a frozen specimen, split the specimen prior to freezing. Use separate Test Requisitions when submitting more than 1 frozen specimen; frozen and non-frozen specimens must not be submitted on the same Test Requisition. Indicate on the specimen container and on the Test Requisition whether a specimen is plasma or serum.**

If more than 1 test is ordered on a single frozen specimen, only 1 of the tests requested will be performed. We will call you to choose which test you want performed before testing can proceed.

Common Causes of Unacceptable Blood Specimens and Inaccurate Test Results

Hemolysis

Hemolysis occurs when the membrane surrounding red blood cells is disrupted and hemoglobin and other intracellular components escape into the serum or plasma. Hemolyzed serum or plasma varies in color from faint pink to bright red, rather than the normal straw color. Grossly or moderately hemolyzed specimens may necessitate a new specimen for some tests. Even slight hemolysis that might not be obvious on visual examination of the serum, or plasma, may significantly alter certain test results (e.g., serum potassium, serum LD). Refer to the **General Test Listing** section for the particular test to determine the effect of hemolysis.

Hyperbilirubinemia

Icteric serum or plasma varies in color from dark to bright yellow, rather than the normal straw color. Icterus may affect certain test results and might necessitate a new sample to assure results of diagnostic value.

Turbidity (Lipemia)

We recommend that patients fast for 9–12 hours before a blood specimen is obtained. Eating prior to blood collection produces a transient presence of fatty substances (lipids) in the blood resulting in turbid, cloudy or milky serum. Moderately or grossly lipemic specimens may alter certain test results (see Fasting Requirements in the **Patient Preparation and Specimen Transport** section).

Urine

Urine Collection

Many urine chemistry tests require a 24-hour collection. Record on the Test Requisition any medications that the patient is receiving. If a preservative is required, it is important that the designated preservative be in the urine collection container at the start of the collection. When the 24-hour urine output is less than 1 liter, 4 grams of boric acid can be used when boric acid is the specified preservative or 10 mL of 6N HCl can be used when HCl is specified. The patient (or responsible individual) should be cautioned that the preservative may be toxic and caustic, and not to spill or discard the preservative.

On the day of the collection, discard the first morning urine void, and begin the collection after this void. Collect all urine for the next 24 hours so that the morning urine void on the second day is the final collection. Measure and record the total urine this volume collected on the Test Requisition and on the urine transport vial (see Pediatric Specimen Tubes below). After mixing the container well, transfer the requested volume into the labeled urine transport vial. Do not send the entire urine collection.

Random (Spot) Urine

The normal composition of urine varies considerably during a 24-hour period. Submit a first morning voided specimen whenever possible because it has a more uniform volume and concentration; its lower pH helps preserve formed elements. To reduce contamination, the specimen submitted should be a “mid-stream” sample. Urine for pregnancy testing should be first morning void, or a random specimen with a specific gravity of at least 1.010. Note the time of collection of the specimen on the Test Requisition and on the container label.

For some urine tests, there are dietary restrictions. For others, some drugs must be avoided prior to obtaining the specimen. This information is included as part of the specimen requirements for the individual tests in the **General Test Listing** section in this Directory.

Since the concentration of urine varies widely, a convenient way of normalizing test results is to divide the result by the concentration of creatinine in the same aliquot. The amount of creatinine excreted daily in the urine is fairly constant (around 1 gram per day; see Creatinine, 24-Hour Urine in **General Test Listing** in this Directory) and thus, the amount of creatinine in a random/spot sample is a good estimate of the fraction of the total daily urine volume that the random/spot sample represents. For specific urine tests that are reported as a creatinine ratio, see **General Test Listing** in this Directory.

Urine Chemistry Tests

Table 1: Preservatives and Requirements

Test Name	Test Code: Random Urine with Creatinine	Test Code: Random Urine without Creatinine	Test Code: 24-Hour with Creatinine	Test Code: 24-Hour without Creatinine	Transport Temperature: Room Temperature	Transport Temperature: Refrigerated	Transport Temperature: Frozen (-15 to -20 °C)	Preservative: 6N HCl	Preservative: Boric Acid	Acid-Washed Container*
Aluminum		6024		14451	P	A	A			R
Amino Acids Screen, QN2	36183					A	R			
Amylase	8464			212	P	A	A			
Antimony	264				P	A	A			R
Arsenic	270			36433		P	A			R
Beryllium	6057				P	A	A			R
Beta-2 Microglobulin	38994	4944				A	P			
Bismuth	6060			37967	A	P	A			R
Cadmium	672			36434	P	A	A			R
Calcium	1633		1635	11313	P	A	A	P		
Calcium, Pediatric	11216				P	A	A	P		
Catecholamines	5244		39627	318	P	A	A	P		
Catecholamines and VMA			39626	8061	P	A	A	P		
Chloride	1645		368	11314	P	A	A			
Chromium	11278		10944		A	P	A			R
Citric Acid	11004		4616	11315		P	A			
Cobalt		37513		14761	A	P	A			R
Collagen Cross-Linked N-Telopetide	36167		36421			P	A			
Copper	15319			365	P	A	A			R
Cortisol, Free, LC/MS/MS			11280			P	A	A	A	
Creatine			592				R			
Creatinine	8459		381		P	A	A	A	A	
Creatinine Clearance(1)			7943		P	A	A	A	A	

*Acid-washed containers are available from your local laboratory. **Refer to entries in General Test Listing for more specific instructions.**

(1) Serum sample and patient height and weight required

R = Required
P = Preferred
A = Acceptable
= Not Available/ Not Applicable

Blood, Urine and Stool

Test Name	Test Code: Random Urine with Creatinine	Test Code: Random Urine without Creatinine	Test Code: 24-Hour with Creatinine	Test Code: 24-Hour without Creatinine	Transport Temperature: Room Temperature	Transport Temperature: Refrigerated	Transport Temperature: Frozen (-15 to -20 °C)	Preservative: 6N HCl	Preservative: Boric Acid	Acid-Washed Container*
Cystine, QN	401						R			
Delta Aminolevulinic Acid		6301		219		P	A	A		
Gold				494	P	A	A			R
Heavy Metals without Cadmium[2]	7507			36438	A	P	A			R
Heavy Metals with Cadmium[2]	15110			35386	A	P	A			R
Heavy Metals Comprehensive Panel[2]	14573			37081	A	P	A			R
Homovanillic Acid (HVA)	6346		39527	530	P	A	A	P		
17-Hydroxycorticosteroids			15202			P	A	A	P	
5-Hydroxyindoleacetic Acid (5HIAA)	1648		39625	523	P	A	A	P		
Immunofixation (IFE)		213			P	A	A			
Kappa Light Chains[3]		34811				P				
Kappa/Lambda Light Chains, QN[3]		34318		17300		P				
Kappa Light Chain, Free		15076				A	P			
Kappa/Lambda Light Chains Free with Ratio		11233			P	A	A			
17-Ketosteroids			15201			P	A	A	P	
Lambda Light Chains, Total[3]		15087			P	A	A			
Lead	601			36440		P	A			R
Lipase		731			P	A	A			
Magnesium	6179		625	11322	P	A	A	P		
Magnesium, Pediatric patient	11220				P	A	A	P		
Mercury	637			36441		P	A			R
Metanephrines, Fractionated, LC/MS/MS	14961			14962	P	A	A	P		
Microalbumin	6517	17674	15281	4555	P	A	A			
Molybdenum[4]	10486				P	A	A			R
Myoglobin		661					R			
Nickel	5215			36443		P	A			R
Organic Acid Full Panel, QN	90561						R			

*Acid-washed containers are available from your local laboratory. **Refer to entries in General Test Listing for more specific instructions.**

(2) Refer to specific listing for the analytes tested
(3) Refrigerated - stable for 72 hours
(4) Collect specimen at the end of patient's work shift

R = Required
P = Preferred
A = Acceptable
= Not Available/ Not Applicable

Blood, Urine and Stool

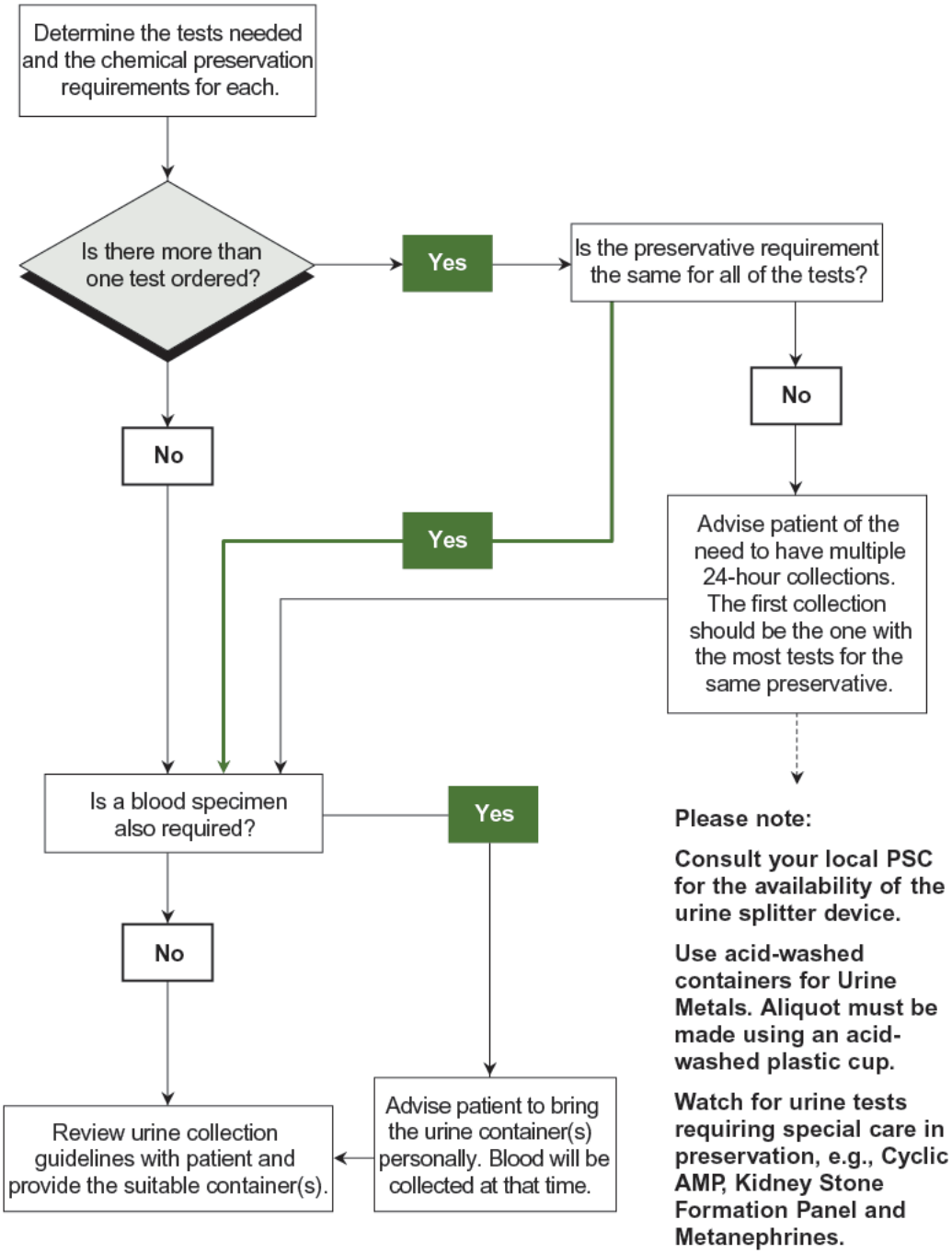
Test Name	Test Code: Random Urine with Creatinine	Test Code: Random Urine without Creatinine	Test Code: 24-Hour with Creatinine	Test Code: 24-Hour without Creatinine	Transport Temperature: Room Temperature	Transport Temperature: Refrigerated	Transport Temperature: Frozen (-15 to -20 °C)	Preservative: 6N HCl	Preservative: Boric Acid	Acid-Washed Container*
Osmolality		678			P	A	A			
Oxalic Acid			682	11318	P	A	A	P		
Oxalic Acid, Pediatric	11222				P	A	A	P		
Phosphate/Phosphorus, Inorganic	1696		719	11319	P	A	A	P		
Phosphate, Pediatric	11215				P	A	A	P		
Porphobilinogen(5)		6329		726		P	A			
Porphyrins, Fractionated(5)		36592		729		P	A			
Potassium	8347		734	11316	P	A	A	A	A	
Protein, Total and Protein Electrophoresis	8525		750		P	A	A			
Protein Electrophoresis, Scan	2971		1169		P	A	A			
Protein, Total–Urine	1715	14523	757	11320	P	A	A			
Selenium	16867			16866	P	A	A			R
Sodium	8514		838	11317	P	A	A	A	A	
Specific Gravity		3190			P	A	A			
Thallium	8835			37124	A	P	A			R
Tin		6325			P	A	A			R
Urea Nitrogen				973		P	A			
Uric Acid	1744		907	11321	P	A	A			
Uric Acid, Pediatric	11217				P	A	A			
Urinalysis with Reflex to Microscopy		7909			P	A				
Vanadium(5)	6350				P	A	A			R
Vanillylmandelic Acid (VMA)(6)	1710		39517	934	P	A	A	P		
Zinc	16502			946	P	A	A			R

*Acid-washed containers are available from your local laboratory.
Refer to entries in General Test Listing for more specific instructions.

(5) Protect from light
(6) Drug or dietary restrictions may apply

R = Required
P = Preferred
A = Acceptable
= Not Available/ Not Applicable

24-Hour Urine Collection: Requirements for Multiple Tests



NOTE: Refrigerate all 24-hour urine collections over the entire collection time.

Urinalysis
Specimens must be submitted in a **yellow-top** preservative tube. This tube cannot be used for urine culture. To reduce contamination, the specimen submitted for urinalysis should be a mid-stream sample.

A mid-stream urine is the collection of a sample midway through the urination process. To collect the sample, the patient should begin urinating into the toilet. (A woman should hold apart the genital folds of skin while she urinates.) Midway through urination, a cup should be used to collect the urine without stopping the flow of the urine, until the collection cup is 1/2 to 2/3 full. The patient should then finish urinating into the toilet. The sample should immediately be transferred into a yellow-top urine preservative tube.

Urine Cultures
See the **Microbiology** section for specific instructions.

Urine Cytology
For questions pertaining to proper submission of urine specimens, see the **Cytology** section.

24-Hour Urine

Proper collection, preservation and accurate measurement of the volumes of 24-hour urine specimens are essential for accurate test results. Give the patient the clean, labeled container provided by us, and instruct patient not to remove any preservatives (powder, liquid or tablet) that may be in the container. Alert the patient that preservatives are hazardous chemicals and are not to be ingested. Patients should be carefully instructed in the correct collection procedure.

Instruct the patient to carry out steps 1-6 below and return the 24-hour collection to your office for specimen pick-up.

1. Unless the physician indicates otherwise, instruct the patient to maintain the usual amount of liquid intake, but to avoid alcoholic beverages.
2. During the collection period, place the 24-hour urine container (with appropriate preservatives, if applicable) provided by us in a refrigerator or cool place to prevent growth of microorganisms and possible decomposition of urine constituents. See specimen requirements for the individual tests in **General Test Listing** in this Directory for information on required preservatives, if any.
3. Have the patient empty his/her bladder in the morning into the toilet (not to be included in the 24-hour collection). Write the date and time of voiding on the container label.
4. Collect the patient's next voiding and add as soon as possible to the 24-hour container. For trace element analysis (e.g., heavy metals), the patient should urinate directly into the 24-hour container to avoid contamination of the sample.
5. For analyses requiring the addition of 6N HCl, add the acid at the start of collection. Have the patient collect each void in a smaller container and carefully pour the urine into the 24-hour container to avoid splashing and possible acid burns.
6. Add all subsequent voidings to the container as in (4). The last sample collected should be the first specimen voided the following morning at the same time as the previous morning's first voiding, which was discarded.

Once the urine collection is complete and received back in your office:

7. Mix the contents of the container(s) gently but thoroughly. Examine to help ensure that the contents appear homogeneous.
8. Measure and note the total volume of urine. Use the graduated markings on the container to determine the volume.
9. Transfer the required aliquot to the plastic screw-cap specimen container provided by us.
10. Record the total 24-hour urine volume on the specimen container and on the Test Requisition (Field # 7 on the sample physician requisition; see **Test Requisition Information** section) before sending to the laboratory.
11. If necessary, refrigerate the aliquot until it can be sent to the laboratory. For frozen specimens, freeze before packing in dry ice for transport. (See **Frozen Serum or Plasma Specimens** in this section.)
12. Ensure the lid is properly tightened to prevent leakage.

Stool

Stool Collection for Chemistry Tests

1. Carefully read the specimen requirements in the **General Test Listing** section.
2. Collect timed specimens in a pre-weighed, well-sealed container (available from us).
3. At the end of the collection period, determine weight of the total sample.
4. Mix contents of timed sample well to obtain a homogeneous mixture.
5. Remove the required aliquot to a screw-cap plastic container and seal well.
6. Record the total weight and collection time of the sample on both the sample container and the Test Requisition.

Do not send the entire collection unless instructions for a specific test indicate otherwise.

Stool Cultures and Other Microbiological Tests: See the **Microbiology** section in this Directory.

Stool Samples for Ova and Parasites: See the **Microbiology** section in this Directory.

Test for the Detection of Blood in Feces

No special diet, drug or supplement avoidance is needed for the InSure® ONE test.

InSure®

Preparing to Collect Samples

- Read collection instructions inside of the kit before beginning testing.
- You do not have to avoid any foods or medications.
- Eating fruits and vegetables can increase test accuracy.
- Check the "Kit Contents" list to be sure you have all the components.
- If you have *cleaners* or *bluing agents* in your toilet bowl or tank, Remove them and flush the toilet twice.

Warnings and precautions

Some conditions may cause a wrong result. You should not perform this test if:

- The Test Card has passed its expiration date.
- The Collection Kit is damaged, dirty or appears to have been tampered with in any way.
- You have hemorrhoids that are bleeding.
- You have blood in you urine, or you see blood in the toilet bowl. In this case, contact your doctor.
- It is three days before, during or three days after your menstrual period.
- You have any bleeding cuts, or wounds, on your hands.
- Your toilet bowl water is saltwater, or rusty.

STEP 1

- Take these instructions, Brush Kit and Test Card into the bathroom.
- Flush the toilet ***BEFORE*** your bowel movement.

STEP 2

- After your bowel movement, ***DO NOT PLACE USED TOILET PAPER IN THE TOILET BOWL.*** Instead, use one of the blue waste bags provided.
- ***DO NOT FLUSH*** the toilet after your bowel movement

STEP 3

- Lift the flap marked "LIFT HERE FOR SAMPLE" on the Test Card to uncover the small white squares marked "1" and "2."

STEP 4

- ***Using one of the blue brushes, gently brush the surface of the stool for about 5 seconds.***
- If the stool is loose, simply stir the water around the stool.
- Remove the brush from the water and gently shake it once to remove excess water and any clumps of stool.

STEP 5

- Transfer a sample of the **WATER ONLY** by gently dabbing the bristles of the brush onto the small white square labeled **"1"** on the Test Card for about 5 seconds (some staining of the square may occur).
- Discard used brush in one of the blue waste bags and throw away.

STEP 6

- Using the second blue brush, repeat step 4 and transfer a second **WATER** sample to the test card by gently dabbing the bristles of the brush onto the small white square labeled **"2"** for about 5 seconds.
- Discard used brush in the other blue waste bag and throw away in your trash.

STEP 7

- **Print your name, date of birth, and the date the sample was collected on the removable label.**
- **REMEMBER TO INCLUDE DATE OF SAMPLE COLLECTION.**
- Peal off the label and use it to reseal the flap making sure the label is placed within the dotted lines.

STEP 8

- Complete the Reply Form.
- Place the test card and reply form in the postage-paid mailing envelope provided.
- If your medical professional or the laboratory provided you with a pre-printed test requisition form include the form also in the return envelope.

STEP 9

- Return via US mail immediately using provided envelope.
- Test Card must be tested at the laboratory within 14 days of sample collection.
- The results will be provided by your medical professional.

An alphabetical listing is included at the end of this section.

General Submission Requirements

Successful isolation of potential pathogens depends upon specimen selection and collection, proper transport and timely delivery to the laboratory.

Whenever possible, specimens should be obtained before antibiotics or other antimicrobial agents have been administered.

Please indicate the source of the specimen on the test to better assist in your diagnosis and treatment of the patient. Please see **General Test Listing** in this Directory for additional instructions.

Not all specimens contain clinically significant pathogens. Organism identification and antimicrobial susceptibility studies will be performed only on appropriate isolates at an additional charge.

- Specimen collection from normally sterile sites requires a needle puncture or a surgical procedure to decrease the chance of contamination. Do not submit syringes with needles attached. If a syringe must be submitted, remove needle, expel air and recap syringe. Tape syringe plunger in position to prevent accidental movement.
- Because specimens are frequently and routinely collected from sites that are not sterile, the quality of culture results is directly dependent on the collection technique for urine, sputum, specimens from the nasopharynx and wounds.
- Specimens from sites such as skin, mucous membranes and the gastrointestinal tract are populated by indigenous microflora. Microbiological tests will be directed at the isolation of specific pathogenic agents.

Temperature

Appropriate storage and transport temperatures for clinical specimens are essential for successful isolation of organisms. If room temperature is required for a specific test, do not place the specimen in an environment where it would be exposed to extremes of heat or cold, so that temperature sensitive organisms have a better chance of survival. Refrigerated temperature can be maintained using a household or commercial refrigerator (that is not used to store food) or a cooler with cold packs. If refrigeration is requested, do not freeze the specimen. Frozen samples may be stored in a household or commercial **non frost-free freezer** (that is not used to store food) at –20 °C until transported to the laboratory. When freezing certain Virology specimens or specimens for *C. difficile* Toxin analysis, maintain them until transport and during transport at less than or equal to -70 °C, which is best done using dry ice. Cultures for Cytomegalovirus must always be frozen at less than or equal to -70 °C (dry ice) when sent to a referral lab.

Smear Preparation

For some specimens, smears may be prepared at the time of collection and sent to the laboratory for Gram stain or Direct Fluorescent Antibody (DFA) stain. The Gram stain may be very useful for the rapid, presumptive identification of infectious agents and to judge the quality of the accompanying specimen. DFA stains are helpful in rapidly identifying the presence of antigens from certain specific organisms. When submitting a smear:

- Handle the specimen using universal precautions, including wearing exam gloves and using a biological safety cabinet when there is chance of aerosolization of the specimen.
- Prepare smears by placing a small drop of material from the specimen in the center of a clean, new glass slide. Spread the sample over a large enough area of the slide to form a thin film. Proper preparation should lead to a monolayer of cellular material and bacteria that are still dense enough to readily demonstrate organisms.
- In general, do not attempt to make smears from body fluids that require centrifugation.
- Sputum Specimens–Select the most purulent or most blood-tinged portion of the sample using sterile loops, rayon swabs, sticks or a pipette. **The use of cotton-tipped swabs for smear preparation is not optimal.** Prepare a thin smear on a clean glass microscope slide and allow it to air dry.
- If the specimen is collected with a swab for both stain and culture, perform such collection procedures using two swabs. Use one swab to inoculate culture transport media and the second swab to make the smear. Roll the swab gently across the slide to avoid destroying host cells and distorting bacteria. Do not submit the second swab for culture since slides are not usually sterile.
- Air-dry smear. Do not fix with cytology fixative.
- Send smear in a plastic slide holder, or if none is available, in a cardboard slide holder.

Bacteriology Swab and Vial Transport Systems

See the *Specimen Transport Device* brochure available through your local Quest Diagnostics laboratory.

- We currently supply rayon-tipped swabs in transport systems containing Amies liquid or gel transport media, in plastic tubes with different colored caps. The swabs in gel transport systems (blue cap) may be used to culture for aerobic and/or anaerobic organisms. Liquid transport systems (red cap) are intended for use only with aerobic culture or antigen detection tests and should not be used for anaerobic culture. After collection, plunge the swab into the liquid or gel transport medium to prevent drying.
- For many tests, we may also provide a new collection swab device called an “ESwab” (elution Swab) which features a flocked nylon tip that acts as a small brush. The ESwabs are simply snapped off into the screw-cap vial provided with multipurpose transport medium. There is also a mini-tip version that can replace both yellow- and green-cap swabs and has also been validated for Bordetella cultures without the use of Regan-Lowe medium. Some of our body site specific viral specimen collection kits also feature this flocked nylon swab.
- Anaerobe Systems tubes and vials are appropriate for liquid or tissue specimens submitted for aerobic and/or anaerobic cultures. See more detailed instructions in **Anaerobic Cultures** in the alphabetical test listing.
- Mini-tip culture swabs with a thin flexible wire shaft are used to collect nasopharyngeal and male urethral specimens.

- Some organisms require use of swabs constructed of certain materials and special transport media, e.g., use only sterile rayon, Dacron® or flocked nylon swab for *Bordetella pertussis*.
- Tests for the detection of bacterial nucleic acids require special collection and transport systems.

Transport of Infectious Substances

Adherence to Regulatory Requirements

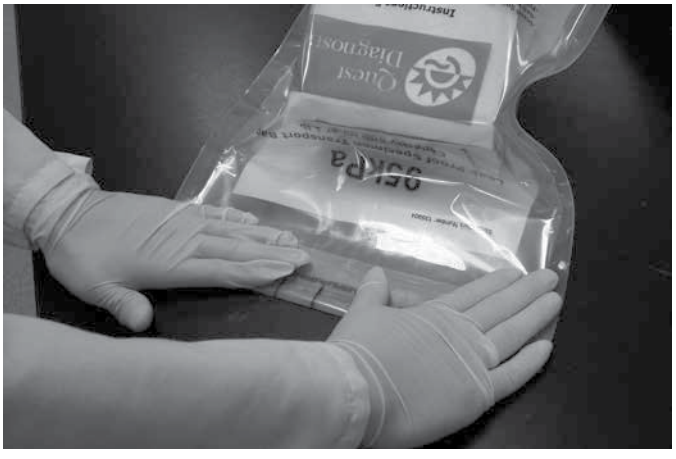
When sending a specimen suspected of containing a human, animal or plant pathogen, please follow all current legal and regulatory requirements for interstate and air transportation for biohazardous material. The requirements include packaging the organism in a double-walled container.

Labeling and Packaging

Indicate the organism suspected and relevant patient history on the requisition form. **Known "Select Agents" must not be submitted to Quest Diagnostics.**

For transportation using Quest Diagnostics Logistics:

If	Then
Routine bacterial isolates	Submit in a screw-cap agar slant using Trypticase soy agar with or without 5% sheep blood or chocolate agar or in an appropriate bacterial transport swab system such as a blue-cap gel swab.
Fungal specimens	Submit in a screw-cap agar slant of Sabouraud Dextrose agar.
Anaerobic organisms	Submit in Chopped Meat Glucose or Thioglycollate Broth.



- All tubes must be appropriately labeled, tightly capped and sealed with tape or parafilm. Do not submit isolates on petri dishes.
- Use a separate bag for each isolate.
- Each isolate must be placed in a Tape Seal 95kPa Specimen Transport Bag with the absorbent sheet pre-inserted in the bag.
- Insert the specimen into the bag through the slit. Remove the adhesive backing from the tape seal area. Fold bag at slit and align lines so that they correspond.
- To the seal bag, place the bag on a solid, flat surface. Press hard at the center of the tape seal area while maintaining this pressure, slide hands outward to the edges to seal.
- Please use an "infectious substance" label on the bag.

USPS or Commercial Carrier

Commercial transport of specimens (e.g., FedEx®, United Parcel Service (UPS®), DHL®, commercial airline) or U.S. Postal Service (USPS) is subject to various carrier requirements for documenting the contents of any package and for packaging and labeling.

Air Carrier: Follow any additional packaging and documentation requirements according to carrier's instructions and/or those issued by the IATA, including Packing Instruction. U.S. Postal Service: Label, package and document according to U.S. Postal Service instructions (note that the U.S. Postal Service may not accept certain types of specimens).

Because different parts of the U.S. Department of Transportation (DOT) regulations apply based upon the mode of transport, check with your carrier or transportation expert about application of the DOT rules prior to submitting. Packages originating outside of the United States must meet any applicable legal requirements of the country of origin and the U.S. Customs and/or Centers for Disease Control and Prevention (CDC) requirements for entry into the United States.

Quest Diagnostics and its affiliates will not be responsible for any liability attributable to the shipper's improper actions or failure to comply with any applicable legal or regulatory requirements. The outline of transportation requirements herein is only a summary of current law. It is provided with the understanding that you seek competent expert or legal advice about regulatory compliance, when applicable. In some cases, these requirements include employee training on these regulations. Quest Diagnostics is not responsible for this training. Quest Diagnostics reserves the right to refuse to accept any shipments that fail to meet legal or regulatory requirements and those that pose a safety hazard to its employees.

Infectious Substances and Select Agents

Under the 2006 rules most specimens for clinical testing may be classified as either (high to low risk:)): Category A Infectious Substances, Category B Infectious Substances or Exempt specimens. Category A Infectious Substances are infectious substance which are transported in a form that, when exposure to it occurs, is capable of causing permanent disability, life-threatening or fatal disease in otherwise healthy humans or animals. Ebola virus is an example of a Category A Infectious substance. See IATA

3.6.2.2.2.1 and HYPERLINK "https://www.iata.org/whatwedo/cargo/dgr/Documents/packing-instruction-650-DGR56-en.pdf" Packing Instruction 650 and 49 CFR 173.134 and 173.196.; Category B Infectious Substances are infectious substances which are not generally capable of causing permanent disability or life-threatening or fatal disease in otherwise healthy humans or animals when exposed. Category B Infectious Substances are Infectious Substances that are not considered to be Category A Infectious Substances.

"Exempt" specimens that are not suspected of containing an infectious substance. DOT stated in their Federal Register notice (HYPERLINK "https://www.gpo.gov/fdsys/pkg/FR-2006-06-02/pdf/06-4992.pdf" 71 FR 32258) that exempt specimens include

[H]uman or animal sample transported for routine testing when the testing is not related to the diagnosis of an infectious disease and when there is no reason to suspect the sample is infectious. Routine screening tests include:

(1) Blood or urine tests a doctor may order as part of a routine medical examination to monitor cholesterol levels, blood glucose levels, hormone levels, or prostate specific antibodies (PSA);
(2) blood or urine tests to monitor liver or kidney functions in individuals who are not known to have an infectious disease and who are following a particular drug therapy regime;
(3) blood or urine tests conducted for insurance or employment purposes and/or intended to determine the presence of alcohol or drugs;
(4) DNA tests; and
(5) pregnancy tests. Routine tests for diagnoses for other than the presence of pathogens include biopsies to detect cancer and antibody titre testing.

Those needing to transport infectious substances should check with the DOT, the U.S. Centers for Disease Control and Prevention (CDC) or public health authorities to determine classification of the specimen and, correspondingly, how the specimen should be packaged for transport. In addition, some air carriers may not consider certain specimens as suitable for air transport.

Select Agents

Specimens *known* to contain select agents must not be sent to Quest Diagnostics. Certain biological agents have a special classification and are in the form of organisms, virus or toxins, known to have a potential use as agents of bioterrorism as defined by the U.S. Department of Agriculture and Centers for Disease Control and Prevention. The most current information, including a list of select agents may be found at www.selectagents.gov.

These agents require special notification and handling and must NOT be sent to Quest Diagnostics. **A known select agent or toxin may only be sent or transferred to individuals or entities (such as certain medical laboratories) registered to possess, use, or transfer that agent or toxin.** Clients must not submit known Select Agents to any Quest Diagnostics laboratory.

Most clinical samples (i.e., blood, wound, etc.) from patients potentially infected with Select Agents can be collected and processed by routine Clinical Microbiology procedures. If environmental contamination with a CDC Select Agent is suspected, please contact your local Public Health Department for more details on how to handle this sample type. Do not submit environmental samples potentially contaminated with Select Agents to Quest Diagnostics facilities. Specimens identified as select agents by Quest Diagnostics will generally not be returned.

Importing Specimens

Clients sending specimens from outside of the United States should contact the Quest Diagnostics laboratory before sending the specimen to the Quest laboratory. Among several requirements, importing specimens suspected of containing an infectious substance into the United States requires the receiving laboratory to have a valid CDC Import Permit and be labeled according to CDC requirements in addition to the DOT requirements discussed above. Importing specimens **not** suspected of containing a human pathogen requires a statement to that fact to accompany the specimen.

Specimens containing potential agents of bioterrorism as specified on the Commerce Control List will generally not returned. The Commerce Control List is available from the Bureau of Industry and Security at www.bis.doc.gov.

Specimen Requirements

Note: After Table 3, the tests are organized alphabetically, starting with "Acid Fast Bacilli, Stain Only". Tests may be for bacteria, mycobacteria or fungi.

For each test, specific collection instructions are given. General instructions and precautions are given above. Tests may be grouped where specimen collection is identical to another test.

Acronym	Name
BAL	Bronchial Alveolar Lavage
BGMK	Buffalo Green Monkey Kidney
C&S	Culture and Sensitivity
CJD	Crutzfeldt-Jacob Disease
CMV	Cytomegalo Virus
CSF	Cerebrospinal Fluid
CT	*Chlamydia trachomatis*
DFA	Direct fluorescent antibody
EBV	Epstein-Barr Virus
EDTA	Ethylenediaminetetraacetic acid
EIA	Enzyme immunoassay
ELVIS®	Enzyme Linked Virus Inducible System
GC	Gonococcus (*Neisseria gonorrhoeae*)
HIV	Human Immunodeficiency Virus
HSV	Herpes Simplex Virus
MIF	Merthiolate Iodine Formalin
NP	Nasopharyngeal
O&P	Ova and Parasites
PCR	Polymerase Chain Reaction
RSV	Respiratory Syncytial Virus
SAF	Sodium Acetate Formalin
TMA	Transcription Mediated Amplification
TV	*Trichomonas vaginalis*
UBiT®	*Helicobacter pylori* Urea Breath (infrared) Test
V-C-M	Virus, Chlamydia, Mycoplasma
VZV	Varicella Zoster Virus
Zn-PVA	Zinc-Polyvinyl alcohol

Virology Swab and Vial Transport Systems

1. We provide a multi-microbe specimen transport medium, V-C-M (Virus, *Chlamydia, Mycoplasma*), for the collection and transport of different types of specimens for viral isolation. (This medium will also support transport of *Ureaplasma*.) Store the V-C-M tube at room temperature until inoculated. Collection kits designed for specific anatomical sites are provided exclusively by us and are designed for genital, NP and skin surface specimens.
2. Do NOT use calcium alginate or wooden shaft swabs for specimen collection; use sterile rayon, Dacron® or flocked nylon swab on plastic or metal shafts.
3. Write patient identification information and the source of the specimen on the Test Requisition and on the V-C-M (green-top) transport vial.
4. Refrigerate specimens in V-C-M (green-top) tube immediately after collection.
5. Keep specimens refrigerated for less than 48 hours, until the courier arrives. If a refrigerator is not available, keep specimen on wet ice or "cold packs" until it is picked up.
6. If submission to the testing laboratory will take more than 48 hours, freeze the sample in V-C-M (green-top) tube at –70 °C, or colder, using dry ice. Transport it with enough dry ice to last three days. Freezing at –20 °C is not acceptable.
7. Identify and separate virus isolation specimens from other specimens that are to be transported to the laboratory. Inform the courier as to the nature of specimens, so they may be appropriately transported to the laboratory. Transport refrigerated in a sterile leak-proof container. Do not freeze specimen unless in V-C-M transport medium.

Special Considerations when Collecting Virology Specimens

1. Specimens for virus isolation should be collected when the virus is at its highest concentration, during the acute phase of the illness. Note that virus isolation may not be as sensitive as molecular methods for some viruses.
2. There are clinical syndromes that are generally associated with a particular virus or viruses. For example, vesicles on mucosal membranes are generally associated with herpes simplex virus. We identify influenza A&B, parainfluenza, adenovirus, human metapneumovirus and respiratory syncytial virus, which are commonly associated with upper respiratory tract infection. Therefore, we have designed rapid culture test offerings to target the predominant viruses associated with a syndrome. It is extremely difficult to culture for every possible virus. Virus cultures can be categorized by virus, syndrome or body site. See Guidelines for Specimen and Virology Test Selection by Syndrome at the end of this section.
3. From body fluid and tissue specimens, we culture for HSV, VZV, enterovirus, CMV, influenza A & B, parainfluenza, adenovirus, and RSV using a combination of rapid and conventional culture techniques. For the diagnosis of central nervous system HSV infection, CSF viral culture is not standard of care because it lacks sensitivity; molecular testing is recommended. Some viruses such as parvovirus are non-culturable and detection by molecular testing is necessary.
4. Measles and Mumps virus require a special request.
5. While many viruses can be found in blood in the acute stage of disease, the most common are hepatitis, HIV, parvovirus 19, CMV, EBV or Measles viruses. Most of these agents are usually diagnosed with tests other than culture and the sensitivity of viral culture from a blood specimen is very poor for many of these viruses. Molecular methods including PCR and/or TMA have come to be considered the standard of practice for the detection and/or quantitation of virus in blood. We offer many molecular tests for these agents.
6. Non-culture methods are also available. These include direct detection methods: lateral flow immunoassay or enzyme immunoassay, direct immunofluorescent assay and nucleic acid amplification techniques.

Virus-Specific Cultures Using Rapid Methods

New technology has shortened the length of incubation for many virus cultures. We offer many commonly ordered tests using this new rapid technology as follows:

Herpes Simplex Virus Rapid Culture

HSV and VZV can be isolated by conventional tissue culture methods (as part of an anatomic-specific virus culture) or by rapid culture techniques such as the Enzyme Linked Virus Inducible System (ELVIS® test). With the ELVIS® technique, the specimen is centrifuged onto genetically engineered cells. After 16–20 hours of incubation, a colorless substrate is added to the cells. If the cells are infected with HSV, the enzyme β-galactosidase is induced and accumulates. This enzyme reacts with substrate and turns the cells blue. If typing is also requested, HSV-positive cultures are stained with fluorescein-conjugated monoclonal antibodies that differentiate HSV-1 from HSV-2.

Enterovirus Culture, Rapid Method

Enteroviruses are among the most common viruses infecting humans and are associated with diverse clinical syndromes, ranging from minor febrile illness to severe, potentially fatal conditions (e.g., aseptic meningitis, encephalitis, paralysis, myocarditis, and neonatal enteroviral sepsis) and could be linked with the development of some chronic diseases (e.g., type 1 diabetes and dilated cardiomyopathy). Specimens can be cultured using special cells such as E-MIX CELLS, a mixture of A549 (Human Laryngeal Carcinoma) and genetically engineered BGMK (Buffalo Green Monkey Kidney) cells, both of which are permissive for culturing enteroviruses. In order to isolate all strains of enterovirus, RMK II CELLS, primary Rhesus monkey kidney cells are also utilized. The cell monolayers are inoculated with the clinical specimen in combination with a proprietary Refeed medium. The plates are then centrifuged to enhance the cell-to-virus interaction, and then incubated to allow for viral replication.

Cytomegalovirus (CMV) Rapid Culture

The rapid shell vial method is performed by centrifuging the specimen onto susceptible cells grown on glass cover slips within vials. Approximately 48 hours after inoculation, cells are stained with fluorescein-conjugated monoclonal antibodies specific for CMV early antigen. If positive, a report is generated at this time.

Varicella-Zoster Virus (VZV) (only) Culture

Specimens will be examined for the presence of VZV by rapid shell vial technique. The rapid shell vial method is performed by centrifuging the specimen onto susceptible cells. Approximately 72 hours after inoculation, cells are stained with fluorescein-conjugated monoclonal antibodies specific for VZV.

Influenza A and B Culture and Rapid Viral Respiratory Culture Screen with Reflex

The rapid shell vial method is performed by centrifuging the specimen onto susceptible cells.

Approximately 48 hours after inoculation, cells are stained with a fluorescein-conjugated monoclonal antibody pool of seven respiratory viruses. If this screen is positive, the cells will then be stained with the specific monoclonal antibodies for influenza A and influenza B, parainfluenza 1, 2 and 3, adenovirus and respiratory syncytial virus (RSV).

Table 2: Quick Reference Virus Collection Guidelines by Specimen Type

Autopsy or Biopsy Specimens	Formalin-preserved or fixed-tissue specimens will not be accepted. • Collect fresh tissue using a set of separate sterile instruments. Each specimen need not be more than 1–2 cm in diameter. • Place each specimen into a V-C-M (green-top preferred) or equivalent viral transport medium. If viral transport medium is not available, place tissue into a leak-proof container. Cover with sufficient non-bacteriostatic sterile saline to prevent drying. • If central nervous tissue is submitted, please inform the laboratory if the patient has or is suspected of having Creutzfeldt-Jacob Disease (CJD) by calling the laboratory and also indicating this on the Test Requisition.
Blood or Serum	Blood and serum are not productive specimen sources for the isolation of viruses. Amplified nucleic acid methods (e.g., PCR) are the most sensitive methods available for detection of many viruses in peripheral blood. Culture of cytomegalovirus from blood is not available. We offer amplified nucleic acid methods.
Body Fluids	Refer to Body Fluids and Tissue Virus Culture.
Cerebrospinal Fluid (CSF)	CSF is collected only by a physician under aseptic conditions. After lumbar puncture, slowly drain the CSF fluid into the sterile leak-proof tubes. As a rule, the first tube is reserved for additional non-routine testing. The second tube or third tube should be sent to microbiology. **Exception:** Always send the most turbid tube to microbiology. Use extreme care in the collection of fluid. Do not contaminate, as any isolate from CSF may be considered significant. (Detection of HSV should be performed by molecular testing.)
Cervical (Gynecological) Swab	Swab the endocervix with sufficient pressure to obtain epithelial cells. Use an additional swab to perform a “vulvar sweep.” Break swab tip(s) off into V-C-M transport medium and refrigerate.
Conjunctival/Ocular	Collect samples using sterile rayon, Dacron® or flocked nylon swab with plastic or fine-gauge wire shaft. Do not use calcium alginate, cotton, or wooden shafted swabs which may inactivate the virus. Submerge the swab into Quest Diagnostics-supplied V-C-M transport medium or equivalent. Break, cut or fold the shaft to fit.
Cutaneous or Vesicular Lesion	If a vesicle is present, disrupt the vesicle and collect the fluid with a swab. With the same swab, collect cells from the base of the vesicle by vigorous rubbing. For non-vesicular lesions, remove scab or crusted material. Vigorously swab the base of the lesion to pick-up infected cells. Break swab tip(s) off into a tube of V-C-M transport medium. Refrigerate.

Nasopharyngeal Swab	Immobilize patient's head and insert mini-tipped Dacron® or flocked nylon swab through a nostril. Push forward using gentle downward pressure to keep the swab on the floor of the nasal cavity until the tip reaches the posterior wall of the nasopharynx. Rotate gently for a few seconds and remove. Place swab into a tube of V-C-M transport medium. Refrigerate.
Rectal Swabs	Insert swab 4–6 centimeters into rectum and roll swab against the mucosa. Examine the swab to help ensure that fecal material is not present. Break swab tip(s) off into V-C-M transport medium. Refrigerate.
Respiratory Aspirate or Washings	The quantity and quality of respiratory specimens to be tested can be improved by aspiration through the nose, nasopharynx or oropharynx. Collect aspirates using a #5–8 disposable infant feeding tube attached to a 10 mL syringe or large suction bulb. If material cannot be aspirated, instill up to 5 mL of saline into the nasal passages and re-aspirate to collect washings. As an alternative, use a suction catheter with a mucus trap. Place up to 2 mL into V-C-M transport medium. Refrigerate.
Stool Specimens for Rotavirus	Specimens should be collected as soon after the onset of symptoms as possible. Peak viral counts are reported to occur on days 3–5 after onset of symptoms. Samples collected later may not contain enough rotavirus antigen to produce a positive reaction.
Throat Swab	Vigorously swab tonsillar area and posterior oropharynx using a sterile rayon, Dacron® or flocked nylon swab. Break swab tip(s) off into a tube of V-C-M transport medium. Refrigerate.
Urethral Swab	Insert flocked nylon or moistened mini-tipped swab at least 2 cm into urethral orifice. Rotate gently to obtain epithelial cells. Place swab into a tube of V-C-M transport medium. Refrigerate.
Urine	Obtain a fresh, clean-catch specimen in a clean container. Transfer about 10 mL to a centrifuge tube and centrifuge for at least 15 minutes in a centrifuge supplied by us, which can develop a relative centrifugal force equivalent to between 1450 (fixed-angle rotor) and 1600 x g (horizontal rotor) when operating within the instrument manufacturer's specifications. Transfer about 2 mL, or as much of the sediment as possible, to V-C-M transport medium. Refrigerate.

Table 3: Guidelines for Specimen and Virology Test Selection

This table lists various diseases or syndromes, with respective suspected agents and the required specimen to be submitted. The list is alphabetical by disease or syndrome category. (Preferred specimen types are listed in **bold type**.)

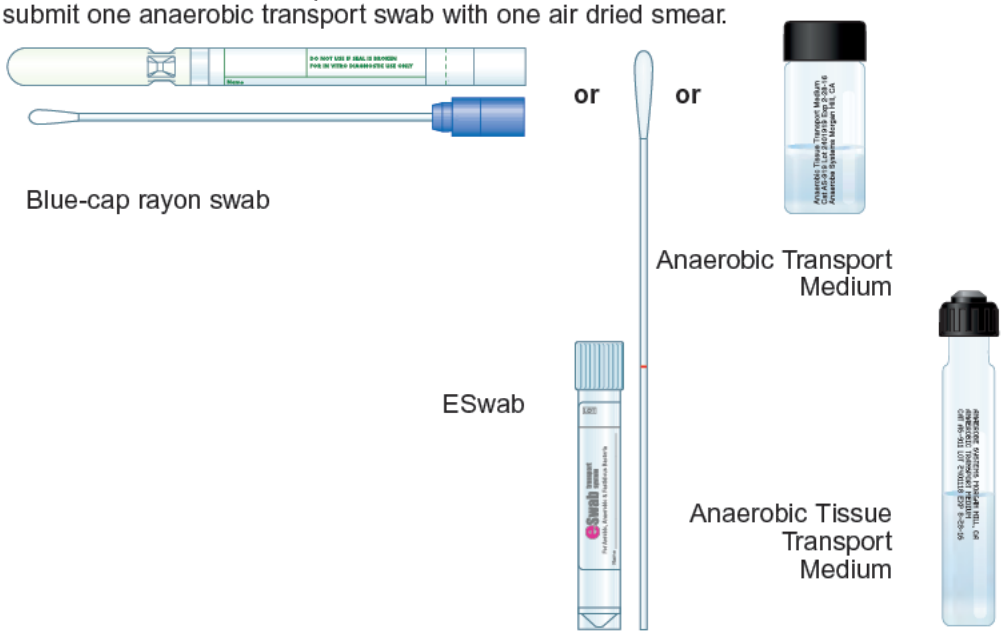
Disease or Syndrome	Suspected Agents	Clinical Specimens
Cardiac		
Pericarditis/Myocarditis	Enterovirus, Influenza, Adenovirus, Parainfluenza, Herpes Simplex Virus Cytomegalovirus (CMV)	Pericardial Fluid, Stool (only for Enterovirus), Throat (HSV) Swab
Pleurodynia	Enterovirus	Stool, Pleural Fluid, Throat Swab
Exanthema and Rashes		
Chickenpox	Varicella-Zoster	**Vesicle Swab,** Throat Swab
Zoster (Shingles)	Varicella-Zoster	Vesicle Swab
Herpes simplex	HSV	Vesicle Swab
Herpangina	Echovirus, Coxsackie A	**Vesicle Swab,** Stool, Throat Swab
Eye Infections		
Conjunctivitis	Adenovirus, Varicella-Zoster *Chlamydia trachomatis*	Conjunctival Swab
Keratitis	Adenovirus, HSV	Conjunctival Swab, Corneal Scraping
Gastrointestinal		
Diarrhea	Rotavirus, Adenovirus 40/41 Enterovirus, Norovirus	Stool
Nervous System		
Aseptic Meningitis	Enterovirus, HSV, Mumps, West Nile Virus	**CSF**
Encephalitis	Enterovirus, HSV, Varicella-Zoster	**CSF**
Perinatal Infections		
"Failure to Thrive"	CMV, HSV HIV	Urine (only for CMV), Throat Swab, CSF, Orifice Swab Blood (PCR testing only)
Cytomegalic Inclusion Disease	CMV	**Urine,** Throat Swab
Herpes	HSV	Vesicle, Mouth, Eye, Throat or Ear Swab, CSF (if indicated)
Pneumonitis	*Chlamydia trachomatis*, CMV	**Respiratory Aspirate,** Nasopharyngeal or Throat Swab
Conjunctivitis	*Chlamydia trachomatis*	Conjunctival Swab
Respiratory		
Upper and Lower Respiratory Infections (including Croup, Viral Pneumonia and Influenza)	Influenza, Parainfluenza, Adenovirus, Enterovirus, Respiratory Syncytial Virus (RSV)	**Nasopharyngeal (NP) Aspirate,** NP Swab, Throat Washing or Swab, Sputum, Bronchial Washing, Bronchiolitis, Bronchoalveolar Lavage
Sexually-Transmitted Diseases		
Cervicitis	*Chlamydia trachomatis*, HSV	Endocervical Swab, Genital Tissue (biopsy)
Epididymitis	*Chlamydia trachomatis*, HSV	Urethral Swab
Non-gonococcal Urethritis	*Chlamydia trachomatis*, HSV	**Urethral Swab**, Genital Tissue (biopsy)
Pelvic Inflammatory Disease	*Chlamydia trachomatis*, HSV	**Endocervical Swab**, Genital Tissue (biopsy)
Lymphogranuloma Venereum (LGV)	*Chlamydia trachomatis*	**Lymph Node Aspirate**, Endocervical Swab, Lesion Swab
Perianal Infection	*Chlamydia trachomatis*, HSV CMV	Perianal or Rectal Swab
Herpes	HSV	Lesion Swab, Vesicular Fluid, for Asymptomatic Shedding, Endocervical Swab with a Vulvar Sweep
Condyloma	Human Papillomavirus (HPV)	Endocervical Swab, Genital Tissue/biopsy (for nucleic acid probe only)
Cervical Dysplasia and Carcinoma	Human Papillomavirus (HPV)	Endocervical Swab, Genital Tissue/biopsy

Alphabetical Test Listing

Acid Fast Bacilli (Mycobacteria) Stain Only (not culture)	
Use	For the assessment of continued infection, communicability of previously diagnosed disease and monitoring the progress of anti-tuberculous drug therapy. Does not include a culture. An individual is considered no longer communicable after effective treatment has been demonstrated for ≥2 weeks causing a significant reduction in symptoms.
Precautions	Patient may be infectious. Specimens should not be collected in an area where other patients or healthcare workers may be exposed. Label the container with the patient name and date of collection.
Specimen Sources	Early morning expectorated sputum from deep cough. Induced sputum, bronchial wash, bronchial brushing, tracheal aspiration or bronchoalveolar lavage fluid.
Specimen Collection Instructions	**Expectorated Sputum** • Prior to collection of a sputum specimen, the patient must be instructed to rinse his/her mouth and gargle with water. • Instruct the patient to obtain material from a deep cough which is expectorated into a sterile container whose rim is pressed under the patient's lower lip to catch the entire specimen. • Instruct the patient to avoid adding saliva or nasopharyngeal discharges to the sputum sample to avoid contamination by indigenous microorganisms. **Induced Sputum** • Prior to collection of induced sputum, use a wet toothbrush and brush the buccal mucosa, tongue and gums of the patient. Rinse the patient's mouth thoroughly with water. • Using an ultrasonic nebulizer, have the patient inhale approximately 20-30 mL of 3-10% sterile saline. • Label the sputum as "Induced" and cap tightly. For other specimen types, see Mycobacteriology (AFB) Culture with Fluorochrome Smear.
Collection Device	Falcon™ Sputum Collection Device containing an inner 50 mL conical specimen tube. Do not submit entire device, only the 50 mL screw-cap tube.
Transport Device	**Respiratory Specimens:** Sterile, leak-proof, 50 mL screw-cap conical tube portion of the Falcon™ Sputum Collection Device *transported on cold packs.* 
Unacceptable Specimens	• Refrigerated specimens older than 24 hrs but less than 48 hrs old may be processed only after contacting the lab Microbiologist or Medical Director. Results may be compromised. • Any specimens > 5 days • 24-hr pooled sputum • Room temperature specimens 2 hrs or older • Frozen specimens • Specimens in alcohol, formalin or other fixatives • Red-top plastic tubes (containing silica or non-culture preservatives) • Urine specimens in preservative such as the Vacutainer® brand C&S collection kit • Swab specimens (only acceptable when biopsy or aspirate material cannot be collected) • Specimens which have leaked and contaminated the outside of the collection container
Specimen Storage and Stability	Double bag the specimen and refrigerate or place it on cold packs. The specimen can only be stored at room temperature for 2 hours; refrigerate. Transport specimen refrigerated to laboratory for testing as soon as possible. The specimen will be viable **for only** 24 hours.

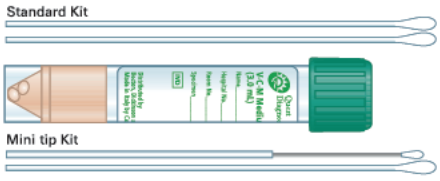
Actinomyces Cultures

Precautions	Actinomycosis can affect many areas of the body and is sometimes difficult to diagnose using single diagnostic tools.
Specimen Sources	1. Abscess biopsy or aspirates (usually oral-cervicofacial, but abscess formation can occur in the abdomen and thoracic regions) 2. Blood 3. Intrauterine devices (for *Actinomyces* only) 4. Surgical specimens 5. Exudates, aspirated pus from deep wounds or abscesses 6. Normally sterile body fluids 7. CSF
Special Instructions	**Decontamination of Skin for Anaerobic Cultures** This procedure must be performed prior to the collection of specimens for anaerobic culture from normally sterile fluids, such as cerebrospinal fluid, blood and aspirates. 1. Clean the puncture site with 70% alcohol. 2. Clean the puncture site with iodophor, allowing it to remain on the skin for at least 1–2 minutes. After decontamination, do not touch the area. If the patient is allergic or sensitive to iodine or iodophors, which typically cause a mild burning sensation, use an alternative (i.e., Chlorhexadine, a 0.5% in alcoholic solution). 3. Following venipuncture, remove iodophor with 70% alcohol and allow to evaporate. 4. For biopsy specimens, follow usual aseptic technique. **Fluid Specimens for Anaerobic Culture** Fluid or tissue specimens must be transported in anaerobic transport systems such as Port-A-Cul® gel vials; these will contain a special holding medium that maintains microorganism viability, but does not promote growth. Submit swab specimens in the blue-cap culture device with Amies gel medium supplied by Quest Diagnostics only when more suitable fluid aspirates are not obtainable. 1. Examine the Port-A-Cul® gel vial for evidence of deterioration (pink to blue medium, dried or cracked medium are unacceptable). Check the expiration date. 2. Vial should remain closed at all times. After removing the flip-cap and before injecting the fluid into vial, decontaminate the rubber stopper by swabbing with 70% alcohol and allow the rubber stopper to dry. Do not use iodine on the rubber stopper. 3. Expel air from the syringe and needle. Aseptically obtain the specimen, push needle through the disinfected rubber stopper, and slowly inject fluid on top of the agar. **NOTE:** If the appropriate transport system is not available, the syringe can be submitted. Do not submit syringe with needle attached. If submitting syringe, remove needle, expel air and recap syringe. 4. Store transport gel vial at room temperature prior to submitting. Do not refrigerate. **Tissue Specimens for Anaerobic Culture** 1. Examine the gel vial for evidence of deterioration (pink to blue medium, dried or cracked medium are unacceptable). Check the expiration date. 2. Holding the vial upright, carefully remove the rubber stopper, keeping inner surfaces sterile. It is important to keep the vial from tipping. Tipping will cause loss of the anaerobic atmosphere (CO_2). 3. Carefully place the tissue sample into the vial on top of the agar surface. Do not press it into the agar. 4. Decontaminate the rubber stopper by swabbing with 70% alcohol and allow the stopper to dry. Do not use iodine on the rubber stopper. Replace stopper on the vial and secure with tape. 5. Keep transport gel vial at room temperature prior to submitting. Do not refrigerate. Specimens not mentioned above may be processed anaerobically only after consultation with one of our Microbiology Supervisors or a Medical Director.

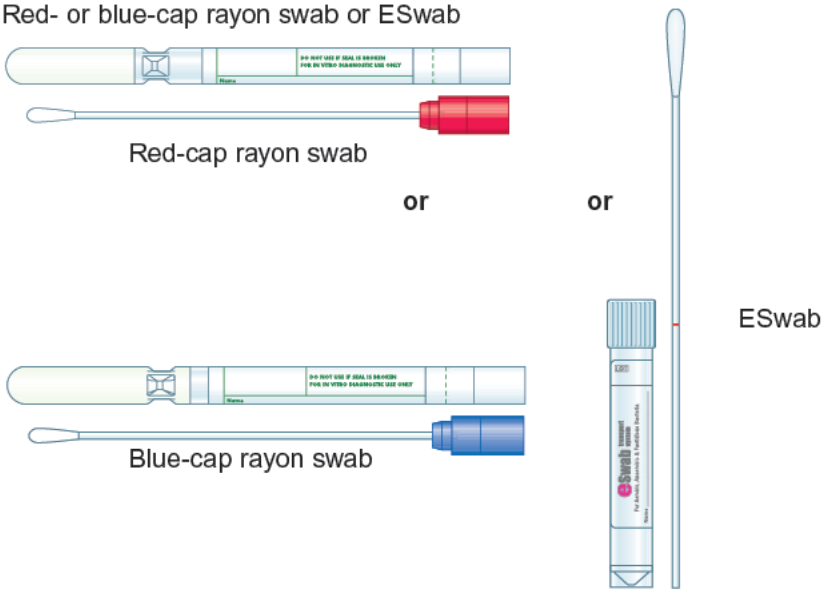
Unacceptable Specimens	• Throat and nasopharyngeal swabs • Sputum and bronchoscopic specimens (unless obtained by the Double Lumen Technique) • Voided or catheterized urines • Vaginal and cervical swabs • Specimens from sites contaminated with intestinal contents • Colostomy sites • Superficial wounds
Collection Device	Syringe with needle, Punch Biopsy device, sterile rayon, Dacron® or flocked nylon swab
Transport Device	Aspirate, fluid or tissue specimens must be transported in anaerobic transport systems such as Anaerobe Systems Anaerobic Transport media. These will contain a special holding medium that maintains microorganism viability, but does not promote growth. Specimen material on swabs is not optimal, but will be processed. Submit swab specimens only in the blue-cap culture device with Amies gel medium supplied by Quest Diagnostics. Do not submit syringe with needle attached. If a syringe must be submitted, remove needle, expel air and recap syringe. NOTE: Tissue and fluids are superior to a swab specimen. If swabs must be used, collect two anaerobic transport swabs, one for culture and one for Gram stain or submit one anaerobic transport swab with one air dried smear.  Blue-cap rayon swab or or Anaerobic Transport Medium ESwab Anaerobic Tissue Transport Medium
Specimen Collection Instructions	Collection of specimen prior to initiation of antimicrobial therapy is preferred.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Specimen will be viable for 3 days in Anaerobic Transport Media. Sample will be stable for 2 days in gel swab transports.

Adenovirus DFA

Precautions	Nasopharyngeal secretions obtained by aspiration, washings or flexible, flocked nylon, or twisted-wire mini-tip culture swabs are the preferred specimens to avoid contamination with nasal or oral flora.
Special Instructions	Guidelines with diagrams for proper collection of nasopharyngeal swabs for viral studies are available at many websites, including this link from New York City: nyc.gov/html/doh/downloads/pdf/flu/h1n1-npswab.pdf

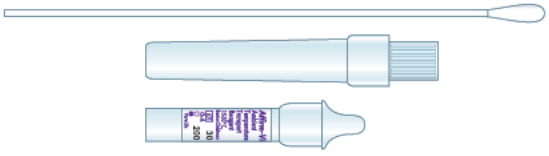
Specimen Collection Instructions	Immobilize patient's head and insert swab through a nostril. Push forward using gentle downward pressure to keep the swab on the floor of the nasal cavity until the tip reaches the posterior wall of the nasopharynx. Rotate gently for a few seconds and remove. Break off swab into V-C-M transport medium. Collect aspirates using a #5–8 disposable infant feeding tube attached to a 10 mL syringe or large suction bulb. If material cannot be aspirated, instill up to 5 mL of saline into the nasal passages and re-aspirate to collect washings. As an alternative, use a suction catheter with a mucus trap. Add an equal amount of aspirate to V-C-M transport medium.
Collection Device	To obtain NP specimens use a flocked nylon swab designed for this purpose **or** a yellow-cap mini-tip swab with a thin, flexible wire that is specifically designed for NP use. A #5–8 disposable infant feeding tube attached to a 10 mL syringe or large suction bulb may be used for aspirates.
Transport Device	Quest Diagnostics-supplied V-C-M transport medium **or** equivalent 
Unacceptable Specimens	Dry swabs Specimens at inappropriate transport temperature Specimens >48 hrs old Expired viral transport media or inappropriate transport media (e.g., Stuart's, Amies, gel-based media, charcoal medium, or nucleic acid transport systems)
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Sample will be viable for 2 days. Do not refrigerate.

Aerobic and/or Superficial Wound Cultures

Use	Determination of infectious agents
Specimen Sources	Superficial wounds such as skin tears, abrasions, lesions, abscess, animal bites, skin biopsy, exit sites and cultures for specific aerobic organisms when no specific test is available.
Collection Device	Red- or blue-cap rayon swab or ESwab
Transport Device	Red- or blue-cap rayon swab or ESwab 

Specimen Collection Instructions	• Collection of specimen prior to initiation of antimicrobial therapy is preferred. • Disinfect wound surface with 70% alcohol prior to collection to avoid superficial contamination. • Aspirate or sample the deepest portion of the lesion, avoiding contamination from the wound surface and pus which will contain non-viable organisms. • Specimens must be received and processed in the laboratory within 48 hrs of collection. For deep wound or biopsy tissue specimens, order the Aerobic and Anaerobic Culture test. If collection occurs in surgery, a biopsy of the lesion wall is recommended as the preferred specimen.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Sample will be viable for 2 days.

Affirm™ Bacterial Vaginosis/Vaginitis Panel
Trichomonas vaginalis, Gardnerella vaginalis, Candida species
See also the listing for the Bacterial Vaginosis/Vaginitis Panel

Specimen Sources	Vaginal swab
Specimen Collection Instructions	1. Label the specimen tube with the patient identification information. Include the time the sample was collected. 2. Place the patient in position for a pelvic examination. Insert an unlubricated speculum (without jelly or water) into the vagina to permit visualization of the posterior vaginal fornix. 3. Using the sterile polyester (Dacron®) swab, obtain a sample from the posterior vaginal fornix. Twist or roll the swab against the vaginal wall two or three times, ensuring the entire circumference of the swab has touched the vaginal wall. Swab the lateral vaginal wall while removing the swab. 4. Immediately place the swab into the specimen tube containing preservative from the previously broken ampule. With the swab touching the **bottom** of the tube, grasp the pre-scored handle of the swab just above the top of the tube and bend until the swab breaks. When the swab is fully inserted into the collection tube, the score mark on the swab is approximately 1 cm above the collection tube. 5. Discard the broken handle into an infectious waste container. 6. Place the cap over the exposed end of the swab and firmly press the cap onto the tube. The cap will “snap” onto the tube when it is properly seated.
Unacceptable Specimens	• Specimens >72 hrs old • No glass ampules • No swabs other than AFFIRM™ swabs • Received in transport systems other than Affirm™ VPIII Ambient Temperature Transport System (ATTS) • Received frozen
Collection Device	Affirm™ VPIII Ambient Temperature Transport System (ATTS)
Transport Device	Affirm™ VPIII Ambient Temperature Transport System (ATTS) 
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Specimen is viable for no more than 72 hours at ambient temperatures (15-30 °C).

Amoeba (Intestinal) Examination

Use	Detection of amoebae and other parasites
Specimen Sources	About 5 g or 5 mL of fresh stool (large walnut size) in zinc-polyvinyl alcohol (Zn-PVA) or Total-Fix transport vial. Formed, liquid or semi-solid specimens are all acceptable.
Precautions	Barium, antimalarials, antimicrobials, mineral oil and other laxatives interfere with the detection of intestinal protozoa. Specimens submitted from patients that have been treated with the above must be collected at least 7-10 days post-treatment. Wait 3 weeks after gallbladder dye administration procedure. Specimens should never be frozen or placed in an incubator. Refrigeration is not required.
Special Instructions	Intestinal amebiasis should be considered in any patient with protracted diarrhea and in all patients with dysentery, especially if there is a history of foreign travel. Examination of fresh stool for the presence of cysts and trophozoites is important and should be carried out immediately if amebiasis is suspected. If amoebae are not discovered on a casual stool examination, a purged stool specimen should be obtained. Because amoebae tend to be more concentrated in the cecum in light infections, it is the second and third expulsions (liquid portions) of the stool, after administration of a purgative, that are most likely to yield amoebae. 1. Purge adult patients with a Fleet® Enema, a ready-to-use saline laxative, except: **Do not** use laxative products when nausea, vomiting or abdominal pain is present unless directed by a physician. **Do not** use in patients with congenital megacolon, bowel obstruction, imperforate anus or congestive heart failure. Use with caution in patients with impaired renal function, pre-existing electrolyte disturbances, or those on diuretics or other medications that may affect electrolyte levels, or where a colostomy exists. 2. Place the most liquid portion of the specimen into only the PVA container within 30 minutes of collection. Fill to the fill line. 3. Do not submit formed stool. 4. Store and transport preserved stool specimens at room or refrigerated temperatures (stable 2 months).
Specimen Collection Instructions	1. **Avoiding contact with urine,** pass stool directly into a large clean container (such as a cut-out milk jug or margarine container) **or** onto plastic wrap placed under the seat of the toilet. There are also commercial stool collection devices commonly referred to as a "hat" that may be used. If the stool is loose or liquid, pass directly into a container, not onto plastic wrap. 2. Transfer to the transport vials within 30 minutes of collection. 3. Open the transport vials. 4. Using the collection spoon built into the lid, obtain scoops of stool from areas that appear bloody, slimy or watery and place them into the vial until the volume rises to the red line. If the stool is formed (hard), sample small amounts from each end and the middle. Load to the "fill line" ensuring that the preservative completely covers the specimen. 5. Mix the contents of the vial thoroughly with the spoon, twist the cap tightly closed, check the cap to be sure it is secured and shake until the contents are well mixed. 6. Keep and transport preserved stool specimens at room or refrigerated temperatures (stable 6 months).
Unacceptable Specimens	• Stool preserved in medium other than Polyvinyl alcohol (PVA) or Total-Fix • Specimens submitted without preservative will be rejected • Specimen containing barium • Specimen received frozen • Urine specimen with preservative • Do not use kits beyond their date of expiration
Collection Device	Collect the stool specimen in a clean, dry container. Collect urine in sterile screw-cap container.

Transport Device	Zinc-Polyvinyl alcohol (Zn-PVA) transport vial (gray label)  
Specimen Storage, Transport and Stability	Transport to laboratory for testing as soon as possible at room temperature. Sample will be stable for 6 months.

Amoeba Culture (*Acanthamoeba and Naegleria sp*)

Use	Determination of infection
Specimen Sources	1-2 mL CSF or small pieces of brain tissue Both contact lenses or contact solution from carrying case Corneal scrapings
Special Instructions	Biopsy material is acceptable
Specimen Collection Instructions	• CSF: Follow skin decontamination procedure outlined in **Anaerobic Cultures**. CSF is collected only by a physician under aseptic conditions. After lumbar puncture, slowly drain the CSF fluid into the sterile leak-proof tubes. • Contact lens & contact lens solution: Submit both lenses in a sterile leak-proof container with solution from lens carrying case. • Corneal scrapings: Instill 1-2 drops of topical anesthetic. Using a sterile corneal spatula, gently scrape corneal ulcers or lesions.
Unacceptable Specimens	Frozen specimens Clinical material dried on slides
Collection Device	• CSF: Lumbar puncture with syringe and needle • Corneal scrapings: corneal spatula • Sterile container with small amount of sterile fluid to prevent drying
Transport Device	CSF in a sterile tube or add scrapings to a container with a small amount of sterile fluid to prevent drying.
Specimen Storage, Transport and Stability	Transport to the laboratory immediately. Store and transport at room temperature. Do not refrigerate. Specimen will be stable for about 4-7 days maximum.

Anaerobic Bacterium Identification

If susceptibility testing of anaerobic bacterium is required, please order **Susceptibility Panel, Anaerobic Organism** separately.

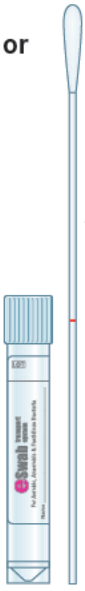
Use	Identification only of pure culture anaerobic isolate.
Specimen Sources	Any non-environmental source is acceptable. Indicate specimen source, any relevant patient history, and date of inoculation on requisition form. **Do not** submit mixed cultures, frozen specimens, or petri dishes.
Collection Device	Submit isolate in a tube of Chopped Meat Glucose or isolate on a suitable anaerobic collection/transport-swab device.
Transport Device	Submit Chopped Meat Glucose or a suitable anaerobic collection/transport device in a double-walled container.  Alternately, a swab of pure isolate using blue-capped gel swab may be submitted.

Specimen Collection Instructions	Use care to touch only one isolated colony and prepare a fresh sub-culture of the organism to be submitted to an appropriate anaerobic transport medium. Incubate until sufficient growth is present prior to shipping.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Isolate viability varies with organism and transport system.

Anaerobic Cultures

For *Clostridium difficile* cultures, see *Clostridium difficile* Culture with Reflex to PCR

Use	Determination of anaerobic infections
Specimen Sources	1. Deep wounds 2. Abscess aspirates 3. Percutaneous Transtracheal aspiration 4. Bronchoscopic specimens obtained by the Double Lumen Technique 5. Suprapubic urine from: a. Percutaneous suprapubic bladder aspiration b. Nephrostomy tube c. Suprapubic catheter 6. Genital specimens from these sites only: a. Cul-de-sac aspiration b. Culdocentesis c. Percutaneous transfundal aspiration d. Placenta e. Fallopian tube f. Septic abortion g. Intrauterine devices (for *Actinomyces* only) 7. Surgical specimens 8. Exudates, aspirated pus from deep wounds or abscesses 9. Normally sterile body fluids 10. Tympanocentesis fluid 11. CSF 12. Bone marrow core specimens
Special Instructions	**Decontamination of Skin for Anaerobic Cultures** This procedure must be performed prior to the collection of specimens for anaerobic culture from normally sterile fluids, such as cerebrospinal fluid, blood and aspirates. 1. Clean the puncture site with 70% alcohol. 2. Clean the puncture site with iodophor, allowing it to remain on the skin for at least 1–2 minutes. After decontamination, do not touch the area. If the patient is allergic, or sensitive, to iodine or iodophors that typically cause a mild burning sensation, use an alternative (i.e., Chlorhexadine, a 0.5% in alcoholic solution). 3. Following venipuncture, remove iodophor with 70% alcohol and allow to evaporate. **Fluid Specimens for Anaerobic Culture** Fluid or tissue specimens must be transported in anaerobic transport systems such as Anaerobe Systems Anaerobic Transport Medium. These will contain a special holding medium that maintains microorganism viability, but does not promote growth. 1. Submit swab specimens in the blue-cap culture device with Amies gel medium supplied by Quest Diagnostics only when more suitable fluid aspirates are not obtainable. 2. Examine the Anaerobic Transport Medium for evidence of deterioration (should appear as clear, colorless, semi solid media; shrinking, cracking or discoloration due to oxidation of medium is unacceptable). Check the expiration date. 3. Vial should remain closed at all times. Before injecting the fluid into vial, decontaminate the rubber stopper by swabbing with 70% alcohol and allow the rubber stopper to dry. Do not use iodine on the rubber stopper. 4. Expel air from the syringe and needle. Aseptically obtain the specimen, push needle through the disinfected rubber stopper, and slowly inject fluid on top of the agar. **NOTE:** If the appropriate transport system is not available, the syringe can be submitted. **Do not** submit syringe with needle attached. If submitting syringe, remove needle, expel air and recap syringe.

	5. Store transport at room temperature prior to submitting. **Do not** refrigerate. **Tissue Specimens for Anaerobic Culture** 1. Examine the Anaerobic Transport Medium for evidence of deterioration (should appear as clear, colorless, semi solid media; shrinking, cracking or discoloration due to oxidation is unacceptable). Check expiration date. 2. Open the screw-cap and place the tissue on the surface of the semisolid medium. Inserting the tissue into the gel is not necessary. Immediately close the tube. 3. Keep transport gel vial at room temperature prior to submitting. **Do not refrigerate.** *Specimens not mentioned above may be processed anaerobically only after consultation with a Quest Diagnostics Microbiology Supervisor or Medical Director.*
Unacceptable Specimens	• Throat and nasopharyngeal swabs • External eye or ear swabs • Sputum and bronchoscopic specimens (unless obtained by the Double Lumen Technique) • Feces and rectal swabs • Voided or catheterized urines • Vaginal and cervical swabs • Specimens from sites contaminated with intestinal contents: -Colostomy sites -Draining pilonidal sinus -Traumatic perforation of bowel -Superficial wounds
Collection Device	Blue-cap rayon swab, ESwab or syringe (fluids)
Transport Device	Same as above. Do not submit syringe with needle attached. If a syringe must be submitted, remove needle, expel air and recap syringe. NOTE: Tissue and fluids are superior to a swab specimen. If swabs must be used, collect two anaerobic transport swabs, one for culture and one for Gram stain **or** submit one anaerobic transport swab with one air dried smear.  Blue-cap rayon swab **or** **or**  Anaerobic Transport Medium ESwab   Anaerobic Tissue Transport Medium

Specimen Collection Instructions	Collection of specimen prior to initiation of antimicrobial therapy is preferred.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Specimen will be viable for 3 days in Anaerobic Transport Medium Sample will be stable for 2 days in gel swab transports.

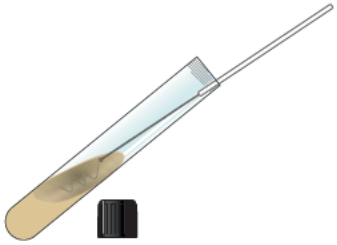
Avian Flu (H5N1)

Immediately contact your local Public Health authority if suspected

Babesia microti

Use	Determination of infestation.
Specimen Sources	Peripheral Blood should be taken during a febrile episode, at 6-hour intervals.
Special Instructions	It is VERY IMPORTANT that one thick and one thin blood film smear be submitted on two separate glass slides with one frosted end in addition to a back-up lavender-top (EDTA) tube, as described below. One slide should be smeared as is done with a differential exam and one slide should have a drop of blood dried in an area about the size of a dime. Anti-malarial agents should be noted on the requisition, as therapy can change the number of parasites present.
Specimen Collection Instructions	Clean and disinfect skin with gauze squares soaked in 70% alcohol or commercial non-cotton alcohol preparations. Wipe dry with sterile gauze or air dry. Be sure the finger is thoroughly dry prior to pricking. • Stick the finger with a sterile disposable lancet, deeply enough to collect a sufficient amount of free-flowing blood for film preparation. Do not squeeze finger to remove the blood. • Holding a clean glass slide by the frosted end, touch the surface of the slide (frosted side) to the puddle of blood that has collected at the puncture site. Allow the blood to dry undisturbed to prepare a thick film. • Repeat the procedure and “feather” the blood drop to prepare the thin film. After collection, apply pressure to the puncture site with sterile gauze until bleeding stops and then bandage. • Obtain patient history for an aid in diagnosis. This should include visits to any country outside of the United States and the date of return. • Print patient’s name/identification in pencil on the frosted end of the slides.
Unacceptable Specimens	Hemolyzed blood, clotted blood and age-deteriorated blood cells (EDTA blood older than 24 hrs).
Collection Device	Disposable lancet and two frosted end slides
Transport Device	Frosted end slides and lavender-top tube 
Specimen Storage, Transport and Stability	Lavender-top tubes must be transported at room temperature to the laboratory (avoiding extremes of heat and cold) as soon as possible; the specimen stability is approximately 24 hrs after blood collection.

Bacterial Identification (Aerobic) and Susceptibility
Bacterial Identification (Aerobic) Only
Susceptibility Panel, Aerobic Bacterium
Fungal Isolate Identification
Mycobacterium Identification

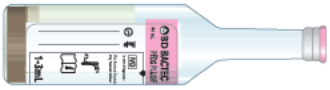
Use	Identification of pure culture isolate. Antibiotic susceptibilities will be performed on aerobic bacterial isolates only when appropriate. If the organism in question is suspected of being a "Select Agent" the submitting physician must contact the Medical Director of the Quest Diagnostics laboratory to which the organism will be sent. For a current list of Select Agents, copy and paste the following address into your web browser: http://www.selectagents.gov/ TransferForm.html. **NOTE:** If susceptibility testing of aerobic bacterium is NOT required, please order the test for identification only.
Specimen Sources	Any non-environmental source is acceptable. Indicate specimen source, any relevant patient history and date of inoculation on test request. **Do NOT submit mixed cultures, frozen specimens, liquid media or petri dishes.**
Collection Device	Suitable agar (solid) medium slant sealed with tape, or parafilm.
Transport Device	Same as the collection. Submit sealed screw-capped agar tube in a double-walled container. Refer to **Infectious Substances** in this section. 
Specimen Collection Instructions	Using care to touch only one isolated colony (up to three for susceptibility testing), prepare a fresh sub-culture of the organism to an appropriate agar slant. Incubate until pure confluent growth is present prior to shipping.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Isolate viability varies with organism and transport system.

Bacterial Vaginosis & Vaginitis

See separate specimen collection instructions for: SureSwab® Bacterial Vaginosis/Vaginitis DNA, Real Time PCR, Affirm™ VPIII Bacterial Vaginosis/Vaginitis Screen or BV Smear Nugent Score in this section and in the **General Test Listing** section.

Blood Cultures for Bacteria, Fungi and Mycobacteria

Use	Determination of bloodstream infection
Precautions	1. Collection of specimen prior to initiation of antimicrobial therapy is preferred. In adults, obtain 2 separate sets of blood cultures. More may be required to confirm certain suspected diagnoses. In pediatric patients, a single blood culture usually is sufficient. 2. Broth in the bottle should be clear. Do not use bottles containing broth that is cloudy. Do not use bottles beyond their expiration date. 3. An aerobic bottle and an anaerobic bottle filled from a single venipuncture or collection site should be interpreted as a single culture set. For example, if a physician orders two separate sets of blood cultures, the phlebotomist would use two separate venipuncture sites, drawing one culture set from the right arm and one culture set from the left arm; in most cases, both sets may be obtained at the same time. Draw the sample for each set of blood cultures (10 mL per bottle from adults and 5 mL per bottle from pediatric patients) with a needle and syringe, or a closed system consisting of a vacuum bottle and double needle collection system.
Specimen Collection Instructions	Apply iodine/iodophor (12% tincture of iodine or 10% providone iodine) or chlorhexidine for 60 seconds in concentric circles away from the venipuncture site covering an area 1½-2 inches in diameter with analgesics and/or anti-anxiety medications.

Specimen Timing & Number	For adults, we recommend the following guidelines for the timing of the collection of blood cultures and optimal recovery of microorganisms present. For children, a single blood culture is generally sufficient for infective endocarditis. **Systemic and Localized Infections** • Suspected acute sepsis, meningitis, osteomyelitis, arthritis, or acute, untreated bacterial pneumonia: obtain 2 sets of blood cultures. • Fever of unknown origin: Initially, obtain 2 sets of blood cultures; 24–36 hours later obtain 2 additional sets of blood cultures. **NOTE:** The yield beyond 4 sets of blood cultures is often negligible. • Suspected early typhoid fever or brucellosis: Owing to the low-level bacteremia present in these infections, obtain 4 sets of blood cultures (the same venipuncture site may be used) over a 24–36 hour period. **Infective Endocarditis** • Acute: Obtain 3 sets of blood cultures during the first 1–2 hours of evaluation. • Subacute: Obtain 3 sets of blood cultures on the first day (ideally 15 or more minutes apart, the same venipuncture site may be used). If all 3 sets are negative, obtain 2 additional sets of cultures. • Culture-negative endocarditis: Consult with the local Quest Diagnostics Medical Director after 5 negative sets of blood cultures. Special culture techniques may be advised. Rather than incubate only seven days, it is done for 1 month in some cases.
Transport Device	BACTEC® blood culture bottles  Fungi and mycobacteria MycoF/Lytic bottle (red label)  Aerobic/F Plus bottle (silver label)  Anaerobic Lytic 10 bottle (purple/lavender label)  Pediatric bottle (pink label)
Specimen Collection Instructions	Collection of specimen prior to initiation of antimicrobial therapy is preferred. Label all culture bottles with the patient's name, date, time and collection time and, if a specific agent is suspected, with **"Rule out <name of microorganism>."** If required, indicate body site from which the blood was drawn (i.e., Left Arm). After palpation, scrub the venipuncture site with 70% alcohol for a minimum of 30 seconds. Chlorhexidine (0.5% in alcoholic solution) has also been shown to be suitable. 1. Apply iodine/iodophor (1–2% tincture of iodine or 10% providone iodine) or chlorhexidine for 60 seconds in concentric circles away from the venipuncture site, covering an area 1½-2 inches in diameter. After the puncture site has been decontaminated, do not touch it. If the patient is allergic or sensitive to iodine, cleanse with 70% alcohol only. Scrub for 60 seconds and let dry completely. 2. Decontaminate the diaphragm bottle tops by swabbing with 70% alcohol. Allow it to dry. Do not use iodine on the diaphragm tops. If further palpation of the vein is needed, disinfect the finger of the glove or use a sterile glove. 3. Using a syringe and needle or a "butterfly" double needle collection system, perform venipuncture and obtain 20 mL of blood (if an adult patient), 10 mL of blood (for a pediatric patient weighing 30–80 lbs, or 2.2-36.4 kg) and inoculate the bottles as described below.*

	4. Following the venipuncture, be sure to remove the iodophor with 70% alcohol as the iodophor can irritate the patient's skin. 5. Do not overfill the bottles. Greater than 12 mL in the adult bottles and greater than 5 mL in the pediatric bottles is overfilling.
Special Instructions	Adult: Inoculate 10 mL each into BD BACTEC® Aerobic/F and Lytic/10 bottles. If you cannot obtain 20 mL of blood, divide as follows: • Less than or equal to 8 mL: transfer entire amount to BD BACTEC® Plus Aerobic/F bottle (silver label with gray top). • Greater than 8 mL, but less than 20 mL: transfer 8–10 mL to BD BACTEC® Plus® Aerobic/F bottle and the remainder to BD BACTEC® Lytic/10 Anaerobic/F bottle (purple label and cap). Pediatric Patients weighing 30–80 lbs: If you cannot obtain 10 mL of blood, divide as follows: • Less than or equal to 5 mL: transfer entire amount to a BD Peds Plus®/F Aerobic bottle (silver/pink cap). • Greater than 5 mL, but less than 10 mL: transfer no more than 5 mL to a BD Peds Plus/F Aerobic bottle (silver/pink cap) and the remainder to BD BACTEC® Lytic/10 Anaerobic/F bottle (purple label and cap). **NOTE:** Although pediatric patients have a smaller blood volume than adults, they can have up to 2–3% of their blood volumes sampled for testing. It should be safe to collect 6 mL, 23 mL, and 60 mL of blood from pediatric patients respectively weighing 2.1–12.7 kg (4.6-27.9 lbs), 12.8–36.3 kg (28-80 lbs), and >36.3 kg (>80 lbs). These blood volumes represent no more than 3% of the patients' total blood volumes and usually less.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible. Prior to pick-up, keep the blood culture bottles or tubes at room temperature, away from direct sunlight and/or ventilation sources. If pick-up is delayed, do not refrigerate or incubate the bottles. The bottles **must be stored at room temperature.** They are stable for up to 48 hrs at room temperature.

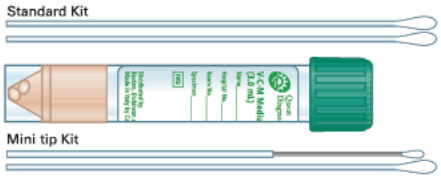
Body Fluid (usually sterile) and Bone Marrow Cultures
See Aerobic and Anaerobic Cultures and note special requirements below.

Use	Determination of localized or systemic infections
Special Instructions	**Do not** submit body fluids in a red-top blood collection tube used for chemistry assays.
Specimen Sources	Bursa, synovial, pleural, pericardial, bone marrow
Collection Device	Needle and syringe
Specimen Collection Instructions	1. Follow skin decontamination procedure outlined in Anaerobic Cultures. 2. Aspirate 10 mL of fluid, or more, by percutaneous puncture. 3. If the appropriate transport system is not available, the syringe can be submitted. **Do not** submit syringe with needle attached. If submitting syringe, **remove needle,** expel air and recap syringe.
Transport Devices	Submit up to 5 mL non-bloody fluid in a transport gel vial system as described in Anaerobic Cultures. The specimen may also be submitted in a sterile leak-proof, screw-cap, plastic container, but anaerobic bacteria recovery will be compromised. If the appropriate transport system is not available, the syringe can be submitted. **Do not** submit the syringe with the needle attached. If submitting a syringe, **remove the needle**, expel air and recap the syringe. **When Fungal or Mycobacterial infection is suspected:** • Submit 5–10 mL of fluid in a leak-proof sterile screw-cap plastic container. Store and transport refrigerated.

	 Anaerobic Transport or jar **or**  Sterile, leak-proof container
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Specimen will be stable for 3 days in Anaerobic Transport vial or jar. Blood culture bottles **must be stored at room temperature.** They are stable for up to 48 hrs. Specimens in a sterile container should be transported refrigerated as soon as possible and may only be stable for 24 hrs.

Body Fluids and Tissues Virus Culture

Use	Determination of infection. Method includes a combination of conventional cell culture tubes as well as shell vial/multi-well plate inoculation enhanced by centrifugation. Final identification is confirmed by immunofluorescence. From body fluid and tissue specimens, we culture specifically for adenoviruses, Herpes simplex, varicella zoster, cytomegalovirus and enterovirus, and respiratory viruses, but other viruses such as RSV may also be detected. Note that virus isolation may not be as sensitive as molecular methods for some viruses.
Precautions	Labile specimen. Refrigerate immediately or freeze in V-C-M at -70 °C (dry ice). • Inform the laboratory if the patient has or is suspected of having Creutzfeldt-Jacob Disease (CJD) by indicating this on the Test Requisition. • Do not submit body fluids in a red-top blood collection tube used for chemistry assays. Red-top tubes are not suitable for transport of microorganisms.
Special Instructions	CSF: Culture is not sensitive for Herpes simplex detection. Order PCR. **NOTE:** For specimens collected by swab, use rayon swabs or flocked nylon swabs with plastic or metal shafts provided by Quest Diagnostics. Tissues, fluids (up to 2 mL), and swabs should be placed in V-C-M or equivalent viral transport medium.
Specimen Sources	Specimen selection must be based on clinical signs, site of infection and the suspected viral agent. Collection of sample should be performed as early as possible in the course of the patient's illness. Viruses may be recovered for only two to three days after the onset of symptoms. Acceptable specimens include respiratory (bronchial lavage, bronchial washings, or tracheal aspirates), tissue and biopsy material, sterile fluids (CSF, pleural fluid, pericardial fluid, synovial fluid, etc.), urine from newborns, conjunctival/ocular swabs, and bone marrow.
Specimen Collection Instructions	**Respiratory (bronchial lavage, bronchial washings, or tracheal aspirates):** Collect sample and transfer up to 2 mL to the V-C-M transport medium. Alternatively, sample may be submitted in a sterile, leak-proof container. **Tissue and Biopsy:** Sterile screw-capped container with small amount of sterile saline to prevent it from drying. Do not add fixative or preservative. Submit as much sample as possible to optimize recovery. **Sterile Fluids (CSF, pleural fluid, pericardial fluid, synovial fluid, etc.):** Collect aseptically. Add fluid to equal volume of V-C-M transport medium or equivalent. Alternately, submit a minimum of 1-2 mL in sterile leak-proof container. **Newborn Urine:** Collect a random clean catch, catheterized, or first void sample in sterile screw-capped container. Optimal volume is 2 mL or greater. Minimum volume is 1 mL. **NOTE:** Urine samples left out at room temperature longer than 2 hours are not acceptable for viral culture due to possible bacterial contamination. **Conjunctival/Ocular:** Collect samples using sterile rayon, Dacron® or flocked nylon swab **or** rayon-tipped swabs with flexible shaft **or** fine-gauge wire shaft. Do not use calcium alginate, cotton, or wooden shafted swabs which may inactivate the virus. Submerge the swab into Quest Diagnostics-supplied V-C-M transport medium or equivalent. Break, cut or fold the shaft to fit. **Bone Marrow:** Collect in sterile leak-proof container, sodium-heparin, or lithium-heparin green top Vacutainer® tube or Quest Diagnostics-supplied V-C-M transport medium or equivalent. Do not add fixative. **NOTE:** PCR is the preferred testing method for Bone Marrow that has not been collected in heparin.

Collection Device	Swabs: sterile rayon, Dacron® or flocked nylon swab or rayon-tipped swabs with flexible shaft Urine: Collect specimen in sterile leak-proof container Respiratory specimens: Sterile leak-proof container
Transport Device	Quest Diagnostics-supplied V-C-M transport medium or equivalent, **or** sterile leak-proof container as appropriate.  V-C-M transport medium **or**  Sterile, leak-proof container
Unacceptable Specimens	• Dry swabs • Swab not in viral transport media • Wooden shaft, cotton, and calcium alginate swabs • Expired viral transport media or inappropriate transport media: (e.g., Stuart's, Amies, gel-based media, charcoal medium, or nucleic acid transport systems) • Bone Marrow in EDTA (Refer for PCR testing) • Specimens in formalin or other fixatives • Stool specimen • Sputum • Semen • Mucosal swabs other than conjunctiva • Skin swabs • Nasophraryngeal swabs • Whole blood, serum or plasma
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible refrigerated on cold packs. Sample will be viable for up to 4 days. If placed into V-C-M transport medium the specimen will be stable up to 30 days if frozen at -70 °C (dry ice).

Bone Marrow Aspirates for Bacteria

Precautions	1. For adults, use BD BACTEC® Plus Aerobic/F (silver label with gray-top) and BD BACTEC® Lytic/10 Anaerobic/F (purple label and cap) bottles. For children, use a BD Peds Plus®/F Aerobic bottle (pink label/cap). Gently mix the bottle(s) following inoculation. Do not vent. 2. Before the use of systemic antimicrobials, obtain 2 separate sets of blood cultures when there is a fever (exceeding 38 °C or 100 °F) combined with significant leukocytosis or leukopenia. Most often, two separate sets of blood cultures will suffice. More may be required to confirm certain suspected diagnoses. 3. Broth in the bottle should be clear. Do not use bottles containing broth that is cloudy. Do not use bottles beyond their expiration date. 4. An aerobic bottle and an anaerobic bottle filled from a single venipuncture or collection site should be interpreted as a single culture set. For example, if a physician orders two separate sets of blood cultures, the phlebotomist would use two separate venipuncture sites, drawing one culture set from the right arm and one culture set from the left arm; in most cases, both sets may be obtained at the same time. Preferably, blood for culture should not be drawn through an indwelling or intra-arterial catheter. Draw the sample for each set of blood cultures (10 mL per bottle from adults and 5 mL per bottle from pediatric patients) with a needle and syringe, or a closed system consisting of a vacuum bottle and double needle collection system.

Specimen Timing & Number	We recommend the following guidelines for the timing of the collection of blood cultures and optimal recovery of microorganisms present. **Systemic and Localized Infections** • Suspected acute sepsis, meningitis, osteomyelitis, arthritis, or acute, untreated bacterial pneumonia: Obtain 2 sets of blood cultures. • Fever of unknown origin: Initially, obtain 2 sets of blood cultures; 24–36 hours later, obtain 2 additional sets of blood cultures. **NOTE:** The yield beyond 4 sets of blood cultures is often negligible. • Suspected early typhoid fever or brucellosis: Owing to the low-level bacteremia present in these infections, obtain 4 sets of blood cultures (the same venipuncture site may be used) over a 24–36 hour period. **Infective Endocarditis** • Acute: Obtain 3 sets of blood cultures during the first 1–2 hours of evaluation. • Subacute: Obtain 3 sets of blood cultures on the first day (ideally 15 or more minutes apart; the same venipuncture site may be used). If all 3 sets are negative, obtain 2 additional sets of cultures. • Culture-negative endocarditis: Consult with the Quest Diagnostics Microbiology Technical Manager, Quest Diagnostics Medical Director, and/or local medical staff after 5 negative sets of blood cultures. Special culture techniques may be advised.
Collection Device	Since these blood cultures are processed using special media and instrumentation, it is necessary to submit all of these cultures in the correct bottles supplied by Quest Diagnostics. For adults, use BD BACTEC® Plus Aerobic/F (pink label/cap) and BD BACTEC® Lytic/10 Anaerobic/F (purple label and cap) bottles. For children, use a BD Peds Plus®/F Aerobic bottle (silver/pink cap).
Transport Device	Same as Collection Devices.  BD BACTEC® Plus® Aerobic/F and Lytic/10 Anaerobic/F bottles or BD Peds Plus®/F Aerobic bottle or BD BACTEC® Myco® F/Lytic bottle
Specimen Collection Instructions	Collect specimen prior to initiation of antimicrobial therapy. Label all culture bottles with the patient's name, date, time and collection time and, if a specific agent is suspected, with **"Rule out <name of microorganism>"**. If required, indicate body site from which the blood was drawn (i.e., Left Arm). After palpation, scrub the venipuncture site with 70% alcohol for a minimum of 30 seconds. Chlorhexidine (0.5% in alcoholic solution) has also been shown to be suitable. 1. Apply iodine/iodophor (12% tincture of iodine or 10% providone iodine) or Chlorhexidine for 60 seconds in concentric circles away from the venipuncture site covering an area 1½-2 inches in diameter. After the puncture site has been decontaminated, do not touch. If the patient is allergic or sensitive to iodine, cleanse with 70% alcohol only. Scrub for 60 seconds and let dry completely. 2. Decontaminate the diaphragm bottle tops by swabbing with 70% alcohol. Allow it to dry. Do not use iodine on the diaphragm tops. If further palpation of the vein is needed, disinfect the finger of the glove or use a sterile glove. 3. Using a syringe and needle or a "butterfly" double needle collection system, perform venipuncture and obtain 20 mL of blood (if an adult patient), 10 mL of blood (if a pediatric patient weighing 30–80 lbs) and inoculate the bottles as described below.

	4. Following the venipuncture, be sure to remove the iodophor with 70% alcohol as the iodophor can irritate the patient's skin. 5. Do not overfill the bottles. Greater than 12 mL in the adult bottles and greater than 5 mL in the pediatric bottles is overfilling.
Special Instructions	Adult: Inoculate 10 mL each into BD BACTEC® Aerobic/F and Lytic/10 bottles. If you cannot obtain 20 mL of blood, divide as follows: • Less than or equal to 8 mL: transfer entire amount to BD BACTEC®Plus® Aerobic/F bottle (silver label with gray-top). • Greater than 8 mL, but less than 20 mL: transfer 8–10 mL to BD BACTEC® Plus® Aerobic/F bottle and the remainder to BD BACTEC®Lytic/10 Anaerobic/F bottle (purple label and cap). Pediatric patients weighing 30–80 lbs: If you cannot obtain 10 mL of blood, divide as follows: • Less than or equal to 5 mL: transfer entire amount to a BD Peds Plus®/F Aerobic bottle (silver/pink cap). • Greater than 5 mL, but less than 10 mL: transfer no more than 5 mL to a BD Peds Plus/F Aerobic bottle (silver/pink cap) and the remainder to BD BACTEC® Lytic/10 Anaerobic/F bottle (purple label and cap). Although pediatric patients have a smaller blood volume than adults, they can have up to 2–3% of their blood volumes sampled for testing. It should be safe to collect 6 mL, 23 mL, and 60 mL of blood from pediatric patients respectively weighing 2.1–12.7 kg, 12.8–36.3 kg, and >36.3 kg. These blood volumes represent no more than 3% of the patients' total blood volumes and usually less.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible. Prior to pick-up, keep the blood culture bottles or tubes at room temperature away from direct sunlight and/or ventilation sources. If pick-up is delayed, do not refrigerate or incubate the bottles. The bottles **must be stored at room temperature**. They are stable for up to 48 hrs at room temperature.

Bone Marrow Aspirates for Mycobacteria or Fungi

Use BD BACTEC®Myco®F/Lytic blood bottle. Gently mix the bottle(s) following inoculation. Do not vent the bottles.

Use	For the diagnosis of systemic fungal and mycobacterial infection
Precautions	A bone marrow aspirate may be done in a healthcare provider's office or in a hospital. Informed consent for the procedure is typically required.
Specimen Timing and Number	• Apply iodine/iodophor (1–2% tincture of iodine or 10% providone iodine) or chlorhexidine for 60 seconds in concentric circles away from the venipuncture site, covering an area 1½–2 inches in diameter. After the puncture site has been decontaminated, do not touch. If the patient is allergic or sensitive to iodine, cleanse with 70% alcohol only. Scrub for 60 seconds and let dry completely. • The patient is asked to lie on their abdomen or side. The skin is cleansed, and a local anesthetic such as lidocaine is injected in area. (Patients may need to be pretreated with analgesics and/or anti-anxiety medications). A 4" 15 gauge aspirate needle is inserted through the skin using manual pressure until it contacts bone and is then advanced into the marrow using a twisting motion. Once the needle is in the marrow cavity, a syringe is attached and used to aspirate about 1 mL of liquid bone marrow. See: pathology.vcu.edu/education/PathLab/pages/hematopath/bm.html • Since these cultures are processed using blood culture media and instrumentation, it is necessary to submit all of these cultures in the correct bottles supplied by Quest Diagnostics. Use BD BACTEC® MycoF/Lytic (red label/cap) bottle(s). Decontaminate the diaphragm bottle top by swabbing with 70% alcohol. Allow it to dry. Do not submit yellow-top SPS or green-top Heparin tubes for Fungal or Mycobacterial blood cultures.
Collection Device	Bone marrow aspiration needle with 10 mL syringe

Transport Device	BACTEC® MycoF/Lytic bottle 
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible. Prior to pick-up, keep the blood culture bottles or tubes at room temperature away from direct sunlight and/or ventilation sources. If pick-up is delayed, do not refrigerate or incubate the bottles. The bottles **must be stored at room temperature.** They are stable for up to 48 hrs at room temperature.

Bone Marrow Core Specimens for Bacteria

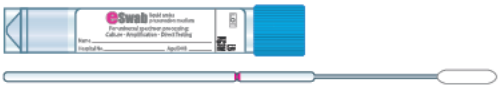
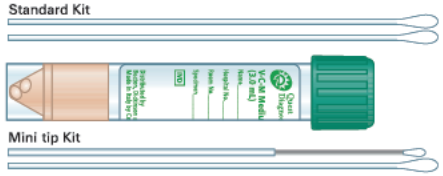
Use	For the diagnosis of systemic bacterial infections
Precautions	A bone marrow biopsy may be done in a healthcare provider's office or in a hospital. Informed consent for the procedure is typically required.
Specimen Sources	Bone Marrow Core specimens
Specimen Collection Instructions	Apply iodine/iodophor (12% tincture of iodine or 10% providone iodine) or chlorhexidine for 60 seconds in concentric circles away from the venipuncture site covering an area 1½-2 inches in diameter. After the puncture site has been decontaminated, do not touch. If the patient is allergic or sensitive to iodine, cleanse with 70% alcohol only. Scrub for 60 seconds and let dry completely. The patient is asked to lie on their abdomen or side. The skin is cleansed, and a local anesthetic such as lidocaine is injected in area. (Patients may need to be pretreated with analgesics and/or anti-anxiety medications). A 4" 11 gauge Jamshidi biopsy needle is inserted through the skin using manual pressure until it contacts bone and is then advanced into the marrow using a twisting motion. Remove obturator when needle is firmly anchored in bone. Advance needle 1-2 cm more with continued "back and forth" rotation. To determine the length of the biopsy specimen in the needle, the obturator can be carefully reinserted into the needle. An ideal biopsy core is 2 cm or greater in length. Break off the biopsy specimen from the surrounding bone by vigorously rotating the needle 360 degrees several times while applying slight pressure. Decreased resistance to rotation usually indicates detachment of the core from the surrounding bone. If difficulty is encountered, withdraw the needle slightly (2-3 mm, do not replace obturator), redirect tip at new angle, and readvance 2-3 mm with rotation, to break off the biopsy core. Rotate needle during withdrawal through bone, periosteum, and skin. Use the small blunt obturator included with each biopsy needle to remove the biopsy core. Hold the needle vertically with the beveled (distal) end up and the hub approximately 2 cm above a sterile container with a bit of non-bacteriostatic saline to prevent drying. Insert the obturator through the distal end of the needle and gently force the biopsy through the hub of the needle onto the container. See: pathology.vcu.edu/education/PathLab/pages/hematopath/bm.html#Anchor-Getting-47857
Collection Device	Biopsy needle with obturator

Transport Device	Sterile, leak-proof screw-cap container with a small amount of saline or Anaerobic Tissue Transport Medium  Sterile, leak-proof container  Anaerobic Tissue Transport Medium
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Specimen will be viable for 3 days in Anaerobe Systems Transport. Sample will be stable for 1-2 days in a sterile container with small amount of sterile saline.

Bone Marrow Core Specimens for Mycobacteria or Fungi

Put core into leak-proof, sterile, plastic screw-cap container with a small amount of non-bacteriostatic sterile saline to prevent drying. Refer to instructions for **Bone Marrow Core Specimens for Bacteria**

Bordetella pertussis/parapertussis DNA, Qualitative, Real-Time Time PCR

Use	Determination of infection
Note	Only patients with signs and symptoms consistent with pertussis should be tested by PCR.
Precautions	Avoid contamination with nasal or oral flora by using a sterile rayon, Dacron® or flocked nylon swab. Specimens should be obtained by aspiration or swabbing the posterior nasopharynx, rather than by throat swabs or anterior nasal swabs
Specimen Sources	Nasopharyngeal swab or nasopharyngeal wash/aspirate.
Specimen Collection Instructions	Immobilize patient's head and insert swab through a nostril. Push forward using gentle downward pressure to keep the swab on the floor of the nasal cavity until the tip reaches the posterior wall of the nasopharynx. Rotate gently for a few seconds and remove. Break off swab into appropriate transport medium. Guidelines with diagrams for proper collection of nasopharyngeal swabs are available at many websites, including this link from New York City: nyc.gov/html/doh/downloads/pdf/flu/h1n1-npswab.pdf. Collect aspirates using a #5–8 disposable infant feeding tube attached to a 10 mL syringe or large suction bulb. If material cannot be aspirated, instill up to 5 mL of saline into the nasal passages and re-aspirate to collect washings. As an alternative, use a suction catheter with a mucus trap. Add an equal amount of aspirate to transport medium.
Collection Device	Sterile rayon, Dacron®, or flocked nylon swab with a flexible shaft.
Transport Device	Viral transport medium, V-C-M medium (green cap) tube, multimicrobe media (M4), liquid Amies tube, ESwab, or equivalent.  Quest Diagnostics-supplied V-C-M transport medium or equivalent Green-top flexible wire liquid transport  

Unacceptable Specimens	• Swabs not in appropriate transport medium • Cotton tipped swabs or calcium alginate swabs • Swabs of the Anterior Nares or Throat • Sputum, bronchoalveolar lavage fluid
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible on cold packs (2-8 °C). • Nasopharyngeal aspirate: Room temperature: 48 hrs, Refrigerated: 8 days, Frozen 30 days • Nasopharyngeal swab: Room temperature 7 days, Refrigerated 7 days, Frozen 30 days.

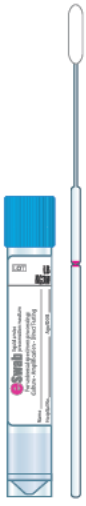
Bordetella pertussis/parapertussis Smear by DFA

The most sensitive test for Bordetella pertussis/parapertussis is DNA, Qualitative, Real-Time PCR.

Use	Determination of infection or carriage
Special Note	Simultaneous direct fluorescent antibody stain (DFA) microscopy and culture for *Bordetella* is more sensitive than culture alone. If a DFA stain is desired, submit 2 slides with 2 smears on each slide, air-dried. Hold and transport specimens refrigerated (stable for 2 days).
Precautions	Avoid contamination with nasal or oral flora by using a specifically designed nasopharyngeal swab of the flexible, flocked nylon or twisted-wire mini-tip culture swab type.
Specimen Collection Instructions	Immobilize patient's head and insert swab through a nostril. Push forward using gentle downward pressure to keep the swab on the floor of the nasal cavity until the tip reaches the posterior wall of the nasopharynx. Rotate gently for a few seconds and remove. Guidelines with diagrams for proper collection of nasopharyngeal swabs for either viral or bacterial studies (different transport medium) are available at many websites, including this link from New York City: nyc.gov/html/doh/downloads/pdf/flu/h1n1-npswab.pdf
Collection Device	Flocked nylon swab **or** yellow-cap mini-tip culture swabs with a thin flexible wire that is specifically designed for NP use.
Transport Device	Air-dried smear on glass, Amies yellow-cap mini-tip culture swab or ESwab  Glass slide **or**  ESwab
Unacceptable Specimens	• Dry swabs • Specimens in expired transport devices • Frozen specimens
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible. • Smear on glass slide: Room temperature: 48 hrs, Refrigerated: 72 hrs • ESwab in Amies: Room temperature: 2 hr, Refrigerated: 96 hrs

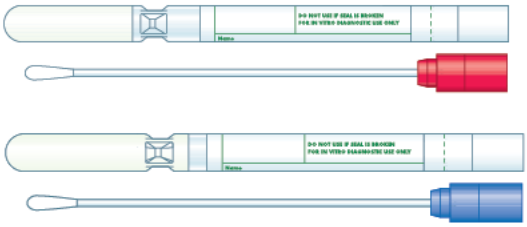
Bordetella pertussis/parapertussis Culture

The most sensitive test for Bordetella pertussis/parapertussis is DNA, Qualitative, Real-Time PCR.

Use	Determination of infection
Note	The most sensitive test for *Bordetella pertussis/parapertussis* is DNA, Qualitative, Real Time PCR.
Precautions	Avoid contamination with nasal or oral flora by using a sterile rayon, Dacron® or flocked nylon swab.
Specimen Collection Instructions	Immobilize patient's head and insert swab through a nostril. Push forward using gentle downward pressure to keep the swab on the floor of the nasal cavity until the tip reaches the posterior wall of the nasopharynx. Rotate gently for a few seconds and remove. Guidelines with diagrams for proper collection of nasopharyngeal swabs for either viral or bacterial studies (different transport medium) are available at many websites, including this link from New York City: nyc.gov/html/doh/downloads/pdf/flu/h1n1-npswab.pdf Nasal washings are also acceptable. See "Respiratory Syncytial Virus Antigen" for specimen collection instructions.
Collection Device	Blue-cap flocked nylon ESwab specifically designed for NP use.
Transport Device	Blue-cap ESwab in Amies medium. 
Unacceptable Specimens	• Dry swabs, frozen specimens, swabs in medium other than Regan-Lowe, Bordet Gengou or ESwab Liquid Amies. • Specimens in expired transport devices, or in viral transport medium. • Frozen specimens • Cotton-tipped swabs • Swabs of the Anterior nasal/Nares
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible. • Swab in Regan-Lowe: Room temperature: 48 hrs Refrigerated: 72 hrs • ESwab in Amies: Room temperature: 2 hrs Refrigerated: 96 hrs

BV Smear Nugent Score

Use	A Gram stain smear evaluation of vaginal flora for diagnosis of bacterial vaginosis (BV). BV in the symptomatic patient is defined as a shift in the vaginal flora from predominately lactobacilli to a variety of other morphologies.
Specimen Sources	Vaginal swab
Collection Device	Swab in Amies transport or air-dried smear in slide transport device.

Transport Device	Red- or blue-cap rayon swab 
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Sample will be viable for 2 days. Do not freeze.

***Campylobacter* Antigen**	
Use	Determination of infection with *Campylobacter* by non-culture method
Specimen Sources	Stool placed in Cary-Blair (peach label) based transport medium to the fill line
Specimen Collection Instructions	**Avoiding contact with urine**, pass stool directly into the vial **or** pass stool into a large clean container (such as a cut-out milk jug, or margarine container) **or** onto plastic wrap placed under the seat of the toilet. There are also commercial stool collection devices commonly referred to as "hats" that may be used. Transfer some of the specimen into the Cary-Blair vial. A tongue depressor provided by your doctor, or other handy implement, such as a plastic spoon, may be used to transfer stool into a clean vial. **If the stool is loose or liquid, pass directly into a container, not onto plastic wrap.**
Unacceptable Specimens	• Stools submitted on swabs and stools mixed with urine • Unpreserved stool
Collection Device	Clean, leak-proof container
Transport Device	Cary-Blair based transport medium on cold packs preferred. Room temperature ***or*** frozen transport acceptable. 
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at refrigerated temperature **or** frozen at -20 °C. Specimen will be viable for 2 days at refrigerated temperature and for seven days when frozen at -20 °C. **NOTE:** Repeated freezing and thawing must be avoided.

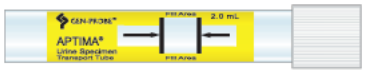
Catheter Tips – Intravascular, Semi-Quantitative Culture	
Use	Determination of focus of blood borne infection
Specimen Sources	Intravascular catheters may become colonized when they are inserted through the skin. The 2 broad categories of devices, long varieties and short varieties, are submitted differently: • Long (indwelling) catheters, such as central venous lines, should not be submitted in their entirety. Submit the distal 2-3 cm of the indwelling tip along with a 2-3 cm length of the percutaneous portion. Place both pieces in separate sterile containers with just a few drops of non-bacteriostatic sterile saline. • Short (percutaneous) catheters, such as peripheral lines used for vascular access, should be submitted in their entirety in a sterile container with just a few drops of non- bacteriostatic sterile saline. • Label containers as either "indwelling" or "percutaneous."

Collection Device	Sterile leak-proof container
Transport Device	Sterile leak-proof container 
Specimen Collection Instructions	Catheter removal should be performed by skilled medical personnel. Standard precautions and aseptic technique must be followed. 1. Remove the dressing. Disinfect the skin around the catheter site with iodophore or a 70% alcohol solution. 2. Gently hold a dry 2x2" gauze pad over the insertion site, increasing pressure as you smoothly withdraw the catheter. Continue to keep steady pressure on the site for 2-3 minutes to stop the bleeding. 3. Place a bandage over the puncture site. 4. Inspect the catheter for integrity and to be sure that you have removed the entire catheter.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature or refrigerated. Sample will be stable for 1 day at either temperature.

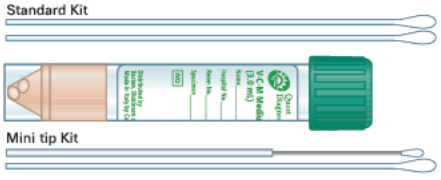
Cerebrospinal Fluid (CSF) Culture

Use	Determination of Central Nervous System infection
Precautions	• Please call the laboratory if the patient has or is suspected of having Creutzfeldt-Jacob Disease (CJD) and also indicate this on the Test Requisition. • Do not submit CSF in a red-top blood collection tube used for chemistry assays as they are not suitable for transport of microorganisms. • Do not use collection tubes commonly included in lumbar puncture kits because they may leak in transit. For optimum results in microbiological analysis, submit the specimen from the second or third tube collected. • Bacterial antigen testing is offered only as a supplement to culture. It should never be used as a substitute for a culture and Gram stain.
Specimen Sources	Follow skin decontamination procedure outlined in the **Anaerobic Cultures** section. For Aerobic and Anaerobic Culture submit at least 2 mL of CSF.
Specimen Collection Instructions	• CSF is collected only by a physician under aseptic conditions: After lumbar puncture, slowly drain the CSF fluid into the sterile leak-proof tubes. Three tubes are generally required for microbiology, hematology, and chemistry. As a rule, the first tube is reserved for additional non-routine testing. The second tube should be labeled for chemistry, the third for microbiology, and the fourth for hematology. **Exception: Always send the most turbid tube to microbiology.** • Use extreme care in the collection of fluid.
Collection Device	Lumbar puncture kit with syringe and needle.
Transport Device	Anaerobic Transport Media is optimum. A sterile, screw-cap tube may also be used, but anaerobic bacteria recovery may be compromised.  Anaerobic Transport Medium
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature **or** refrigerated. Sample will be viable for 1 day.

Chlamydia and *Gonorrhoeae* Nucleic Acid by Transcription Mediated Amplification (TMA), (Gen-Probe® Aptima® Combo 2)	
Specimen Sources	Endocervix, Vagina, Male Urethra, Urine
Specimen Collection Instructions	**Endocervix** 1. Remove excess mucus from the exocervix using the cleaning swab provided in the collection kit (white shaft swab in package with red printing). Discard this swab. 2. Insert specimen collection swab (blue shaft swab in package with green printing) into endocervical canal. Gently rotate swab clockwise for 10–30 seconds in endocervical canal to help ensure adequate sampling. Withdraw swab carefully; avoid any contact with vaginal mucosa. 3. Remove cap from swab specimen transport tube and immediately place specimen collection swab into specimen transport tube. Carefully break swab shaft at score-line; use care to avoid splashing contents. Re-cap swab specimen transport tube tightly. Hold and transport the specimens to the laboratory at 2-30 °C. The specimen is stable for up to 60 days. **Urethra** 1. Patient should not have urinated for at least 1 hour prior to specimen collection. 2. Insert specimen collection swab (blue shaft swab in package with green printing) 2–4 cm into urethra. Gently rotate swab clockwise for 2–3 seconds in urethra to help ensure adequate sampling. Withdraw swab carefully. 3. Remove cap from swab specimen transport tube and immediately place specimen collection swab into specimen transport tube. Carefully break swab shaft at score-line; use care to avoid splashing contents. Re-cap swab specimen transport tube tightly. **Urine** 1. The patient should **not** have urinated for at least 1 hour prior to specimen collection. Female patients should not cleanse their labia prior to providing a specimen. 2. Direct patient to provide first-catch urine (approximately 20–30 mL of initial urine stream) into urine collection cup free of any preservatives. Collection of larger or smaller volumes of urine may result in reduced test sensitivity. 3. Remove cap from urine specimen transport tube and using the disposable pipette provided, transfer 2 mL of urine into in the Gen-Probe® Aptima® Combo 2 Assay urine specimen transport tube. The correct volume of urine has been added when fluid level is between black fill lines on the urine specimen transport tube label. 4. Re-cap urine specimen transport tube tightly. Invert 3–4 times to ensure that the specimen and reagent are well mixed. Label the tube with the patient information and date/time of collection. **Vagina** 1. Partially peel open the swab package. Do not touch the soft tip of the swab or lay the swab down. If the soft tip is touched, the swab is laid down, or the swab is dropped, use a new Aptima® Vaginal Collection Kit. Remove the swab and hold it placing the thumb and forefinger in the middle of the swab shaft. **Do not hold the swab shaft below the score line.** 2. Carefully insert the swab into the vagina about 2 inches past the introitus and gently rotate the swab for 10–30 seconds. Make sure the swab touches the walls of the vagina so that the swab absorbs the moisture. Withdraw the swab without touching the external skin. 3. Remove cap from the vaginal transport tube and immediately place the swab into the specimen transport tube. Carefully break the swab shaft at the score-line; use care to avoid splashing contents. If the contents of the tube are spilled, use a new Aptima® Vaginal Collection Kit. Re-cap vaginal specimen transport tube tightly.
Unacceptable Specimen Collection	• Male urine specimen • Specimens in broken containers • Specimens exceeding stability time limits • Urine specimens with meniscus outside the horizontal black lines on the urine transport tube • White cleansing swab received  • Transports containing 2 swabs • No swab received in Transport Tube

Collection Device	**Endocervical and Urethral:** Aptima® Unisex Swab Specimen Collection Kit for Endocervical and Male Urethral Swab Specimens **Urine:** Aptima® Urine Collection Kit for Male and Female Urine Specimens **Vaginal:** Aptima® Vaginal Swab Specimen Collection Kit for Patient-collected and Clinician-collected Vaginal Swab Specimens (orange-labeled tube with white collection swab).
Transport Device	Aptima® transport tube from the respective collection kit  Unisex Swab Specimen transport tube (white label)  Urine Specimen transport tube (yellow label)  Vaginal Swab transport medium (orange label)
Specimen Storage and Stability	Store and transport the specimens to the laboratory at 2-30 °C. The specimen is stable for up to 30 days.

Chlamydia trachomatis Culture

Use	Culture screen for *Chlamydia trachomatis*. Nucleic acid tests are also available for the detection of *C. trachomatis* (see Chlamydia and Gonorrhoeae Nucleic Acid Detection in this section), but culture is desirable under certain jurisdictions.
Specimen Sources	Urethral, eye, cervical, anorectal or throat
Specimen Collection Instructions	Collect specimens using a sterile rayon, Dacron® or flocked nylon swab containing gel. After collection, place swab in V-C-M medium (green cap) tube supplied by Quest Diagnostics. **Cervical Specimens:** Specimens from the female cervix should contain as many columnar epithelial cells as possible, since *C. trachomatis* is an intracellular organism. Clean the cervix with a sterile rayon swab before sampling. Insert the swab into the cervical canal and rotate the swab at the squamo-columnar junction. Withdraw the swab without touching the vaginal surfaces. **Urethral Specimens:** Specimens from the male urethra should also contain intact epithelial cells to ensure an accurate diagnosis. It is preferable that patients do not urinate one hour before collection of the swab. Insert the swab 2-4 cm into the urethra using a Dacron® or rayon mini-tip swab. Rotate the swab and withdraw. **Rectal mucosa:** Specimens from the male urethra should also contain intact epithelial cells to ensure an accurate diagnosis. It is preferable that patients do not defecate one hour before collection of the swab. Insert the swab 2-4 cm into the anorectum using a Dacron® or rayon swab. Rotate the swab and withdraw. **Conjunctival:** Specimens should also contain intact epithelial cells to ensure an accurate diagnosis. It may help to slightly moisten the mini-tip swab in Chlamydia transport medium before sampling.
Collection Device	A sterile rayon, Dacron® or flocked nylon swab
Transport Device	V-C-M medium (green cap) tube supplied by Quest Diagnostics 

Unacceptable Specimens	Dry swabs, frozen specimens, specimens in expired transport devices, or in viral transport medium.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at refrigerated temperatures. Sample will be stable for 48 hours.

Clostridium difficile Culture with Reflex to PCR

Use	Determination of infection with toxin-producing *C. difficile*
Clinical Notes	While enzyme immunoassays for toxin(s) A and/or B have good specificity, false negative rates of 10-20% have been reported. Culturing for *C. difficile* may improve the sensitivity of laboratory diagnosis. Since 20-25% of isolates do not produce toxin, isolates must then be tested for toxin production.
Specimen Sources	About 5 mL of liquid or non-formed stool, preferred
Special Instructions	• Obtain specimen prior to commencement of *C. difficile* directed antibiotic therapy. • Care should be taken in specimen collection. Alcohol wipes and lotions are ineffective against spores of *C. difficile*. Wash hands well with soap and water.
Specimen Collection Instructions	**Avoiding contact with urine,** pass stool directly into a large clean container (such as a cut out milk jug, margarine container) **or** onto plastic wrap placed under the seat of the toilet. There are also commercial stool collection devices commonly referred to as a "hat" that may be used. *If the stool is loose or liquid, pass directly into a container, not onto plastic wrap.* Using the collection spoon built into the lid of the Cary-Blair transport vial, obtain scoops of stool from areas that appear bloody, slimy, or watery and place them into the vial until the volume rises to the "fill to here" line. If the stool is formed (hard), sample small amounts from each end and the middle. Mix the contents of the vial with the spoon, twist the cap tightly closed, and shake until the contents are well mixed. A tongue depressor provided by your doctor, or other handy implement, such as a plastic spoon, may be used to transfer stool into a clean vial. Mix well and refrigerate the specimen. Rectal swabs are also acceptable if stool cannot be obtained.
Unacceptable Specimens	• Formed stool • Raw stool at room temperature • Specimens from children <1 yr • Specimens exceeding stability • Specimens in expired transport media • Specimens in viral transport media
Collection Device	Clean, leak-proof container
Transport Device	Anaerobic (Blue Cap) swab or a Anaerobic Transport Medium tube or vial  Anaerobic Transport Medium Stool in clean leak-proof container Stool in Cary-Blair (peach label) transport medium, also acceptable  or  Clean vial (tan label) Cary-Blair transport medium

Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at refrigerated temperature, or frozen on dry ice. Specimens in Cary-Blair, on a blue-cap swab or in clean vial, will be viable for 2 days at refrigerated temperature and for 7 days when shipped and frozen at -70 °C on dry ice. **NOTE:** Repeated freezing and thawing must be avoided.

***Clostridium difficile* Toxins A & B/GDH with Reflex to PCR**	
Use	Determination of infection with toxin-producing *C. difficile*
Specimen Sources	About 5 mL of liquid or non-formed stool
Special Instructions	Testing should be limited to patients over 6 months of age with clinically significant diarrhea and a history of antibiotic exposure.
Specimen Collection Instructions	**Avoiding contact with urine,** pass stool directly into the vial **or** pass stool into a large clean container (such as a cut-out milk jug or margarine container) **or** onto plastic wrap placed under the seat of the toilet. There are also commercial stool collection devices commonly referred to as "hats" that may be used. Transfer some of the specimen into the vial. A tongue depressor provided by your doctor, or other handy implement, such as a plastic spoon, may be used to transfer stool into a clean vial; mix well. **If the stool is loose or liquid, pass directly into a container, not onto plastic wrap.**
Unacceptable Specimens	Formed stool Stools submitted in preservative Stools submitted on swabs and stools mixed with urine Specimens stored at room temperature for >4 hrs Unpreserved stool >48 hrs old that has not been frozen
Collection Device	Clean, leak-proof container
Transport Device	Clean, leak-proof container (tan label) 
Specimen Storage and Stability	Transport to local laboratory for testing as soon as possible at refrigerated temperature, or frozen at -20 °C. The specimen will be viable for 3 days at refrigerated temperature and for at least 7 days when frozen at -20 °C. If shipped to a referral laboratory, it is best to freeze the specimen using dry ice. **NOTE:** Repeated freezing and thawing must be avoided.

***Clostridium difficile* Toxin B, QL Real Time PCR**	
Use	Determination of infection with toxin-producing *C. difficile* by PCR method
Specimen Source	About 5 mL of liquid, or soft stool
Collection Device	Sterile, leak-proof container
Specimen Collection Instructions	Transfer liquid or soft stool (but not urine) into the container. Avoid mixing toilet paper or soap with the sample. Store sample refrigerated until shipment.
Unacceptable Specimens	Specimen other than liquid or semi-formed stool Stool in preservative or mixed with urine Specimen in wrong transport container
Specimen Storage and Stability	Transport to laboratory for testing frozen at -70 °C on dry ice. Stable for 7 days at -70 °C.

Cryptococcal Antigen Screen with Reflex to Titer (Latex and Immunoassay Tests)	
Use	Determination of infection by *Cryptococcus neoformans* or *C. gattii*. Progressive disease is usually accompanied by increasing antigen titers, while declining titers are usually associated with clinical improvement.
Specimen Sources	CSF or serum
Specimen Collection Instructions	**CSF** is collected under aseptic conditions. After the lumbar puncture, slowly drain the CSF fluid into the sterile, leak-proof tubes. Three tubes are generally required for microbiology, hematology, and chemistry. As a rule, the first tube is used for additional non-routine testing. The second tube should be labeled for chemistry, the third for microbiology, and the fourth for hematology. **Exception: Always send the most turbid tube to microbiology.** **Serum:** use routine venipuncture collection procedures
Unacceptable Specimens	Specimens other than serum or CSF.
Collection Device	Lumbar puncture kit with syringe and needle.
Transport Device	CSF: Sterile, screw-cap tube  Serum: Red-top tube (no additive), or serum separator tube
Specimen Storage, Transport and Stability	Deliver to laboratory as soon as possible. Specimens will be stable for 7 days if submitted refrigerated (cold packs). Serum may be submitted frozen (-20 °C or colder) and is stable for 60 days.

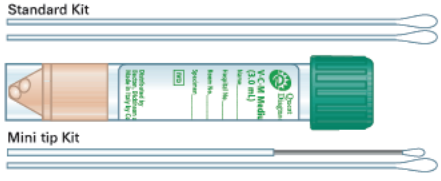
Cryptosporidium Antigen (in Stool) DFA	
Use	Determination of infestation
Specimen Sources	About 10 g or 10 mL of fresh stool (large walnut size) in formalin or Total-Fix™. Formed, liquid or semi-solid specimens are all acceptable.
Precautions	The patient must not use barium products, antacids, anti-diarrheal medications or laxatives containing oil prior to collection of a specimen for parasitological exam.
Special Instructions	Transfer stool within 30 minutes of collection into a 10% formalin or Total-Fix™ vial to the “fill to here” line. Since the number of oocysts present in stool specimens varies from day to day, multiple specimens should be examined. It is recommended that a series of three stool specimens be submitted over consecutive days for optimal recovery of cryptosporidium.
Specimen Collection Instructions	**Avoiding contact with urine,** pass stool directly into the vial **or** pass stool into a large clean container (such as a cut-out milk jug or margarine container) **or** onto plastic wrap placed under the seat of the toilet. There are also commercial stool collection devices commonly referred to as a “hat” that may be used. Transfer some of the specimen into the vial using the spoon attached to the cap of a 10% formalin vial or use a tongue depressor provided by your doctor, or other handy implement such as a plastic spoon. Add enough specimen to the “Fill to Here” line on the vial. If the stool is loose or liquid, pass directly into a container, not onto plastic wrap.
Unacceptable Specimens	• Unpreserved stool specimens regardless of transport temperature. • Stool specimens submitted in MF/MIF or alcohol based media. • Stool specimens submitted in Poly vinyl alcohol (PVA). • Stool specimens submitted in alcohol based O&P transport medium. • Specimens in diapers or expired transport device.
Collection Device	Clean, leak-proof container

Transport Device	10% Formalin Vial (pink label) 	Total-Fix™ 
Specimen Storage, Transport and Stability	Store and transport at room temperature. Specimen will be stable for at least 6 months.	

***Cyclospora* and *Isospora* Examination and *Microsporidium* Spore Detection**	
Use	Determination of infestation
Specimen Sources	About 10 g or 10 mL of fresh stool (large walnut size) in 10% formalin transport or Total-Fix™. Formed, liquid or semi-solid specimens are all acceptable.
Precautions	• Barium, antimalarials, mineral oil and other laxatives interfere with the detection of intestinal protozoa. Specimens submitted from patients that have been treated with the above must be collected at least 7-10 days post treatment. • Antimicrobial agents (wait 2 weeks) • Gallbladder dye (wait 3 weeks after procedure) • Specimens should never be frozen or placed in an incubator. Refrigeration is not required. • Parasite examinations cannot be performed on specimens submitted in stool culture transport vials or any other transport media specifically designed for bacterial pathogens.
Specimen Collection Instructions	Patient Instructions for Stool Sample Collection for O & P 1. Avoiding contact with urine, pass stool directly into a large clean container (such as a cut-out milk jug or margarine container) or onto plastic wrap placed under the seat of the toilet. There are also commercial stool collection devices commonly referred to as a "hat" that may be used. If the stool is loose or liquid, pass directly into a container, not onto plastic wrap. 2. Transfer to the transport vials within 30 minutes of collection. 3. Open the transport vial. 4. Using the collection spoon built into the lid, obtain scoops of stool from areas that appear bloody, slimy or watery and place them into the vial until the volume rises to the red line. If the stool is formed (hard), sample small amounts from each end and the middle. Load to the "fill line" ensuring that the preservative completely covers the specimen. 5. Mix the contents of the vial thoroughly with the spoon, twist the cap tightly closed, check the cap to be sure it is secured and shake until the contents are well mixed. 6. Keep and transport preserved stool specimen at room temperature.
Unacceptable Specimens	• Duodenal aspiration in 10% formalin vial for microsporidium • Stool preserved in medium other than 10% formalin or Total-Fix™ • Specimens submitted without preservative will be rejected • Specimen containing barium • Specimen received frozen • Do not use kits beyond their date of expiration
Collection Device	Collect the stool specimen in a clean, dry container

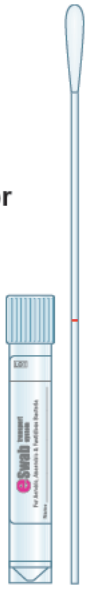
Transport Device	10% formalin transport vial (pink label)  Total-Fix™ 
Specimen Storage, Transport and Stability	Stool: • **For Cyclospora & Isospora examination,** transport to laboratory for testing as soon as possible at room temperature. Sample will be stable for 6 months. • **For Microsporidium Spore detection,** transport to laboratory for testing as soon as possible at room temperature or refrigerated. Sample will be stable for 1 month.

Cytomegalovirus (CMV) Culture, Rapid

Use	Determination of infection
Precautions	Labile specimen. Refrigerate as soon as possible or freeze at -70 °C (dry ice).
Special Instructions	For specimens collected by swab, use cotton, rayon or Dacron® swabs with plastic or metal shafts submitted in Viral/Chlamydia/Mycoplasma (V-C-M) or M4 medium.
Specimen Sources	**Urine:** First-morning or random clean, voided urine collected in a sterile collection cup with a tight-fitting, screw-cap, or added to V-C-M or M4 transport medium. **Respiratory tract specimens:** sputum, bronchial washings (lavage) (BAL), tracheal aspirates in V-C-M or M4 Transport medium **Tissues** **Body fluid:** saliva, semen, tears, or bone marrow **Swab specimens:** rectal lesion, throat, vaginal or cervical Tissue specimens kept moist in sterile saline. Specimens in V-C-M transport medium.
Specimen Collection Instructions	Tissues, fluids (up to 2 mL), and swabs should be placed in V-C-M or equivalent viral transport medium.
Collection Device	**Tissues or fluids:** sterile screw-cap container **Swabs:** sterile rayon, Dacron® or flocked nylon swab or rayon-tipped swabs with flexible shaft. Body site specific viral collection kits (NP, genital and skin surface) with V-C-M are available from Quest Diagnostics. **Urine:** collection kit is provided containing a BD plastic 4 mL gray-top tube with preservative that prevents rapid multiplication of bacteria in the urine during specimen transport, which could cause colony counts to be erroneously high.
Transport Device	Quest Diagnostics-supplied V-C-M transport medium or equivalent 
Unacceptable Specimens	• Dry swabs • Specimens in formalin or other fixatives

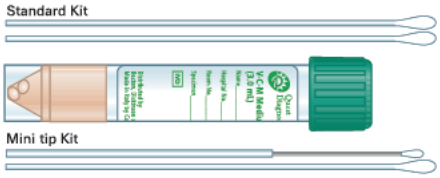
	Gel-based transport systems Nucleic acid transport systems Specimens on glass slides Stool specimen Whole blood, serum or plasma Wooden-shaft and calcium alginate swabs
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible refrigerated on cold packs. Sample will be viable for up to 4 days. The specimen will be stable up to 30 days if frozen at -70 °C (dry ice).

Ear, External, Culture

Use	Determination of infectious agents causing otitis externa and otitis media
Specimen Sources	Collect specimen from external canal using aerobic swab devices (Left ear swab, or right ear swab)
Collection Device	Red- or blue-cap rayon swab or ESwab
Transport Device	Red- or blue-cap rayon swab or ESwab  Red-cap rayon swab **or**  Blue-cap rayon swab **or**  ESwab
Specimen Collection Instructions	**Otitis, Externa** • For simple cases of otitis externa, remove debris. Collect exudate using a sterile culture swab from the external canal. • Use a sterile rayon, Dacron® or flocked nylon swab to collect the specimen. After collection, plunge the swab into gel transport medium to prevent drying. **Otitis Media** • Clean the external canal with mild soap, such as 5 % green soap or Ivory®, and rinse well. • If the eardrum has ruptured, collect exudate using a sterile culture swab and submit as an External Ear Culture. • For tympanocentesis specimens, use a syringe aspiration technique to obtain fluid from behind the external ear drum and inoculate an Anaerobic Transport Medium. • If the appropriate transport system is not available, the syringe can be submitted. Do not submit a syringe with the needle attached. If submitting a syringe, remove the needle, expel air and recap the syringe.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. **Do not refrigerate.** Sample will be viable for 2 days.

Enterovirus Culture

Use	Determination of infection
Special Instructions	For specimens collected by swab, use sterile rayon, Dacron® or flocked nylon swab or rayon-tipped swabs with flexible shaft or twisted-wire metal shafts supplied by Quest Diagnostics in Viral/Chlamydia/Mycoplasma (V-C-M), UTM or M4 medium.
Specimen Sources	Throat swabs or 2 mL of throat aspirate/wash, cerebrospinal fluid (CSF), vesicular or ulcerative lesions, and stool. Other Acceptable specimens: Rectal swab, nasopharyngeal and lower respiratory. For optimal detection of Enterovirus from plasma and or CSF, we recommend Enterovirus, RNA, Qualitative, Real time PCR testing.
Specimen Collection Instructions	**Throat:** 1. Vigorously swab tonsillar area and posterior oropharynx using a sterile rayon, Dacron® or flocked nylon swab or rayon-tipped swabs with flexible shaft. Avoid touching the lips, cheeks, tongue and uvula. 2. Break swab tip(s) off into V-C-M transport medium. Refrigerate. **Bronchial lavage, bronchial washings, or tracheal aspirates-** Collect sample and transfer up to 2 mL to the V-C-M transport medium. Alternatively, sample may be submitted in a sterile, leak-proof container. **Cerebrospinal Fluid (CSF):** Collect aseptically. Add fluid to equal volume of V-C-M transport medium or equivalent. Alternately, submit a minimum of 1-2 mL in sterile, leak-proof container. **Lesion:** 1. If vesicle is present, disrupt the vesicle and collect the fluid with a sterile rayon, Dacron® or flocked nylon swab or rayon-tipped swabs with flexible shaft. With the same swab, collect cells from the base of the vesicle by vigorous rubbing. 2. Transfer the swab to V-C-M transport medium and break the tip into the medium. 3. For non-vesicular lesions, vigorously swab the base of the lesion to pick-up infected cells. Break swab tip(s) off into V-C-M transport medium. **Stool:** 1. Collect specimen in clean, dry container. 2. Transfer sufficient stool to V-C-M (green-top) tube to make a 20–40% suspension in V-C-M transport medium. Refrigerate. **Rectal:** Insert sterile rayon, Dacron® or flocked nylon swab or rayon-tipped swabs with flexible shaft at least 3 centimeters into anal orifice; rotate to help ensure sufficient stool specimen on swab. **Mucosa:** 1. Insert swab 4–6 centimeters into rectum and roll swab against the mucosa. Examine the swab to help ensure that fecal material is not present. 2. Break the swab tip(s) into V-C-M transport medium. Refrigerate. **Nasopharyngeal Swab:** 1. **See Influenza A&B, Rapid Culture** in this section. Insert a sterile rayon, Dacron® or flocked nylon swab or rayon-tipped swabs with flexible shaft through the nose into the nasopharynx and gently rotate. 2. Allow a few seconds for the swab to absorb the secretions. 3. Remove the swab and place into V-C-M transport medium, snap off or cut wire shaft with scissors and cap. Refrigerate.
Collection Device	**Throat wash:** Sterile screw-cap container. **Swabs:** Sterile rayon, Dacron® or flocked nylon swab or rayon-tipped swabs with flexible shaft. Body site specific viral collection kits (NP, genital and skin surface) with V-C-M are available from Quest Diagnostics. Cut the wire swab off and place in V-C-M. Do not use plastic sheath. **CSF:** Lumbar puncture kit with syringe and needle.

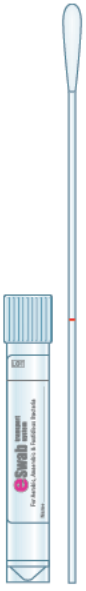
Transport Device	Specimen should be transported in viral transport media such as V-C-M transport medium, UTM or Microtest M4 media (red or blue label).  Or, cut the nasopharyngeal wire swab off and place in V-C-M. Do not use plastic sheath.
Unacceptable Specimens	• Formalin or other fixatives, any specimen • Sample types other than listed as acceptable • Dry swabs • Specimens at inappropriate transport temperature (RT or frozen raw samples) • Specimens >48 hrs old • Expired viral transport media or inappropriate transport media (e.g., Stuart's, Amies, gel-based media, charcoal medium, or nucleic acid transport systems) • Whole blood, bone marrow, serum, plasma, urine or tissue
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible refrigerated on cold packs. Refrigerated sample will be viable for up to 72 hours. If placed into V-C-M transport medium, the specimen will be stable refrigerated up to 4 days, or 30 days if frozen at -70 °C (dry ice).

Eye, Culture

For *Acanthamoeba*/*Naegleria sp.* culture, refer to Amoeba (Intestinal) Examination.

For *Chlamydia trachomatis* eye culture, refer to *Chlamydia trachomatis* Culture.

For fungi, refer to Fungus Cultures.

Use	Determination of bacterial infection. See Chlamydia and fungal culture.
Specimen Sources	Conjunctival and corneal scrapings
Collection Device	Conjunctiva: Blue-cap rayon swab or ESwab Cornea: Media furnished by Quest Diagnostics
Transport Device	Same as the collection devices  Blue-cap rayon swab or  ESwab

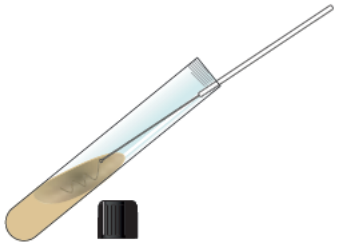
Specimen Collection Instructions	**Conjunctivitis:** Use a sterile rayon, Dacron® or flocked nylon swab and roll it over the conjunctiva behind the eyelids. Immediately replace the swab into its aerobic transport medium and send to the laboratory. A swab for conjunctival culture should be taken before topical anesthetic application. **Corneal Scrapings:** Contact the laboratory ahead of time to obtain media and special instructions for inoculation. If conjunctival cultures will also be submitted, collect them first. Instill 1-2 drops of topical anesthetic. Using a sterile corneal spatula gently scrape corneal ulcers or lesions. Directly inoculate media furnished by Quest Diagnostics.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. **Do not refrigerate.** Sample will be viable for 2 days.

Fecal Leukocytes (Stool Exam for WBC)

Use	Detection of leukocytes which may indicate inflammation
Specimen Sources	About 10 g or 10 mL of fresh stool (large walnut size) in a Total-Fix™ zinc polyvinyl alcohol (Zn-PVA) transport vial. Formed, liquid or semi-solid specimens are all acceptable.
Precautions	Barium, antimalarials, antimicrobials, mineral oil and other laxatives interfere with the detection of intestinal protozoa. Specimens submitted from patients that have been treated with the above must be collected at least 7-10 days post treatment. Wait 3 weeks after gallbladder dye administration procedure. Specimens should never be frozen or placed in an incubator. Refrigeration is not required.
Special Instructions	Do **not** use laxative products when nausea, vomiting or abdominal pain is present unless directed by a physician. Do **not** use in patients with congenital megacolon, bowel obstruction, imperforate anus or congestive heart failure. Use with caution in patients with impaired renal function, pre-existing electrolyte disturbances, those on diuretics or other medications that may affect electrolyte levels, **or** where a colostomy exists.
Specimen Collection Instructions	1. **Avoiding contact with urine,** pass stool directly into a large clean container (such as a cut-out milk jug or margarine container) or onto plastic wrap placed under the seat of the toilet. There are also commercial stool collection devices commonly referred to as a "hat" that may be used. If the stool is loose or liquid, pass directly into a container, not onto plastic wrap. 2. Transfer to the transport vials within 30 minutes of collection. 3. Open the transport vials. 4. Using the collection spoon built into the lid, obtain scoops of stool from areas that appear bloody, slimy or watery. Place into the vial until the volume rises to the red line. If the stool is formed (hard), sample small amounts from each end and the middle. Load to the "fill line", ensuring that the preservative completely covers the specimen. 5. Mix the contents of the vial thoroughly with the spoon, twist the cap tightly closed, check the cap to be sure it is secured and shake until the contents are well mixed. 6. Keep and transport preserved stool specimens at room or refrigerated temperatures (stable 6 months).
Unacceptable Specimens	• Stool preserved in medium other than Total-Fix™ or Polyvinyl alcohol (PVA) • Specimens submitted without preservative will be rejected • Specimen containing barium • Specimen received frozen • Urine specimen with preservative • Do not use kits beyond their date of expiration
Collection Device	Collect the stool specimen in a clean, dry container.

Transport Device	Zinc Polyvinyl alcohol (Zn-PVA) transport vial  Total-Fix™ 
Specimen Storage, Transport and Stability	Transport to laboratory for testing as soon as possible at room temperature. Sample will be stable for 6 months.

Fungal Isolate Identification

Use	Identification of pure culture isolate. Antimicrobial susceptibilities will be performed on fungal isolates only when requested. **NOTE:** This test is not for susceptibility testing of fungal isolates.
Specimen Sources	Any non-environmental source is acceptable. Indicate specimen source, any relevant patient history and date of inoculation on the test requisition. **Do NOT submit mixed cultures, frozen specimens, liquid media or petri dishes.**
Collection Device	Suitable agar (solid) medium slant sealed with tape, or parafilm.
Transport Device	Same as the collection. Submit sealed screw-capped agar tube in a double-walled container. Refer to **Infectious Substances** in this section. 
Specimen Collection Instructions	Using care to touch only one isolated colony (up to three for susceptibility testing), prepare a fresh sub-culture of the organism to an appropriate agar slant. Incubate until pure confluent growth is present prior to shipping.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Isolate viability varies with organism and transport system.

Fungal Stain

See Specimen collection instructions for:

Fungus Culture of Hair, Skin and Nails or Fungus Culture of Sources other than Blood, Hair, Skin and Nails or Yeast Culture, with Direct Fluorescent KOH

Fungus Culture of Hair, Skin and Nails

Use	Detection of dermatophytes. A Calco-fluor white stain will be performed in addition to culture, in order to maximize sensitivity and provide the clinician useful information more quickly.
Precautions	Specimens for the diagnosis of tinea capitis should include both representative abnormal hairs removed with forceps and scales collected by scraping. Do not submit specimens if the patient is currently undergoing antifungal therapy because this may result in a negative culture. If active antifungal treatment has been initiated, discontinue the treatment for 5–30 days (based on topical vs. systemic treatment) before taking the specimen. If the first culture is negative, a repeat culture is recommended if clinically indicated. If the culture continues to be negative, a biopsy may be indicated.

Specimen Sources	Hair, skin scrapings and nail scrapings/clippings
Collection Device	Scalpel or edge of glass microscope slide.
Transport Device	Place all hair, skin, and nail specimens in a sterile dry container for transport to the laboratory. 
Specimen Collection Instructions	Wipe the affected area with an alcohol swab. Obtain skin specimens for both dermatophytosis and primary cutaneous candidiasis by scraping the active (advancing) borders of the lesion(s) with a scalpel or glass microscope slide. **For nails,** wipe the area with an alcohol swab before collecting the specimen. Take nail specimens from the proximal portion of the nail plate and subungual debris from between the nail plate and bed. Do not submit initial nail clippings (tips of nails). Nail clippings of at least 3 mm in length should be obtained. This will increase the yield of the culture.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. **Do not refrigerate.** Sample will be viable for 7 days.

Fungus Culture, Blood

See Specimen collection instructions for: **Blood Cultures for Bacteria, Fungi or Mycobacteria**

Fungus Culture of Sources other than Blood, Hair, Skin and Nails

Use	Detection of fungal infections. A Calco-fluor white stain will be performed in addition to culture when possible, in order to maximize sensitivity and rapidly give the clinician useful information.
Specimen Sources	Respiratory, Lesion and Other Miscellaneous Sources

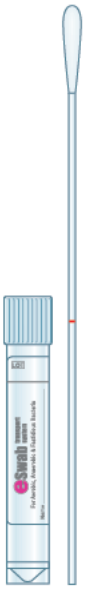
See Specimen Collection Instructions for specimen types using techniques described in the Cultures section for Lower Respiratory and Aerobic Cultures. Add a small amount of sterile saline to biopsy or soft tissue specimens.

Corneal Scrapings may be directly inoculated. Contact the laboratory ahead of time to obtain media and special instructions for inoculation. Instill one two drops of topical anesthetic. Using a sterile corneal spatula, gently scrape corneal ulcers or lesions. Directly inoculate media furnished by Quest Diagnostics.

Transport Containers	Submit in a leak-proof, sterile screw-cap plastic container. Urine may be submitted in a urine bacterial culture transport tube. Submit swabs in Amies liquid transport medium.
Specimen Storage and Stability	Store and transport raw specimens refrigerated. Transport tubes at room or refrigerated temperature. Specimens will be stable for several days.

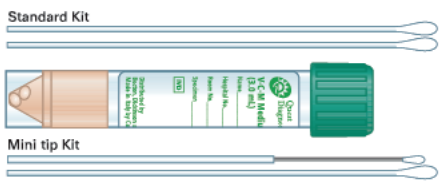
Genital Cultures

Use	Determination of infectious agents post gynecological surgery or delivery. **If Group B *streptococci, Neisseria gonorrhoeae* or *Chlamydia trachomatis* is suspected, order specific cultures or nucleic acid tests for these organisms. For Mycoplasma and Ureaplasma, see *Mycoplasma hominis/Ureaplasma* in this section. For vaginosis/vaginitis, refer to SureSwab® Vaginosis/Vaginitis Panel, Affirm™ Bacterial Vaginosis/Vaginitis Panel Screen, or BV Smear Nugent Score.**
Specimen Sources	Vaginal, Endocervical, Urethral, Prostatic secretions
Collection Device	Blue-cap rayon swab or ESwab

Transport Device	Blue-cap rayon swab or ESwab  Blue-cap rayon swab or  ESwab
Specimen Collection Instructions	Collect genital specimens using a rayon-tipped (blue-cap) BD brand culture swab containing gel. After collection, plunge the swab into the gel transport medium to prevent drying. The swab may be used to culture urethral exudate or inflammation of the vaginal/cervical area.
Unacceptable Specimens	• Dry swabs, frozen specimens, specimens in expired transport devices, or in viral transport medium. • Specimens >48 hrs old • Request for anaerobic culture is inappropriate for this specimen source.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Sample will be viable for 2 days.

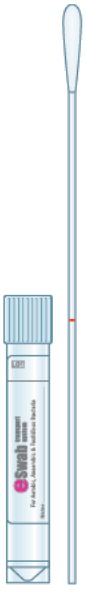
Genital Specimens and Other Body Sources for *Mycoplasma hominis*/*Ureaplasma* Culture

Nucleic acid testing also available from female genital sources. See SureSwab™ test listings.

Specimen Sources	Urogenital (vaginal, cervical, urethral swabs or secretions), sterile body fluids, urine, tissue and wounds. Respiratory (Sputum, Bronchial Washing, Tracheobronchial secretions, Bronchoalveolar lavage, Nasopharyngeal or Throat swabs) are acceptable only from children under 1 year of age.
Collection Device	Obtain specimen using a sterile rayon, Dacron® or flocked nylon swab. Do not use wooden-shafted cotton swabs. **Urine:** Collect specimen in sterile plastic cup and transfer to a centrifuge tube if available. Transfer the sediment into the V-C-M medium. **Respiratory specimens:** Refer to Sputum and Lower Respiratory Tract Specimens for Routine Bacteriology, Mycobacteriology (AFB) and Fungal Cultures in this section.
Transport Device	V-C-M medium (green cap) tube supplied by Quest Diagnostics or equivalent. 
Specimen Collection Instructions	Obtain specimen using a sterile rayon, Dacron® or flocked nylon swab. After collection, place swab into V-C-M medium (green cap) tube supplied by Quest Diagnostics.

	BAL respiratory specimen: Put in a V-C-M at a 1:1 or 1:2 ratio. **Urine:** • Centrifuge for at least 15 minutes in a device with a rotor diameter and speed [RPM] capacity able to develop a relative centrifugal force equivalent to 1250-1600 times *g* [the force of gravity: 9.80665 m/s^2]. Centrifuges supplied by Quest Diagnostics can develop a relative centrifugal force equivalent to between 1450 (fixed angle rotor) and 1600 times *g* (horizontal rotor) when operating within the instrument manufacturer's specifications. • Discard supernate and re-suspend the sediment in V-C-M transport medium. • If centrifugation cannot be performed, add the urine to the V-C-M (green-top) tube using a 1:1 volume of urine to V-C-M transport medium.
Unacceptable Specimens	• Specimens collected on wooden shafted swabs or cotton swabs. • Specimens received in expired transport medium, M4RT transport medium, or at room temperature. • Tissue specimens received in formalin. • Urine specimens received in any preservative.
Specimen Storage and Stability	Refrigerate after collection and during transport to the laboratory. Specimen is stable for 2 days refrigerated.

Genital, Pharyngeal and Rectal Culture for *C. trachomatis* and *N. gonorrhoeae*
Neisseria gonorrhoeae (GC) Culture

Use	Nucleic acid tests are also available for the detection of *N. gonorrhoeae* (see *Chlamydia* and *Gonorrhoeae* Nucleic Acid Detection in this section), but culture is desirable under certain jurisdictions.
Specimen Sources	Urethral, cervical, anorectal or throat
Collection Device	Blue- or yellow-cap rayon swab or ESwab
Transport Device	Blue-cap rayon swab or ESwab  Blue-cap rayon swab **or**  ESwab
Specimen Collection Instructions	Collect specimens using a rayon-tipped (blue-cap) BD brand culture swab containing gel. After collection, plunge the swab into the gel transport medium to prevent drying.
Unacceptable Specimens	Dry swabs, frozen specimens, specimens in expired transport devices, or in viral transport medium. Specimens >24 hrs old.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Sample will be viable for only 1 day.

Giardia lamblia Antigen, Giardia Ag. X2, Giardia Antigen with Reflex to Ova and Parasite If Negative	
Use	Determination of infestation
Specimen Sources	About 10 g or 10 mL of fresh stool (large walnut size) in a Total-Fix™ vial or 10% formalin. Formed, liquid or semi-solid specimens are all acceptable.
Special Instructions	Transfer stool within 30 minutes of collection into a Total-Fix™ or 10% formalin vial only. **NOTE:** Stool in Sodium Acetate Formalin (SAF), Merthiolate-iodine-formalin (MIF) and Cary-Blair media are also acceptable.
Specimen Collection Instructions	**Avoiding contact with urine,** pass stool directly into the vial **or** pass stool into a large clean container (such as a cut-out milk jug or margarine container) **or** onto plastic wrap placed under the seat of the toilet. There are also commercial stool collection devices commonly referred to as a "hat" that may be used. Transfer some of the specimen into the vial using the spoon attached to the cap of a 10% formalin vial or use a tongue depressor provided by your doctor or other handy implement such as a plastic spoon. Add enough specimen to the "Fill to Here" line on the vial. If the stool is loose or liquid, pass directly into a container, not onto plastic wrap.
Unacceptable Specimens	Duodenal/gastric aspirates are not acceptable for this test due to the pH of the specimen. Unpreserved stool specimens regardless of transport temperature Stool specimens submitted in Zinc Polyvinyl alcohol (Zn-PVA) Stool specimens submitted in alcohol-based O&P transport medium Specimens in diapers or expired transport device
Collection Device	Clean, leak-proof container
Transport Device	10% formalin vial (pink label) or Cary-Blair vials Total-Fix™  
Specimen Storage, Transport and Stability	Store and transport at room or refrigerated temperature (stable 2 months). Fresh, unpreserved specimens are stable for 48 hours refregerated or frozen up to 1 year.

Gram Stain	
Use	Rapid determination of infectious agents and to judge specimen quality
Specimen Sources	**Body Fluids, Bronchial Alveolar Lavage (BAL), and Bronchial Brushings:** Specimens should be processed either by a cytospin or regular centrifuge and sediment used to prepare a smear. Using slides with etched rings may help locate the inoculated area. Refer to manufacturer directions for use of cytocentrifuge. **Urine Specimens:** Place one drop of well-mixed, un-centrifuged specimen on a slide with a sterile Pasteur pipette (do not spread the drop). Allow the drop to dry. **Sputum Specimens:** Select the most purulent or most blood-tinged portion of the sample. **Swab specimens:** See specimen collection instructions for specific body sites. **Vaginal specimens:** Refer to BV Smear Nugent Score.
Specimen Collection Instructions	Prepare smears by placing a small drop of material from the specimen in the center of a clean, new glass slide. Spread the sample over a large area of the slide to form a thin film. Proper preparation should lead to a monolayer of cellular material and bacteria that are still dense enough to readily demonstrate organisms. • In general, do not attempt to make smears from body fluids that require centrifugation. • Sputum Specimens: Select the most purulent or most blood-tinged portion of the sample using sterile loops, rayon swabs, or wooden applicators. THE USE OF COTTON-TIPPED SWABS FOR SMEAR PREPARATION IS NOT OPTIMAL. Prepare a thin smear on a clean glass microscope slide and allow it to air dry.

	• If a culture is desired at the same time, it is necessary to perform collection procedures using two swabs. Use one swab to inoculate culture transport media and the second swab to make the smear. Roll the swab gently across the slide to avoid destroying host cells and distorting bacteria. • Air-dry smear: Do not fix with cytology fixative.
Collection Device	See specimen collection devices for specific body site tests in this alphabetical listing. Please do not submit syringes with needle attached. If submitting syringe, please remove the needle, expel air and recap syringe. Sterile screw-cap cups or other sterile containers may be used for whole specimens.
Transport Device	Glass slide in plastic or cardboard slide holder case **Respiratory Specimens:** Sterile, leak-proof, 50 mL screw-cap conical tube portion of the Falcon™ Sputum Collection Device *transported on cold packs.*  Glass slide **or**  Conical tube portion of the Falcon™ Sputum Collection Device
Unacceptable Specimens	• Broken slides or smears too thick to read • Smears fixed with Cytology fixative • Slides previously stained by cytology and cover slipped • Specimens in DNA probe transports or PVA transports • Dry swabs
Specimen Storage and Stability	**Air dried smears:** Stable for at least 10 days at room temperature. **Swabs in transport media:** Stable for 2 days at room temperature. **Gram stain:** Respiratory specimens are stable for up to 24 hrs at room temperature and 48 hrs refrigerated. Stability for culture is less. **Body Fluids:** Stable for 48 hrs at room temperature **Anaerobic Transport Media:** Up to 72 hrs room temperature

Group A *Streptococcus* Antigen with Reflex to culture If Antigen Is Negative	
Use	Determination of infection with group A *streptococcus*
Specimen Sources	Posterior pharynx
Precautions	Uncommon, acute life-threatening diseases associated with untreated pharyngitis include peritonsillar, or retropharyngeal abscesses, diphtheria and epiglottitis, which may cause acute, complete airway obstruction. Airway management should be considered prior to throat culture if these conditions are suspected.
Special Instructions	Two swabs should be submitted for this test. Throat specimens should not be collected if the patient may have epiglottitis, a rapidly progressing infection with potential to cause complete airway obstruction. If epiglottitis is suspected, prompt otolaryngologic consultation for airway management is recommended.
Specimen Collection Instructions	Use a single, or a double (see above), aerobic culture swab to sample the back of the throat (posterior pharynx), tonsillar crypts, and between the tonsillar pillars and uvula. Avoid touching the lips, cheeks, tongue and uvula. Throat specimens should not be collected if the patient may have epiglottitis.

Unacceptable Specimens	• Specimens collected from other sources than the throat. • Swabs with wooden shafts, calcium alginate, or cotton tips. • Frozen specimens, specimens in expired transport devices, or in viral transport medium or in Gen-Probe collection devices and specimens >48 hrs old.
Collection Device	Two swabs in liquid media such as Amies (BD Red cap), **or** modified Stuart's medium, **or** clean, dry, sterile rayon tip swabs. Do not use a collection system containing charcoal **or** semisolid (gel) transport media.
Transport Device	Two BD Red-cap rayon, in liquid bacterial transport medium. 
Specimen Storage, Transport and Stability	Transport to laboratory for testing as soon as possible at room temperature. The specimen will be stable for 2 days.

Group A *Streptococcus* Cultures

See Specimen collection instructions for **Throat Cultures, Routine** and cultures for **Group A *Streptococcus only with Susceptibility [AST]***

Group B *Streptococcus* Cultures

See *Streptococcus* Group B Cultures

Hair, Skin and Nail Specimens for Fungi

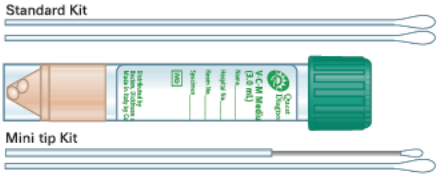
Use	Detection of dermatophytes. A Calco-fluor white stain will be performed in addition to culture, in order to maximize sensitivity and rapidly give the clinician useful information.
Precautions	Specimens for the diagnosis of Tinea should include both representative abnormal hairs removed with forceps and scales collected by scraping. Do not submit specimens if the patient is currently undergoing antifungal therapy because this may result in a negative culture. If active antifungal treatment has been initiated, discontinue the treatment for 5–30 days (based on topical vs. systemic treatment) before taking the specimen. If the first culture is negative, a repeat culture is recommended if clinically indicated. If the culture continues to be negative, a biopsy may be indicated.
Specimen Sources	Hair, skin scrapings and nails scrapings/clippings
Collection Device	Scalpel or edge of glass microscope slide
Transport Device	Place all hair, skin, and nail specimens in a sterile dry container for transport to the laboratory. 
Specimen Collection Instructions	Wipe the affected area with an alcohol swab. Obtain skin specimens for both dermatophytosis and primary cutaneous candidiasis by scraping the active (advancing) borders of the lesion(s) with a scalpel or glass microscope slide. **For nails**, wipe the area with an alcohol swab before collecting the specimen. Take nail specimens from the proximal portion of the nail plate and subungual debris from between the nail plate and bed. Do not submit initial nail clippings (tips of nails). Nail clippings of at least 3 mm in length should be obtained. This will increase the yield of the culture.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Sample will be viable for several days. **Do not refrigerate.**

Helicobacter pylori (Stool) Antigen	
Use	Determination of infection. This assay is also FDA cleared as a "test of cure." Specimens from patients of any age may be tested.
Specimen Sources	About 5 mL of liquid or non-formed stool. Formed, liquid or semi-solid specimens are all acceptable, but do not submit watery specimens.
Special Instructions	Ideally, when sent for initial diagnostic purposes, the patient should refrain from taking proton pump inhibitors or bismuth preparations two weeks prior to testing, if possible; these may cause a false negative result. However, positive test results for specimens from patients taking these agents should be considered true positive results.
Specimen Collection Instructions	**Avoiding contact with urine**, pass stool directly into the vial, **or** pass stool into a large clean container (such as a cut-out milk jug or margarine container), **or** onto plastic wrap placed under the seat of the toilet. There are also commercial stool collection devices commonly referred to as a "hat" that may be used. Transfer some of the specimen into the vial using the tongue depressor provided by your doctor, or other handy implement such as a plastic spoon. **If the stool is loose or liquid, pass directly into a container, not onto plastic wrap.**
Unacceptable Specimens	Watery stool specimens Stool in transport media, swabs, **or** preservatives Specimens received at room temperature Refrigerated preserved specimens >72 hrs old Samples subjected to freeze-thaw cycles more than twice Specimens in diapers
Collection Device	Clean, leak-proof container
Transport Device	Clean, leak-proof container. It need not be sterile. 
Specimen Storage, Transport and Stability	Submit specimens in air-tight, plastic transport containers and transport refrigerated. Under these conditions, the antigen is stable for up to 3 days. If the specimen will take longer than 3 days to deliver to the laboratory, it may be frozen, extending stability as much as 30 days.

Helicobacter pylori Urea Breath Test, Infra-red (UBT)	
Use	Use for the qualitative detection of urease associated with *H. pylori* in the human stomach and as an aid in the initial diagnosis and post-treatment monitoring of *H. pylori* infection in **adult** patients. For pediatric patients, order stool antigen assay, 34838. The test may be used for monitoring treatment if used at least 4 weeks following completion of therapy. **NOTE:** These specimens may be collected at selected Quest Diagnostics Patient Service Centers or collected in the office.
Precautions	Remind the patient that Pranactin-Citric contains phenylalanine (one of the protein components of Aspartame). Phenylketonurics restrict dietary phenylalanine.
Specimen Sources	Human breath. Paired breath samples (pre and post) must be submitted together. **Note that time intervals listed in the Specimen Collection Instructions below are critical. DO NOT exceed specified times.**
Collection Device	BreathTek™ UBT Collection kit

Transport Device	Capped blue and pink bags. Keep paired breath samples together by reusing the plastic kit pouch provided. 
Specimen Collection Instructions	• Remind the patient that Pranactin-Citric contains phenylalanine (one of the protein components of Aspartame). Phenylketonurics restrict dietary phenylalanine. • The patient should have fasted at least 1 hour before administering the BreathTek™ UBT. • Ideally, when sent for initial diagnostic purposes, the patient should refrain from taking proton pump inhibitors or bismuth preparations two weeks prior to testing, if possible as these may cause a false negative result. However, positive test results for specimens from patients taking these agents should be considered true positive results. Open the BreathTek™ UBT Collection Kit, which should contain all materials needed. Label each breath collection bag with patient identification or with the barcode labels provided by the laboratory. 1. Collect the BASELINE breath sample according to the following procedure: a. Remove the blue breath collection bag from the kit tray. b. Remove the pull-off cap from the mouthpiece of the breath collection bag. c. Instruct the patient to: (1) breathe normally; (2) take a deep breath then pause momentarily; (3) exhale into the mouthpiece of the bag. d. Replace the cap firmly until it clicks on the mouthpiece of the bag and label bag with time of collection. 2. Prepare the Pranactin®-Citric solution no more than sixty (60) minutes before administering it to the patient. Urea slowly decomposes in water. a. Remove the Pranactin®-Citric pouch from the kit tray. Tap the upright packet of Pranactin®-Citric to settle the contents in the bottom half. b. With clean scissors, cut off the top of the packet and carefully empty the contents into the drinking cup provided, making sure to transfer all of the contents by tapping on the bottom of the pouch. c. Add potable water to the fill line indicated on the outside of the cup by a raised plastic ridge. d. Replace the lid securely and swirl the mixture for up to two (2) minutes to dissolve the packet contents; typically, only one (1) minute is required for complete dissolution. *The resulting solution should be clear with no particulate matter. If particulate matter is present after thorough mixing, the solution should not be used.* 3. Instruct the patient to drink all of the solution with the straw provided, without stopping. Advise the patient NOT to 'rinse' the inside of his/her mouth with the solution before swallowing. Discard the straw. 4. Set a timer for 15 minutes. The patient should sit quietly and should not eat, drink or smoke during the 15 minute interval. 5. After 15 minutes have elapsed, remove the pink breath collection bag from the kit tray. Collect the POSTDOSE breath sample according to the procedure described as above for the BASELINE sample. 6. Place labeled BLUE and PINK Collection bags in a large Quest Diagnostics specimen bag with the Test Requisition. Place a DO NOT REFRIGERATE label onto the specimen bag.
Specimen Storage and Stability	Transport to laboratory at room temperature. Samples are stable for 7 days from collection.

Herpes Simplex Virus Culture With Typing, or Without Typing	
Use	Determination of infection with herpes simplex virus (HSV)
	If positive for HSV, typing is also performed, HSV positive cultures are stained with fluorescent antibodies that differentiate HSV 1 from HSV 2. If typing is not required, HSV is identified and reported. Refer to the Guidelines for Specimen and Virology Test Selection (by Syndrome) chart in this section.
Precautions	Labile specimen. Refrigerate immediately or freeze at -70 °C (dry ice). • Do not submit body fluids in a red-top blood collection tube used for chemistry assays. Red-top tubes are not suitable for transport of microorganisms. • If Herpes Simplex infection of the central nervous system is suspected, the recommended test method is HSV PCR.
Special Instructions	CSF: Culture is not sensitive for Herpes simplex detection. Order PCR. **NOTE:** For specimens collected by swab, use a sterile rayon, Dacron® or flocked nylon swab or rayon-tipped swabs with flexible shaft supplied by Quest Diagnostics and transported in V-C-M transport medium or equivalent.
Specimen Sources	Acceptable specimens include vesicle, lesion fluid, scrapings or swab from the base of the lesion, urogenital and respiratory specimens, conjunctival or corneal scrapings, tissue and biopsy material.
Specimen Collection Instructions	Lesion 1. If vesicle is present, disrupt the vesicle and collect the fluid with a sterile rayon, Dacron® or flocked nylon swab or rayon-tipped swab with flexible shaft. With the same swab, collect cells from the base of the vesicle by vigorous rubbing. 2. Transfer the swab to V-C-M transport medium and break the tip into the medium. 3. For non vesicular lesions, remove scab or crusted material and vigorously swab the base of the lesion to pick-up infected cells. Break swab tip(s) off into V-C-M transport medium. **CSF:** Recommend Nucleic Acid Test(s) as they give optimal assay sensitivity (eg HSV PCR) See CSF Culture. Collect aseptically, and submit a minimum of 1-2 mL in a sterile leak-proof container and submit for PCR testing. **Urethral:** Insert mini-tipped swab at least 2 cm into urethral orifice. Rotate gently to obtain epithelial cells. Break swab tip(s) off into V-C-M transport medium. **Endocervical and vaginal wall specimens:** Insert swab into endocervix and rotate gently; or swab the vaginal walls. Place swab into V-C-M transport medium. **Rectal:** Insert swab 4–6 centimeters into rectum and roll swab against the mucosa. Examine the swab to help ensure that fecal material is not present. Break swab tip(s) off into V-C-M transport medium. **Respiratory:** Throat, swabs, secretions or washings. Collect sample and transfer up to 2 mL to the V-C-M transport medium. Alternatively, sample may be submitted in a sterile, leak-proof container. **Tissue and Biopsy:** Sterile screw-capped container with small amount of sterile saline to prevent it from drying. Do not add fixative or preservative. Submit as much sample as possible to optimize recovery. **Conjunctival/Ocular:** Collect samples using a sterile rayon, Dacron® or flocked nylon swab or rayon-tipped swabs with flexible shaft or fine-gauge wire shaft. Do not use calcium alginate, cotton, or wooden shafted swabs which may inactivate the virus. Submerge the swab into Quest Diagnostics-supplied V-C-M transport medium or equivalent. Break, cut or fold the shaft to fit.
Collection Device	Swabs: sterile rayon, Dacron® or flocked nylon swab or rayon-tipped swabs with flexible shaft.

Transport Device	Quest Diagnostics-supplied V-C-M transport medium or equivalent, or sterile leak-proof container, as appropriate.  V-C-M transport medium **or**  Sterile, leak-proof container
Unacceptable Specimens	• Dry swabs • Swab not in Viral Transport Media • Wooden shaft, cotton, and calcium alginate swabs • Expired viral transport media • Bone marrow in EDTA (refer for PCR testing) • Specimens in formalin or other fixatives. • Raw stool • Specimens received at room temperature • CSF • Sputum • Specimens received in bacterial transport systems or molecular transport systems
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible refrigerated on cold packs. Refrigerated sample not in transport media will be viable for up to 72 hrs. If placed into V-C-M transport medium the specimen will be stable up to 4 days refrigerated or 30 days if frozen at -70 °C (dry ice).

Herpes Simplex Virus, Type 1/2, Pap

Use	Diagnosis of active Herpes simplex infection.
Specimen Sources	Genital lesion
Specimen Collection Instructions	**Collecting only for HSV Option 1:** Genital lesion.* Aspirate fluid from lesion or collect fluid on swab. If scabbed or crusted, remove scabbed or necrotic area and vigorously scrape or swab the base of the lesion. Place fluid, scrapings or swab in liquid cytology preservative (PreservCyt®). **NOTE:** If an active infection is suspected but no lesion is visible, collect as per Pap instructions. A negative result does not rule out infection with Herpes simplex and type-specific serology testing should be considered. **Option 2: Collecting a Pap and HSV in 2 separate vials (preferred for visible lesion):** Collect the Pap **first** using cervical brush/broom per Pap test instructions and place in vial clearly labeled "Pap." Collect the lesion sample per instructions in Option 1 and place in vial clearly labeled "HSV." **Option 3: Collecting a Pap and HSV in same vial when there is no visible lesion,** collect the Pap using cervical brush/broom and place in vial per ThinPrep® Pap test instructions and submit. **When there is a visible lesion,** collect the Pap first, then collect the lesion scrapings or aspirate per instructions in Option 1. If not bloody, place fluid or scrapings in vial. After vigorous swishing of swab or collection device, remove from the vial. **If the lesion sample is very bloody,** place sample in a separate vial per Option 2 (excessive blood will interfere with the Pap test). Call the laboratory for specific pre-aliquot instructions if performing Cytology on site.

Unacceptable Specimens	• PreservCyt® material already processed for cytology • PreservCyt® with excess mucus • Add-ons to samples for ThinPrep® • Specimens received after Pap slide prep • Specimens in broken containers • Specimens exceeding stability time limits
Collection Device	PreservCyt® ThinPrep® vials SurePath™ vial
Transport Device	PreservCyt® ThinPrep® vials  ThinPrep® Kit plus spatula and brush  SurePath™ vial
Specimen Storage and Stability	

Specimen type	Room Temperature (18-26 °C)	Refrigerated (2-8 °C)	Frozen (-10 to -30 °C)
PreservCyt® solution in ThinPrep® vial and SurePath™ vial	4 days	4 days	N/A
PreservCyt or SurePath™ in Aptima® Specimen Transport Media	14 days	14 days	30 days

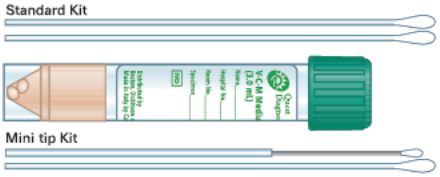
Herpes Simplex Virus, Type 1/2 DNA, Real-Time PCR SureSwab® (90570)

Specimen Sources	Genital lesion
Specimen Collection Instructions	Collect fluid from lesion swab from the collection kit. If scabbed or crusted, remove scabbed or necrotic area and vigorously scrape or swab the base of the lesion. Place fluid or scrapings with swab in Aptima®, Vaginal Swab Specimen Collection Kit.
Unacceptable Specimens	• Specimens in broken containers • Specimens exceeding stability time limits • White cleansing swabs received • Transports containing 2 swabs • No swab received in transport tube • Non Aptima® Swab Collection Kit
Collection Device	Aptima® Vaginal Swab Collection Kit Aptima® Unisex Swab Specimen Collection Kit for Male Urethral Swab specimens
Transport Device	Aptima® Vaginal Swab Collection Kit Aptima® Unisex Swab Specimen Collection Kit for Male Urethral Swab specimens  Vaginal Swab transport medium (orange label)  Unisex Swab transport medium (white label) 

Specimen Storage and Stability	Room Temperature: up to 14 days Refrigerated temperature: up to 14 days Frozen at -20 °C: up to 30 days

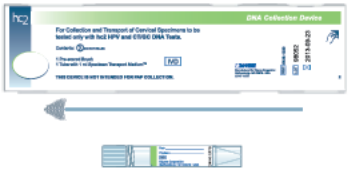
Herpes Simplex/Varicella zoster Rapid - Viral Culture

Use	Determination of infection with Herpes simplex (HSV) and/or Varicella zoster (VZV). Since clinical manifestations of these two viruses can be indistinguishable, this centrifugation-enhanced cell culture with microscopic stain detection allows for detection of both viruses. Refer to the *Guidelines for Specimen and Virology Test Selection* (by syndrome) chart in the beginning of this section.
Precautions	Labile specimen. Refrigerate immediately or freeze at -70 °C (dry ice). • Inform the laboratory if the patient has or is suspected of having Creutzfeldt-Jacob Disease (CJD) by indicating this on the Test Requisition. • Do not submit body fluids in a red-top blood collection tube used for chemistry assays. Red-top tubes are not suitable for transport of microorganisms.
Special Instructions	**CSF: Culture is not sensitive for Herpes simplex detection. Order PCR.** **NOTE:** For specimens collected by swab, use cotton, Dacron® or flocked nylon swab swabs with plastic or metal shafts submitted in Quest Diagnostics-supplied V-C-M transport medium or equivalent.
Specimen Sources	Acceptable specimens include lesion aspirate or swab from oral, skin, conjunctiva, respiratory, body fluids, as well as tissue and biopsy material. **NOTE:** For genital, rectal or peri-rectal specimens refer to Herpes simplex Virus Culture, Rapid method (ELVIS) with or without typing. For whole blood, serum or plasma, we recommend HSV, type 1&2 DNA, PCR testing.
Specimen Collection Instructions	**Lesion:** 1. If vesicle is present, disrupt the vesicle and collect the fluid with a plastic shaft rayon or Dacron® swab. With the same swab, collect cells from the base of the vesicle by vigorous rubbing. 2. For non-vesicular lesions, remove scab or crusted material and vigorously swab the base of the lesion to pick-up infected cells 3. Transfer the swab to V-C-M transport medium and break the tip into the medium. **Respiratory:** Throat swabs, secretions or washings. Collect sample and transfer up to 2 mL to the V-C-M transport medium. Alternatively, sample may be submitted in a sterile, leak-proof container. **Tissue and Biopsy:** Sterile screw-capped container with small amount of sterile saline to prevent it from drying. Do not add fixative or preservative. Submit as much sample as possible to optimize recovery. **Conjunctival/Ocular:** Collect samples using a sterile rayon, Dacron® or flocked nylon swab with plastic or fine-gauge wire shaft. Do not use calcium alginate, cotton, or wooden shafted swabs which may inactivate the virus. Submerge the swab into Quest Diagnostics-supplied V-C-M transport medium or equivalent. Break, cut or fold the shaft to fit.
Collection Device	**Swabs:** sterile rayon, Dacron® or flocked nylon swab or rayon-tipped swabs with flexible shaft.

Transport Device	Quest Diagnostics-supplied V-C-M transport medium or equivalent, or sterile leak-proof container as appropriate.  V-C-M transport medium **or**  Sterile, leak-proof container
Unacceptable Specimens	• Dry swabs • Swab not in Viral Transport Media • Wooden shaft, cotton, and Calcium alginate swabs • Expired viral transport media or inappropriate transport media (e.g., Stuart's, Amies, gel-based media, charcoal medium, or nucleic acid transport systems) • Bone marrow in EDTA (Refer for PCR testing) • Specimens in formalin or other fixatives or received on glass slides • Stool • Urine • Specimens received at room temperature • CSF
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible refrigerated on cold packs. Refrigerated sample will be viable for up to 72 hours. If placed into V-C-M transport medium the specimen will be stable up to 4 days refrigerated or 30 days if frozen at -70 °C (dry ice).

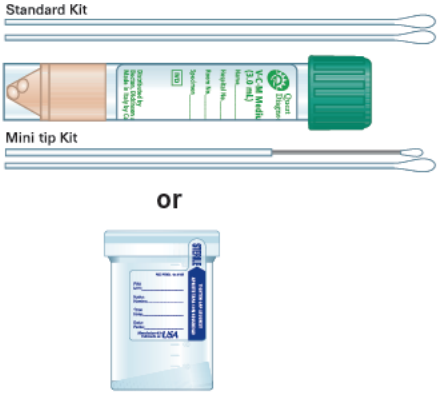
HPV DNA, High Risk
HPV DNA, High/Low Risk

Use	The Digene® HPV high-risk assay detects the following high-risk types: 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59 and 68. The Digene® high risk/low risk assay detects the high-risk types listed above and the following low-risk types: 6, 11, 42, 43 and 44.
Specimen Sources	Cervical or anorectal specimens
Specimen Collection Instructions	Cervical specimens must be collected prior to the application of acetic acid or iodine if colposcopic examination is being performed. **Pap Specimen:** See the Cytology section. Cervical: 1. Collect Pap specimen before obtaining specimen for HPV DNA testing using the appropriate cervical collection device. 2. Remove excess mucus from the cervical os and surrounding ectocervix using a cotton or Dacron® swab. Discard this swab. Insert the brush 1-1.5 cm into the os of the cervix until the largest outer bristles of the brush touch the ectocervix. Rotate brush 3 full turns in a counter clockwise direction. Do not insert the brush completely into the cervical canal. Remove the brush from the canal. Avoid touching the bristles to the outside of the Digene® Sampler Transport Tube or any other object. 3. Insert the brush into the bottom of the Digene® Sampler Transport Tube. Snap off the shaft at the score line and cap the tube securely.

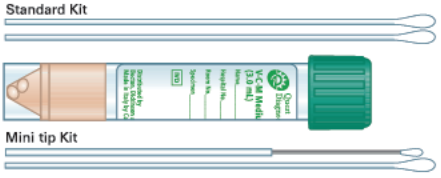
	The sample may also be collected using the cervical sampler brush provided in the Digene® Cevical Sampler Collection Kit. Insert the swab or brush into the Digene® Standard Transport Medium (STM) supplied with the collection kit. Assure that the swab or brush is submerged correctly in the transport medium and secure the cap tightly to prevent leakage in transit. **Anorectal Specimens:** A tap water-moistened Dacron® swab is used. The Dacron® swab is inserted about 5-6 cm into the anal canal past the anal verge, into the rectal vault. This is done without direct visualization of the anal canal. Apply firm lateral pressure to the swab handle as it is rotated and slowly withdrawn from the anal canal, inscribing a cone-shaped arc. Avoid using cotton swabs on a wooden stick because the handle may break and splinter during collection.
Unacceptable Specimens	Swabs, frozen specimens
Collection Device	Digene® Cervical Brush and Specimen Transport Medium PreservyCyt Thin Prep® vial SurePath™ vial
Transport Device	Digene® Specimen Transport tube  ThinPrep® Kit plus spatula and brush   SurePath™
Specimen Storage and Stability	Specimens should be transported to the laboratory at room temperature, or refrigerated.

Influenza A H1N1 (2009), PCR

Use	Aid in the detection and differentiation of seasonal influenza A virus infection and infection by the 2009 H1N1 influenza virus.
Specimen Sources	Nasal swab, nasopharyngeal swab **or** nasal aspirate in multimicrobe media (M4), V-C-M medium (green cap) tube or equivalent
Specimen Collection Instructions	Swabs must be sterile rayon, Dacron® or flocked nylon with plastic shafts. Place swab in sterile viral transport media containing protein stabilizer, antibiotics to inhibit bacterial fungal growth, and buffer solution (e.g., V-C-M, M4, M5, M6 and other media intended to transport *chlamydia*, mycoplasma, or viruses).
Unacceptable Specimens	Sputum, bronchial lavage, calcium alginate swabs, lower respiratory samples
Collection Device	Viral transport media, V-C-M medium (green cap) tube or equivalent or multimicrobe media (M4)
Transport Device	Viral transport media, V-C-M medium (green cap) tube or equivalent or multimicrobe media (M4)
Specimen Storage and Stability	Transport to the laboratory on cold packs. Room temperature: 48 hours Refrigerated: 7 days Frozen: 30 days

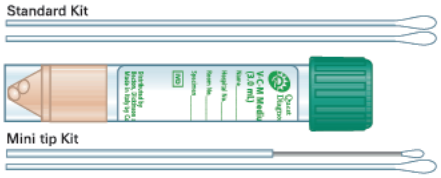
Influenza A&B Antigen Immunoassay	
Use	Rapid screen for the detection of influenza infection by type. This test can be used in a setting of high prevalence. However, due to the low sensitivity of immunoassays for influenza, negative results should be confirmed by culture or molecular assays.
Specimen Sources	Nasopharyngeal (NP) swabs and washes, nasopharyngeal aspirates, lower nasal (turbinate) swabs and washes.
Special Instructions	It is recommended that specimens be obtained early in the course of the illness and be tested as soon as possible.
Specimen Collection Instructions	Nasopharyngeal (NP) swab: Immobilize the patient's head and insert swab through a nostril. Push forward using gentle downward pressure to keep the swab on the floor of the nasal cavity until the tip reaches the posterior wall of the nasopharynx. Rotate gently for a few seconds and remove. Submit swab in V-C-M transport medium. Guidelines with diagrams for proper collection of nasopharyngeal swabs for either viral or bacterial studies (different transport medium) are available at many websites, including this link from New York City: nyc.gov/html/doh/downloads/pdf/flu/h1n1-npswab.pdf.
Unacceptable Specimens	Calcium alginate swabs cannot be tested and will be discarded. Swabs with cotton tips and wooden shafts are not recommended. (Only sterile rayon, Dacron® or flocked nylon swab or rayon-tipped swabs with flexible shaft are to be used with this test). Specimens at room temperature, unless tested at point of care as a fresh specimen.
Collection Device	**NP swabs:** sterile rayon, Dacron® or flocked nylon swab **or** rayon-tipped swabs with flexible shaft are recommended and placed into Viral, Chlamydia and Mycoplasma (V-C-M) medium vials or equivalent, such as M4, EMEM or PBS with gelatin or albumin. See package insert for complete list of validated transport media. Washes and aspirates should be added to an equal amount of V-C-M transport medium.
Transport Device	Quest Diagnostics-supplied V-C-M transport medium, or equivalent, or sterile leak-proof container as appropriate, transported on cold packs. **NOTE:** As a point of care test, no transport media is required.  V-C-M transport medium Sterile, leak-proof container
Specimen Storage, Transport and Stability	Specimens should be submitted in air-tight plastic transport containers and transported refrigerated. Under these conditions, the antigen is stable for up to 4 days. If the specimen will take longer than 4 days to deliver to the laboratory, it may be frozen, which will extend the stability until the time of testing. Transport at room temperature is acceptable, but the specimen is stable for only 48 hrs.

Influenza A&B, DFA	
Use	Determination of infection by Influenza virus and type
Precautions	Nasopharyngeal secretions obtained by aspiration, washings or flexible, flocked nylon, or twisted wire mini-tip culture swabs are the preferred specimens in order to avoid contamination with nasal or oral flora.
Special Instructions	Guidelines with diagrams for proper collection of nasopharyngeal swabs for viral studies are available at many websites, including this link from New York City: nyc.gov/html/doh/downloads/pdf/flu/h1n1-npswab.pdf.

Specimen Collection Instructions	Immobilize patient's head and insert swab through a nostril. Push forward using gentle downward pressure to keep the swab on the floor of the nasal cavity until the tip reaches the posterior wall of the nasopharynx. Rotate gently for a few seconds and remove. Break off swab into V-C-M transport medium, or smear secretions onto a clean glass slide. Collect aspirates using a #5–8 disposable infant feeding tube attached to a 10 mL syringe or large suction bulb. If material cannot be aspirated, instill up to 5 mL of saline into the nasal passages and re-aspirate to collect washings. As an alternative, use a suction catheter with a mucus trap. Add an equal amount of aspirate to V-C-M transport medium.
Collection Device	To obtain NP specimens, use a flocked nylon swab designed for this purpose or a yellow-cap mini-tip swabs with a thin flexible wire that is specifically designed for NP use. A #5–8 disposable infant feeding tube attached to a 10 mL syringe or large suction bulb may be used for aspirates.
Transport Device	Smear on clean glass slide, or swab in Quest Diagnostics-supplied V-C-M transport medium or equivalent, or sterile leak-proof container as appropriate.  V-C-M transport medium **or**  Sterile, leak-proof container
Unacceptable Specimens	• Broken slides, dry swabs, frozen specimens, specimens in expired transport devices, or in viral transport medium • Specimens >48 hrs old
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Sample will be viable for 2 days. Do not refrigerate.

Influenza A&B, Rapid Culture

Use	Determination of infection and whether type A or B. This test can be used in a setting of high prevalence.
Precautions	Avoid contamination with nasal or oral flora.
Specimen Sources	Nasopharyngeal lavage/wash, nasal swab or throat swab (adults only) specimens. Specimens will be examined for the presence of influenza A and B by rapid shell vial technique.
Special Instructions	They should be placed in V-C-M transport medium (green-top), or equivalent, and transported to the laboratory at 2–8 °C. Use only sterile rayon, Dacron® or flocked nylon swab or rayon-tipped swabs with flexible shaft for specimen collection. Guidelines with diagrams for proper collection of nasopharyngeal swabs for viral studies are available at many websites, including this link from New York City: nyc.gov/html/doh/downloads/pdf/flu/h1n1-npswab.pdf.
Specimen Collection Instructions	Immobilize patient's head and insert swab through a nostril. Push forward using gentle downward pressure to keep the swab on the floor of the nasal cavity until the tip reaches the posterior wall of the nasopharynx. Rotate gently for a few seconds and remove.
Collection Device	To obtain specimen, use yellow-cap mini-tip culture swabs with a thin flexible wire that is specifically designed for NP use.

Transport Device	Quest Diagnostics-supplied V-C-M transport medium or equivalent, or sterile leak-proof container, as appropriate.  V-C-M transport medium **or**  Sterile, leak-proof container
Unacceptable Specimens	• Dry swabs • Specimens at inappropriate transport temperature. (RT or frozen raw sample) frozen specimens, specimens in expired transport devices, or in viral transport medium. • Specimens >48 hrs old • Expired viral transport media or inappropriate transport media (e.g., Stuart's, Amies, gel-based media, charcoal medium, or nucleic acid transport systems)
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Sample will be viable for 2 days. Do not refrigerate.

Legionella Antigen, Urine, EIA

Use & limitations	The detection of *Legionella pneumophila* serogroup 1 soluble antigen in urine by EIA. A negative test result does not rule-out the possibility of infection due to other serogroups or species of *Legionella*, since this test only detects *L. pneumophila* serogroup 1 antigen. *L. pneumophila* serogroup 1 antigenuria can be detected 2-3 days after infection and may persist for prolonged periods after treatment in some patients.
Specimen Sources	5 mL of first morning voided urine
Specimen Collection Instructions	**Female patients** • Wash hands. Wash the vulvar area well from the front to the back, using a 5% green soap gauze pad or towelette. Do not use benzalkonium chloride disinfectant as residual disinfectant may cause a false negative test result. Rinse the area from front to the back, using first one moistened gauze pad or paper towelette soaked with either clean, tap, sterile or distilled water, then a second and a third if necessary, to remove residual soap. Last, dry the area from the front to the back with a dry gauze pad or towelette. Discard all gauze pads or towelettes in a wastebasket. • With one hand, separate the labia and lean slightly forward so that the urine flows directly down into the toilet without running along the skin. • After voiding the first portion of the urine, with the other hand, place a sterile, leak-proof container under the stream of urine and collect the urine sample. **Male patients** • Use a cleansing wipe, a soapy gauze pad or towelette to wash the end of the penis. Rinse, using first one gauze pad or paper towelette, moistened with sterile, tap or distilled water. A second or third rinse may be needed to remove soap. Use a clean gauze pad or paper towelette to dry. Discard all pads and towelettes into the wastebasket. • Begin to urinate into the toilet. • After voiding the first part, place a sterile, leak-proof container under the stream of urine and collect the mid portion of the urine flow, allowing the last part to go into the toilet.
Collection Device	Leak-proof, plastic screw-cap container

Transport Device	Leak-proof, plastic screw-cap container 
Specimen Storage and Stability	Transport to laboratory at refrigerated, or frozen, temperature. The specimen will be stable for 14 days refrigerated, or for 30 days if frozen.

Lyme Disease (*Borrelia spp*) DNA, Qualitative, Real-Time PCR, Blood	
Use	The diagnosis of Lyme Disease is most often made by clinical examination combined with evidence of tick bite or exposure in endemic areas. Amplification of Borrelia genomic DNA from blood can support the diagnosis. This test was developed and its performance characteristics have been determined by Nichols Institute. It has not been cleared or approved by the U.S. Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary.
Specimen Sources	1 mL whole blood
Collection Device	EDTA lavender-top tube
Transport Device	EDTA lavender-top tube
Specimen Storage and Stability	Transport refrigerated (in cold packs); stable for 7 days. Room temperature specimens are stable for 48 hours. Do not freeze.

Lyme Disease (*Borrelia spp*) DNA, Qualitative, Real-Time PCR, Tick	
Use	The diagnosis of Lyme Disease is most often made by clinical examination combined with evidence of tick bite or exposure in endemic areas. Amplification of Borrelia genomic DNA from submitted tick can support the diagnosis. This test was developed and its performance characteristics have been determined by Nichols Institute, Chantilly. It has not been cleared or approved by the U.S. Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary.
Specimen Sources	1 tick
Collection Device	Submit in 70% alcohol or in wet tissue in a sterile screw-cap container.
Transport Device	Sterile screw-cap container.
Specimen Storage and Stability	Transport at room temperature. Stable for 14 days.

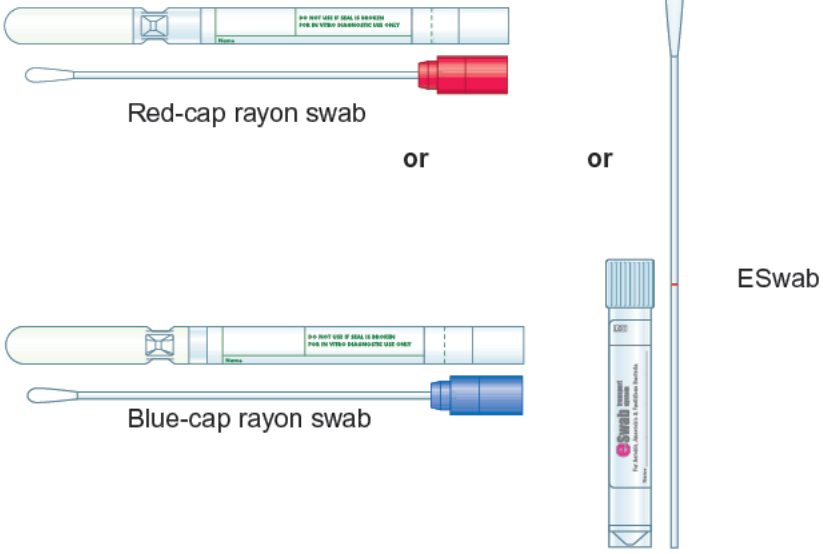
Malaria, Babesia, *Trypanosoma* sp. and Other Blood Parasites	
Use	Determination of infestation
Specimen Sources	Peripheral blood should be taken during a febrile episode, at 6-hr intervals.
Special Instructions	It is **critical** that at least 2 thick and 2 thin blood film smears be submitted on two separate glass slides with one frosted end in addition to a backup lavender-top (EDTA) tube, as described below. **NOTE:** Blood samples are to be taken, and slides prepared when the patient presents with symptoms of malaria, and every 6 hrs for 36 hrs. Specimens obtained during the febrile state yield the greatest number of parasites in circulating blood. One slide should be smeared as is done with a differential exam and 1 slide should have a drop of blood dried in an area about the size of a dime. Anti-malarial agents should be noted on the requisition, as therapy can change the numbers of parasites present.

Specimen Collection Instructions	Clean and disinfect skin with gauze squares soaked in 70% alcohol or commercial non-cotton alcohol preparations. Wipe dry with sterile gauze or air dry. Be sure the finger is thoroughly dry prior to pricking. • Stick the finger with a sterile disposable lancet, deeply enough to collect a sufficient amount of free-flowing blood for film preparation. Do not squeeze finger to remove the blood. • Holding a clean glass slide by the frosted end, touch the surface of the slide (frosted side) to the puddle of blood that has collected at the puncture site. Allow blood to dry undisturbed to prepare the thick film. • Repeat the procedure and "feather" the blood drop to prepare the thin film. After collection, apply pressure to the puncture site with sterile gauze until bleeding stops and then bandage. • Obtain patient history for an aid in diagnosis. This should include visits to any country outside of the United States and the date of return. • Print patient's name/identification in pencil on the frosted end of the slides.
Unacceptable Specimens	Hemolyzed or clotted blood and age-deteriorated blood cells. EDTA blood older than 48 hrs will be processed only at the direction of the Medical Director in consultation with the client.
Collection Device	Disposable lancet and two frosted end slides
Transport Device	Frosted end slides and lavender-top tube 
Specimen Storage, Transport and Stability	Lavender-top tubes must be transported at room temperature to the laboratory (avoiding extremes of heat and cold) as soon as possible; the specimen is stable for approximately 24 hrs after blood collection.

Methicillin-Resistant *Staphyloccus Aureus* (MRSA) DNA

Specimen Sources	Nasal
Specimen Collection Instructions	Insert the swab into the nostril up to 2.5 cm (1 inch) from edge of the nare and roll five times. Repeat using a new swab in the other nostril. Place both swabs in medium for transport to the laboratory.
Unacceptable Specimens	Received frozen, specimens exceeding stability specifications, specimens in leaking or broken containers, wire swabs Nasopharyngeal
Collection Device	Dual swabs in Liquid Amies, Liquid Stuart's or bacterial culture swab transport media
Transport Device	Same as collection devices  Red-cap rayon swab  2-swab Amies
Specimen Storage and Stability	Store specimens between 2-30 °C during transport. Protect against freezing or exposure to excessive heat. Maintain specimens that can be tested within 24 hrs at room temperature (15-30 °C). Specimens can be stored up to 5 days at 2-8 °C before testing.

Methicillin-Resistant *Staphyloccus Aureus* (MRSA) Surveillance Culture Screen

Use	Detection of MRSA colonization for epidemiological purposes
Specimen source	Nasal or skin surface, such as axial or groin
Collection Device	Red- or blue-cap rayon swab or ESwab
Transport Device	Red- or blue-cap rayon swab or ESwab 
Specimen Collection Instructions	1. Use Amies liquid transport medium (red-cap Copan, or BD swab), or Amies gel transport medium (blue-cap Copan, or BD swab) or ESwab to obtain the specimen. 2. Culture both anterior nares (the opening of each nostril) utilizing one culture swab. 3. Insert a pre-moistened swab (sterile, non-bacteriostatic saline or water) about 2 cm and rotate the swab against the nasal mucosa back and forth of each nostril for 3 seconds—slight pressure with a finger on the outside of the nose helps to assure good contact between the swab and the inside of the nose. 4. Return swab back to the plastic transport tube and ensure that the cap is on tight.
Unacceptable Specimens	• Dry swabs • Frozen specimens • Specimens in expired transport devices • Specimens submitted in formalin • Specimens submitted in viral transport medium • Specimens > 48 hrs old • Swabs from environmental sources • Swabs from sources other than nares
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature or refrigerated. Sample will be stable for 2 days.

Microfilaria (Filarial Worms)

Use	Determination of infestation	
Specimen Sources	**Suspected Microfilaria**	**Preferred Specimen**
	Onchocerca volvulus	Skin snips
	Mansonella streptocerca	Skin snips
	Wuchereria bancrofti, Loa loa	Blood

	Brugia malayi, Brugia timori Blood *Mansonella perstans, Mansonella ozzardi* Blood Air-dried blood smears and aspirates from excised nodules for microfilariae present in the skin may also be submitted.
Special Instructions	If *Wuchereria bancrofti* or *Brugia malayi* are suspected, draw blood between 10pm and 4am. If diurnal *Loa loa* is suspected, draw blood between 10am and 2pm. For *Mansonella* species, draw anytime. Provide patient history as an aid in diagnosis, including visits to any country outside of the United States and the date of return to the U.S.
Specimen Collection Instructions	See the Phlebotomy section under Blood Serum or Plasma for venipuncture collection procedures. Collect peripheral blood in EDTA at recommended times, depending on the microfilariae suspected. Skin snips are the specimen of choice for the detection of *Onchocerca volvulus* and/or *Mansonella streptocerca* infections. Clean the area to be excised with 70% alcohol; elevate the section with a needle and cut with a scalpel blade. Care must be taken to obtain blood-free biopsy specimens in order to prevent possible contamination by microfilariae found in circulating blood. If African onchocerciasis is suspected, multiple skin snips must be taken from the gluteal and calf areas; for American onchocerciasis, the scapular and deltoid areas are the sites of choice. A corneal-scleral punch may also be used. A small amount of saline must be added to the sample.
Unacceptable Specimens	• Hemolyzed blood, clotted blood and age-deteriorated blood cells (EDTA blood older than 48 hrs) • Skin snips held at room temperature for more than 48 hrs • Desiccated skin snips, or skin snips transported in formalin
Collection Device	Lavender-top tube
Transport Device	Lavender-top tube, glass slides Skin snips and aspirates: Clean screw-capped container with a few drops of sterile physiological saline.  Lavender-top tube  Glass slide  Clean screw-cap container
Specimen Storage, Transport and Stability	Lavender-top tubes must be transported at room temperature to the laboratory (avoiding extremes of heat and cold) as soon as possible; the specimen stability is approximately 48 hrs after blood collection. **Do not refrigerate specimens prior to or during transport.**

Microsporidium Spore Detection

Specimen Sources	About 5 g or 5 mL of fresh stool (large walnut size) in a Total-Fix™ or 10% formalin transport vial. Formed, liquid or semi-solid specimens are all acceptable.
Precautions	• Barium, antimalarials, mineral oil and other laxatives interfere with the detection of intestinal protozoa. Specimens submitted from patients that have been treated with the above must be collected at least 7–10 days post-treatment.

	• Antimicrobial agents (wait 2 weeks) • Gallbladder dye (wait 3 weeks after procedure) • Specimens should never be frozen or placed in an incubator. Refrigeration is not required. • Parasite examinations cannot be performed on specimens submitted in stool culture transport vials or any other transport media specifically designed for bacterial pathogens.
Specimen Collection Instructions	**Stool collection: patient instructions** 1. Avoiding contact with urine, pass stool directly into a large clean container (such as a cut-out milk jug or margarine container) or onto plastic wrap placed under the seat of the toilet. There are also commercial stool collection devices commonly referred to as a "hat" that may be used. If the stool is loose or liquid, pass directly into a container, **not** onto plastic wrap. 2. Transfer to the transport vials within 30 minutes of collection. 3. Open the transport vial. 4. Using the collection spoon built into the lid, obtain scoops of stool from areas that appear bloody, slimy or watery and place them into the vial until the volume rises to the red line. If the stool is formed (hard), sample small amounts from each end and the middle. Load to the "fill line" ensuring that the preservative completely covers the specimen. 5. Mix the contents of the vial thoroughly with the spoon, twist the cap tightly closed, check the cap to be sure it is secured and shake until the contents are well mixed. 6. Keep and transport preserved stool specimen at room temperatures. **NOTE: Duodenal aspiration** in 10% formalin vial for *Microsporidium*
Unacceptable Specimens	• Stool preserved in medium other than 10% formalin or Total-Fix™ • Specimens submitted without preservative • Specimen containing barium • Specimen received frozen • Do not use kits beyond their date of expiration
Collection Device	Collect the stool specimen in a clean, dry container.
Transport Device	10% formalin transport vial (pink label) Total-Fix™  
Specimen Storage, Transport and Stability	**Stool:** Transport to laboratory for testing as soon as possible at room temperature or refrigerated. Sample will be stable for 1 month.

Mycobacteria, Blood Culture

See Specimen collection instructions for: **Blood Cultures for Bacteria, Fungi and Mycobacteria**

Mycobacteria, Interferon Gamma Release Assay (Quantiferron)

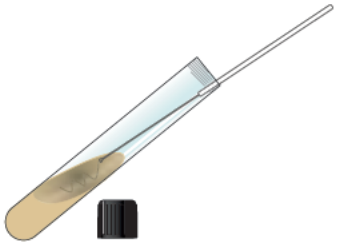
See Specimen Collection Instructions for: **Quantiferron in Immunology section**.

Mycobacteriology (AFB) Culture with Fluorochrome Smear

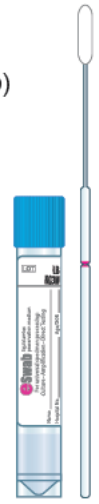
Antibiotic susceptibilities will be performed automatically on isolates of *Mycobacterium tuberculosis*.

Use	Isolation and identification of Mycobacteria used in the management and treatment of tuberculosis and other Mycobacterial infections. Positive smears indicate the presence of acid-fast organisms and possible communicability.
Precautions	Sputum has a very short stability. Transport to the lab as soon as possible at refrigerated temperature. Label the container with the patient name, date and time of collection.
Special Instructions	It is recommended to collect 3 sputum specimens for AFB smear and culture in patients with clinical and chest x-ray findings consistent with tuberculosis. These specimens should be collected over an 8–24 hour period and should include at least one first morning specimen. Early-morning sputum specimens should be collected because they contain accumulated, overnight secretions and are more likely to be concentrated with pathogenic bacteria. Submit each specimen separately; do not pool them. Bronchial wash specimens are generally obtained before biopsy specimens to avoid excess blood in the recovered fluid, because blood may alter the concentration of cellular and noncellular components.
Specimen Sources	• Early-morning expectorated sputum from deep cough • Induced sputum, bronchial wash, bronchial brushing, tracheal aspiration or bronchoalveolar lavage fluid • Body fluids, including cerebrospinal fluid (CSF), pleural, peritoneal, pericardial, synovial, ascitic and gastric lavage fluids • Skin lesion material, abscess contents, wounds, tissue biopsy, lymph node and bone • Gastric aspirates from children • Stool or urine
Specimen Collection Instructions	**Expectorated Sputum** 1. Prior to collection of a sputum specimen, the patient must be instructed to rinse his/her mouth and gargle with water. 2. Instruct the patient to obtain material from a deep cough, which is expectorated into a sterile container whose rim is pressed under the patient's lower lip to catch the entire specimen. 3. Instruct the patient to avoid adding saliva or nasopharyngeal discharges to the sputum sample to avoid contamination by indigenous microorganisms. **Induced Sputum** 1. Prior to collection of induced sputum, use a wet toothbrush and brush the buccal mucosa, tongue and gums of the patient. Rinse the patient's mouth thoroughly with water. 2. Using an ultrasonic nebulizer, have the patient inhale approximately 20-30 mL of 3-10% sterile saline. 3. Label the sputum as "Induced" and cap tightly. **Bronchial Washing Culture** 1. Pass the bronchoscope transnasally, or transorally in nonintubated patients, or via the endotracheal tube in intubated patients. 2. Wedge the tip of the bronchoscope in a segmental bronchus (for bronchial wash). 3. Inject sterile 0.85% sodium chloride (generally 5-20 mL aliquots) from a syringe through a biopsy channel of the bronchoscope. 4. Gently suction the 0.85% sodium chloride into a sterile container before administering the next aliquot. (In general, 50-75% of the 0.85% sodium chloride instilled is recovered in the lavage effluent). 5. Keep aliquots separate during collection in sterile, leak-proof containers (for example, right upper lobe and right lower lobe) and label accordingly.

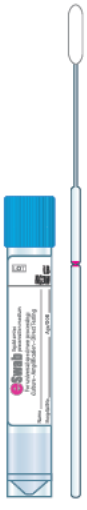
	Tracheal Aspirate 1. Lower respiratory secretions are collected from patients with a tracheotomy using a Lukens trap. 2. Transfer to a sterile container and cap tightly. **Gastric Lavage** Must be neutralized with sodium bicarbonate within 4 hrs of collection.
Collection Device	Falcon™ Sputum Collection Device containing an inner 50 mL conical specimen tube. Do not submit entire device; only the 50 mL screw-cap tube.
Transport Device	**Respiratory Specimens** Sterile, leak-proof, 50 mL screw-cap conical tube portion of the Falcon™ Sputum Collection Device transported on cold packs. **Tissues, Fluids or Stool** Tightly sealed, leak-proof sterile, wax-free screw-cap tube. Use a small amount of sterile, bacteriostatic saline if necessary. **Urine** Submit the entire first morning, voided urine using a sterile container.  Conical tube portion of the Falcon™ Sputum Collection Device **or**  Sterile, leak-proof container
Unacceptable Specimens	• Refrigerated specimens more than 5 days old. Older specimens may be processed only after contacting the lab Microbiologist or Medical Director. Results may be compromised. • Any specimens greater than 5 days old • 24-hr pooled sputum • Room temperature specimens 2 hrs or older • Frozen specimens • Specimens in alcohol, formalin or other fixatives • Red-top plastic tubes (containing silica or non-culture preservatives) • Urine specimens in preservative such as the Vacutainer® brand C&S collection kit • Swab specimens that are dry or expired • Specimens which have leaked and contaminated the outside of the collection container
Specimen Storage and Stability	Double bag the specimen. Store refrigerated (or with cold packs). The specimen can only be stored at room temperature for 2 hrs, prior to refrigeration. Transport to laboratory for testing as soon as possible refrigerated. Refrigerated specimens are viable for 5 days.

Mycobacterium Identification	
Use	For Species determination
Specimen Sources	Pure culture from any non-environmental source is acceptable. Use suitable agar (solid) medium slant such as Middlebrook 7H11 or Lowenstein-Jensen sealed with tape or parafilm and refer to instructions in that section. Indicate specimen source, any relevant patient history and date of inoculation on test request. **Do NOT submit mixed cultures, frozen specimens, liquid media or petri dishes.**
Collection Device	Suitable agar (solid) medium slant sealed with tape or parafilm
Transport Device	Same as the collection. Submit sealed, screw-capped agar tube in a double-walled container. Refer to **Infectious Substances** in this section. 
Specimen Collection Instructions	Using care to touch only one isolated colony (up to three for susceptibility testing), prepare a fresh sub-culture of the organism to an appropriate agar slant. Incubate until pure confluent growth is present prior to shipping.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Isolate viability varies with organism and transport system.

Nasopharyngeal Cultures	
Sinus aspirate should be submitted for Aerobic & Anaerobic Culture. Nasal swabs should be submitted for MRSA Culture Screen.	
Use	Determination of carriage or colonization
Preferred Specimen	• **Nasopharyngeal secretions** obtained by aspiration, washings or flexible, twisted-wire, mini-tip culture swabs are the preferred specimens to avoid contamination with nasal or oral flora. • **Sinus drainage** is also acceptable but may be contaminated by nasopharyngeal flora.
Specimen Collection Instructions	Immobilize patient's head and insert swab through a nostril. Push forward using gentle downward pressure to keep the swab on the floor of the nasal cavity until the tip reaches the posterior wall of the nasopharynx. Rotate gently for a few seconds and remove. Guidelines with diagrams for proper collection of nasopharyngeal swabs for either viral or bacterial studies (different transport medium) are available at many websites, including this link from New York City: nyc.gov/html/doh/downloads/pdf/flu/h1n1-npswab.pdf. **Nasopharyngeal Aspirate** 1. Instill 1–1.5 mL of nonbacteriostatic saline (about pH 7.0) into one nostril. 2. Flush a plastic catheter or tubing with 2–3 mL of saline. 3. Insert the tubing into the nostril parallel to the palate. 4. Aspirate nasopharyngeal secretions. 5. Repeat this procedure for the other nostril; combine aspirates into a sterile vial.
Collection Device	Sterile rayon, Dacron® or flocked nylon swab or yellow-cap mini-tip culture swabs with a thin flexible wire or plastic shaft that is specifically designed for NP use.

Transport Device	Sterile rayon, Dacron® or nylon swab or yellow-cap mini-tip culture swabs with a thin, flexible wire that is specifically designed for NP use. ESwab (blue-cap)  or  Yellow-cap rayon swab
Unacceptable Specimens	• Dry swabs; frozen specimens; specimens in expired transport devices, or in viral transport media • Specimens >48 hrs old • Request for anaerobic culture is inappropriate for this specimen source.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible on cold packs. Sample will be viable for 2 days.

Neisseria gonorrhoeae Culture

Use	Culture screen for *Neisseria gonorrhoeae*. Nucleic Acid tests are also available for the detection of *N. gonorrhoeae* (see *Chlamydia* and *Gonorrhoeae* Nucleic Acid Detection in the **General Test Listing** section), but culture is desirable under certain jurisdictions.
Specimen Sources	Urethral, cervical, anorectal or throat
Collection Device	Blue-cap rayon swab or ESwab
Transport Device	Blue-cap rayon swab or ESwab  
Specimen Collection Instructions	Collect specimens using a rayon-tipped (blue-cap) BD brand culture swab containing gel. After collection, plunge the swab into the gel transport medium to prevent drying.
Unacceptable Specimens	• Dry swabs; frozen specimens; specimens in expired transport devices, or in viral transport media. • Specimens >24 hrs old
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Sample will be viable for only 1 day.

Other Respiratory Tract Pathogens: *Mycoplasma pneumoniae* and *Pneumocystis jiroveci (carinii)* (DFA)

Specimen Collection Instructions	**See: Sputum and Lower Respiratory Tract Culture Bacteriology, Mycobacteriology and Fungi.**
Precautions	Sputum has a very short stability. Transport to the lab as soon as possible. Label the container with the patient name date and time of collection.
Special Instructions	Respiratory secretion specimens for *Mycoplasma pneumonia* or for *Chlamydia psittaci* must be transported to the laboratory in V-C-M medium (green cap) tube supplied by Quest Diagnostics. **Do not use wooden-shafted cotton swabs.** Up to 3 mL of respiratory fluid can be added to a V-C-M tube. These specimens should be refrigerated after collection and during transport to the laboratory (specimens are stable for 2 days, refrigerated). Specimens for *Pneumocystis jiroveci* may be stored and transported as for routine bacterial culture.

Ova and Parasites
Ova and Parasites, 2 Specimens
Ova and Parasites, 3 Specimens

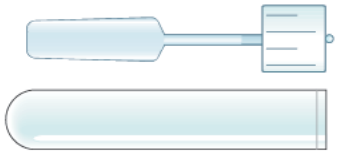
Use	Determination of infestation
Specimen Sources	About 10 g or 10 mL of fresh stool (large walnut size) in a single vial of Total-Fix™, **or** a pair of 10% formalin and zinc polyvinyl alcohol (Zn-PVA) transport vials. Formed, liquid or semi-solid specimens are all acceptable. **NOTE:** 25 mL or unpreserved urine in a sterile screw-cap container may be submitted specifically for Schistosoma. Do not submit first morning specimen. Peak egg secretion occurs between noon and 3pm.
Precautions	• Barium, antimalarials, mineral oil and other laxatives interfere with the detection of intestinal protozoa. Specimens submitted from patients that have been treated with the above must be collected at least 7-10 days post treatment. • Antimicrobial agents (wait 2 weeks) • Gallbladder dye (wait 3 weeks after procedure) • Specimens should never be frozen or placed in an incubator. Refrigeration is not required. • Parasite examinations cannot be performed on specimens submitted in stool culture transport vials or any other transport media specifically designed for bacterial pathogens.
Special Instructions	Many parasites are passed intermittently. The usual examination for ova and parasites before therapy may include up to three specimens collected at 1–3 day intervals to increase probability of detecting parasites. Each specimen must be preserved in a single vial of Total-Fix™ (new), **or** one vial of 10% formalin **and** one vial of zinc-polyvinyl alcohol (Zn-PVA) with a minimum of 5 grams of specimen in each of the vials. Do not exceed the fill line on the vials. Formalin preserves helminth ova and larvae. PVA is an excellent fixative for the preservation of the trophozoite stages of protozoa. Total-Fix preserves both. One Total-Fix™, **or** a pair of formalin/PVA preservative vials must be submitted for a comprehensive examination. It is important to indicate specimen consistency (formed, soft, loose, or watery) by checking the appropriate box on the transport vial label. **NOTE: If Giardia is strongly suspected, please see Giardia Antigen, EIA Stool.** Giardia Antigen EIA will detect the vast majority of parasitic infection for all patients with no travel history outside of the U.S.
Specimen Collection Instructions	**Duodenal/Gastric Aspirates for Parasite Detection** **Duodenal:** Sterile endoscopic sampling technique may be used. A sterile catheter is introduced through the endoscope and then an infusion of saline is instituted. Once the catheter is in the intestinal lumen, the infused solution is aspirated. **Gastric:** Place NG tube in patient. Use as large a bore NG tube as is comfortable (minimum 10 french). Avoid too deep a placement to prevent passage through the pylorus. 1. Aspirate the stomach contents. If less than about 10 cc of mucus is aspirated, reposition the tube and/or the patient to maximize the yield of gastric contents.

	2. Place the aspirates in both 10% formalin and Zn-PVA containers within 30 minutes of collection. Fill to the fill line. • **Important:** Indicate the source of the specimen on the vial and the Test Requisition. • Store and transport preserved specimens at room or refrigerated temperatures (stable 2 months). **Patient Instructions for Stool Sample Collection for O & P** 1. Avoiding contact with urine, pass stool directly into a large clean container (such as a cut-out milk jug or margarine container) or onto plastic wrap placed under the seat of the toilet. There are also commercial stool collection devices commonly referred to as a "hat" that may be used. If the stool is loose or liquid, pass directly into a container, not onto plastic wrap. 2. Transfer to the transport vials within 30 minutes of collection. 3. Open the transport vials. 4. Using the collection spoon built into the lid, obtain scoops of stool from areas that appear bloody, slimy or watery and place them into the vial until the volume rises to the red line. If the stool is formed (hard), sample small amounts from each end and the middle. Load to the "fill line" ensuring that the preservative completely covers the specimen. 5. Mix the contents of the vial thoroughly with the spoon, twist the cap tightly closed, check the cap to be sure it is secured and shake until the contents are well mixed. 6. Keep and transport preserved stool specimens at room or refrigerated temperatures (stable 6 months).
Unacceptable Specimens	• Stool preserved in medium **other than:** – 10% formalin – Zinc Polyvinyl alcohol (Zn-PVA) – Merthiolate Iodine Formalin (MIF) – Total-Fix • Specimens submitted without preservative • Specimen containing barium • Specimen received frozen • Urine specimen with preservative • Do not use kits beyond their date of expiration
Collection Device	Collect the stool specimen in a clean, dry container. Collect urine in sterile screw-cap container.
Transport Device vials	10% formalin (pink label) and zinc polyvinyl alcohol (Zn-PVA; gray label) transport  Urine maybe submitted in a sterile, screw-cap container.
Specimen Storage, Transport and Stability	**Stool:** Transport to laboratory for testing as soon as possible at room temperature. Sample will be stable for 6 months. **Urine:** Transport to laboratory for testing as soon as possible refrigerated. Sample will be stable for 48 hrs.

Parasite Identification, Tick (and Other Arthropods) ID
Parasite Identification, Intestinal

Use	Parasite Identification
Specimen Sources	**Parasite Identification, Tick (and Other Arthropods)**: Collect suspected tick, insect, larva, etc. **Parasite Identification, Intestinal:** Collect suspected nematode, cestode, trematode or other parasites.
Collection Device	**Parasite Identification, External:** Submit the entire organism in 70% isopropyl alcohol in a clean screw-cap container. **Parasite Identification, Intestinal:** Submit the entire organism in 70% isopropyl alcohol or 10% formalin in a clean, screw-cap container.
Transport Device	Clean screw-cap vial (tan label) 
Specimen Collection Instructions	**Parasite Identification, External:** Collect specimen (suspected tick, insect, larva) in clean container and transfer to the entire organism in 70% isopropyl alcohol as soon as possible. **Parasite Identification, Intestinal:** Collect specimen (suspected nematode, cestode, trematode or other parasite) in clean container and transfer to 70% isopropyl alcohol or 10% formalin as soon as possible.
Unacceptable Specimens	**Parasite Identification, Intestinal:** Unpreserved specimens and those obtained within 7 days of treatment with mineral oil, barium, antibiotics and laxatives.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Do not refrigerate. Sample will be viable for 2 months.

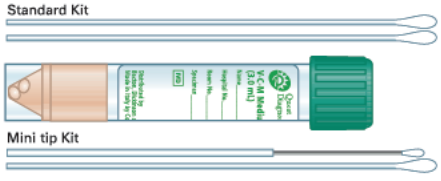
Pinworm Identification

Use	Pinworm (*Enterobius vermicularis*) perianal detection
Specimen Sources	Perianal
Precautions	It is important to take the specimen when the patient first awakes in the morning and before defecation.
Collection Device	One pinworm "paddle" consisting of a clear plastic spatula with adhesive on one side
Specimen Collection Instructions	Pinworm paddles provided by Quest Diagnostics are appropriate for the submission of specimens for pinworm exam; do not submit stool. To facilitate diagnosis, use the pinworm paddle as follows: 1. Remove the cap with attached paddle from the tube. 2. Separate the buttocks and press the tacky surface against several areas of the perianal region first thing in the morning upon awakening (important). 3. Replace the paddle in the tube for transport to the laboratory at room temperature within 24–48 hours from collection. Alternate Specimens: Clear cellulose (scotch) tape preparations on a clear glass slide.
Transport Device	Same as the collection device  Pinworm Paddle
Specimen Storage and Stability	Transport to the laboratory for testing as soon as possible. Refrigeration (cold packs) is preferred, but we have also validated room temperature transport. The specimen will be viable for 5 days.

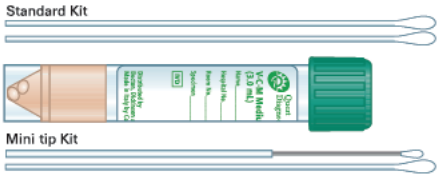
Pneumocystis jiroveci (carinii) (DFA)	
Use	Diagnosis of pneumonia in immunocompromised patients
Precautions	Sputum has a very short stability. Transport to the lab as soon as possible. Label the container with the patient name date and time of collection.
Special Instructions	Specimens for *Pneumocystis jiroveci* may be stored and transported as for routine bacterial culture.
Specimen Sources	Early-morning expectorated sputum from deep cough, bronchial wash or tracheal aspirations
Specimen Collection Instructions	**Expectorated Sputum** 1. Prior to collection of a sputum specimen, the patient must be instructed to rinse his/her mouth and gargle with water. 2. Instruct the patient to obtain material from a deep cough which is expectorated into a sterile container whose rim is pressed under the patient's lower lip to catch the entire specimen. 3. Instruct the patient to avoid adding saliva or nasopharyngeal discharges to the sputum sample to avoid contamination by indigenous microorganisms. **Induced Sputum** 1. Prior to collection of induced sputum, use a wet toothbrush and brush the buccal mucosa, tongue and gums of the patient. Rinse the patient's mouth thoroughly with water. 2. Using an ultrasonic nebulizer, have the patient inhale approximately 20-30 mL of 15% sodium chloride and 10% glycerin. Label the sputum as "Induced" and cap tightly. **Bronchial Washing** 1. Pass the bronchoscope transnasally or transorally in nonintubated patients or via the endotracheal tube in intubated patients. 2. Wedge the tip of the bronchoscope in a segmental bronchus (for bronchial wash) 3. Inject sterile 0.85% sodium chloride (generally in 5-20 mL aliquots) from a syringe through a biopsy channel of the bronchoscope. 4. Gently suction the 0.85% sodium chloride into a sterile container before administering the next aliquot. (In general, 50-75% of the 0.85% sodium chloride instilled is recovered in the lavage effluent). 5. Keep aliquots separate during collection in sterile, leak-proof containers (for example, right upper lobe and right lower lobe) and label accordingly. **Tracheal Aspirate** 1. Lower respiratory secretions are collected from patients with a tracheotomy using a Lukens trap. 2. Transfer to a sterile container and cap tightly.
Collection Device	Falcon™ Sputum Collection Device containing an inner 50-mL conical specimen tube. Do not submit entire device; only the 50-mL screw-cap tube.
Transport Device	Falcon™ Sputum Collection Device 50 mL conical specimen tube **or** sterile, leak-proof, 50 mL screw-cap conical tube transported on cold packs.  Falcon™ Sputum Collection Device with 50 mL conical specimen tube  Sterile leak-proof container
Unacceptable Specimens	• Refrigerated specimens older than 24 hrs but less than 48 hrs old may be processed only after contacting the lab microbiologist or Medical Director. Results may be compromised. • Any specimens > 48 hrs old

	• 24-hr pooled sputum • Sputum received for anaerobic culture • Room temperature specimens >2 hrs old • Swab specimens and specimens that leaked and contaminated the outside of the collection container • Sputum specimens with >25 epithelial cells/lp • Frozen specimens
Specimen Storage and Stability	Double bag the specimen in the inner 50 mL tube and refrigerate or place it on cold packs. The specimen can only be stored at room temperature for 2 hrs, or refrigerated. Transport to laboratory for testing as soon as possible refrigerated. The specimen will be viable for only 24 hrs.

Respiratory Syncytial Virus Antigen Immunoassay and DFA

Use	Screen for infection
Precautions	Nasopharyngeal secretions obtained by aspiration or washings. Sterile rayon, Dacron® or flocked nylon or twisted-wire mini-tip culture swabs are the preferred specimens in order to avoid contamination with nasal or oral flora.
Special Instructions	Guidelines with diagrams for proper collection of nasopharyngeal swabs for viral studies are available at many websites: nyc.gov/html/doh/downloads/pdf/flu/h1n1-npswab.pdf
Specimen Collection Instructions	Immobilize patient's head and insert swab through a nostril. Push forward using gentle downward pressure to keep the swab on the floor of the nasal cavity until the tip reaches the posterior wall of the nasopharynx. Rotate gently for a few seconds and remove. Break off swab into the V-C-M medium. Collect aspirates using a #5–8 disposable infant feeding tube attached to a 10 mL syringe or large suction bulb. If material cannot be aspirated, instill up to 5 mL of saline into the nasal passages and re-aspirate to collect washings. As an alternative, use a suction catheter with a mucus trap. Add an equal amount of aspirate to V-C-M medium.
Collection Device	To obtain NP specimens, use a sterile rayon, Dacron® or flocked nylon swab designed for this purpose or yellow-cap mini-tip swab with a thin flexible wire that is specifically designed for NP use. A #5–8 disposable infant feeding tube attached to a 10 mL syringe or large suction bulb may be used for aspirates.
Transport Device	V-C-M medium (green cap) tube supplied by Quest Diagnostics 
Unacceptable Specimens	• Dry swabs; frozen specimens; specimens in expired transport devices, or in viral transport media. • Specimens >48 hrs old
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Sample will be viable for 2 days. Do not refrigerate.

Respiratory Viral Cultures (Rapid) and Rapid Screens by Direct Fluorescent Antibody for Adenovirus, Influenza A&B, Parainfluenza 1,2,3, Respiratory Syncytial Virus (RSV)

Use	Determination of infection by various viral agents
Precautions	Nasopharyngeal secretions obtained by aspiration, washings or flexible, flocked nylon, or twisted-wire mini-tip culture swabs are the preferred specimens in order to avoid contamination with nasal or oral flora.
Special Instructions	Guidelines with diagrams for proper collection of nasopharyngeal swabs for viral studies are available at many websites, including this link from New York City: nyc.gov/html/doh/downloads/pdf/flu/h1n1-npswab.pdf.
Specimen Collection Instructions	Immobilize patient's head and insert swab through a nostril. Push forward using gentle downward pressure to keep the swab on the floor of the nasal cavity until the tip reaches the posterior wall of the nasopharynx. Rotate gently for a few seconds and remove. Break off swab into V-C-M transport medium. Collect aspirates using a #5–8 disposable infant feeding tube attached to a 10 mL syringe or large suction bulb. If material cannot be aspirated, instill up to 5 mL of saline into the nasal passages and re-aspirate to collect washings. As an alternative, use a suction catheter with a mucus trap. Add an equal amount of aspirate to V-C-M transport medium.
Collection Device	To obtain NP specimens, use a sterile rayon, Dacron® or flocked nylon swab **or** rayon-tipped swabs with flexible shaft or yellow-cap mini-tip swabs with a thin flexible wire that is specifically designed for NP use. A #5–8 disposable infant feeding tube attached to a 10 mL syringe or large suction bulb may be used for aspirates.
Transport Device	Quest Diagnostics-supplied V-C-M transport medium or equivalent, or sterile leak-proof container as appropriate 
Unacceptable Specimens	• Dry swabs, frozen • Specimens at inappropriate transport temperature (RT or frozen raw sample), in expired transport devices, or in viral transport medium. • Specimens >72 hrs old • Expired viral transport media or inappropriate transport media (e.g., Stuart's, Amies, gel-based media, charcoal medium, or nucleic acid transport systems). Request for anaerobic culture is inappropriate for this specimen source.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Sample will be viable for 2 days. Do not refrigerate.

Rotavirus Antigen

Use	Determination of Infection/Infectivity
Specimen Sources	About 5 g or 5 mL of fresh stool (walnut size). Formed, liquid or semi-solid specimens are all acceptable. Rectal swabs may be submitted from children.
Special Instructions	Stool specimens should be collected as soon after onset of symptoms as possible. Peak viral counts are reported to occur on days 3-5 after onset of symptoms. Samples collected 8 days or more after onset of symptoms may not contain enough rotavirus antigen to produce a positive reaction.
Specimen Collection Instructions	Avoiding contact with urine, pass stool directly into the vial or pass stool into a large clean container (such as a cut-out milk jug or margarine container) or onto plastic wrap placed under the seat of the toilet. There are also commercial stool collection devices

	commonly referred to as a "hat" that may be used. Transfer some of the specimen into the vial using a tongue depressor provided by your doctor or other handy implement such as a plastic spoon. If the stool is loose or liquid, pass directly into a container, not onto plastic wrap.
Unacceptable Specimens	Stools submitted in preservative (except swabs in Amies medium) Stools submitted on swabs and stools mixed with urine Specimens stored at room temperature for >4 hours Unpreserved stool >48 hours old that has not been frozen Specimens submitted in diapers Swabs submitted with no visible stool specimen present
Collection Device	Clean, dry, leak-proof container
Transport Device	Clean vial (tan label) or Swabs in Amies transport medium 
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at refrigerated temperature or frozen at -20 °C. Specimens will be viable for 3 days at refrigerated temperature and for 7 days when undiluted stool is frozen at -20 °C or colder.

***Salmonella*, *Shigella* Culture, *Salmonella*, *Shigella* and *Campylobacter* Culture and *Campylobacter* (only)**	
Use	Determination of infection and test of cure
Specimen Sources	About 2-5 gm, or 5 mL, of fresh Stool (walnut size) Formed, liquid or semi-solid specimens are all acceptable.
Special Instructions	If the first culture specimen yields negative results, a second, or a third specimen, collected at 1–3 day intervals, may increase the probability of isolating a pathogen.
Specimen Collection Instructions	**Avoiding contact with urine,** pass stool directly into a large clean container (such as a cut out milk jug margarine container) **or** onto plastic wrap placed under the seat of the toilet. There are also commercial stool collection devices commonly referred to as a "hat" that may be used. If the stool is loose or liquid, pass directly into a container, not onto plastic wrap. Using the collection spoon built into the lid of the Cary-Blair transport vial, obtain scoops of stool from areas that appear bloody, slimy, or watery, and place them into the vial until the volume rises to the "fill to here" line. If the stool is formed (hard), sample small amounts from each end and the middle. Mix the contents of the vial with the spoon, twist the cap tightly closed, and shake until the contents are well mixed. Rectal swabs are also acceptable if stool cannot be obtained.
Unacceptable Specimens	• Unpreserved stool specimens regardless of transport temperature • Stool specimens submitted in Ova and Parasite (formalin and PVA, zinc-polyvinyl alcohol) vials, Phosphate Buffered Glycerol Saline, **or** in Viral transport systems • Frozen stool • Dry rectal swabs • Specimens in diapers **or** expired transport devices • Specimens >96 hrs old
Collection Device	Clean, dry, leak-proof container

Transport Device	Cary-Blair transport medium vial (peach label) 
Specimen Storage, Transport and Stability	Specimens should be submitted in Cary-Blair transport medium vials and transported refrigerated **or** at room temperature. Stable for up to 4 days.

Scabies Examination

Use	Determination of infestation
Specimen Sources	Dry skin scrapings
Collection Device	Clean, plastic screw-capped container
Specimen Collection Instructions	• Due to the infectious nature of Sarcoptes scabiei, universal precautions must be strictly adhered to when collecting and transporting specimens for scabies. Collect skin scrapings from the webbings in between the fingers regardless of the site of the rash for the greatest recovery rate. The rash represents sensitization to the bite and does not correspond to the location of the active adult female mites. • Place skin scrapings in a clean, screw-cap container without any fluid. Addition of any fluid to the container hampers detection. • Alternate Specimens: Scrapings between two microscopic slides rubber-banded together in a screw-cap tube or plastic vial.
Unacceptable Specimens	Skin scrapings in formalin or alcohol, slides not submitted in a leak-proof container and broken slides.
Transport Device	Clean, plastic screw-capped container Microscopic slides rubber-banded together in a screw-cap tube or plastic container 
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Do not refrigerate. Sample will be stable for 2 days.

Severe Acute Respiratory Syndrome (SARS)

Immediately contact your local Public Health authority if suspected

Shiga Toxin with Reflex to Culture If Positive, with Salmonella Shigella Culture

Use	Determination of infection with toxin-producing *E. coli*, Salmonella, or Shigella
Specimen Sources	About 5 mL of liquid or non-formed stool. Formed, liquid or semi-solid specimens are all acceptable. Rectal swabs may be submitted from children or when stool cannot be obtained.
Specimen Collection Instructions	**Avoiding contact with urine,** pass stool directly into a large clean container (such as a cut out milk jug or margarine container) **or** onto plastic wrap placed under the seat of the toilet. There are also commercial stool collection devices commonly referred to as "hats" that may be used, such as Direct Detect. Transfer some of the specimen into the Cary-Blair vial. A tongue depressor provided by your doctor, or other handy implement, such as

	a plastic spoon, may be used to transfer stool into a clean vial; mix well. If rectal swabs are used for children, insert the swab about 2 cm into the rectum for about 10 seconds. **If the stool is loose or liquid, pass directly into a container, not onto plastic wrap.**
Unacceptable Specimens	• Unpreserved stool specimens transported at room temperature • Dry swabs and specimens in diapers • Samples subjected to freeze-thaw cycles more than twice • Unlabeled specimens • Samples beyond stated stability requirements
Collection Device	Clean, leak-proof container
Transport Device	Stool: Cary-Blair Transport medium (peach label) Rectal swabs: Blue-cap Amies gel swabs in transport media may be used for infants or when stool cannot be obtained.  Cary-Blair transport medium  Blue-cap rayon swab
Specimen Storage, Transport and Stability	Specimens in Cary-Blair are stable for seven days when stored and transported refrigerated; stable for three days at room temperature. Frozen specimens (dry ice) are stable up to one month.

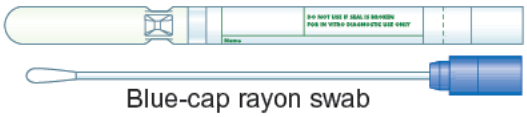
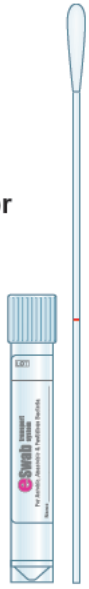
Sinus Aspirate Culture

Use	Determination of both aerobic and anaerobic infection
Specimen Sources	Ethmoid or maxillary sinus
Precautions	Sinus puncture is an invasive procedure, and is not routinely performed. Studies have shown a close correlation between organisms found by sinus puncture and by endoscopically-guided aspiration of the sinus cavities through the middle meatus. Culture specimens obtained from nasopharyngeal swabs correlate poorly with sinus pathogens recovered on culture from puncture specimens because of contamination of the swab with normal nasopharyngeal flora.
Collection Device	Needle puncture or endoscopic aspirate
Transport Device	• Anaerobic Transport Medium  If the appropriate transport system is not available, the syringe can be submitted. Do not submit a syringe with the needle attached. If submitting a syringe, remove the needle, expel air and recap the syringe.
Specimen Collection Instructions	The most accurate way to determine the causative organism is by sinus puncture or aspiration during endoscopic sinus surgery. After anesthetization of the puncture site, usually in the canine fossa, or inferior meatus, the contents of the maxillary sinus are aspirated under sterile technique.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Do not refrigerate. Sample will be viable for 2 days at room temperature.

Sputum and Lower Respiratory Tract Culture Bacteriology, Mycobacteriology (AFB) and Fungal Culture with KOH	
Use	Diagnosis of lower respiratory tract infection. For *Pneumocystis jiroveci (carinii)* specimens, refer to *Pneumocystis jiroveci (carinii)* (DFA). Requests for anaerobic cultures are inappropriate for sputum specimens.
Precautions	Sputum has a very short stability. Transport to the lab as soon as possible. Label the container with the patient name date and time of collection.
Special Instructions	Early-morning sputum specimens should be collected because they contain pooled overnight secretions in which pathogenic bacteria are more likely to be concentrated. Bronchial wash specimens are generally obtained before biopsy specimens to avoid excess blood in the recovered fluid, because blood may alter the concentration of cellular and noncellular components. For mycobacterial culture, it is recommended to collect three sputum specimens for acid-fast smears and culture in patients with clinical and chest x-ray findings compatible with tuberculosis. These specimens should be collected over an 8–24 hr period of time and should include at least one first morning specimen. Submit each specimen separately; do not pool them. **NOTE:** Respiratory secretion specimens for *Mycoplasma pneumonia* or for *Chlamydia psittaci* must be transported in V-C-M medium (green cap) tube supplied by Quest Diagnostics. Up to 3 mL of respiratory fluid can be added to a V-C-M tube. These specimens should be refrigerated after collection and during transport to the laboratory. Specimens are stable for 2 days, refrigerated.
Specimen Sources	Early-morning expectorated sputum from deep cough, bronchial wash **or** tracheal aspirations
Specimen Collection Instructions	**Expectorated Sputum** 1. Prior to collection of a sputum specimen, the patient must be instructed to rinse his/her mouth and gargle with water. 2. Instruct the patient to obtain material from a deep cough which is expectorated into a sterile container whose rim is pressed under the patient's lower lip to catch the entire specimen. 3. Instruct the patient to avoid adding saliva or nasopharyngeal discharges to the sputum sample to avoid contamination by indigenous microorganisms. **Induced Sputum** 1. Prior to collection of induced sputum, use a wet toothbrush and brush the buccal mucosa, tongue and gums of the patient. Rinse the patient's mouth thoroughly with water. 2. Using an ultrasonic nebulizer, have the patient inhale approximately 20-30 mL of 15% sodium chloride and 10% glycerin. 3. Label the sputum as "Induced" and cap tightly. **Bronchial Washing** 1. Pass the bronchoscope transnasally or transorally in nonintubated patients or via the endotracheal tube in intubated patients. 2. Wedge the tip of the bronchoscope in a segmental bronchus (for bronchial wash). 3. Inject sterile 0.85% sodium chloride (generally in 5-20 mL aliquots) from a syringe through a biopsy channel of the bronchoscope. 4. Gently suction the 0.85% sodium chloride into a sterile container before administering the next aliquot. In general, 50-75% of the 0.85% sodium chloride instilled is recovered in the lavage effluent. 5. Keep aliquots separate during collection in sterile, leak-proof containers (for example, right upper lobe and right lower lobe) and label accordingly. **Tracheal Aspirate** 1. Lower respiratory secretions are collected from patients with a tracheotomy using a Lukens trap. 2. Transfer to a sterile container and cap tightly.
Collection Device	Falcon™ Sputum Collection Device containing an inner 50 mL conical specimen tube. Do not submit entire device; only the 50 mL screw-cap tube.

Transport Device	Falcon™ Sputum Collection Device 50 mL conical specimen tube or Sterile, leak-proof, 50 mL screw-cap conical tube transported on cold packs.  Falcon™ Sputum Collection Device with 50 mL conical specimen tube  Sterile leak-proof container
Unacceptable Specimens	• Refrigerated specimens older than 24 hrs but less than 48 hrs old may be processed only after contacting the lab Microbiologist or Medical Director. Results may be compromised. • Any specimens > 48 hrs old • 24-hr pooled sputum • Sputum received for anaerobic culture • Room temperature specimens >2 hrs old • Swab specimens and specimens that leaked and contaminated the outside of the collection container. • Sputum specimens with >25 epithelial cells/lp • Frozen specimens
Specimen Storage and Stability	Double bag the specimen in the inner 50 mL tube and refrigerate or place it on cold packs. The specimen can only be stored at room temperature for 2 hrs or refrigerated. Transport to laboratory for testing as soon as possible refrigerated. The specimen will be viable for only 24 hrs.

Staphylococcus aureus Screen

Screens for nasal colonization for MRSA, see MRSA Culture Screen	
Use	Detection of Staphylococcus carriage or colonization Antimicrobial susceptibility testing or testing to detect resistance mechanisms may be performed for phenotypic characterization at no additional charge.
Precautions	This order code should not to be used for the diagnosis of active infection. Refer to **Aerobic and/or Superficial Wound Cultures.**
Specimen Sources	Any skin source Nasal swab
Collection Device	Red- or blue-cap rayon swab, or ESwab
Transport Device	Red- or blue-cap rayon swab, or ESwab  Red-cap rayon swab **or** **or**  Blue-cap rayon swab  ESwab

Specimen Collection Instructions	1. Use Amies liquid transport medium (red-cap Copan or BD swab), or Amies gel transport medium (blue-cap Copan or BD swab) or ESwab to obtain the specimen. 2. Culture any skin source (Nasal swab for Staphylococci). 3. Return swab back to the plastic transport tube and make sure the cap is on tight.
Unacceptable Specimens	• Dry swabs • Frozen specimens • Specimens in expired transport devices • Specimens submitted in formalin • Specimens submitted in viral transport medium • Specimens greater than 48 hrs old • Swabs from environmental sources
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature or refrigerated. Sample will be stable for 2 days.

Stool Exam for WBC

See the listing for Fecal Leukocytes.

Streptococcus Group B Cultures

Use	Screening for group B *streptococcus*. Primarily used to determine prenatal vaginal colonization in pregnant women. The Center for Disease Control and Prevention (CDC) and ACOG recommends culturing both the vagina and rectum of pregnant women at 35–37 weeks of gestation for Group B *streptococci* to help identify neonates that are at increased risk for infection and to provide appropriate antibiotics. These are broth-enhanced cultures. Antimicrobial Susceptibility Testing (AST) is not routinely performed on Group B *Streptococcus*, but may be indicated in penicillin-allergic patients. Order code 15090 includes AST for use with these allergic patients. If this special test was mistakenly not ordered, susceptibility testing can be added by calling the laboratory within 3 days of the original test request.
Specimen Sources	**Pregnant patients:** Obtain one or two swabs of the vaginal introitus and the anorectum as recommended by the CDC.
Specimen Collection Instructions	**Pregnant Patients:** Using either a red-cap, Amies liquid transport medium swab or blue-cap, Amies gel medium swab, collect specimen by inserting first into the vaginal introitus and then into the anorectum as recommended by the CDC. Cervical specimens are not appropriate for this test.
Collection Device	Red- or Blue-cap rayon swab
Transport Device	Red- or Blue-cap rayon swab  Red-cap rayon swab **or**  Blue-cap rayon swab

Unacceptable Specimens	• Dry swabs, frozen specimens, specimens in expired transport devices, cervical swabs, nucleic acid amplification transport, or in viral transport medium. • Specimens >48 hrs old
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Sample will be viable for 2 days at room temperature.

Streptococcus Group B PCR, Broth Enhanced

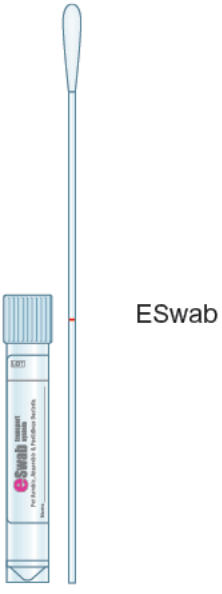
Use	Screening for group B *streptococcus*. Primarily used to determine prenatal vaginal colonization in pregnant women. The Center for Disease Control and Prevention (CDC) and ACOG recommends culturing both the vagina and rectum of pregnant women at 35–37 weeks of gestation for Group B *streptococci* to help identify neonates that are at increased risk for infection and to provide appropriate antibiotics. This is a PCR assay performed on broth-enhanced cultures. Antimicrobial Susceptibility Testing (AST) is not routinely performed on Group B *Streptococcus*, but may be indicated in penicillin-allergic patients. Order code 91770 includes AST for use with these allergic patients. If this special test was mistakenly not ordered, susceptibility testing can be added by calling the laboratory within 3 days of the original test request.
Specimen Sources	Obtain one or two swabs of the vaginal introitus and the anorectum as recommended by the CDC.
Collection Device	Red- or Blue-cap rayon swab
Transport Device	Red- or Blue-cap rayon swab
Specimen Collection Instructions	**Pregnant Patients:** Using either a red-cap, Amies liquid transport medium swab or blue-cap, Amies gel medium swab, collect specimen by inserting first into the vaginal introitus and then into the anorectum as recommended by the CDC. Cervical specimens are not appropriate for this test.
Specimen Storage and Stability	Transport refrigerated or at room temperature. Stable for 2 days.

Streptococcus Group B PCR, Broth Enhanced with AST

Use	Screening for group B streptococcus. Primarily used to determine prenatal vaginal colonization in pregnant women. The Center for Disease Control and Prevention (CDC) and ACOG recommends culturing both the vagina and rectum of pregnant women at 35–37 weeks of gestation for Group B streptococci to help identify neonates that are at increased risk for infection and to provide appropriate antibiotics. This is a PCR assay performed on broth-enhanced cultures. Antimicrobial Susceptibility Testing (AST) is performed on positive cultures.
Specimen Sources	Obtain one or two swabs of the vaginal introitus and the anorectum as recommended by the CDC.
Collection Device	Red- or Blue-cap rayon swab
Transport Device	Red- or Blue-cap rayon swab
Specimen Collection Instructions	**Pregnant Patients:** Using either a red-cap, Amies liquid transport medium swab or blue-cap, Amies gel medium swab, collect specimen by inserting first into the vaginal introitus and then into the anorectum as recommended by the CDC. Cervical specimens are not appropriate for this test.
Specimen Storage and Stability	Transport refrigerated or at room temperature. Stable for 2 days.

Throat Cultures, Routine and Cultures for Group A *Streptococcus* only, with or without Susceptibility

Use	This test is only for the detection of agents known to cause pharyngitis-group A streptococci, *Arcanobacterium haemolyticum* and groups C and G streptococci. Group A only is a group A streptococcus only culture with susceptibility testing for those patients allergic to penicillin. If infection with *A. haemolyticum* or non-group A streptococci is suspected, a routine throat culture should be ordered rather than a group A strep culture.

	Thrush is best confirmed by ordering a yeast culture which employs media designed specifically to promote growth of fungi. For detection of carriage, Nasopharyngeal culture is suggested. For culture of a tonsillar abscess, Aerobic culture is suggested. If pharyngitis from *Neisseria gonorrhoeae* is suspected, use test code 480 which employs special media selective for this pathogen.
Precautions	Uncommon, acute, life-threatening diseases associated with untreated pharyngitis include peri-tonsillar or retropharyngeal abscesses, diphtheria and epiglottitis, which may cause complete obstruction of the airway. Airway management should be considered prior to throat culture in these patients.
Special Instructions	Throat specimens **should not** be collected **if** the patient has epiglottitis, a rapidly progressing cellulitis with potential to cause complete airway obstruction. If epiglottitis is suspected, prompt otolaryngologic consultation for airway management is recommended. A blood culture should be considered.
Specimen Collection Instructions	Use a sterile aerobic culture swab to sample the back of the throat (posterior pharynx), tonsillar crypts, and between the tonsillar pillars and uvula. Avoid touching the lips, cheeks, tongue and uvula. Throat specimens should not be collected if the patient may have epiglottitis.
Collection Device	Red- or blue-cap rayon swab or ESwab
Transport Device	Red- or blue-cap rayon swab or ESwab  Red-cap rayon swab **or** **or**  Blue-cap rayon swab  ESwab
Unacceptable Specimens	• Dry swabs, frozen specimens, specimens in expired transport devices, or in viral transport medium. • Specimens >48 hrs old • Requests for anaerobic culture are inappropriate for this specimen source.
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Sample will be viable for 2 days.

***Trichomonas vaginalis*, Culture**	
Nucleic Acid test also available.	
Use	Determination of Infestation
Specimen Sources	Vaginal Exudate, Prostatic Fluid, Penile Urethra, Male Urine, Amniotic fluid, prostatic fluid, and semen
Collection Device	Rayon or flocked nylon swabs

Transport Device	In-Pouch™ Trichomonas self-contained culture system or equivalent tube media 
Specimen Collection Instructions	**Female:** **Vaginal Exudate:** Wipe away excessive fluid or discharge. Obtain fluid from the posterior fornix of the vaginal vault with a sterile rayon, Dacron® or flocked nylon swab. Inoculate the InPouch™ TV and discard the swab. **Male:** 1. **Prostatic Fluid:** Clean the glans penis with soap and water. Massage the prostate through the rectum. Collect the fluid expressed from the penile meatus on a sterile swab as above, inoculate the InPouch™ TV and discard the swab. 2. **Urethra:** Express any fluid onto a swab or collect with a wire shaft mini-tip, or mini tipped flocked nylon swab. Insert the swab 2-4 cm into the urethral lumen, rotate the swab, and leave it in place for at least 2 seconds. Inoculate the InPouch™ TV medium and discard the swab. 3. **Urine:** Collect a minimum of 15 mL of first-morning, midstream, voided urine. Centrifuge urine and inoculate the InPouch™ TV with the sediment.
Inoculation Instructions	The physician must maintain a supply of InPouch™ TV medium in order to inoculate the broth immediately after obtaining the specimen from the patient. **Swabs** 1. Remove the InPouch™ TV from the box and unfold it out to its full length. Hold it so that the closure strip is at the top. There are two chambers, an upper and lower chamber. Make sure the liquid in the upper chamber is below the closure tape to prevent the liquid from leaking upon opening. 2. Tear open the upper chamber just above the closure strip. 3. Pull on the tabs attached to the middle of each side of the closure strip so that the upper chamber is opened. Insert the swab containing the specimen into the liquid. 4. Rotate and squeeze the swab gently against the sides of the pouch to inoculate the medium. Discard swab in a biohazard container. 5. Close the pouch, roll the top edge down 3 full turns and fold the wire closure strip's end tabs behind the pouch to lock. **Male Urine Specimen** 1. Immediately following collection of the specimen, centrifuge the urine for 5 minutes at 500 RPM. Aspirate the supernatant, and inoculate 1-2 drops of the sediment into the broth as described above using a sterile, disposable Pasteur pipette. 2. Close the pouch, roll the top edge down 3 full turns and fold the wire closure end tabs behind the pouch to lock. 3. A urine specimen must be prepared by the physician's office staff and placed into the InPouch™ TV device prior to transfer to the lab. **Amniotic Fluid, Prostatic Fluid, and Semen Specimens in a Sterile Container** 1. Immediately following collection of the specimen, inoculate the broth using either a sterile swab (see **Swabs** above) or a sterile, disposable pipette. If using a pipette, aspirate 2-3 drops of the specimen and inoculate specimen into the device as above. 2. Close the pouch, roll the top edge down 3 full turns and fold the wire closure end tabs behind the pouch to lock. **NOTE:** The Affirm™ VP-III ATTS transport device should be submitted if the Bacterial Vaginitis/Vaginosis Screen, DNA Probe panel is requested.

Unacceptable Specimens	• Leaking specimens • Refrigerated specimens • Inoculated pouches received more than 24 hours after collection • Specimens inoculated in In-Pouch™ TV after expiration date • Uninoculated urine specimens • Uninoculated non-gel swabs • Urine from females
Specimen Storage and Stability	Store and transport specimens to the laboratory at room temperature within 24 hours of collection.

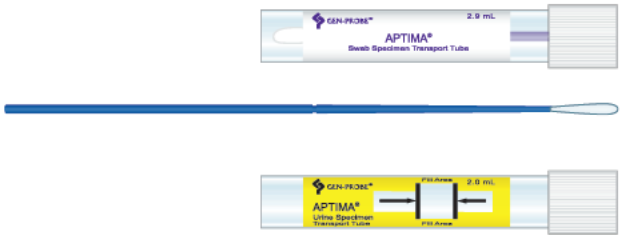
Trichomonas vaginalis Qualitative TMA, Pap Vial

Use	This test is used to detect asymptomatic or symptomatic infection with *Trichomonas vaginalis* in female clinical specimens. The test has greater analytical sensitivity than culture methods.
Specimen Sources	Endocervical, Vaginal
Specimen Collection Instructions	**Pap Vial:** See Pap Specimen Collection and Handling in the Cytology section. Call the laboratory for specific pre-aliquot instructions if performing Cytology on site.
Unacceptable Specimens	• PreservCyt® material previously processed for cytology • PreservCyt® with excess mucus • Add-ons to samples for ThinPrep® • Specimens received after Pap slide prep • Specimens in broken containers • Specimens exceeding stability time limits
Collection Device	PreservCyt® ThinPrep® vials
Transport Device	PreservCyt® ThinPrep® vials  Thin Prep® Vial  SurePath™ vial

Specimen Storage and Stability

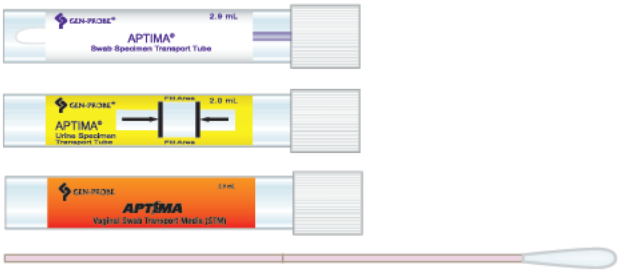
Temperature	Specimen collected in PreservCyt® Solution	PreservCyt® Solution in Aptima® Specimen Transfer Tube	Specimen collected in SurePath™ Solution	SurePath™ Solution in Aptima® Specimen Transfer Tube
Room Temp (15–30°C)	30 days	14 days	4 days	14 days
Refrigerated (2–8°C)	30 days	30 days	4 days	14 days
Frozen (≤ –20°C)	180 days	180 days	Not Acceptable	Not Acceptable

Trichomonas vaginalis RNA, QUALITATIVE TMA, MALES

Use	This test is used to detect *Trichomonas vaginalis* infection in male clinical specimens. The test has greater analytical sensitivity than culture methods.
Specimen Sources	Male urine Male urethral swab
Specimen Collection Instructions	**Urine:** The patient should not have urinated for at least one hour prior to specimen collection. Patient to provide a first-catch urine (approximately 20-30 ml of the initial urine stream) into a urine collection cup free of any preservatives. Collection of larger volumes of urine may result in specimen dilution that may reduce test sensitivity. 2 ml of urine specimens must be transferred into the Gen- Probe Aptima® urine transport tube as soon as possible or within 24 hours of collection. Urine specimens must be refrigerated pending transfer into Aptima® transport tube. **Urethral swabs:** follow instructions in the Aptima® Unisex Swab Specimen Collection Kit
Unacceptable Specimens	Specimens other than male urethral or male urine
Collection Device	Aptima® Unisex Swab Specimen Collection Kit for male Urethral Swab specimens Aptima® Urine Collection Kit
Transport Device	Aptima® Unisex Swab Specimen Collection Kit for Male Urethral Swab specimens Aptima® Urine Collection Kit  Unisex Swab transport medium (white label) Urine Swab transport medium (yellow label)
Specimen Storage and Stability	Temperature / Urethral Swab / Urine Room Temperature: 60 days / 30 days Refrigerated: 60 days / 30 days Frozen: 180 days / 180 days

Trichomonas vaginalis, RNA Qualitative TMA, SureSwab®

Use	This test is used to detect *Trichomonas vaginalis* infection in female clinical specimens. The test has greater analytical sensitivity than culture methods.
Specimen Sources	• Female urine specimen • Endocervical swab • Vaginal swab
Specimen Collection Instructions	Follow specimen collection instructions provided in the Aptima® collection kits.
Unacceptable Specimens	• Male urine specimen • Specimens in broken containers • Specimens exceeding stability time limits • Urine specimens with meniscus outside the horizontal black lines on the urine transport tube • White cleansing swab received • Transports containing 2 swabs • No swab received in Transport Tube

Collection Device	• Aptima® Unisex Swab Specimen Collection Kit for Endocervical and male Urethral Swab Specimens • Aptima® Urine Collection Kit • Aptima® Vaginal Swab Specimen Collection Kit
Transport Device	• Aptima® Unisex Swab Specimen Collection Kit for Endocervical and male Urethral Swab Specimens • Aptima® Urine Collection Kit • Aptima® Vaginal Swab Specimen Collection Kit  Unisex Swab transport medium (white label) Urine Swab transport medium (yellow label) Vaginal Swab transport medium (orange label)

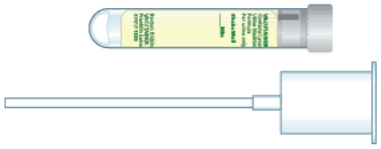
Specimen Storage and Stability

Temperature	Urine in Primary Collection Container	Urine in Aptima® Transport Medium	Swabs in Aptima® Transport Medium
Room Temp	24 Hours	30 days	60 days
Refrigerated	24 Hours	30 days	60 days
Frozen	Not Acceptable	180 days	180 days

Urine Cultures for Bacteria: Routine
Urine, Special
Urine Culture for Yeast

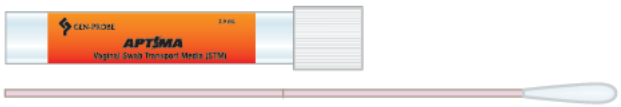
Use	Determination of urinary tract infection. A routine urine culture detects >1,000 bacterial colonies/mL; whereas a special urine culture detects >100 bacterial colonies/mL.
Special Culture	Special urine cultures should only be ordered for specimens collected by in-and-out or straight catheter, suprapubic aspirates, urine specimens following prostatic massage and specimens collected by cystoscopy. Also order this Special Urine Culture for low colony count evaluation of voided urine in selected patients. Specimens obtained by these invasive techniques are less likely to be contaminated by organisms from the external genitalia and lower colony counts may be clinically significant. Similarly, urine voided after prostatic massage may contain organisms that are indicative of prostatitis. **NOTE:** Urine generally is **not** acceptable for anaerobic culture. If clinically indicated, culture for anaerobes by collecting cystoscopic or suprapubic aspirate. Submit these urine samples in an anaerobic transport system.
General Patient Preparation	• Prevention of contamination by normal vaginal, perineal and anterior urethral flora is the most important consideration for collection of a clinically relevant urine specimen. • Obtain early-morning specimens whenever possible. There are increased bacteria in the bladder after overnight incubation. Symptomatic patients may have lower colony counts if specimens are collected late at other times during the day. • The microbial load in urine may be influenced by fluid intake. Symptomatic patients may have lower colony counts if diuresis is occurring. • Urinalysis and urine culture require two different preservatives; therefore, they require separate specimens. The urinalysis specimen must be submitted in a yellow-top Urinalysis Transport Tube that has an invisible preservative coating.

Female Patients	• Wash hands. Wash the vulvar area well from the front to the back, using a 5% green soap gauze pad or towelette. Do not use benzalkonium chloride disinfectant as residual disinfectant may cause a false negative test result. Rinse the area from front to the back, using first one moistened gauze pad or paper towelette soaked with either clean, tap, sterile or distilled water, then a second and a third if necessary, to remove residual soap. Last, dry the area from the front to the back with a dry gauze pad or towelette. Discard all gauze pads or towelettes in a wastebasket. • With one hand, separate the labia and lean slightly forward so that the urine flows directly down into the toilet without running along the skin. • After voiding the first portion of the urine, with the other hand, place a clean container under the stream of urine and collect the urine sample. A clean, dry plastic paper or waxed-paper cup is recommended and will not adversely contaminate the specimen. Do not touch the inside of the container. • Transfer urine immediately into the urine transport tube, which contains a preservative.
Male Patients	• Use a cleansing wipe, a soapy gauze pad or towelette, to wash the end of the penis. Rinse, using first one gauze pad or paper towelette moistened with sterile, tap or distilled water. A second or third rinse may be needed to remove soap. Use a clean gauze pad or paper towelette to dry. Discard all pads and towelettes into the wastebasket. • Begin to urinate into the toilet. • After voiding the first part, place a clean container under the stream of urine and collect the rest of the urine except the very last part into the container (a clean, dry plastic paper or waxed-paper cup is recommended and will not adversely contaminate the specimen). After collection, transfer urine immediately into the urine transport tube, which contains a preservative.
Specimen Sources	Clean-catch urine, urine from indwelling or straight catheters
Special Instructions	**Indwelling Catheters** Specimens obtained from the collection bag are not suitable for analysis. Disinfect the catheter collection port with 70% alcohol and allow it to dry. Aspirate at least 5-10 mL of urine with a sterile needle and syringe. Transfer the specimen to the urine transport tube. Foley catheter tips will not be accepted. Swab specimens are not appropriate for urine culture. Ileal conduit urine may be submitted after removing the external device and inserting a catheter into the cleansed stoma for collection. **Low Urine Volumes** Urine samples less than 4 mL in volume should not be placed in gray-top urine transport tubes. Instead, transport refrigerated in a sterile container. Please indicate the reason for the small volume of collected urine on the Test Requisition. Special conditions that necessitate small urine sample volumes are: • Infants and small children • Severe oliguria • Directed catheterization
Specimen Collection Instructions	Collect specimen prior to initiation of antimicrobial therapy. 1. Obtain the urine specimen from the patient in a clean container (a clean, dry plastic or waxed-paper cup is recommended and will not contaminate the specimen). If collecting for both urinalysis and culture, it is recommended that at least 20 mL of urine be collected. 2. Open the pouch of the gray top “Vacutainer® C&S: Preservative Plus” 4 mL Plastic Tube Transport Kit. Remove the transfer device and tube. Submerge the straw of the transfer device to the bottom of the urine container. The container may be tipped at an angle if the volume of urine is limited. 3. Place the transport tube in the holder portion of the transfer device. Push it down as far as it will go, puncturing the stopper. 4. Hold the tube and transfer device in position until the urine stops flowing into the tube. 5. Remove the transport tube from the transfer device and shake the tube vigorously. 6. Discard the transfer device and remaining cup of urine into appropriate biohazard disposal containers.
Collection Device	A clean, dry plastic cup provided by Quest Diagnostics or a clean leak-proof container such as a waxed-paper cup is recommended and will not contaminate the specimen.

Transport Device	A urine transport kit is provided containing a BD plastic 4 mL gray-top tube with preservative that prevents rapid multiplication of bacteria in the urine during specimen transport, which could cause colony counts to be erroneously high. 
Precautions	• The transport tube should fill approximately to the minimum line indicated on the tube. A tube that is not appropriately filled is unacceptable for culture. (Sometimes with aging, altitude, technique or a manufacturing problem, the vacuum inside the tube may not be enough to draw in the appropriate amount of urine.) If an inadequate sample is obtained, repeat the tube transfer procedure using a fresh kit that is not close to its expiration date. • The tube and transfer device do not work well unless there is at least 7 mL of urine in the collection cup. If there are only 5–6 mL of urine, remove the tube's stopper and pour the urine directly into the tube until the minimum fill line is reached. Do not overfill. Replace the stopper as tightly as possible. • If less than 4 mL is available, submit refrigerated urine in a sterile container without preservative.
Specimen Storage and Stability	Send the specimen to the laboratory as soon as possible at refrigerated, or room temperature (stable 48 hrs at both temperatures; refrigerated is preferred). Unpreserved and non-refrigerated urine is unacceptable for routine bacterial culture.

Vaginosis Vaginitis Plus (includes the following tests):
SureSwab® *Chlamydia/N. Gonorrhoeae* RNA, TMA
SureSwab® Bacterial Vaginosis DNA, QN, PCR
SureSwab® *Trichomonas Vaginalis* RNA, QL, TMA
SureSwab® *Candidiasis*, PCR

Refer to individual test codes in **General Test Listing** for further details. Refer to the alphabetical listing in this section of the book for *Chlamydia trachomatis, Neisseria gonorrhoeae* and *Trichomonas* testing.

Specimen Sources	Vaginal swab
Specimen Collection Instructions	Follow specimen collection instructions provided in the Aptima® collection Kits.
Unacceptable Specimens	Samples other than vaginal Male Samples Specimens in broken containers Specimens exceeding stability time limits White cleansing swab received Transports containing 2 swabs No Swab Received in Transport Tube
Collection Device	Aptima® Vaginal Swab Specimen Collection Kit Aptima® Unisex Swab Specimen Collection Kit for Endocervical and male Urethral Swab Specimens
Transport Device	Aptima® Vaginal Swab Specimen Collection Kit Aptima® Unisex Swab Specimen Collection Kit for Endocervical and male Urethral Swab 9o9pSpecimens  Vaginal Swab transport medium (orange label)  Unisex Swab transport medium (white label)

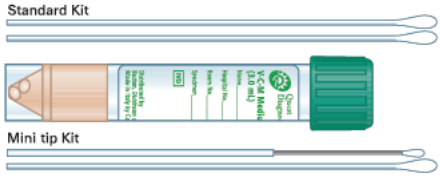
Specimen Storage and Stability	Specimen type	Room Temperature (18-26 °C)	Refrigerated (2-8 °C)	Frozen (-10 to -30 °C)
	All	48 hrs	7 days	30 days

Vancomycin Resistant Enterococci (VRE) Culture

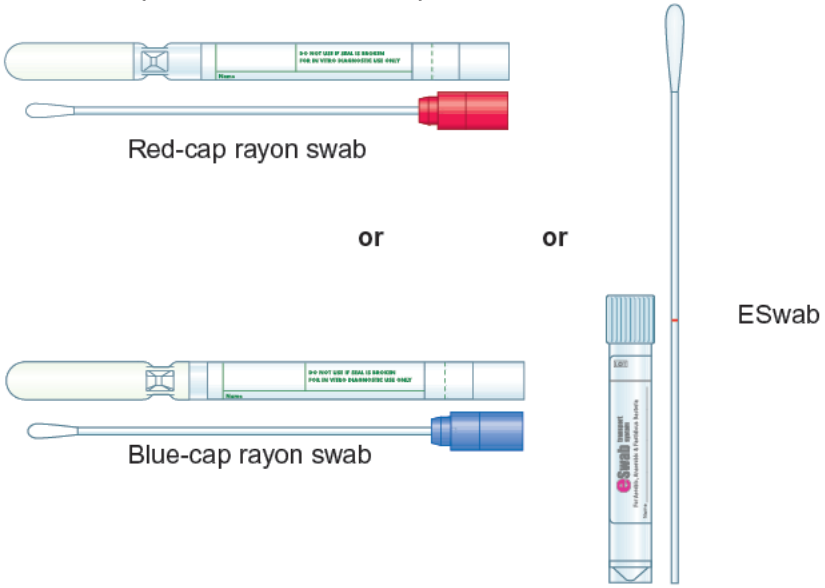
Use	Detection of VRE colonization for infection control purposes
Specimen Sources	Stool in Cary-Blair transport medium **or** a rectal swab.
Specimen Collection Instructions	**Avoiding contact with urine,** pass stool directly into a large clean container (such as a cut-out milk jug or margarine container) **or** onto plastic wrap placed under the seat of the toilet. There also are commercial stool collection devices commonly referred to as a "hat" that may be used. If the stool is loose or liquid, pass directly into a container, not onto plastic wrap. Using the collection spoon built into the lid of the Cary-Blair transport vial, obtain scoops of stool from areas that appear bloody, slimy, or watery and place them into the vial until the volume rises to the "fill to here" line. If the stool is formed (hard), sample small amounts from each end and the middle. Mix the contents of the vial with the spoon, twist the cap tightly closed, and shake until the contents are well mixed. Rectal swabs are also acceptable if stool cannot be obtained.
Collection Device	Large clean, dry container (does not need to be sterile)
Transport Device	Cary-Blair transport device (peach color), or red- or blue-cap rayon swab.  Cary-Blair transport medium **or**  Red-cap rayon swab **or**  Blue-cap rayon swab

Varicella Zoster Rapid - Viral Culture

Use	Determination of active primary or recurrent infection with Varicella Zoster (VZV), also known as Chicken pox virus or HSV type 3. Refer to the *Guidelines for Specimen and Virology Test Selection* (by Syndrome) table of this section.
Special Instructions	Inform the laboratory if the patient has or is suspected of having Creutzfeldt-Jacob Disease (CJD) by indicating this on the Test Requisition. **NOTE:** For specimens collected by swab, use a sterile rayon, Dacron® or flocked nylon swab **or** rayon-tipped swabs with flexible shaft submitted in Quest Diagnostics-supplied V-C-M transport medium or equivalent.

Specimen Sources	Lesion aspirate or swab from sources such as oral, skin, or conjunctiva. Acceptable specimens also include: Respiratory specimens such as sputum, bronchial washings/lavage, and tracheal aspirates Tissue sections and body fluids and CSF
Specimen Collection Instructions	**Lesion** 1. If vesicle is present, disrupt the vesicle and collect the fluid with a sterile rayon, Dacron® or flocked nylon swab **or** rayon-tipped swabs with flexible shaft. With the same swab, collect cells from the base of the vesicle by vigorous rubbing. 2. Transfer the swab to V-C-M transport medium and break the tip into the medium. 3. For non-vesicular lesions, vigorously swab the base of the lesion to pick-up infected cells. Break swab tip(s) off into V-C-M transport medium. **CSF:** See CSF Culture. Collect aseptically. Add fluid to equal volume of V-C-M transport medium or equivalent. Alternately, submit a minimum of 1-3 mL in sterile leak-proof container. **Respiratory:** Throat swabs, secretions or washings - break swab tip(s) off into V-C-M transport medium or transfer up to 2 mL of wash/secretions to the V-C-M transport medium. Alternatively, sample may be submitted in a sterile, leak-proof container. **Tissue and Biopsy:** Sterile screw-capped container with small amount of sterile saline to prevent it from drying. Do not add fixative or preservative. Submit as much sample as possible to optimize recovery.
Collection Device	Swabs: sterile rayon, Dacron® or flocked nylon swab Lumbar puncture kit for CSF
Transport Device	Quest Diagnostics-supplied V-C-M transport medium or equivalent, or sterile leak-proof container as appropriate. 
Unacceptable Specimens	• Dry swabs • Swab not in viral transport media • Wooden shaft, cotton, and calcium alginate swabs • Expired viral transport media or inappropriate transport media: (e.g., Stuart's, Amies, gel-based media, charcoal medium, or nucleic acid transport systems) • Bone Marrow in EDTA (for PCR testing) • Specimens in formalin or other fixatives or received on glass slides • Stool • Urine • Specimens received at room temperature
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible refrigerated on cold packs. Refrigerated sample will be viable for up to 72 hrs. If placed into V-C-M transport medium the specimen will be stable up to 72 hrs refrigerated or 30 days if frozen at -70 °C (dry ice).

Yeast Culture, with Direct Fluorescent KOH

Use	Determination of yeast infection. The KOH is a microscopic exam that enables prompt detection of fungi, but cannot determine type. For deep or systemic infection, we suggest Fungus Culture, Other than Skin, Hair or Nails. Nail infection (Onychia) requires scrapings of the nail or nail bed and Fungus Culture, Skin, Hair or Nails is suggested because these tests use specialized media and also detect molds.
Specimen Sources	• Mucosal surfaces such as oral (thrush), vaginal (vaginitis) and several skin surfaces are prone to yeast infection. • For dry lesions: collect specimen using a curette, a vaccinostyle or a bistoury from the periphery of the lesion. • Urinary tract infections may also be caused by yeast and clean-catch specimens are suitable.
Collection Device	Swabs and whole specimens are used
Transport Device	Red- or Blue-cap Swabs in Amies transport medium or ESwab  Red-cap rayon swab or or ESwab Blue-cap rayon swab
Specimen Collection Instructions	Fluids, secretions and white patchy areas of the mucosa may be sampled with a sterile rayon, Dacron® or flocked nylon swab. For urine, see **Urine Cultures for bacteria: Routine and Special** and **Urine Culture for Yeast.**
Specimen Storage and Stability	Transport to laboratory for testing as soon as possible at room temperature. Sample will be viable for 2 days.

Yersinia Culture or Vibrio Culture, and/or to Rule Out Other Bacteria

See Specimen collection instructions for: ***Salmonella, Shigella Culture, Salmonella, Shigella and Campylobacter Culture and Campylobacter (only)***

Most acute infections elicit an immune response. There are some important exceptions, however:

1. Some superficial infections may fail to induce an antibody response despite significant illness.
2. Infections in immunocompromised individuals, including certain healthy young infants, may not result in a significant antibody response.
3. Acute infections and immunizations may be thwarted in the presence of passively acquired antibody, circumventing the production of new patient antibodies; e.g., trans-placental IgG antibody may prevent the production of antibody to the measles vaccine if administered to infants too early.

Antibodies of the IgM class usually appear early in the infection, prior to the appearance of the IgG class. The presence of IgM antibody is usually transient and is suggestive of a current or recent, not necessarily a primary, infection. Recurrent or reactivated infections have been known, on occasion, to elicit an IgM response, especially among the herpes virus group (CMV, HSV, EBV). IgM antibody usually appears 7-10 days after a primary infection and reaches maximum levels within 2-3 weeks. The duration of the IgM response is variable, dependent upon the infecting organism and the patient. Therefore, interpretation of a positive IgM test result must be made with caution and in conjunction with clinical findings.

IgG antibody usually appears after the initial IgM response and reaches peak levels 3-4 weeks later. IgG antibody may persist for life; individuals who have a mild infection or are treated early in the course of the disease may revert to an apparent negative IgG status over time. The detection of IgG antibody suggests past exposure, infection or immunization to the organism. With many diseases (e.g., rubella, measles, etc.), in the absence of a current or recent infection, the presence of IgG is consistent with immunity to the disease.

Antibody/serology tests are designed to detect either multiple or specific classes of immunoglobulins, e.g., total antibody vs. specific IgG or IgM.

Serum

Collect blood in a red-top or serum separator tube (SST®) and process according to instructions in the **Blood, Urine and Stool** section.

Cerebrospinal Fluid (CSF)

- CSF will be accepted only for serologic testing for certain organisms that are associated with neurological diseases. See **General Test Listing** in this Directory.
- Collect blood-free CSF as directed in the **Specimen Collection and Handling** section of this Directory.
- Refrigerate the CSF (at 2-8 °C) until it is transported to the laboratory.
- A serum specimen, collected at the same time as the CSF, is often necessary for serologic diagnosis of central nervous system diseases.

Other Body Fluids

Body fluids other than serum and CSF are not generally acceptable for serological testing.

QuantiFERON®–TB TEST

NOTE: This test is available at only selected Quest Diagnostics laboratories. The collection supplies consist of a kit of three special 4 mL blood collection tubes along with specimen collection instructions. From each patient, collect 1 mL of blood in each tube by direct venipuncture or with a butterfly needle into each of the QuantiFERON®-TB Gold IT blood collection tubes. *If a butterfly needle is used, it is imperative to fill the tubing attached to the butterfly needle with blood by first aspirating blood into a red-top tube, which is then discarded. Then, the QuantiFERON®-TB Gold tubes may be filled or prime tubing with the "purge" tube (not supplied) before filling the QFT tubes.*

Following standard veinipuncture techniques, draw 1 mL of blood into each of the three plastic QuantiFERON®-TB Gold tubes, which are color coded with red, purple and gray tops.

NOTE: As 1 mL tubes draw blood relatively slowly, keep the tube on the needle for 2-3 seconds once the tube appears to have completed filling to ensure that the correct volume is drawn.

The 1 mL fill volume is indicated by the black mark on the side of the tubes. QuantiFERON®-TB Gold IT blood collection tubes are manufactured to draw 1 mL. If the level of blood in any tube is not close to the indicator line, it is recommended that an additional tube be obtained. Above 3000 ft of altitude, users should ensure that blood is drawn into each tube within these limits. If low blood draw volume does occur, blood can be collected using a syringe and 1 mL transferred to each of the three tubes. For safety reasons, this is best performed by removing the syringe needle, ensuring appropriate safety procedures, removing the caps from the three QuantiFERON®-TB Gold IT tubes and adding 1 mL of blood to each (up to the black mark on the side of the tube label). Replace the tube caps securely.

Immediately after filling, shake tubes ten (10) times just firmly enough to ensure that the inner surface of the tube is coated in blood (to solubilize antigens on tube walls) to ensure complete integration of the tube's contents into the blood.

Incubated Instructions

The tubes must be transferred to a 36-38 °C incubator as soon as possible within 16 hours of collection. Prior to incubation, maintain the tubes at room temperature (17−27 °C). If incubation is delayed after draw, remix tubes by inverting 10 times immediately prior to placing them **upright** in the incubator. Incubate 16 -24 hrs. Following incubation, centrifuge the incubated tubes for 15 minutes at 2000 to 3000 RCF (g). The gel plug will separate the cells from the plasma. If this does not occur, the tubes should be re- centrifuged at a higher speed. Send the incubated and spun tubes refrigerated to Quest Diagnostics.

Non-Incubated Instructions

Send tubes (at room temperature) immediately to Quest Diagnostics, as incubation must begin within a 16-hour time window. Specimens received after the 16 hour window will not be tested. Do not expose to high temperatures, refrigerate or freeze.

Warning: ***Over-energetic shaking may cause gel disruption and could lead to aberrant results.***

General Collection Instructions

1. 3.2% citrate plasma, shipped frozen, is the only acceptable sample type. All other anticoagulants (heparin, EDTA, oxalate) are NOT acceptable.
2. Proper blood to anticoagulant ratio is required:
   a. Vacutainer® tubes must be filled to completion to ensure the proper 9:1 blood to anticoagulant ratio is achieved.
   b. Routine collection requires 9 parts blood added to 1 part sodium citrate. For patients with normal hematocrits, no adjustment is necessary. If the patient has a known hematocrit above 55%, adjust the amount of anticoagulant in the collection tube before drawing the blood according to the CLSI guidelines below:

CLSI Guidelines:
Calculation

X = Anticoagulant volume required
H = Hematocrit
V = Volume of blood added

$$\mathbf{X}\ \text{mL sodium citrate} = \frac{(100 - \mathbf{H})}{(595 - \mathbf{H})} \times \mathbf{V}$$

Example:

Patient hematocrit = 60%, 5 mL blue-top tube to be drawn

$$\mathbf{X} = \frac{(100 - 60)}{(595 - 60)} \times 4.5^{*} = 0.34\ \text{mL sodium citrate}$$

*If a 5 mL tube is used then the volume of blood added is 4.5 mL. In this example, the volume of anticoagulant required in the tube is approximately 0.34 mL (remove 0.16 mL).

3. To avoid contaminating the sample with tissue thromboplastin or heparin, follow the guidelines below. These substances may alter results.
   a. The venipuncture must be clean, with no trauma.
   b. Hemolyzed samples are not acceptable.
   c. If using a winged blood collection device, do not use the first tube for coagulation studies. (The first tube must be a non-additive tube or a coagulation tube.)
   d. If drawn through an indwelling catheter, flush with 5 mL of saline and discard the first 5 mL of blood collected or six dead space volumes of the vascular access device before collecting the specimen for coagulation testing. Blood should not be collected from heparinized lines.
4. Mix the sample gently by inverting the tube gently three to six times (refer to the manufacturer's product insert for collection container mixing recommendations). DO NOT shake or mix vigorously. Excessive mixing can cause hemolysis and/or platelet clumping and activation leading to erroneous results.
5. Process the sample as soon as possible (within 60 minutes). Do not store whole blood samples refrigerated prior to processing as this may cause erroneous results. Spin down the specimen at a speed and time required to produce platelet poor plasma (<5,000 - 10,000/μL). This can be accomplished by centrifuging at 1500 × g for 15 minutes at room temperature. Double centrifugation of the sample may be performed to ensure that the sample is platelet-poor.
6. Preparing samples for transport:
   a. Transfer plasma into a plastic tube using a plastic Pasteur pipette. Do not use glass tubes or glass Pasteur pipettes as glass can activate the clotting cascade.
   b. Label each tube "PLASMA." Submit a plasma aliquot for each and every coagulation assay requested (one tube for each test). If possible, submit one additional plasma aliquot for repeat and/or test additions.
   c. If you are requesting other tests that require serum, please label these tubes as "SERUM".
7. Ship samples for testing on dry ice. Samples must remain frozen in transit.
8. We highly recommend quick-freezing the sample to keep coagulation factors intact. This can be achieved by one of the following methods:
   a. Freeze in a -70°C freezer (-20°C is also acceptable)
   b. Freeze on dry ice
   c. Freeze with liquid nitrogen

Platelet-Poor Plasma for Lupus Anticoagulant Testing

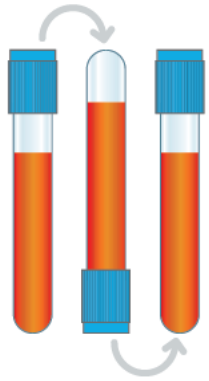
An important step in the diagnosis of the lupus anticoagulant (LA) is appropriate specimen collection and processing. The more platelet free the sample, the greater the sensitivity of most test systems to the presence of LA. It is imperative for the laboratory to take precautions in preparing platelet poor plasma (PPP).

Ideally, PPP should have a platelet count of less than 10,000/uL. Although the sample collection process described above should yield PPP, the following double-spin technique can also be used:

1. Spin down specimen at 1500 × g for 15 minutes.
2. Transfer the plasma to a plastic tube with a plastic Pasteur pipette, staying away from the buffy coat layer. Spin down the plasma portion again at 1500 × g for 15 minutes. With another plastic Pasteur pipette, transfer the plasma to another plastic tube, staying clear of the bottom of the tube where the platelets lie.
3. Transfer plasma into a plastic tube using a plastic Pasteur pipette. Do not use glass tubes or glass Pasteur pipettes as glass can activate the clotting cascade.
4. Label each tube "PLASMA." Submit a plasma aliquot for each and every coagulation assay requested (one tube for each test). If possible, submit one additional plasma aliquot for repeat and/or test additions.

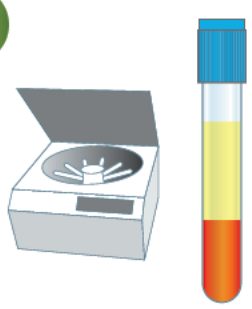
Preparing Platelet-Poor Plasma for Coagulation Testing

1



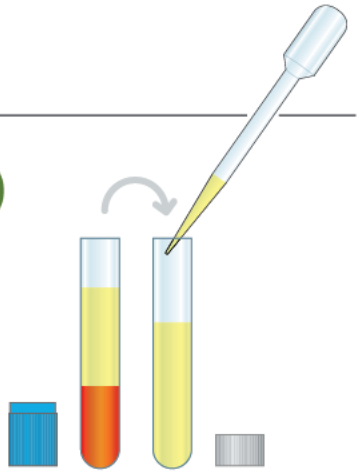
Immediately after collection, mix specimen by gentle inversion. Complete processing within 60 minutes of collection.

2



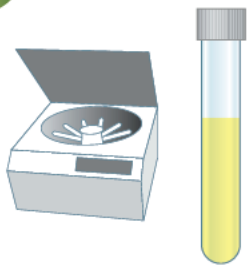
Centrifuge at 1500 x g for 15 minutes.

3



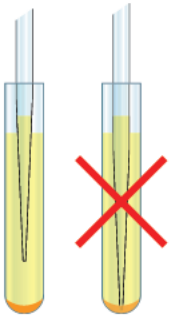
Using plastic Pasteur Pipettes, transfer supernatant plasma to a plastic tube.

4



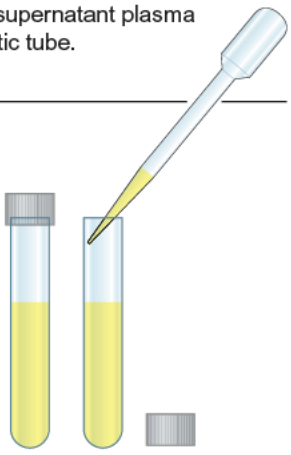
Cap and centrifuge supernatant plasma at 1500 x g for 15 minutes.

5



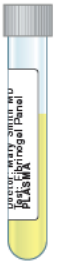
Remove supernatant plasma from second spin, being careful to not disturb the sediment at the bottom of the tube.

6



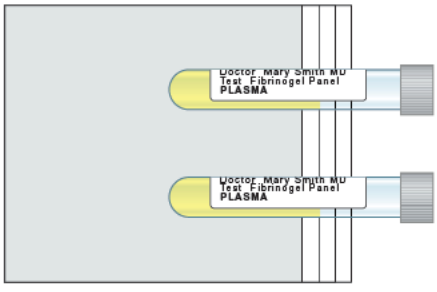
Transfer plasma to plastic storage tubes.

7



Label tubes with patient information and specimen type.

8



Immediately process and place specimens at the proper temperature for transport. Specimens should be FROZEN.

Both Gynecologic and Non-Gynecologic Cytology are available from all Quest Diagnostics laboratories. For Gynecologic Cytology (Pap tests) we provide liquid-based and conventional Pap collection kits with detailed collection and submission instructions. Our reports use standard descriptive Cytopathology terminology (Bethesda 2001), which includes feedback on sample adequacy and HPV results on the same report when ordered as a reflex or panel on the Test Requisition.

The Pap is a screening test for cervical cancer. It is not a diagnostic test and is subject to false negative and false positive results. It is most reliable when a satisfactory sample, regularly obtained, is submitted with relevant clinical findings and history, and when the Pap result is evaluated along with historic and current clinical information.

Testing for Human Papilloma Virus (HPV) is an important adjunct to the detection of premalignant or malignant lesions, and it can be performed on the same liquid medium used to submit Gynecologic Cytology samples. HPV testing can be optionally ordered as a reflex to Atypical Squamous Cells (ASC) in women age 21 and older, or in conjunction with the Pap in women age 30 to 65. ASCCP Guidelines suggest that women age 30 to 65 with a positive HPV and negative Pap be further evaluated for the presence of HPV Genotypes 16,18. Quest Diagnostics has modified and validated commercially available tests for HPV in order to perform these assays using the sample collected and submitted in a ThinPrep® or SurePath™ vial. Testing for *N. gonorrhoeae* (NG) and *C. trachomatis* (CT) can also be performed on the same liquid medium used to submit cytology samples. Quest Diagnostics has modified and validated commercially available tests for CT and NG in order to perform these assays using the sample collected and submitted in a ThinPrep® or SurePath™ vial.

Quest Diagnostics offers computer-assisted Pap testing. Selecting this option when ordering a Pap test does not change the instructions provided below on Specimen Collection and Handling or on the availability of additional or reflex STI tests (HPV, CT, NG). In instances where computer-assisted imaging is unable to be performed, traditional manual screening will be performed.

General Submission Requirements

Supplies

We strongly recommend the use of our collection materials (Cytopathology Test Requisition, liquid-based collection vials, slides, fixatives, endocervical brushes, brooms, spatulas and slide containers).

Specimen Identification

We cannot accept specimens that are not properly labeled. Two forms of patient ID are required by the College of American Pathologists (CAP). Label primary* specimen container wall (not the lid) with two identifiers and the source of specimen at the time of collection. Place one of the peel-off labels from the Test Requisition onto each specimen container, if available.

Submitted slides must be labeled with two acceptable positive patient identifiers.

*Primary specimen container is the innermost container received by the laboratory.

- Label all slides on frosted end in pencil with patient's first initial and full last name and a second acceptable, unique positive patient identifier at the time of collection.
- Label specimen containers (on the container wall, not the lid) with the patient's first initial and full last name and/or unique identifier(s) and site(s) of specimen collected.

Unacceptable Specimens

- No patient identification on the Test Requisition
- Illegible or no patient identification on the slide or specimen container. Labeling the slide holder only is not adequate identification.
- No account/physician number or name on Test Requisition
- Slides broken beyond repair
- Leakage of sample during transport
- Mismatch between name of patient on specimen and name on Test Requisition
- No source indicated on Test Requisition for non-Gyn specimens
- Expired liquid-based preservative/vial
- SurePath™ Pap Test (blue vial) without either a combined brush/spatula or a broom collection device from a non-pregnant woman with a cervix
- SurePath™ Pap Test (blue vial) with a brush only from a non-pregnant woman with a cervix; the spatula only is acceptable for pregnant women and women without a cervix.
  - ♦ Syringes are not acceptable specimen containers.
  - ♦ Transport of needles violates Department of Transportation regulations.

Gynecologic Cytology Specimens: The Pap Test

Ordering Information

Complete a Cytopathology Test Requisition including:

- Patient's full first and last name (any name change in the past 5 years should be noted) and/or unique identifier
- Date of birth
- Test ordered
- Date of specimen collection
- Source of specimen (cervical, endocervical, vaginal, or other gynecologic or non-gynecologic site)
- Submitting physician's name, UPIN or NPI number, and telephone number
- Last Menstrual Period (LMP)
- Menstrual status (hysterectomy, pregnant, postpartum, menopause, hormone therapy)
- Previous abnormal cervical cytology results, previous treatment, biopsy or surgical procedure
- Other clinical information/history, as requested on a Cytopathology Test Requisition, as applicable

Guidelines for Medicare Pap Ordering

According to the Centers for Medicare and Medicaid Services (CMS), Papanicolaou (Pap) tests performed on Medicare beneficiaries are covered differently depending on the patients' clinical history and findings and timing of their last Pap tests. Therefore, in order for Medicare beneficiaries to receive this benefit appropriately, Pap tests for Medicare beneficiaries must be ordered by providers and billed by laboratories according to the same criteria.

For Medicare patients, the ordering guidelines are as follows:

Cytology Medicare Screen—Routine (covered once every 2 years) is for a routine screening Pap test for a patient with no current signs or symptoms or risk factors for developing cervical cancer.

Cytology Medicare Screen—High Risk (covered once every year) is for a patient with no current signs and symptoms but with risk factors for developing cervical cancer.

Cytology Medicare Medical Necessity (covered if supported by client-provided ICD codes) is for a patient with current signs and/or symptoms of possible cervical cancer.

A completed and signed Advance Beneficiary Notice (ABN) is required each time one of the two *screening Pap tests* is ordered, due to possible non-coverage for excessive frequency. A completed and signed Advance Beneficiary Notice is required for the *Medical Necessity Pap test* when the accompanying ICD codes do not meet Medicare's coverage criteria. Please refer to the Medicare medical necessity coverage guidelines provided by Quest Diagnostics.

Patient Preparation

1. Schedule an appointment approximately two weeks (10–18 days) after the first day of last menstrual period. In the case of concurrent Pap and biopsy samples, the Pap sample should be taken before application of acetic acid or Lugol solution before biopsy. Menses may interfere with Pap test interpretation.
2. No use of douche for 48 hours prior to the test.
3. No use of tampons, birth control foams, jellies/lubricants or other vaginal creams or vaginal medications for 48 hours prior to the test.
4. Refrain from intercourse 48 hours prior to the test.
5. The clinician should not use any lubricant jelly for the examination until after the Pap has been obtained.
6. Testing for Human Papilloma Virus (HPV) is an important adjunct to the diagnosis of pre-malignant or malignant lesions, and it can be performed on the same liquid medium used to submit cytology samples. Quest Diagnostics has modified and validated commercially available tests for HPV in order to perform these assays using the sample collected and submitted in a ThinPrep® or SurePath® vial.
7. Testing for *N. gonorrhoeae* (NG) and *C. trachomatis* (CT) can also be performed on the same liquid medium used to submit cytology samples. Quest Diagnostics has modified and validated commercially available tests for CT and NG in order to perform these assays using the sample collected and submitted in a ThinPrep® or SurePath™ vial.

Pap Specimen Collection and Handling

Liquid transport media are preferred for gynecological cytology specimens. Two such systems are available: the SurePath™ Pap Test and the ThinPrep® Pap Test™.

SurePath™ Pap Test Specimen Collection and Handling

Brush/Spatula Device (PapPerfect Spatula and CytoBrush® GT)

Contraindications: The CytoBrush® GT is **not** intended for use in pregnant women.
For patients who are pregnant or do not have a cervix, follow Steps 1-4 and 7-8 only.

1. Complete the Cyto/Tissue or Ob-Gyn requisition.
2. Record the patient's First Initial and Full Last Name and unique identifier(s) on the vial.
3. Select contoured end of Pap Perfect® plastic spatula and rotate **360°** around the entire exocervix while maintaining tight contact with exocervical surface.
4. Visually locate the notched score line on the side of the spatula handle, about 4 cm from the contoured collection end. With gloved hand(s) and one single, quick, and firm SNAP, separate the contoured end from the rest of the spatula handle. Do not touch collection end. Drop this contoured collection end into a vial of SurePath™ preservative labeled with the patient's name. Discard remaining device handle end of the spatula after each use. Place cap on vial until step 6; do not tighten cap. For patients who are pregnant or do not have a cervix, proceed to Steps 7–8.
5. Obtain an adequate sampling from the endocervix using an endocervical brush device. Insert Cytobrush Plus® GT device into the endocervix until only the bottom-most bristles are exposed at the os. Slowly rotate ¼–½ turn in one direction. To reduce unnecessary bleeding, do not over-rotate brush. DO NOT ROTATE BRUSH MORE THAN ½ TURN. Over-rotation may result in poor sample collection. Remove Cytobrush® device.
6. Visually locate the notched score line on the side of the Cytobrush® handle, about 4 cm from the brush tip. With gloved hand(s) and one single, quick, and firm SNAP, separate the brush head-short handle from the rest of brush handle. Do not touch collection end. Drop brush head-short handle into the same vial of SurePath™ preservative. Discard remaining device handle end of Cytobrush®.
7. Tighten the SurePath® vial cap so the torque line on the cap passes the torque line on the vial.
8. Place the vial and requisition in a specimen bag for transport to the laboratory.

Broom-Like Device (Rovers® Cervex-Brush®)

Contra indications: The Rovers® Cervex-Brush® should **not** be used after the first 10 weeks of gestation in pregnant women. For patients who are past 10 weeks gestation or do not have a cervix, refer to the Spatula Device instructions above (Steps 1–4 and 7–8).

1. Complete the Cyto/Tissue or Ob-Gyn requisition.
2. Record the patient's first initial and full last name and/or unique identifier(s) on the vial.
3. Obtain an adequate sampling from the cervix using a broom-like device.
4. Insert the central bristles of the broom into the endocervical canal deep enough to allow the shorter bristles to fully contact the ectocervix. Push gently, and rotate the broom in a clockwise direction **five times.** DO NOT ROTATE IN A COUNTERCLOCKWISE DIRECTION.
5. Remove and "pop off" broom head into a vial of SurePath™ preservative labeled with the patient's first initial and full last name and unique identifier(s) on the vial.
6. Tighten the cap so the torque line on the cap passes the torque line on the vial.
7. Place the vial and requisition in a specimen bag for transport to the laboratory.

Broom-Like Device (Rovers® Cervex-Brush® Combi)

Contra indications: The Rovers® Cervex-Brush® should **not** be used after the first 10 weeks of gestation in pregnant women. For patients who are past 10 weeks gestation or do not have a cervix, refer to the Spatula Device instructions above (Steps 1–4 and 7–8).

1. Complete the Cyto/Tissue or Ob-Gyn requisition.
2. Record the patient's first initial and full last name and unique identifier(s) on the vial.
3. Insert the central bristles of the brush into the endocervical canal. Use gentle pressure on the cervix until the lateral bristles bend against the ectocervix.
4. Maintain the gentle pressure and rotate the Rovers® Cervex-Brush® Combi **two times** in a clockwise direction by rolling the stem between thumb and forefinger.
5. Remove and "pop off" broom head into a vial of SurePath™ preservative labeled with the patient's name.
6. Tighten the cap so the torque line on the cap passes the torque line on the vial.
7. Place the vial and requisition in a specimen bag for transport to the laboratory.

ThinPrep® Pap Test™ Specimen Collection and Handling

Brush/Spatula Device

Contraindications: The CytoBrush® GT is **not** intended for use in pregnant women.
For patients who are pregnant or do not have a cervix, follow Steps 1–4 and 7–8 only.

1. Complete the Cyto/Tissue or Ob-Gyn requisition.
2. Record the patient's first initial and full last name and unique identifier(s) on the vial.
3. Select contoured end of Pap Perfect® plastic spatula and rotate 360° around the entire exocervix while maintaining tight contact with the exocervical surface.
4. Immediately rinse the spatula in the PreservCyt® Solution vial by swirling vigorously in the vial **10 times.** Discard the spatula. Do not let the spatula sit in the vial.
5. Obtain an adequate sampling from the endocervix using an endocervical brush device. Insert the brush into the endocervix until only the bottom-most bristles are exposed at the os. Slowly rotate ¼–½ turn in one direction. To reduce unnecessary bleeding, do not over-rotate brush. DO NOT ROTATE BRUSH MORE THAN ½ TURN. Over-rotation may result in poor sample collection.
6. Rinse the brush in the PreservCyt® Solution by rotating the device in the solution **10 times** while pushing against the PreservCyt® vial wall. Swirl the brush vigorously to further release material. If material is still visible on the bristles, then scrape the bristles with the spatula staying within the fluid. Swirl the brush vigorously to further release material. Discard the brush. Do not let the brush sit in the vial.
7. Tighten the cap so that the torque line on the cap passes the torque line on the vial.
8. Place the vial and requisition in a specimen bag for transport to the laboratory.

Broom-Like Device (Rovers® Cervex-Brush®)

Contraindications: The Rovers® Cervex-Brush® should **not** be used after the first 10 weeks of gestation in pregnant women.

For patients who are past 10 weeks gestation or do not have a cervix, refer to the Spatula Device instructions above (Steps 1–4 and 7–8).

1. Complete the Cyto/Tissue or Ob-Gyn requisition.
2. Record the patient's first initial and full last name and unique identifier(s) on the vial.
3. Obtain an adequate sampling from the cervix using a broom-like device. Insert the central bristles of the broom into the endocervical canal deep enough to allow the shorter bristles to fully contact the ectocervix. Push gently, and rotate the broom in a clockwise direction **five times.**
4. Rinse the broom in the PreservCyt® Solution vial by pushing the broom into the bottom of the vial **10 times,** forcing the bristles apart. Swirl the broom vigorously to further release material. If material is still visible on the bristles, then scrape the bristles against the vial staying within the fluid. Swirl the broom vigorously to further release material. Discard the collection device. Do not let the broom sit in the vial.
5. Tighten the cap so that the torque line on the cap passes the torque line on the vial.
6. Place the vial and requisition in a specimen bag for transport to the laboratory.

Broom-Like Device (Rovers® Cervex-Brush® Combi)

Contra indications: The Rovers® Cervex-Brush® Combi should **not** be used during pregnancy. For patients who are past 10 weeks gestation or do not have a cervix, refer to the Spatula Device instructions above (Steps 1–4 and 7–8).

1. Complete the Cyto/Tissue or Ob-Gyn requisition.
2. Record the patient's first initial and full last name and unique identifier(s) on the vial.
3. Insert the central bristles of the brush into the endocervical canal. Use gentle pressure on the cervix until the lateral bristles bend against the ectocervix.
4. Maintain the gentle pressure and rotate the Rovers® Cervex-Brush® Combi **two times** in a clockwise direction by rolling the stem between thumb and forefinger.
5. Rinse the broom in the PreservCyt® Solution vial by pushing the broom into the bottom of the vial **10 times,** forcing the bristles apart. Swirl the broom vigorously to further release material. If material is still visible on the bristles, then scrape the bristles against the vial staying within the fluid. Swirl the broom vigorously to further release material. Discard the collection device. Do not let the broom sit in the vial.
6. Tighten the cap so the torque line on the cap passes the torque line on the vial.
7. Place the vial and requisition in a specimen bag for transport to the laboratory.

Conventional Pap Test Specimen Collection and Handling

1. Complete the Test Requisition.
2. Using a lead pencil, write the patient's first initial and full last name and unique identifier on the frosted end of the slide. Unlabeled slides cannot be accepted.
3. Insert the extended tip of the spatula in the endocervical canal and rotate allowing blunt edge of spatula to scrape the ectocervix. Do not smear yet. For patients who do not have a cervix: Use the blunt end of the spatula to scrape vaginal wall(s). Proceed to Step 5.
4. Insert the Cytobrush® into the endocervical canal until the bristles are barely visible. Turn **90°–180°** and remove. Brush is not recommended for use during pregnancy.
5. Smear the extended tip spatula (cervical) specimen and/or blunt-ended spatula (vaginal) specimen along the entire length of the slide using only half of the surface.
6. Roll the Cytobrush® (endocervical) specimen along the entire length of the slide using the remaining half of the slide surface. Bending the bristles will help transfer the cells to the slide.
7. Immediately apply fixative. If using spray fixative, hold the dispenser 6–10" from the slide. DO NOT use commercial hair spray as a fixative. The variability of ingredients results in poor specimen preservation.
8. Allow to dry completely before closing the slide holder.

Non-Gynecologic Cytology Specimens

Ordering Information

Complete a Cytopathology Test Requisition including:

- Patient's full first and last name (any name change in the past 5 years should be noted), unique identifier
- Date of birth
- Submitting physician's name, UPIN or NPI number, and telephone number and account information
- Source and specific anatomic site (e.g., body site, left, right, quadrant, etc.)
- Date of specimen collection
- Collection method (e.g., washing, brushing, FNA, fluid, etc.)
- Nature of lesion (e.g., solid/cystic, mobile/fixed, functional/nonfunctional, etc.)
- Any other pertinent history (e.g., previous surgery, presence of other masses, previous abnormal findings)
- Mammography, X-ray or other imaging findings
- Diagrams of the site sampled may be helpful, especially for fine needle aspiration biopsies

Specimen Collection and Handling

Smear

(**NOTE:** Cyst contents should be submitted as fluids and not smears.)

1. Write patient's first initial and full last name and an acceptable unique positive patient identifier in pencil on the frosted end of slide.
2. Submit 1–5 slide(s) of material from any source that can be evaluated cytologically.
3. Fix slides immediately with cytology spray fixative or immerse in ethyl alcohol for 3–5 minutes.
4. Allow the fixative to dry thoroughly before packaging slides for transport.
5. Submit in an appropriate slide container at room temperature.

Fluid/Washings

Submit the fluid fixed with a minimum of 10 mL of fixative. Specimens larger than 10 mL should be fixed with a volume of fixative equal to the volume of the specimen.

Appropriate Fixatives for Non-Gyn Cytology Specimens

If you have any questions, please contact your local cytology department for assistance in selecting the preferred non-Gyn fixative for your patient samples.

- CytoLyt® Solution (preferred fixative for most non-Gyn specimens)
- Ethyl alcohol
- Isopropyl or methyl alcohol may be used as a substitute if none of the above two fixatives are available.

The following collection solutions are not recommended with the ThinPrep® System:

- Saccomanno and other solutions containing carbowax
- Alcohols
- Mucollexx
- Normal Saline
- Phosphate Buffered Saline (PBS)
- Culture media
- RPMI solution

CytoRich®
CytoRich® Red* (SurePath™ processed specimens only)

- Solubilizes protein and lyses red blood cells
- Excellent for fine needle aspirations
- General non-Gyn and endometrial cell preservation
- Extended sample stability

CytoRich® Blue (SurePath™ processed specimens only)

- General Purpose Cell Preservative
- Excellent for urine and non-hemolytic samples
- Recommended for use as a general cytology preservative
- Excellent for fine needle aspirations
- General non-Gyn and endometrial cell preservation
- Extended sample stability

Place fluid/fixative mixture in a tightly capped, leak-proof, labeled container (label the container wall, not the lid).

The following specimens are prepared by mixing the material with an equal volume of fixative:

- Breast Cyst Aspiration
- Effusion (Ascites, peritoneal or pericardial fluid)
- Bronchial Washings/Lavages
- Endometrial Washings
- Esophageal Washings
- Gastric Washings
- Paracentesis (Abdominal) Fluid/Ascites
- Pericardial Fluid
- Thoracentesis (Pleural or chest) Fluid
- Urine

Brushings
Roll brush(es) over clean, dry slide(s). Fix immediately with alcohol or spray fixative. The brush(es) used to prepare the slides may be swirled in a container of appropriate fixative to dislodge additional specimen. Submit slides and liquid specimen together with one Test Requisition.

Breast Secretion
(Nipple Discharge)

Smear drops of fluid from the nipple directly onto clean glass slides and fix immediately with spray fixative or immerse in alcohol for 3–5 minutes.

Breast Solid Mass Aspiration
See Fine Needle Aspiration in this section.

Fine Needle Aspiration of Solid Lesions (FNA Biopsy)

Liquid-Based Fixative FNA Technique
(Preferred Method)

1. Label container of CytoLyt® or other cytology fixative with the patient's first initial and full last name and an acceptable unique positive patient identifier prior to starting the procedure.
2. If local anesthetic is used, insert the anesthetic needle adjacent to, but not into, the lesion. The anesthetic could dilute or distort the specimen and hinder achieving an optimal evaluation.
3. Attach a fine needle (22 gauge or higher) to a syringe.
4. Insert the needle into the lesion.
5. While applying negative pressure, move needle back and forth traversing the entire lesion.
6. Release negative pressure, then remove needle. Specimen should not be drawn up into the barrel of the syringe. Pressure should be released as fluid appears in the needle hub. The cells and tissue fragments obtained from a solid lesion should remain in the barrel of the needle.
7. Eject specimen directly into the pre-labeled container of CytoLyt® or other cytology fixative.
8. Flush needle and syringe with fixative.
9. This procedure can be repeated multiple times, using sterile syringe and needle each time, until the lesion has been thoroughly sampled. Add material obtained with each aspiration to the same container of fixative.

Liquid-Based Fixative FNA Technique
(Thyroid aspirates with optional molecular assays)

1. Before specimen preparation, label CytoLyt tubes with patient's full name, and second acceptable patient identifier, date of birth, and the location of the Thyroid Nodule. Two CytoLyt tubes are preferred for each Thyroid Nodule.
2. For each Thyroid Nodule, perform two aspirations and put into a CytoLyt tube for Cytology. Tighten the cap, and label the tube with the provided sticker "Cytology".
3. Perform two additional aspirations, and put into a separate CytoLyt tube for molecular studies. Tighten the cap, and label the tube with the provided sticker "Molecular".
4. For each additional Thyroid Nodule, use an additional kit, repeat steps 1-3.

5. Fill in the Quest Diagnostics Test Requisition. The test name, order code, clinical indication must be complete. Submit the specimen with the completed Quest Diagnostics Test Requisition.
6. Place the tubes into the Quest Diagnostics transport bag provided and seal the bag securely.
7. The specimen should be stored at room temperature. Do not centrifuge, refrigerate, or freeze.

Alternatively, the entire specimen (all four passes) for each Thyroid Nodule may be placed into one CytoLyt tube for both Cytology and Molecular studies. Tighten the cap, and label the tube with both stickers "Cytology" and "Molecular". Then follow steps 5-7.

Or, if you prefer to use direct smears for cytology, perform aspirations and make two glass slides (alcohol spray fixed or air dried) for each nodule with patient's full name and second acceptable patient identifier and location of the thyroid nodules clearly labeled. Put slides in the slide container (separate containers for fixed and air dried). Put the remainder of the aspirations and needle washes in a CytoLyt tube, and label the tube with the sticker "Cytology".

Perform two additional aspirations from the same nodule and place the specimen in another Cytolyt tube. Tighten the cap, and label the tube with the provided sticker "Molecular". Then follow steps 5-7.

If you have any questions on the Thyroid sample kit, please call Quest Diagnostics Nichols Oncology Services at 866-894-6920 (San Juan Capistrano) or 866-677-0742 (Chantilly).

Slide FNA Technique

(Alternative/Adjunct Method)

1. Label glass slide(s) with the patient's first initial and full last name and an acceptable unique positive patient identifier on the frosted end prior to starting the procedure.
2. If local anesthetic is used, insert the anesthetic needle adjacent to, but not into, the lesion. The anesthetic could dilute or distort the specimen and hinder achieving an optimal evaluation.
3. Attach a fine needle (22 gauge or higher) to a syringe.
4. Insert needle into lesion.
5. While applying negative pressure, move needle back and forth traversing the entire lesion.
6. Release negative pressure, then remove needle. Specimen should not be drawn up into the barrel of the syringe. Pressure should be released as fluid appears in the needle hub. The cells and tissue fragments obtained from a solid lesion should remain in the barrel of the needle.
7. After withdrawing the needle, eject one drop of specimen onto each of 2–3 slides. Label one "Air-dried" slide as such if applicable.
8. Do not fix slide(s) labeled "Air dried."
9. Use a clean slide to evenly smear the aspirated material on the other 2 slides.
10. Fix slides immediately (within a few seconds) using cytology spray fixative or immerse in alcohol for 3–5 minutes.
11. If blood, fluid or cellular material in excess of three drops is obtained with a needle pass, the excess should be expressed into a container of CytoLyt® or other cytology fixative.
12. Flush needle and syringe with this same fixative.
13. This procedure can be repeated multiple times, using sterile syringe and needle each time, until the lesion has been thoroughly sampled.
14. Submit the liquid specimen together with the fixed and air-dried slides using one Test Requisition.

Skin (Viral) Lesion: Tzanck Smear

Remove crust or dome from lesion. Scrape ulceration with a curette. Spread material on alcohol-moistened slide. Fix slides immediately (within a few seconds) using cytology spray fixative or immerse in alcohol fixative for 3–5 minutes.

Sputum

Submit early-morning deep-cough specimen prior to any food ingestion. Have patient rinse mouth with plain water before sputum is collected. Collect separate specimens on 3 consecutive mornings. Do not pool the specimens. Mix material with an equal volume of fixative.

Urine

Instructions for Urine Collected in the Office (Voided or Catheterized)

Submit all specimens in an equal volume of fixative (See Appropriate Fixatives for Non-Gyn Cytology Specimens in the **Cytology** section). Mark Test Requisition "Voided" or "Catheterized" as applicable. For offices with centrifugation capability, see steps 2 and 3 in the Urine Collected When a Centrifuge Is Available category below.

Patient Instructions for Urine Collected at Home

1. Provide patient with an appropriate volume of fixative (e.g., 50 mL of ethyl alcohol or pre-measured container of CytoLyt®).
2. Instruct the patient to drink three (3) 8-oz. glasses of water before bedtime.
3. Instruct the patient to discard the first morning void and collect the specimen from the second morning void. Mix an equal volume with the fixative. Do not submit a 24-hour urine collection for cytologic evaluation.

Instructions for Urine Collection When a Centrifuge Is Available

1. Instruct the patient to void into clean specimen container. A sterile container is not necessary; however, if that is the only container available, it may be used.
2. Mix the specimen by gently swirling in the container. Immediately fill two (2) 15 mL conical tubes and centrifuge at 400 RCF for 10 minutes. The centrifuge

speed and time may be adjusted to conform to procedures used for routine urinalysis.

3. Carefully decant the supernate after centrifuging and transfer the cell sediment from the bottom of each tube into appropriate fixative in a leak-proof container. See Appropriate Fixatives for Non-Gyn Cytology Specimens in the **Cytology** section.

Lymph Node (Touch Prep)
Label one "Air-dried" slide. Fix remaining slide(s) immediately in alcohol or use spray fixative.

Lymph Node Aspirate for Flow Cytometry

- Place aspirated Non-Gyn material into 15 mL tube containing RPMI-based, or other tissue culture, or cytogenetics medium.
- Ship at room temperature within 48 hours (can be transported refrigerated).
- Use only RPMI-based or other tissue culture or cytogenetics medium. DO NOT use any fixative (formalin, alcohol, etc.) or saline.

Hematopathology services are available through Quest Diagnostics. Please feel free to contact our hematopathologists for further information.

The essence of a successful Hematopathology program depends on both the referring physician and the laboratory. A pertinent clinical history and an adequate, properly fixed specimen are essential for optimal evaluation.

Specimen Handling and Ordering Information

Ordering Information

Bone Marrow

1. Two forms of patient ID are required by the College of American Pathologists (CAP). Label ALL **primary*** specimen containers wall (not the lid) and ALL bone marrow-touch preps, peripheral smears and tubes with two identifiers that include patient first and full last name, date collected and add LEFT or RIGHT and specimen type to respective specimens at the time of collection. Place one of the peel-off labels from the Test Requisition onto each specimen container, if available.

   Submitted slides must be labeled with two acceptable positive patient identifiers at the time of collection. Examples of acceptable identifiers include, but are not limited to: patient name, date of birth, hospital number, social security number, requisition number, accession number, unique random number or clinical chart numbers that identify the patient from whom the laboratory specimen was obtained. A location (e.g., hospital room number) is not an acceptable identifier.

* Primary specimen container is the innermost container received by the laboratory that actually holds the specimen.

2. Submit at least one peripheral blood smear if available.
3. Submit at least 4–6 bone marrow smears and, when biopsy is performed, 2 touch imprint slides. Smears and touch imprint slides should be submitted in tightly wrapped plastic containers, bags, and/or cardboard holders. **Always separate them from formalin-fixed specimens.** Unstained smears exposed to the slightest trace of formalin vapor will not stain properly.
4. Submit the bone marrow clot in formalin. Make sure the clot has formed before putting it in formalin. Label as “Clot” and add LEFT or RIGHT, if applicable.
5. Submit the bone marrow core in formalin. Label as “Core” and add LEFT or RIGHT, if applicable.
6. For flow cytometry, submit 3 mL of bone marrow aspirate or peripheral blood in an EDTA (lavender, the **PREFERRED** tube type for Flow cytometry) or heparin tube.
7. For chromosome analysis (classical cytogenetics) or FISH studies, submit 3 mL of bone marrow aspirate or peripheral blood in a heparin (green, the **MANDATORY** tube type for Cytogenetics) tube.
8. For molecular studies, submit 1 mL of bone aspirate or peripheral blood in an EDTA (lavender) tube. We recommend that you talk with a Quest Diagnostics Genetics Counselor at 1.866.GENE.INFO (1.866.436.3463) before acquiring specimens for molecular testing. We also recommend submitting 3–6 mL of peripheral blood in an EDTA (lavender) tube for molecular testing and Leumeta assays.

Complete a Hematopathology Test Requisition, including:

- Patient’s full first and last name
- Date of birth
- Source of specimen
- Submitting physician’s name, NPI number, and telephone number
- Date of collection
- Source of specimen
- Clinical history
- Most recent CBC result

Specimen Requirements

Specimen Type	FLOW	Immunoperoxidase***	Hematopathology Morphology**	PCR	RT-PCR (bcr/abl, RARA only)	Chromosome /FISH	Shipping
Peripheral blood	Green-, yellow- or lavender-top tube and 1 fresh smear	Not acceptable	1 fresh smear	Lavender-top tube 2–5 mL (min 1 mL)	Lavender-top tube 2–5 mL (min 1 mL)	Green-top tube 2–5 mL, 10% blasts or lymphocytosis	Room temperature within 48 hours
Fresh bone marrow core biopsy	RPMI Medium* 1 cm (length)	Place in 10% formalin	Place in 10% formalin	RPMI Medium* 1 cm (length)	Not acceptable	RPMI Medium* 1 cm (length) No fixative	Room temperature within 48 hours
Bone marrow aspirate	EDTA lavender or Green-top tube 2 mL and at least 1 fresh smear	Not acceptable	At least 5 fresh smears or green-top tube 2 mL	Lavender-top tube 2–5 mL (min 1 mL)	Lavender-top tube 2–5 mL (min 1 mL)	Green-top tube 1–3 mL (1 mL minimum) or RPMI	Room temperature within 48 hours
Fresh tissue biopsy	RPMI Medium* 1 cm (length) diced into fine pieces for optimal cell preservation	Place in 10% formalin	Place in 10% formalin sections no thicker than 0.5 cm	RPMI Medium* 1 cm (length)	Not acceptable	RPMI Medium* 5 mm X 5mm	Room temperature within 48 hours
Frozen tissue biopsy	Not acceptable	Call laboratory	Call laboratory	Swap frozen	Not acceptable	Not acceptable	Dry ice
Fixed paraffin	Not acceptable	0.5 X 0.5 X 0.5 cm formalin-fixed only	0.5 X 0.5 X 0.5 cm formalin-fixed only	0.5 X 0.5 X 0.5 cm (B5 unacceptable)	Not acceptable	For lymphoma probes only. (Decalcified specimens not acceptable)	Room temperature
Body fluids	Call laboratory	Call laboratory	Call laboratory	Call laboratory	Call laboratory	Call laboratory	Room temperature within 48 hours

*RPMI based, or other tissue culture, or cytogenetics medium
**Also required: Clinical history, CBC, differential
***Also required: Clinical history

Return to Table of Contents

Tissue biopsy and consultative pathology services are available from all Quest Diagnostics laboratories. Immunofluorescence testing and frozen sections services are provided by a limited number of our local laboratories; please call before submitting these sample types. Also, requests for "technical only" or "professional only" services require contractual agreements in advance.

If the tissue specimen contains radioactive material or Cruetzfeldt-Jakob Disease (CJD) or is suspected of containing radioactive material or CJD, contact your regional laboratory to ensure that such specimens are accepted by the laboratory.

Routine Tissue Pathology

1. Obtain biopsy(ies) with care not to crush the specimen with forceps, hemostats, or other instruments. Cautery will cause heat artifact.
2. After biopsy collection, immediately place each specimen in a tightly secured container with 10% neutral buffered formalin. Use only formalin bottles supplied by Quest Diagnostics. Do not force a large specimen into a small container; formalin must surround the specimen for proper fixation. Formalin volume to specimen ratio should be 10:1.
3. Use a separate container for each separately identified specimen. Specialized Collection kits are available for prostate, GI and Hematopathology specimens.
4. Two forms of patient ID are required by the College of American Pathologists (CAP). Label **primary*** specimen container wall (not the lid) with the patient's name and one other unique identifier that also appears on the requisition and the source of specimen at the time of collection. Place one of the peel-off labels from the Test Requisition onto each specimen container, if available.

   Submitted slides must be labeled with two acceptable positive patient identifiers at the time of collection. Examples of acceptable identifiers include, but are not limited to: patient name, date of birth, hospital chart number, social security number, requisition number, accession number, unique random number or clinical chart numbers that identify the patient from whom the laboratory specimen was obtained. A location (e.g., hospital room number) or specimen site is not an acceptable identifier.

   *Primary specimen container is the innermost container received by the laboratory that actually holds the specimen.
5. Do NOT freeze formalin-fixed specimens.
6. Complete a Tissue Pathology Test Requisition and send with specimen(s). Only one Tissue Pathology Test Requisition per patient is needed. Each container and specimen must be separately identified on the Test Requisition. Ensure patient name and site are an exact match on each container and each requisition before submitting or transporting.

   The Test Requisition should reflect pertinent demographic and clinical information, including:

- Patient's full first and last name (any name change should be noted) and unique identifier
- Patient's date of birth
- Gender
- Date of specimen collection; the time of collection is also required for breast biopsies where a subsequent molecular test such as ER/PR may be performed (see below for additional requirements)
- Clinical/pre-op diagnosis (duration, size, impression)
- Pertinent clinical history/operative findings and/or previous surgery
- Specific anatomic location of tissue removed and
- The procedure (excision, cone, punch, etc.)
- Any requests for additional special studies

Specialty Requisitions for Uropathology, GI Pathology, Dermatopathology and Hematopathology are available in addition to the general Histopathology Test Requisition. These requisitions generally differ by using checkboxes for clinical symptoms/history related to each specialty.

Skin Biopsy for Direct Immunofluorescence

Immunofluorescence testing is handled by only a few local Quest Diagnostics laboratories. Contact your regional Quest Diagnostics Supply Department and request Michel's Fixative prior to biopsy. Immunofluorescence cannot be performed on formalin-fixed tissues.

Frozen Section Pathology

Frozen sections are handled by only a few local Quest Diagnostics laboratories. Contact your regional laboratory to determine if this service is available in your area.

Tissue specimens for ER/PR and/or HER2 IHC/ISH (FISH,CISH)

Place the tissue specimen in 10% formalin fixative immediately upon collection. Label **primary*** specimen container wall (not the lid) with two acceptable positive patient identifiers and the source of specimen at the time of collection. Place one of the peel-off labels from the Test Requisition onto each specimen container, if available.

Submitted slides must be labeled with two acceptable positive patient identifiers at the time of collection. Examples of acceptable identifiers include, but are not limited to: patient name, date of birth, hospital chart number, social security number, requisition number, accession number, unique random number or clinical chart numbers that identify the patient from whom the laboratory specimen was obtained. A location (e.g., hospital room number) or specimen site are not an acceptable identifier.

*Primary specimen container is the innermost container received by the laboratory that actually holds the specimen.

Avoid decalcifying procedures which may affect results. Avoid freezing or crushing artifacts. Alternatively, submit a formalin-fixed, paraffin-embedded tissue block or one routinely stained (hematoxylin and eosin) histologic section of the block and 5 each 4-micron freshly-cut unstained sections on positively charged slides. Do not oven dry unstained slide(s) before sending out for testing. Include a completed Test Requisition with appropriate clinical history and a copy of the original requisition and pathology report with interpretation (when submitting blocks and slides).

Indicate the following on the Test Requisition:

- Time and date of collection (comment if unknown)
- Cold ischemia time (time between removal and fixation)
- Type of fixation if other than formalin (comment if unknown)
- Duration of fixation (number of hours from time of collection/fixation to time of processing of tissue sample). Alternately, specify that fixation is no less than 6 hours and no more than 48 hours for HER2 and no less than 6 hours and no more than 72 hours for ER/PR.
- Type of processing, if other than routine (microwave tissue processing or rapid tissue processing), for paraffin blocks

Paraffin Blocks and Slides for ER/PR IHC, Her2 IHC/ISH (FISH, CISH), and DNA Ploidy/Cell Cycle Analysis

Estrogen and progesterone receptor (ER/PR) detection is available by immunohistochemical staining and can have semi-quantification by Digital Image Analysis if requested. See **General Test Listing** of this Directory.

Submit a formalin-fixed, routinely processed paraffin-embedded tissue block, one routinely stained (hematoxylin and eosin) histologic section from the block and 5 unstained freshly cut histologic sections on positively charged slides. Do not oven dry unstained slide(s) before sending out for testing. Avoid decalcifying procedures which may affect results. Avoid freezing or crushing artifacts. A histologic section of the submitted tissue block is evaluated by a pathologist to determine what may adversely affect ER/PR staining results.

Include a completed Test Requisition with appropriate clinical history and a copy of the original requisition and pathology report.

Indicate the following, as applicable, on the Test Requisition:

- Time and date of collection (comment if unknown)
- Cold ischemia time (time between removal and fixation)
- Type of fixative if other than formalin (comment if unknown)
- Type of processing, if other than routine (microwave tissue processing or rapid tissue processing), for paraffin blocks and slides submitted for ER/PR and/or HER2.

Wrap the blocks individually and transport in a cooled container/s with frozen gel ice-packs/dry ice or ambient temperature to prevent the melting of paraffin-embedded tissue blocks from excessive heat during transit. Transport the slides at cool/ambient temperature.

DNA ploidy or cell cycle analysis determinations on paraffin-embedded tissues by both flow cytometry and digital image analysis are available.

HER2 ISH (FISH,CISH) testing is performed on paraffin-embedded tissue blocks. Send blocks that are properly fixed and processed. Include specimen site, type of fixation, time into fixation (if available), duration of fixation (if available) and type of tissue processing. **Wrap the blocks individually and transport in a cooled container/s with frozen gel ice-packs/dry ice or ambient temperature to prevent the melting of paraffin-embedded tissue blocks from excessive heat during transit.** Transport the slides at cool/ambient temperature.

Technical Component Only

Requests for grossing and preparation of stained slides to be returned without pathologist review must be arranged in advance by contractual agreement.

Professional Component Only

Requests for pathologist primary diagnostic review (not a second opinion or consultative review) of slides prepared by the client's histology laboratory must be arranged in advance by contractual agreement.

Extent of Examination, Special Stains and Other Techniques

The extent of tissue examination can be determined only during the pathologist's examination of the specimen. The examination may require special studies, markers, or stains as deemed appropriate for proper evaluation by the Quest Diagnostics Pathologist; this includes ER/PR and Her2 for malignant breast biopsies. Additional HER2 testing must be attempted in equivocal specimens to attempt to obtain a positive or negative HER2 test result and most accurately determine the HER2 status of the tumor specimen. These additional tests will result in additional charges (see below).

Fees

The fee for histopathology services will vary depending upon the number of specimens submitted, the size and complexity of the specimen and the necessity for additional tests. The fees and submission of bills to patients, customers, and health plans will be based on Current Procedural Terminology (CPT®) codes.

If you have any questions, please contact your local Quest Diagnostics laboratory.

Allergy Evaluations

Return to Table of Contents

Allergy Evaluations

The Allergy Evaluation section includes information about individual allergens, as well as many established panels and regional profiles.

Table of Contents

Individual Allergens

Preferred Specimen: 0.8 mL serum for 1-4 allergens tested, and at least 1.5 mL serum for each of the 5-10 allergens tested.

Allergen-Specific IgE Interpretation of Results

Specific IgE Class	kU/L	Level of Allergen-Specific IgE Antibody
0	<0.10	Absent/Undetectable
0/1	0.10–0.34	Very Low Level
1	0.35–0.69	Low Level
2	0.70–3.49	Moderate Level
3	3.50–17.4	High Level
4	17.5–49.9	Very High Level
5	50–100	Very High Level
6	>100	Very High Level

The individual allergens, represented with their ImmunoCAP® code in the following tables, may be ordered on an individual basis. These Tables are listed in the left chart alphabetically by allergen and in the right chart by Phadia* Code.

*Please note that Phadia is now known as Thermo Fisher ImmunoDiagnostics.

Table 1: Animal Allergens

Table 1a – Alphabetical by Allergen

Animal	Phadia Code	Test Code
Cat dander	e1	2601
Chicken feathers	e85	2651
Cow dander	e4	2604
Dog dander	e5	2605
Duck feathers	e86	2664
Goat epithelia	e80	2656
Goose feathers	e70	2661
Guinea pig epithelia	e6	2606
Hamster epithelia	e84	2652
Horse dander	e3	2603
Mouse epithelia	e71	2657
Mouse serum proteins	e76	6744
Mouse urine proteins	e72	2658
Parrot/Parakeet droppings	e77	2663
Rabbit epithelia	e82	2654
Rat	e87	2538
Rat epithelia	e73	2659
Rat serum proteins	e75	6778
Rat urine proteins	e74	2660
Sheep epithelia	e81	2655
Swine epithelia	e83	2653

Table 1b – By Phadia Code

Phadia Code	Animal	Test Code
e1	Cat dander	2601
e3	Horse dander	2603
e4	Cow dander	2604
e5	Dog dander	2605
e6	Guinea pig epithelia	2606
e70	Goose feathers	2661
e71	Mouse epithelia	2657
e72	Mouse urine proteins	2658
e73	Rat epithelia	2659
e74	Rat urine proteins	2660
e75	Rat serum proteins	6778
e76	Mouse serum proteins	6744
e77	Parrot/Parakeet droppings	2663
e80	Goat epithelia	2656
e81	Sheep epithelia	2655
e82	Rabbit epithelia	2654
e83	Swine epithelia	2653
e84	Hamster epithelia	2652
e85	Chicken feathers	2651
e86	Duck feathers	2664
e87	Rat	2538

Table 2: Biologics and Occupational Allergens

Table 2a – Alphabetical by Allergen

Biologics and Occupational	Phadia Code	Test Code
Castor bean	k71	2751
Cotton seed	k83	23862
Green coffee bean	k70	2752

Table 2b – By Phadia Code

Phadia Code	Biologics and Occupational	Test Code
c70	Insulin, porcine	2754
c71	Insulin, bovine	2755
c73	Insulin, human	2760

Table 2: Biologics and Occupational Allergens *(continued)*

Table 2a – Alphabetical by Allergen

Biologics and Occupational	Phadia Code	Test Code
Insulin, bovine	c71	2755
Insulin, human	c73	2760
Insulin, porcine	c70	2754
Ispaghula (Psyllium)	k72	2753
Latex	k82	8927
Silk	k74	2758
Sunflower seed	k84	23864
Wild silk	k73	2757

Table 2b – By Phadia Code

Phadia Code	Biologics and Occupational	Test Code
k70	Green coffee bean	2752
k71	Castor bean	2751
k72	Ispaghula (Psyllium)	2753
k73	Wild silk	2757
k74	Silk	2758
k82	Latex	8927
k83	Cotton seed	23862
k84	Sunflower seed	23864

Table 3: Food Allergens

Table 3a – Alphabetical by Allergen

Food	Phadia Code	Test Code
Almond	f20	2820
Alpha-lactalbumin	f76	2851
Apple	f49	2849
Apricot	f237	2563
Asparagus	f261	2626
Avocado	f96	8928
Banana	f92	8926
Barley	f6	2806
Basil	f269	2564
Beef	f27	2827
Beta-lactoglobulin	f77	2852
Black pepper	f280	2561
Blackberry	f211	2630
Blue mussel	f37	2837
Blueberry	f288	2568
Brazil nut	f18	2818
Broccoli	f260	2631
Buckwheat	f11	2811
Cabbage	f216	2632
Carrot	f31	2831
Casein	f78	2853
Cashew nut	f202	2608
Cauliflower	f291	2635
Celery	f85	2860
Cheddar cheese	f81	2858
Cheese, mold type	f82	2859
Cherry	f242	2609
Chestnut	f299	2636
Chicken meat	f83	2857
Chick pea	f309	38958
Chili pepper	f279	2610
Cinnamon	f220	2637
Clam	f207	8929
Cocoa	f93	2875
Coconut	f36	2836
Codfish	f3	2803
Coffee	f221	2915
Corn	f8	2808
Crab	f23	2823
Cucumber	f244	2639

Table 3b – By Phadia Code

Phadia Code	Food	Test Code
f1	Egg white	2801
f2	Milk	2802
f3	Codfish	2803
f4	Wheat	2804
f5	Rye	2805
f6	Barley	2806
f7	Oat	2807
f8	Corn	2808
f9	Rice	2809
f10	Sesame seed	2810
f11	Buckwheat	2811
f12	Pea	2812
f13	Peanut	2813
f14	Soybean	2814
f15	White bean	2815
f17	Hazelnut	2817
f18	Brazil nut	2818
f20	Almond	2820
f23	Crab	2823
f24	Shrimp	2824
f25	Tomato	2825
f26	Pork	2826
f27	Beef	2827
f31	Carrot	2831
f33	Orange	2833
f35	Potato	2835
f36	Coconut	2836
f37	Blue mussel	2837
f40	Tuna	2840
f41	Salmon	2841
f44	Strawberry	2844
f45	Yeast	2845
f47	Garlic	2847
f48	Onion	2848
f49	Apple	2849
f54	Sweet potato	2555
f57	Japanese Millet IgE	2621
f75	Egg yolk	2856
f76	Alpha-lactalbumin	2851
f77	Beta-lactoglobulin	2852

Table 3: Food Allergens *(continued)*

Table 3a – Alphabetical by Allergen

Food	Phadia Code	Test Code
Egg mix	f245	2919
Egg white	f1	2801
Egg yolk	f75	2856
Eggplant	f262	2642
Flounder	f147	23893
Garlic	f47	2847
Ginger	f270	2644
Gluten	f79	2854
Goat milk	f300	2922
Grape	f259	2675
Grapefruit	f209	2923
Green bean	f315	2680
Green pepper	f263	2931
Grouper	f410	11009
Halibut	f303	2998
Hazelnut	f17	2817
Honey	f247	8930
Japanese Millet IgE	f57	2621
Kiwi fruit	f84	2884
Lamb	f88	2888
Lemon	f208	2708
Lentils	f235	3010
Lettuce	f215	2862
Lime	f306	2709
Lobster	f80	2855
Macadamia	f345	38475
Mackerel	f206	2713
Malt	f90	2863
Mandarin	f302	2714
Mango fruit	f91	23860
Melons	f87	2887
Milk	f2	2802
Milk, boiled	f231	3044
Mushroom	f212	8931
Mustard	f89	2889
Nutmeg	f282	2718
Oat	f7	2807
Onion	f48	2848
Orange	f33	2833
Oregano	f283	3045
Ovalbumin	f232	2719
Ovomucoid	f233	3046
Oyster	f290	8932
Papaya	f293	2720
Paprika	f218	3047
Parsley	f86	2861
Passion fruit	f294	2724
Pea	f12	2812
Peach	f95	8405
Peanut	f13	2813
Pear	f94	8884
Pecan nut	f201	2864
Pine nut	f253	2725
Pineapple	f210	3048
Pistachio	f203	2726
Plum	f255	2728
Poppy seed	f224	3050

Table 3b – By Phadia Code

Phadia Code	Food	Test Code
f78	Casein	2853
f79	Gluten	2854
f80	Lobster	2855
f81	Cheddar cheese	2858
f82	Cheese, mold type	2859
f83	Chicken meat	2857
f84	Kiwi fruit	2884
f85	Celery	2860
f86	Parsley	2861
f87	Melons	2887
f88	Lamb	2888
f89	Mustard	2889
f90	Malt	2863
f91	Mango fruit	23860
f92	Banana	8926
f93	Cocoa	2875
f94	Pear	8884
f95	Peach	8405
f96	Avocado	8928
f147	Flounder	23893
f201	Pecan nut	2864
f202	Cashew nut	2608
f203	Pistachio	2726
f204	Trout	3063
f206	Mackerel	2713
f207	Clam	8929
f208	Lemon	2708
f209	Grapefruit	2923
f210	Pineapple	3048
f211	Blackberry	2630
f212	Mushroom	8931
f213	Rabbit	2730
f214	Spinach	3054
f215	Lettuce	2862
f216	Cabbage	2632
f218	Paprika	3047
f220	Cinnamon	2637
f221	Coffee	2915
f222	Tea	6805
f224	Poppy seed	3050
f226	Pumpkin Seed IgE	2729
f231	Milk, boiled	3044
f232	Ovalbumin	2719
f233	Ovomucoid	3046
f234	Vanilla	3244
f235	Lentils	3010
f237	Apricot	2563
f242	Cherry	2609
f244	Cucumber	2639
f245	Egg mix	2919
f247	Honey	8930
f253	Pine nut	2725
f255	Plum	2728
f256	Walnut	3489
f258	Squid	2745
f259	Grape	2675
f260	Broccoli	2631

Table 3: Food Allergens *(continued)*

Table 3a – Alphabetical by Allergen

Food	Phadia Code	Test Code
Pork	f26	2826
Potato	f35	2835
Pumpkin Seed IgE	f226	2729
Rabbit	f213	2730
Rice	f9	2809
Rye	f5	2805
Salmon	f41	2841
Scallop	f338	273
Sesame seed	f10	2810
Shrimp	f24	2824
Sole	f337	38243
Soybean	f14	2814
Spinach	f214	3054
Squid	f258	2745
Strawberry	f44	2844
Sweet potato	f54	2555
Swordfish	f312	3055
Tea	f222	6805
Tomato	f25	2825
Trout	f204	3063
Tuna	f40	2840
Vanilla	f234	3244
Walnut	f256	3489
Wheat	f4	2804
White bean	f15	2815
Yeast	f45	2845

Table 3b – By Phadia Code

Phadia Code	Food	Test Code
f261	Asparagus	2626
f262	Eggplant	2642
f263	Green pepper	2931
f269	Basil	2564
f270	Ginger	2644
f279	Chili pepper	2610
f280	Black pepper	2561
f282	Nutmeg	2718
f283	Oregano	3045
f288	Blueberry	2568
f290	Oyster	8932
f291	Cauliflower	2635
f293	Papaya	2720
f294	Passion fruit	2724
f299	Chestnut	2636
f300	Goat milk	2922
f302	Mandarin	2714
f303	Halibut	2998
f306	Lime	2709
f309	Chick pea	38958
f312	Swordfish	3055
f315	Green bean	2680
f337	Sole	38243
f338	Scallop	273
f345	Macadamia	38475
f410	Grouper	11009

Table 4: Grass Allergens

Table 4a – Alphabetical by Allergen

Grass	Phadia Code	Test Code
Bahia grass (*Paspalum notatum*)	g17	2317
Bermuda grass (*Cynodon dactylon*)	g2	2302
Brome grass (*Bromus inermis*)	g11	2311
Canary grass (*Phalaris canariensis*)	g71	2371
Common reed (*Phragmites communis*)	g7	2307
Corn grass	g202	3490
Cultivated oat pollen (*Avena sativa*)	g14	2314
Cultivated rye grass (*Secale cereale*)	g12	2312
Cultivated wheat pollen (*Tritica sativa*)	g15	2315
Johnson grass (*Sorghum halepense*)	g10	2310
June grass (Kentucky Blue) (*Poa pratensis*)	g8	2308
Meadow fescue (*Festuca elatior*)	g4	2304
Meadow foxtail (*Alopecurus pratensis*)	g16	2316
Orchard grass (cocksfoot) (*Dactylis glomerata*)	g3	2303
Perennial rye grass (*Lolium perenne*)	g5	2305
Red top grass (Bent grass) (*Agrostis alba*)	g9	2309
Salt grass (*Distichlis species*)	g203	2350
Sweet vernal grass (*Anthoxanthum odoratum*)	g1	2301
Timothy grass (*Phleum pratense*)	g6	2306
Velvet grass (*Holcus lanatus*)	g13	2313
Wild rye (*Secale* species)	g70	2370

Table 4b – By Phadia Code

Phadia Code	Grass	Test Code
g1	Sweet vernal grass (*Anthoxanthum odoratum*)	2301
g2	Bermuda grass (*Cynodon dactylon*)	2302
g3	Orchard grass (cocksfoot) (*Dactylis glomerata*)	2303
g4	Meadow fescue (*Festuca elatior*)	2304
g5	Perennial rye grass (*Lolium perenne*)	2305
g6	Timothy grass (*Phleum pratense*)	2306
g7	Common reed (*Phragmites communis*)	2307
g8	June grass (Kentucky Blue) (*Poa pratensis*)	2308
g9	Red top grass (Bent grass) (*Agrostis alba*)	2309
g10	Johnson grass (*Sorghum halepense*)	2310
g11	Brome grass (*Bromus inermis*)	2311
g12	Cultivated rye grass (*Secale cereale*)	2312
g13	Velvet grass (*Holcus lanatus*)	2313
g14	Cultivated oat pollen (*Avena sativa*)	2314
g15	Cultivated wheat pollen (*Tritica sativa*)	2315
g16	Meadow foxtail (*Alopecurus pratensis*)	2316
g17	Bahia grass (*Paspalum notatum*)	2317
g70	Wild rye (*Secale* species)	2370
g71	Canary grass (*Phalaris canariensis*)	2371
g202	Corn grass	3490
g203	Salt grass (*Distichlis* species)	2350

Table 5: House Dust Allergens

Table 5a – Alphabetical by Allergen

House Dust	Phadia Code	Test Code
House dust (Greer)	h1	2711
House dust (Hollister-Stier)	h2	2712

Table 5b – By Phadia Code

Phadia Code	House Dust	Test Code
h1	House dust (Greer)	2711
h2	House dust (Hollister-Stier)	2712

Table 6: House Dust and Storage Mite Allergens

Table 6a – Alphabetical by Allergen

House Dust and Storage Mite	Phadia Code	Test Code
Blomia Tropicalis	d201	3299
Dermatophagoides farinae	d2	2722
Dermatophagoides pteronyssinus	d1	2721
Glycyphagus domesticus (Storage mite)	d73	2727
Lepidoglyphus destructor (Storage mite)	d71	2723

Table 6b – By Phadia Code

Phadia Code	House Dust and Storage Mite	Test Code
d1	*Dermatophagoides pteronyssinus*	2721
d2	*Dermatophagoides farinae*	2722
d71	*Lepidoglyphus destructor* (Storage mite)	2723
d73	*Glycyphagus domesticus* (Storage mite)	2727
d201	*Blomia Tropicalis*	299

Table 7: Insect and Venom Allergens

Table 7a – Alphabetical by Allergen

Insect and Venom	Phadia Code	Test Code
Blood worm	i73	2738
Cockroach	i6	2736
Cockroach, American	i206	37454
Honey bee	i1	2731
Fire ant	i70	2739
Mosquito	i71	2740
Paper wasp	i4	2734
White-faced hornet	i2	2732
Yellow hornet	i5	2735
Yellow jacket	i3	2733

Table 7b – By Phadia Code

Phadia Code	Insect and Venom	Test Code
i1	Honey bee	2731
i2	White-faced hornet	2732
i3	Yellow jacket	2733
i4	Paper wasp	2734
i5	Yellow hornet	2735
i6	Cockroach	2736
i70	Fire ant	2739
i71	Mosquito	2740
i73	Blood worm	2738
i206	Cockroach, American	37454

Table 8: Mold Allergens

Table 8a – Alphabetical by Allergen

Mold	Phadia Code	Test Code
Alternaria alternata	m6	2706
Aspergillus fumigatus	m3	2703
Aureobasidium pullulans (Pullularia)	m12	6634
Botrytis cinerea	m7	6647
Cephalosporium acremonium	m202	3301
Chaetomium globosum	m208	3415
Candida albicans	m5	2705
Cladosporium herbarum (Hormodendrum)	m2	2702
Curvularia lunata	m16	6680
Epicoccum purpurascens	m14	6692
Fusarium proliferatun (Fusarium moniliforme)	m9	6696
Setomelanomma rostrata (Helminthosporium halodes)	m8	6711
Mucor racemosus	m4	2704
Pityrosporum orbiculare	m70	3403
Penicillium chrysogenum (Penicillium notatum)	m1	2701
Phoma betae	m13	6770
Rhizopus nigricans	m11	6781
Stemphylium herbarum (Stemphylium botryosum)	m10	6799
Trichophyton rubrum	m205	3406
Trichoderma viride	m15	6809

Table 8b – By Phadia Code

Phadia Code	Mold	Test Code
m1	*Penicillium chrysogenum (Penicillium notatum)*	2701
m2	*Cladosporium herbarum* (Hormodendrum)	2702
m3	*Aspergillusfumigatus*	2703
m4	*Mucor racemosus*	2704
m5	*Candida albicans*	2705
m6	*Alternaria alternata*	2706
m7	*Botrytiscinerea*	6647
m8	*Setomelanomma rostrata (Helminthosporium halodes)*	6711
m9	*Fusarium proliferatun (Fusarium moniliforme)*	6696
m10	*Stemphylium herbarum (Stemphylium botryosum)*	6799
m11	*Rhizopus nigricans*	6781
m12	*Aureobasidium pullulans* (Pullularia)	6634
m13	*Phoma betae*	6770
m14	*Epicoccum purpurascens*	6692
m15	*Trichoderma viride*	6809
m16	*Curvularia lunata*	6680
m70	*Pityrosporum orbiculare*	3403
m202	*Cephalosporium acremonium*	3301
m205	*Trichophyton rubrum*	3406
m208	*Chaetomium globosum*	3415

Table 9: Tree Allergens

Table 9a – Alphabetical by Allergen

Tree	Phadia Code	Test Code
Acacia (*Acacia* species)	t19	2519
Alder (*Alnus incana*)	t2	2502
Australian pine (*Casuarina equisetifolia*)	t73	2554
Beech (*Fagus grandifolia*)	t5	2505
Birch (*Betula verrucosa*)	t3	2503
Cottonwood (*Populus deltoides*)	t14	2514
Elm (*Ulmus americana*)	t8	2508
Eucalyptus (*Eucalyptus* species)	t18	2518
Hazelnut (*Corylus avellana*)	t4	2504
Italian cypress (*Cupressus sempervirens*)	t23	2523
Maple (box elder; *Acer negundo*)	t1	2501
Melaleuca (*Melaleuca* species)	t21	2521
Mesquite (*Prosopis juliflora*)	t20	2520
Mountain cedar (*Juniperus sabinoides*)	t6	2506
Oak (*Quercus alba*)	t7	2507
Olive (*Olea europa*)	t9	2509
Pecan/Hickory (*Carya* species, pecan)	t22	2522
Privet	t210	3326
Queen palm (*Arecastrum romanzoffianum*)	t72	2556
Sycamore (*Plantanus acerfolia*)	t11	2511
Walnut (*Juglans californica*)	t10	2510
White ash (*Fraxinus americana*)	t15	2515
White mulberry (*Morus* species)	t70	2570
White pine (*Pinus strobus*)	t16	2516
Willow (*Salix nigra*)	t12	2512

Table 9b – By Phadia Code

Phadia Code	Tree	Test Code
t1	Maple (box elder; *Acer negundo*)	2501
t2	Alder (*Alnus incana*)	2502
t3	Birch (*Betula verrucosa*)	2503
t4	Hazelnut (*Corylus avellana*)	2504
t5	Beech (*Fagus grandifolia*)	2505
t6	Mountain cedar (*Juniperus sabinoides*)	2506
t7	Oak (*Quercus alba*)	2507
t8	Elm (*Ulmus americana*)	2508
t9	Olive (*Olea europa*)	2509
t10	Walnut (*Juglans californica*)	2510
t11	Sycamore (*Plantanus acerfolia*)	2511
t12	Willow (*Salix nigra*)	2512
t14	Cottonwood (*Populus deltoides*)	2514
t15	White ash (*Fraxinus americana*)	2515
t16	White pine (*Pinus strobus*)	2516
t18	Eucalyptus (*Eucalyptus* species)	2518
t19	Acacia (*Acacia* species)	2519
t20	Mesquite (*Prosopis juliflora*)	2520
t21	Melaleuca (*Melaleuca* species)	2521
t22	Pecan/Hickory (*Carya* species, pecan)	2522
t23	Italian cypress (*Cupressus sempervirens*)	2523
t70	White mulberry (*Morus* species)	2570
t72	Queen palm (*Arecastrum romanzoffianum*)	2556
t73	Australian pine (*Casuarina equisetifolia*)	2554
t210	Privet	3326

Table 10: Weed Allergens

Table 10a – Alphabetical by Allergen

Weed	Phadia Code	Test Code
Cocklebur (*Xanthium pensylvanicum*)	w13	2413
Common ragweed (short) (*Ambrosia elatior*)	w1	2401
Dandelion (*Taraxacum vulgare*)	w8	2408
English plantain (*Plantago lanceolata*)	w9	2409
False ragweed (*Franseria acanthicarpa*)	w4	2404
Firebush (*Kochia scoparia*)	w17	2417
Giant ragweed (tall) (*Ambrosia trifida*)	w3	2403
Goldenrod (*Solidago virgaurea*)	w12	2412
Lamb's quarters (goosefoot; *Chenopodium album*)	w10	2410
Mugwort (sagebrush) (*Artemisia vulgaris*)	w6	2406
Nettle (*Urtria dioica*)	w20	2420
Oxeye daisy (*Chrysanthemum leucanthemum*)	w7	2407
Rough marsh elder (Iva)	w16	2416
Rough pigweed (*Amaranthus retroflexus*)	w14	2414
Russian thistle (prickly saltwort; *Salsola kali*)	w11	2411
Scale (Atriplex)	w15	2415
Sheep sorrel (dock; *Rumex acetosella*)	w18	2418
Western ragweed (*Ambrosia psilostachya*)	w2	2402
Wormwood (sagebrush) (*Artemisia absinthium*)	w5	2405

Table 10b – By Phadia Code

Phadia Code	Weed	Test Code
w1	Common ragweed (short; *Ambrosia elatior*)	2401
w2	Western ragweed (*Ambrosia psilostachya*)	2402
w3	Giant ragweed (tall; *Ambrosia trifida*)	2403
w4	False ragweed (*Franseria acanthicarpa*)	2404
w5	Wormwood (sagebrush; *Artemisia absinthium*)	2405
w6	Mugwort (sagebrush; *Artemisia vulgaris*)	2406
w7	Oxeye daisy (*Chrysanthemum leucanthemum*)	2407
w8	Dandelion (*Taraxacum vulgare*)	2408
w9	English plantain (*Plantago lanceolata*)	2409
w10	Lamb's quarters (goosefoot; *Chenopodium album*)	2410
w11	Russian thistle (prickly saltwort; *Salsola kali*)	2411
w12	Goldenrod (*Solidago virgaurea*)	2412
w13	Cocklebur (*Xanthium pensylvanicum*)	2413
w14	Rough pigweed (*Amaranthus retroflexus*)	2414
w15	Scale (Atriplex)	2415
w16	Rough marsh elder (Iva)	2416
w17	Firebush (*Kochia scoparia*)	2417
w18	Sheep sorrel (dock; *Rumex acetosella*)	2418
w20	Nettle (*Urtria dioica*)	2420

Table 11: Other Allergens

Table 11a – Alphabetical by Allergen

Other	Phadia Code	Test Code
Ascaris	p1	2741
Seminal fluid	o70	2770

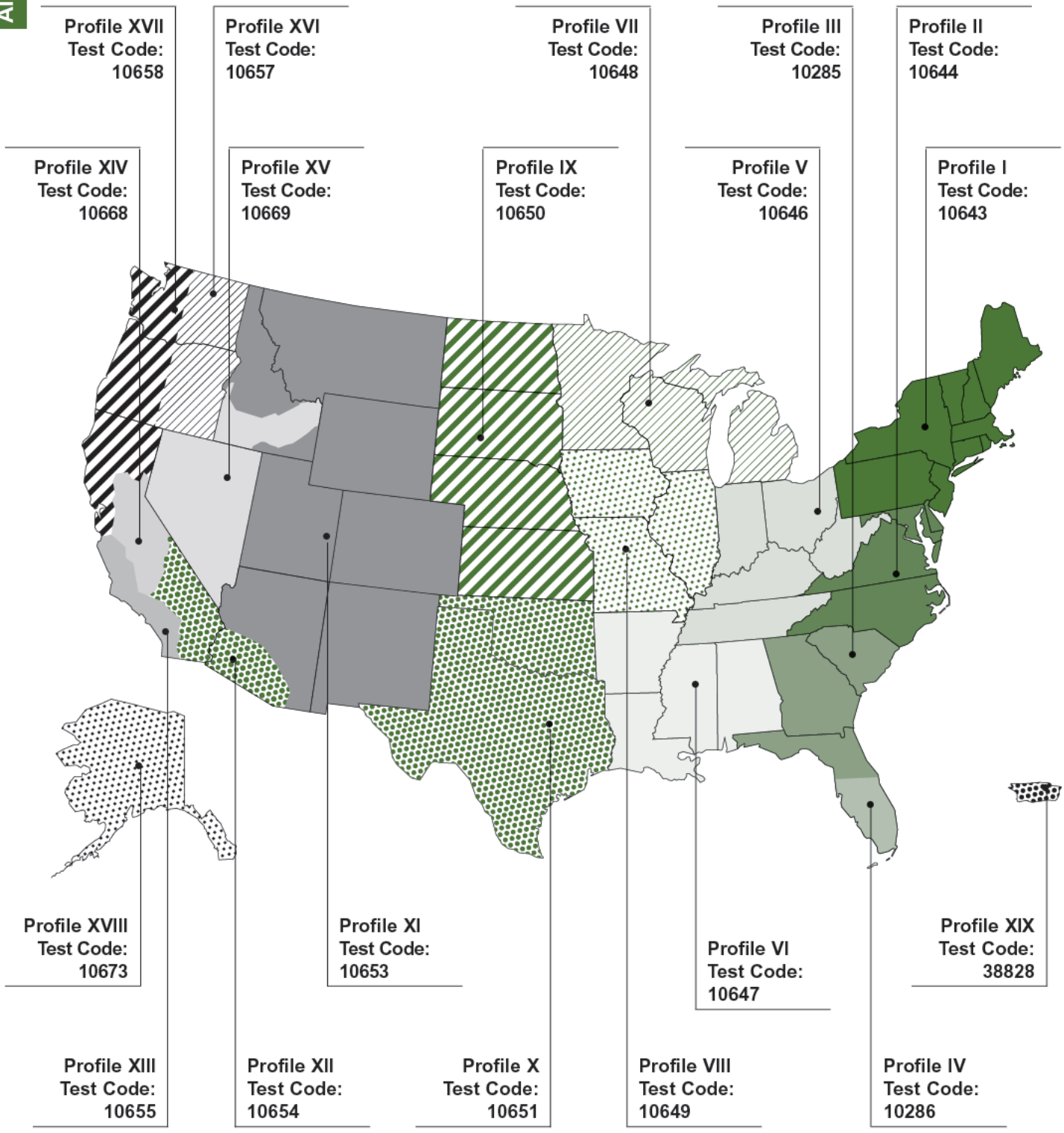
Table 11b – By Phadia Code

Phadia Code	Other	Test Code
o70	Seminal fluid	2770
p1	Ascaris	2741

Allergy Profiles for Inhalant and Food Allergens

A total of 19 regional allergy profiles have been developed based upon the regional prevalence of allergens, taking into account the relative abundance and antigenicity for each seasonal allergen. Each Regional Respiratory Allergy Profile consists of 14-21 of the most prevalent tree, grass, and weed allergens specific to that region, in addition to the most prevalent allergens common to all regions.

All Regional Respiratory Allergy Profiles include a Total IgE test. Testing is performed by the Phadia ImmunoCAP® Specific IgE blood test, which utilizes a fluoroenzyme immunoassay (non-RAST®) procedure that is more accurate than RAST®. This results in a high degree of diagnostic efficiency in the detection of atopic individuals relative to inhalant and food allergens. Submission requirements: 2 mL serum—plastic vial.



For individual test components, please refer to Table 12 - Regional Respiratory Allergy Profiles for Inhalant Allergens.

Table 12. Regional Respiratory Allergy Profiles for Inhalant Allergens

	Test	Prevalent Test Allergens	Test Code
Profile I: CT, MA, ME, NH, NJ, NY, PA, RI, VT	d1	*Dermatophagoides pteronyssinus*	**10643**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g2	Bermuda grass (*Cynodon dactylon*)	
	g6	Timothy grass (*Phleum pratense*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum* (*Penicillium notatum*)	
	m2	*Cladosporium herbarum*	
	m3	*Aspergillus fumigatus*	
	m6	*Alternaria alternata* (a mold)	
	t1	Maple (box elder; *Acer negundo*)	
	t3	Birch (*Betula verrucosa*)	
	t6	Mountain cedar (*Juniperus sabinoides*)	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t10	Walnut (*Juglans californica*)	
	t11	Sycamore *(Plantanus acerfolia)*	
	t14	Cottonwood (*Populus deltoids*)	
	t15	White ash (*Fraxinus americana*)	
	t70	Mulberry	
	w1	Common ragweed (short; *Ambrosia elatior*)	
	w6	Mugwort (sagebrush; *Artemisia vulgaris*)	
	w14	Rough pigweed (*Amaranthus retroflexus*)	
	w18	Sheep sorrel (*Rumex acetosella*)	
Profile II: DC, DE, MD, NC, VA	d1	*Dermatophagoides pteronyssinus*	**10644**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g2	Bermuda grass (*Cynodon dactylon*)	
	g6	Timothy grass (*Phleum pratense*)	
	g10	Johnson grass (*Sorghum halepense*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum* (*Penicillium notatum*)	
	m2	*Cladosporium herbarum*	
	m3	*Aspergillus fumigatus*	
	m6	*Alternaria alternata* (a mold)	
	t1	Maple (box elder; *Acer negundo*)	
	t3	Birch (*Betula verrucosa*)	
	t6	Mountain cedar (*Juniperus sabinoides*)	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t14	Cottonwood (*Populus deltoids*)	
	t22	Pecan/Hickory (*Carya* species, pecan)	
	t70	Mulberry	
	w1	Common ragweed (short; *Ambrosia elatior*)	
	w14	Rough pigweed (*Amaranthus retroflexus*)	
	w18	Sheep sorrel (*Rumex acetosella*)	

Table 12. Regional Respiratory Allergy Profiles for Inhalant Allergens *(continued)*

	Test	Prevalent Test Allergens	Test Code
Profile III: GA, northern FL, SC	d1	*Dermatophagoides pteronyssinus*	**10285**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g2	Bermuda grass (*Cynodon dactylon*)	
	g6	Timothy grass (*Phleum pratense*)	
	g17	Bahia grass (*Paspalum notatum*)	
	i6	Cockroach	
	m1	Penicillium chrysogenum (*Penicillium notatum*)	
	m2	*Cladosporium herbarum*	
	m3	*Aspergillus fumigatus*	
	m6	*Alternaria alternata* (a mold)	
	t1	Maple (box elder; *Acer negundo*)	
	t3	Birch (*Betula verrucosa*)	
	t6	Mountain cedar (*Juniperus sabinoides*)	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t22	Pecan/Hickory (*Carya* species, pecan)	
	w1	Common ragweed (short; *Ambrosia elatior*)	
	w14	Rough pigweed (*Amaranthus retroflexus*)	
	w18	Sheep sorrel (*Rumex acetosella*)	
	w20	Nettle (*Urtica dioica*)	
Profile IV: FL, south of Orlando	d1	*Dermatophagoides pteronyssinus*	**10286**
	d2	*Dermatophagoides farinae*	
	d201	*Blomia tropicalis*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g2	Bermuda grass (*Cynodon dactylon*)	
	g6	Timothy grass (*Phleum pratense*)	
	g17	Bahia grass (*Paspalum notatum*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum (Penicillium notatum)*	
	m2	*Cladosporium herbarum*	
	m3	*Aspergillus fumigatus*	
	m6	*Alternaria alternata* (a mold)	
	t1	Maple (box elder; *Acer negundo*)	
	t6	Mountain cedar (*Juniperus sabinoides*)	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t73	Australian pine (*Casuarina equisetifolia*)	
	w1	Common ragweed (short; *Ambrosia elatior*)	
	w14	Rough pigweed (*Amaranthus retroflexus*)	
	w18	Sheep sorrel (*Rumex acetosella*)	
	w20	Nettle (*Urtica dioica*)	

Table 12. Regional Respiratory Allergy Profiles for Inhalant Allergens *(continued)*

	Test	Prevalent Test Allergens	Test Code
Profile V: IN, KY, OH, TN, WV	d1	*Dermatophagoides pteronyssinus*	**10646**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g2	Bermuda grass (*Cynodon dactylon*)	
	g6	Timothy grass (*Phleum pratense*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum (Penicillium notatum)*	
	m2	*Cladosporium herbarum*	
	m3	*Aspergillus fumigatus*	
	m6	*Alternaria alternata* (a mold)	
	t1	Maple (box elder; *Acer negundo*)	
	t3	Birch (*Betula verrucosa*)	
	t6	Mountain cedar (*Juniperus sabinoides*)	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t10	Walnut (*Juglans californica*)	
	t11	Sycamore *(Plantanus acerfolia)*	
	t14	Cottonwood (*Populus deltoids*)	
	t15	White ash (*Fraxinus americana*)	
	t22	Pecan/Hickory (*Carya* species, pecan)	
	t70	Mulberry	
	w1	Common ragweed (short; *Ambrosia elatior*)	
	w11	Russian thistle (Saltwort; *Salsola kali*)	
	w14	Rough pigweed (*Amaranthus retroflexus*)	
	w18	Sheep sorrel (*Rumex acetosella*)	
Profile VI: AL, AR, LA, MS	d1	*Dermatophagoides pteronyssinus*	**10647**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g2	Bermuda grass (*Cynodon dactylon*)	
	g6	Timothy grass (*Phleum pratense*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum (Penicillium notatum)*	
	m2	*Cladosporium herbarum*	
	m3	*Aspergillus fumigatus*	
	m6	*Alternaria alternata* (a mold)	
	t1	Maple (box elder; *Acer negundo*)	
	t3	Birch (*Betula verrucosa*)	
	t6	Mountain cedar (*Juniperus sabinoides*)	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t10	Walnut (*Juglans californica*)	
	t22	Pecan/Hickory (*Carya* species, pecan)	
	t70	Mulberry	
	w1	Common ragweed (short; *Ambrosia elatior*)	
	w14	Rough pigweed (*Amaranthus retroflexus*)	
	w16	Rough marsh elder (Iva)	

Table 12. Regional Respiratory Allergy Profiles for Inhalant Allergens (continued)

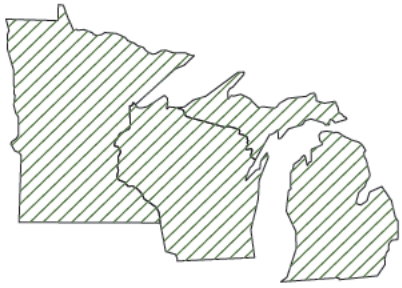
	Test	Prevalent Test Allergens	Test Code
Profile VII: MI, MN, WI 	d1	*Dermatophagoides pteronyssinus*	**10648**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g2	Bermuda grass (*Cynodon dactylon*)	
	g6	Timothy grass (*Phleum pratense*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum* (*Penicillium notatum*)	
	m2	*Cladosporium herbarum*	
	m3	*Aspergillus fumigatus*	
	m6	*Alternaria alternata* (a mold)	
	t1	Maple (box elder; *Acer negundo*)	
	t3	Birch (*Betula verrucosa*)	
	t6	Mountain cedar (*Juniperus sabinoides*)	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t14	Cottonwood (*Populus deltoids*)	
	t15	White ash (*Fraxinus americana*)	
	t70	Mulberry	
	w1	Common ragweed (short; *Ambrosia elatior*)	
	w11	Russian thistle (Saltwort; *Salsola kali*)	
	w16	Rough marsh elder (Iva)	
	w20	Nettle (*Urtica dioica*)	
Profile VIII: IA, IL, MO 	d1	*Dermatophagoides pteronyssinus*	**10649**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g2	Bermuda grass (*Cynodon dactylon*)	
	g6	Timothy grass (*Phleum pratense*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum* (*Penicillium notatum*)	
	m2	*Cladosporium herbarum*	
	m3	*Aspergillus fumigatus*	
	m6	*Alternaria alternata* (a mold)	
	t1	Maple (box elder; *Acer negundo*)	
	t6	Mountain cedar (*Juniperus sabinoides*)	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t10	Walnut (*Juglans californica*)	
	t11	Sycamore *(Plantanus acerfolia)*	
	t14	Cottonwood (*Populus deltoids*)	
	t15	White ash (*Fraxinus americana*)	
	t22	Pecan/Hickory (*Carya* species, pecan)	
	t70	Mulberry	
	w1	Common ragweed (short; *Ambrosia elatior*)	
	w11	Russian thistle (Saltwort; *Salsola kali*)	
	w14	Rough pigweed (*Amaranthus retroflexus*)	
	w16	Rough marsh elder (Iva)	

Table 12. Regional Respiratory Allergy Profiles for Inhalant Allergens (continued)

	Test	Prevalent Test Allergens	Test Code
Profile IX: KS, NE, ND, SD	d1	*Dermatophagoides pteronyssinus*	**10650**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g2	Bermuda grass (*Cynodon dactylon*)	
	g6	Timothy grass (*Phleum pratense*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum* (*Penicillium notatum*)	
	m2	*Cladosporium herbarum* (Hormodendrum)	
	m3	*Aspergillus fumigatus*	
	m6	*Alternaria alternata* (a mold)	
	t1	Maple (box elder; *Acer negundo*)	
	t6	Mountain cedar (*Juniperus sabinoides*)	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t14	Cottonwood (*Populus deltoides*)	
	t15	White ash (*Fraxinus americana*)	
	t70	Mulberry	
	w1	Common ragweed (short; *Ambrosia elatior*)	
	w11	Russian thistle (prickly saltwort; *Salsola kali*)	
	w18	Sheep sorrel (*Rumex acetosella*)	
	w20	Nettle (*Urtica dioica*)	
Profile X: OK, TX	d1	*Dermatophagoides pteronyssinus*	**10651**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g2	Bermuda grass (*Cynodon dactylon*)	
	g6	Timothy grass (*Phleum pratense*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum* (*Penicillium notatum*)	
	m2	*Cladosporium herbarum* (Hormodendrum)	
	m3	*Aspergillus fumigatus*	
	m6	*Alternaria alternata* (a mold)	
	t1	Maple (box elder; *Acer negundo*)	
	t3	Birch (*Betula verrucosa*)	
	t6	Mountain cedar (*Juniperus sabinoides*)	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t14	Cottonwood (*Populus deltoids*)	
	t15	White ash (*Fraxinus americana*)	
	t22	Pecan/Hickory (*Carya* species, pecan)	
	t70	Mulberry	
	w1	Common ragweed (short; *Ambrosia elatior*)	
	w14	Rough pigweed (*Amaranthus retroflexus*)	
	w16	Rough marsh elder (Iva)	
	w18	Sheep sorrel (*Rumex acetosella*)	
	w20	Nettle (*Urtica dioica*)	

Table 12. Regional Respiratory Allergy Profiles for Inhalant Allergens *(continued)*

	Test	Prevalent Test Allergens	Test Code
Profile XI: AZ (mountains), CO, ID (mountains), MT, NM, UT, WY 	d1	*Dermatophagoides pteronyssinus*	**10653**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g2	Bermuda grass (*Cynodon dactylon*)	
	g6	Timothy grass (*Phleum pratense*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum* (*Penicillium notatum*)	
	m2	*Cladosporium herbarum*	
	m3	*Aspergillus fumigatus*	
	m6	*Alternaria alternata* (a mold)	
	t1	Maple (box elder; *Acer negundo*)	
	t2	Alder (*Alnus incana*)	
	t6	Mountain cedar (*Juniperus sabinoides*)	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t9	Olive (*Olea europa*)	
	t14	Cottonwood (*Populus deltoides*)	
	t70	Mulberry	
	w1	Common ragweed (short; *Ambrosia elatior*)	
	w6	Mugwort (sagebrush; *Artemisia vulgaris*)	
	w11	Russian thistle (prickly saltwort; *Salsola kali*)	
	w14	Rough pigweed (*Amaranthus retroflexus*)	
	w18	Sheep sorrel (*Rumex acetosella*)	
Profile XII: AZ (south), CA (southeast desert) 	d1	*Dermatophagoides pteronyssinus*	**10654**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g2	Bermuda grass (*Cynodon dactylon*)	
	g5	Perennial rye grass (*Lolium perenne*)	
	g10	Johnson grass (*Sourghum halepense*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum* (*Penicillium notatum*)	
	m2	*Cladosporium herbarum* (Hormodendrum)	
	m3	*Aspergillus fumigatus*	
	m6	*Alternaria alternata* (a mold)	
	t6	Mountain cedar (*Juniperus sabinoides*)	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t9	Olive (*Olea europa*)	
	t14	Cottonwood (*Populus deltoides*)	
	t19	Acacia (*Acacia species*)	
	w1	Common ragweed (short; *Ambrosia elatior*)	
	w6	Mugwort (sagebrush; *Artemisia vulgaris*)	
	w11	Russian thistle (prickly saltwort; *Salsola kali*)	
	w14	Rough pigweed (*Amaranthus retroflexus*)	

Table 12. Regional Respiratory Allergy Profiles for Inhalant Allergens *(continued)*

	Test	Prevalent Test Allergens	Test Code
Profile XIII: CA, southern coast	d1	*Dermatophagoides pteronyssinus*	**10655**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g2	Bermuda grass (*Cynodon dactylon*)	
	g6	Timothy grass (*Phleum pratense*)	
	g10	Johnson grass (*Sourghum halepense*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum* (*Penicillium notatum*)	
	m2	*Cladosporium herbarum* (Hormodendrum)	
	m3	*Aspergillus fumigatus*	
	m6	*Alternaria alternata* (a mold)	
	t2	Alder (*Alpus incana*)	
	t6	Mountain cedar (*Juniperus sabinoides*)	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t9	Olive (*Olea europa*)	
	t10	Walnut (*Juglans californica*)	
	t14	Cottonwood (*Populus deltoides*)	
	t70	Mulberry	
	w1	Common ragweed (short; *Ambrosia elatior*)	
	w6	Mugwort (sagebrush; *Artemisia vulgaris*)	
	w11	Russian thistle (prickly saltwort; *Salsola kali*)	
	w14	Rough pigweed (*Amaranthus retroflexus*)	
Profile XIV: CA, central valley	d1	*Dermatophagoides pteronyssinus*	**10668**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g2	Bermuda grass (*Cynodon dactylon*)	
	g6	Timothy grass (*Phleum pratense*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum* (*Penicillium notatum*)	
	m2	*Cladosporium herbarum* (Hormodendrum)	
	m3	*Aspergillus fumigatus*	
	m6	*Alternaria alternata* (a mold)	
	t2	Alder (*Alnus incana*)	
	t3	Birch (*Betula verrucosa*)	
	t6	Mountain cedar (*Juniperus sabinoides*)	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t9	Olive (*Olea europa*)	
	t11	Sycamore *(Plantanus acerfolia)*	
	t70	Mulberry	
NOTE: See Respiratory Allergy Profile, Region XIV in the Test Selection/Interpretation tab on our website at QuestDiagnostics.com/hcp/qtim/testMenuSearch.do.	w1	Common ragweed (short; *Ambrosia elatior*)	
	w6	Mugwort (sagebrush; *Artemisia vulgaris*)	
	w11	Russian thistle (prickly saltwort; *Salsola kali*)	
	w14	Rough pigweed (*Amaranthus retroflexus*)	

Table 12. Regional Respiratory Allergy Profiles for Inhalant Allergens *(continued)*

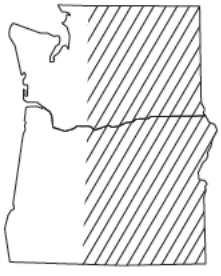
	Test	Prevalent Test Allergens	Test Code
Profile XV: ID (south), NV	d1	*Dermatophagoides pteronyssinus*	**10669**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g2	Bermuda grass (*Cynodon dactylon*)	
	g6	Timothy grass (*Phleum pratense*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum* (*Penicillium notatum*)	
	m2	*Cladosporium herbarum* (Hormodendrum)	
	m3	*Aspergillus fumigatus*	
	m6	*Alternaria alternata* (a mold)	
	t1	Maple (box elder; *Acer negundo*)	
	t6	Mountain cedar (*Juniperus sabinoides*)	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t9	Olive	
	t14	Cottonwood (*Populus deltoides*)	
	t70	Mulberry	
	w1	Common ragweed (short; *Ambrosia elatior*)	
	w6	Mugwort (sagebrush; *Artemisia vulgaris*)	
	w11	Russian thistle (prickly saltwort; *Salsola kali*)	
	w14	Rough pigweed (*Amaranthus retroflexus*)	
Profile XVI: OR, WA (central and east)	d1	*Dermatophagoides pteronyssinus*	**10657**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g6	Timothy grass (*Phleum pratense*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum* (*Penicillium notatum*)	
	m2	*Cladosporium herbarum* (Hormodendrum)	
	m3	*Aspergillus fumigatus*	
	m6	*Alternaria alternata* (a mold)	
	t1	Maple (box elder; *Acer negundo*)	
	t2	Alder (*Alnus incana*)	
	t3	Birch (*Betula verrucosa*)	
	t6	Mountain cedar (*Juniperus sabinoides*)	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t14	Cottonwood (*Populus deltoides*)	
	w6	Mugwort (sagebrush; *Artemisia vulgaris*)	
	w11	Russian thistle (prickly saltwort; *Salsola kali*)	
	w14	Rough pigweed (*Amaranthus retroflexus*)	
	w18	Sheep sorrel (*Rumex acetosella*)	

Table 12. Regional Respiratory Allergy Profiles for Inhalant Allergens *(continued)*

	Test	Prevalent Test Allergens	Test Code
Profile XVII: CA (northwest), OR (west), WA (west) 	d1	*Dermatophagoides pteronyssinus*	**10658**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g6	Timothy grass (*Phleum pratense*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum* (*Penicillium notatum*)	
	m2	*Cladosporium herbarum* (Hormodendrum)	
	m3	*Aspergillus fumigatus*	
	m6	*Alternaria alternata* (a mold)	
	t1	Maple (box elder; *Acer negundo*)	
	t2	Alder (*Alnus incana*)	
	t3	Birch (*Betula verrucosa*)	
	t6	Mountain cedar (*Juniperus sabinoides*)	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t10	Walnut (*Juglans californica*)	
	t14	Cottonwood (*Populus deltoides*)	
	t15	White ash (*Fraxinus americana*)	
	w1	Common ragweed (short; *Ambrosia elatior*)	
	w14	Rough pigweed (*Amaranthus retroflexus*)	
	w18	Sheep sorrel (*Rumex acetosella*)	
	w20	Nettle (*Urtica dioica*)	
Profile XVIII: Alaska 	d1	*Dermatophagoides pteronyssinus*	**10673**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g6	Timothy grass (*Phleum pratense*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum* (*Penicillium notatum*)	
	m2	*Cladosporium herbarum* (Hormodendrum)	
	m3	Indoor mold (*Aspergillus fumigatus*)	
	m6	*Alternaria alternata* (a mold)	
	t2	Alder (*Alnus incana*)	
	t3	Common silver birch	
	t14	Cottonwood (*Populus deltoides*)	
	w6	Mugwort (sagebrush; *Artemisia vulgaris*)	
	w18	Sheep sorrel (*Rumex acetosella*)	

Table 12. Regional Respiratory Allergy Profiles for Inhalant Allergens (*continued*)

	Test	Prevalent Test Allergens	Test Code
Profile XIX: Puerto Rico	d1	*Dermatophagoides pteronyssinus*	**38828**
	d2	*Dermatophagoides farinae*	
	d201	*Blomia tropicalis*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	g2	Bermuda grass (*Cynodon dactylon*)	
	g9	Redtop grass, Bent grass (*Agrostis stolonifera*)	
	g10	Johnson grass (*Sourghum halepense*)	
	i6	Cockroach	
	m1	*Penicillium chrysogenum* (*Penicillium notatum*) (a mold)	
	m2	*Cladosporium herbarum*	
	m3	*Aspergillus fumigatus* (a mold)	
	m6	*Alternaria alternata* (a mold)	
	m12	*Aureobasisium pullulans*	
	t7	Oak (*Quercus alba*)	
	t8	Elm (*Ulmus americana*)	
	t18	Eucalyptus (*Eucalyptus* species)	
	t73	Australian pine (*Casuarina equisetifolia)*	
	w14	Rough pigweed (*Amaranthus retroflexus*)	
	w18	Sheep sorrel (*Rumex acetosella*)	
	w19	Wall pellitory	

Table 13. Childhood Allergy (Food and Environmental) Profile

States	Test	Prevalent Test Allergens	Test Code
50 States	d1	*Dermatophagoides pteronyssinus*	**10659**
	d2	*Dermatophagoides farinae*	
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	f1	Egg white	
	f2	Milk	
	f3	Codfish	
	f4	Wheat	
	f13	Peanut	
	f14	Soybean	
	f24	Shrimp	
	f256	Walnut	
	i6	Cockroach	
	m2	*Cladosporium herbarum*	
	m6	*Alternaria alternata* (a mold)	
Puerto Rico	d1	*Dermatophagoides pteronyssinus*	**38829**
	e1	Cat dander	
	e5	Dog dander	
	e72	Mouse urine proteins	
	f1	Egg white	
	f2	Milk	
	f4	Wheat	
	f8	Corn	
	f13	Peanut	
	f14	Soybean	
	i6	Cockroach	
	m6	*Alternaria alternata* (a mold)	

Table 14. Food Allergy Profile, Adult

States	Test	Prevalent Test Allergens*	Test Code
50 States 	f1	Egg white	10715
	f2	Milk	
	f3	Codfish	
	f4	Wheat	
	f10	Sesame seed	
	f13	Peanut	
	f14	Soybean	
	f17	Hazelnut	
	f20	Almond	
	f24	Shrimp	
	f40	Tuna	
	f41	Salmon	
	f202	Cashew nut	
	f256	Walnut	
	f338	Scallop	

Table 15: Additional Allergy Panels

Submission Requirements: Each of these panels, consisting of 5 allergens, may be determined from 2 mL Serum – plastic vial.

Mold Group #11 (Test Code 7911)

m2	*Cladosporium herbarum*
m3	*Aspergillus fumigatus*
m4	*Mucor racemosus*
m5	*Candida albicans*
m6	*Alternaria alternata*

Animal Group (Test Code 94216)

e3	Horse dander
e4	Cow dander
e70	Goose feathers
e72	Mouse urine proteins
e85	Chicken feathers

Stinging Insect Group #13 (Test Code 7913)

i1	Honey bee
i2	White-faced hornet
i3	Yellow jacket
i4	Paper wasp
i5	Yellow hornet

Cereal Group #15 (Test Code 7915)

f5	Rye
f6	Barley
f9	Rice
f11	Buckwheat
f79	Gluten

Vegetable Group #16 (Test Code 7916)

f8	Corn
f12	Pea
f15	White bean
f31	Carrot
f35	Potato

Salad Group #17 (Test Code 7917)

f25	Tomato
f33	Orange
f85	Celery
f86	Parsley
f215	Lettuce

Nut Mix Group #18 (Test Code 7918)

f10	Sesame seed
f13	Peanut
f17	Hazelnut
f20	Almond
f36	Coconut
f201	Pecan
f202	Cashew nut

Seafood Group #19 (Test Code 7919)

f3	Codfish
f23	Crab
f24	Shrimp
f40	Tuna
f41	Salmon
f80	Lobster

NOTE: A substitution will be made only when an individual allergen is unavailable.

Allergy Component Testing

Allergen components (in conjunction with whole-allergen test results) help better diagnose allergies, allowing one to prepare more comprehensive management plans.

High levels of a particular IgE antibody can predict the likelihood of an allergic sensitivity, but may not be solely predictive of reactions or allergic response.

Egg Component Panel (Test Code 91372)
Ovalbumin (f232)
Ovomucoid (f233)

Milk Component Panel (Test Code 91403)
Alpha-lactalbumin (f76)
Beta-lactoglobulin (f77)
Casein (f78)

Peanut Component Panel (Test Code 91681)
Ara h1 (f422)
Ara h2 (f423)
Ara h3 (f424)
Ara h8 (f352)
Ara h9 (f427)

Peanut, Total with Reflex to Peanut Component Panel (Test Code 91747)
Peanut (f13)
- Peanut Component Panel: Ara h 1 (f422), Ara h 2 (f423), Ara h 3 (f424), Ara h 8 (f352), and Ara h 9 (f427)

***Brazil Nut (f18) IgE with Reflex to Component (Test Code 94464)**
Brazil Nut (f18)
- Brazil Nut Component: Ber e1 (f354)

***Cashew Nut (f202) IgE with Reflex to Component (Test Code 94465)**
Cashew Nut (f202)
- Cashew Nut Component: Ana o3 (f443)

***Hazelnut (f17) IgE with Reflex to Component Panel (Test Code 94468)**
Hazelnut (f17)
- Hazelnut Component Panel: Cor a1 (f428), Cor a8 (f425), Cor a9 (f440), and Cor a14 (f439)

***Walnut (f256) IgE with Reflex to Component Panel (Test Code 94467)**
Walnut (f256)
- Walnut Component Panel: rJug r1 (f441) and rJug r3 (f442)

***Tree Nut Allergy Panel (Test Code 94462)**
Almond (f20)
Brazil Nut (f18)
Cashew Nut (f202)
Hazelnut (f17)
Macadamia Nut (rf345)
Peanut (f13)
Pecan Nut (f201)
Pistachio (f203)
Walnut (f256)

***Tree Nut Allergy Panel with Reflex to Components (Test Code 94463)**
Almond (f20)
Brazil Nut (f18) with reflex to Brazil Nut Component
Cashew Nut (f202) with reflex to Cashew Nut Component
Hazelnut (f17) with reflex to Hazelnut Component Panel
Macadamia Nut (rf345)
Peanut (f13) with reflex to Peanut Component Panel
Pecan Nut (f201)
Pistachio (f203)
Walnut (f256) with reflex to Walnut Component Panel
- Brazil Nut Component: Ber e1 (f354)
- Cashew Nut Component: Ana o3 (f443)
- Hazelnut Component Panel: Cor a1 (f428), Cor a8 (f425), Cor a9 (f440), and Cor a14 (f439)
- Peanut Component Panel: Ara h 1 (f422), Ara h 2 (f423), Ara h 3 (f424), Ara h 8 (f352), and Ara h 9 (f427)
- Walnut Component Panel: rJug r1 (f441) and rJug r3 (f442)

***These tests are not available for Florida patient testing.**

Childhood Allergy (Food and Environmental) Profile (Test Code 10659)

Alternaria alternata (m6)
Cat Dander (e1)
Cladosporium herbarum (m2)
Cockroach (i6)
Codfish (f3)
Milk (f2)
Dermatophagoides farinae (d2)
Dermatophagoides pteronyssinus (d1)
Dog Dander (e5)
Egg White (f1)
Mouse Urine Proteins (e72)
Peanut (f13)
Shrimp (f24)
Soybean (f14)
Walnut (f256)*
Wheat (f4)

Childhood Allergy (Food and Environmental) Profile with Reflexes (Test Code 91683)

Alternaria alternata (m6)
Cat Dander (e1)
Cladosporium herbarum (m2)
Cockroach (i6)
Codfish (f3)
Milk (f2) with reflex to Milk Component Panel
Dermatophagoides farinae (d2)
Dermatophagoides pteronyssinus (d1)
Dog Dander (e5)
Egg White (f1) with reflex to Egg Component Panel
Mouse Urine Proteins (e72)
Peanut (f13) with reflex to Peanut Component Panel
Shrimp (f24)
Soybean (f14)
Walnut (f256)*
Wheat (f4)
- Egg Component Panel: Ovalbumin (f232) and Ovomucoid (f233)
- Milk Component Panel: Alpha-lactalbumin (f76), Beta-lactoglobulin (f77), and Casein (f78)
- Peanut Component Panel: Ara h 1 (f422), Ara h 2 (f423), Ara h 3 (f424), Ara h 8 (f352), and Ara h 9 (f427)

Food Allergy Profile (Test Code 10715)

Almond (f20)
Cashew Nut (f202)*
Codfish (f3)
Milk (f2)
Egg White (f1)
Hazelnut (f17)*
Peanut (f13)
Salmon (f41)
Scallop (f338)
Sesame Seed (f10)
Shrimp (f24)
Soybean (f14)
Tuna (f40)
Walnut (f256)*
Wheat (f4)

Food Allergy Profile with Reflexes (Test Code 91682)

Almond (f20)
Cashew Nut (f202)*
Codfish (f3)
Milk (f2) with reflex to Milk Component Panel
Egg White (f1) with reflex to Egg Component Panel
Hazelnut (f17)*
Peanut (f13) with reflex to Peanut Component Panel
Salmon (f41)
Scallop (f338)
Sesame Seed (f10)
Shrimp (f24)
Soybean (f14)
Tuna (f40)
Walnut (f256)*
Wheat (f4)
- Egg Component Panel: Ovalbumin (f232) and Ovomucoid (f233)
- Milk Component Panel: Alpha-lactalbumin (f76), Beta-lactoglobulin (f77), and Casein (f78)
- Peanut Component Panel: Ara h 1 (f422), Ara h 2 (f423), Ara h 3 (f424), Ara h 8 (f352), and Ara h 9 (f427)

***Allergen components noted by an asterisk are not available for Florida patient testing.**

Toxicology Services

Please see General Test Listing in this Directory for individual tests.

Clinical Toxicology is the measurement and interpretation of concentrations of drugs and other toxic substances in human biological fluids for the purpose of patient care. This testing may be necessary when multiple drug ingestion is involved, as the effects of one drug may mask the clinical signs and symptoms of the effects of other drugs. The laboratory test results provide information to the clinician, who can make a clinical diagnosis and provide therapy as needed.

As an industry leader in diagnostic testing, conducting approximately nine million drug tests per year, we can help you meet today's drug testing and monitoring needs, while offering the clinical and technical support you need. Our comprehensive toxicology offering includes therapeutic drug monitoring, metals testing, clinical toxicology, and workplace testing.

Clinical toxicology testing includes:

- Therapeutic Drug Monitoring
- Heavy Metals
- Clinical Drug Testing
  - Prescription Drug Monitoring
  - Substance Monitoring
  - General Toxicology

NOTE: In addition, Quest Diagnostics Substance Abuse and Mental Health Services Administration (SAMHSA)-certified laboratories offer a variety of workplace drug test panels and cutoff levels in addition to the federally mandated (SAMHSA/DOT) drug panel. Contact the laboratory for workplace drug testing options and availability.

Therapeutic Drug Monitoring (TDM)

Drug Half-Life, Steady State, and Recommended Sample Collection Time

Therapeutic drug monitoring is commonly used to help maintain drug levels within the therapeutic window, the concentration range in which a drug exerts its clinical effect with minimal adverse effects for most patients. TDM is particularly useful for monitoring drugs that are used long-term and have a narrow therapeutic range. TDM is also useful to detect and monitor drug interactions and identify inadequate adherence as a cause of poor treatment response.[1,2]

Blood samples are usually collected at steady state to obtain clinically useful serum drug concentrations. When a fixed dose is administered at regular intervals, a drug will accumulate in the body during the absorption phase until it reaches steady state, during which the rate of drug intake equals the rate of drug elimination. The time required to reach steady state depends on the elimination half-life of the drug, defined as the time required for the serum drug concentration to decrease by 50%. The half-life is itself determined by the metabolism and excretion rates of the drug. Under conditions of first-order kinetics in a one compartment distribution model (drug is rapidly and evenly distributed throughout the body) and in the absence of a loading dose, at least 5 half-lives are required to achieve steady state. However, some drugs are metabolized by non-first-order kinetics, undergo extensive first-pass metabolism in the liver, and/or follow multi-compartment distribution in the body (drug is distributed into plasma at one rate, then exchanged between plasma and tissues at a different rate). The time required for these drugs to reach steady state may differ from the conventional 5 half-lives.

Once steady state has been reached, peak and/or trough serum samples may be collected after the next scheduled dose. For peak samples, that would typically be 2 to 3 hours after an oral dose, 30 to 60 minutes after an intravenous dose, 2 to 4 hours after an intramuscular dose, or 1 to 1.5 hours after an intranasal dose. Trough samples are drawn just before administration of the next scheduled dose. TDM of aminoglycoside antibiotics, such as gentamicin and amikacin, requires determination of both peak and trough concentrations for multiple daily dosing regimens. Only trough concentrations are measured for most other drugs.

Please refer to "Drug Half-Life, Steady State, and Recommended Sample Collection Time" at QuestDiagnostics.com/testcenter/ for additional information, including estimates of the elimination half-life and steady state sample collection time for commonly administered drugs (i.e., those administered in multiple doses), but excluding time-release and long-acting regimens. The pharmacokinetics of each drug may vary with patient age, sex, weight, clinical status, and the presence of other drugs. These parameters are generalized guidelines and are not meant to replace patient assessment and clinical judgment.

Examples of therapeutic drug monitoring tests include:

Therapeutic Drug Monitoring Tests		
Acetaminophen	Fluvoxamine	Risperidone
Acetazolamide	Gabapentin	Rufinamide
Acyclovir	Gentamicin	Salicylate
Albuterol	Glutethimide	Secobarbital
Alkaloids	Haloperidol	Sirolimus
Alprazolam	Hydrochlorothiazide	Sulfonylurea
Amikacin	Hydroxychloroquine	Tacrolimus
Amiodarone	Hypoglycemic Panel	Theophylline
Amitriptyline	Ibuprofen	Thiopurine
Amoxicillin	Imipramine	Trifluoperazine
Aripiprazole	Lacosamide	Tiagabine
Benzodiazepines	Lamotrigine	Tobramycin
Benztropine	Leflunomide	Topiramate
Carbamazepine	Levetiracetam	Tranylcypromine
Carisoprodol	Lidocaine	Trazodone
Chlordiazepoxide	Lithium	Trihexyphenidyl
Cimetidine	Loxapine	Trimethadione
Clomipramine	Mephobarbital	Trimethoprim
Clonazepam	Meprobamate	Trimipramine
Clorazepate	Mesoridazine	Valproic Acid
Clozapine	Methotrexate	Vancomycin
Colchicine	Methsuximide	Venlafaxine
Cyclosporine	Mirtazapine	Verapamil
Dabigatran	Mycophenolic Acid	Voriconazole
Desipramine	Naproxen	Ziprasidone
Diazepine	Olanzapine	Zonisamide
Digitoxin	Oxcarbazepine	
Digoxin	Paliperidone	
Disopyramide	Pentobarbital	
Doxepin	Phenobarbital	
Ethchlorvynol	Phenothiazines	
Ethosuximide	Phenytoin	
Everolimus	Primidone	
Felbamate	Procainamide/NAPA	
Fentanyl	Promethazine	
Flecainide	Protriptyline	
Fluconazole	Propafenone	
Fluoxetine	Quetiapine	
Fluphenazine	Quinidine	

Heavy Metals

Heavy metals testing is intended to evaluate and monitor exposure to heavy metals and the process of detoxification. Quest Diagnostics offers interpretation guides for comprehensive toxic metal panels, peripheral neuropathy testing, cobalt monitoring and thallium toxicity, as well as test information for the available tests.

The symptoms of metal intoxication can mimic other treatable disorders. Such symptoms include nausea, vomiting, dementia, anemia, kidney failure, infertility, seizure, neuropathy, learning disorders, and pulmonary dysfunction. Thus, urine metal analysis may assist in differential diagnosis, as well as in monitoring patients for elimination of toxic metal(s) during treatment. Elevated metal levels are associated with diets high in seafood (including shellfish), certain folk medicines, exposure to contaminated water, lead-based and latex paint, cigarette smoke, and industrial exposure.

Workplace Heavy Metals Testing

Quest Diagnostics offers a wide variety of heavy metals-related testing, such as blood lead, cadmium, and zinc protoporphyrin, for workplace compliance with federal workplace safety guidelines.

Pediatric Blood Lead

Children are especially susceptible to the effects of lead poisoning. Blood lead levels in the range of 5-9 µg/dL have been associated with adverse health effects in children aged 6 years and younger. Patient management varies by age and CDC Blood Level Range. Please refer to the CDC website regarding Lead Publications/Case Management for recommended interventions.

Multiple sources of lead exposure exist, with household paint being only one. They include:

- Paint in homes built before 1978
- Water pumped through lead pipes
- Imported items, including clay pots
- Consumer products like toys, candy, makeup and jewelry
- Certain home remedies

The Centers for Disease Control and Prevention (CDC) recommends that all children ages 1–5 get their blood lead levels tested. In the past, blood lead level results below 10mcg/dL were not considered a level of concern.

- A new CDC lower cutoff (5 µg/dL) is now being used to identify children associated with lead-exposure hazards.
- The CDC also recommends laboratory confirmation when point-of-care blood lead results are greater than or equal to 5 µg/dL.

As a result, more children will likely be identified as having elevated blood lead levels.

Examples of heavy metals tested include:

Heavy Metals Tests

Aluminum	Chromium	Mercury	Silicon	Uranium
Antimony	Chromium, Blood	Metals Panel	Silver	Vanadium
Arsenic	Cobalt	Molybdenum	Tellurium	Zinc
Beryllium	Copper	Nickel	Thallium	Zirconium
Bismuth	Gold	Platinum	Tin	
Boron	Lead	Selenium	Titanium	
Cadmium	Manganese	Selenium, RBC	Tungsten	

Clinical Drug Testing

Quest Diagnostics offers a full line of lab-based drug testing products and services that provide the critical information you need to make confident and informed decisions.

We have established a reputation as a national leader in workplace drug testing, with full accreditation by leading healthcare institutions and government agencies. We offer a full range of drug testing options.

Select the product that meets your clinical needs:

- Prescription Drug Monitoring: When prescribing controlled medications, measuring the presence or absence of drugs/drug metabolites can help to monitor patient compliance with prescription drug treatment therapy
- Substance Monitoring: When looking for the presence of substances of misuse or abuse, urine drug testing can help to identify recent drug use
- General Toxicology: When looking for the presence of drugs/drug compounds and synthetic drugs in a patient with an unknown prescription history, or who is responsive or displaying aberrant behavior, a full-spectrum screen may be appropriate

Urine Testing Process

Urine testing, one of the most common screening methods, is an accurate and reliable way to detect drug use that occurred within the past 72 hours. Quest Diagnostics offers a variety of drug test panels and cutoff levels, in addition to individually orderable drug class test options.

Certifications

Quest Diagnostics participates in rigorous laboratory proficiency testing. Our drug testing labs hold and maintain Clinical Laboratory Improvement Amendments of 1988 (CLIA-88), CAP certification and applicable state licensures. We are committed to the highest standards of Six Sigma quality and service.

Clinical Drug Testing - Prescription Drug Monitoring (Pain Management)

Why Monitor Your Patients?

Protect your patients

We recognize that behind every specimen and result there is a human life—a life whose quality may be improved when pain medications are used as you prescribed. For patients with chronic and recurring pain, opioids not only relieve suffering, but also should support normal daily functioning, alleviate stress and improve sleep. Periodic urine drug testing (UDT) can help you to:

- Monitor your patient's treatment plan
- Manage pain therapy safety and availability for your patients by assisting with regulatory compliance

A number of opioid medications have been linked to increasing risks of diversion (passing the drug on to others for sale or use), noncompliance and abuse.

Monitor Drug Use

If you prescribe scheduled medications, including pain medications, balancing the needs of your patients and your practice can be challenging. One step you can take is proactive prescription drug monitoring with UDT, which helps to:

- Supplement patient self-reporting with documented lab results to help
- Identify drug compliance
- Detect illicit substances
- Detect drug substitution or supplementation

Prescription Drug Monitoring Tests and Profiles

Tests with reflex confirmation are available with and without medMATCH®. medMATCH reports compare prescribed drugs to test results. medMATCH report comments are present when drug test results may be the result of metabolism of one or more drugs or when results are inconsistent with prescribed medication(s) listed. medMATCH report comments may be blank when drug results are consistent with prescribed medication(s) listed.

Examples of prescription drug monitoring tests include:

Prescription Drug Monitoring Tests

S = Screen; C = Confirmation; M = medMATCH; Q = Quantitative

Drug Class	Drug/Drug Metabolite Tests	Test Codes Includes		Mass Spectrometry Quantitative	
		S, C	S,C,M	Q	Q,M
Alcohol Metabolites	Ethyl Glucuronide (EtG)	16910	90079	16217	92142
	Ethyl Sulfate Ets				
Amphetamines	Amphetamine	16885	70245	16913	70209
	Methamphetamine				
Amphetamines w d/l isomers	Amphetamine	91589	91590	92483	92484
	Methamphetamine				
	d/l isomer Methamphetamine			90319	
Barbiturates	Amobarbital	16886	70246	16912	70230
	Butalbital				
	Pentobarbital				
	Phenobarbital				
	Secobarbital				
Benzodiazepines	Alphahydroxyalprazolam	16887	70247	16914	70231
	Alphahydroxymidazolam				
	Alphahydroxytriazolam				
	Aminoclonazepam				
	Hydroxyethylflurazepam				
	Lorazepam				
	Nordiazepam				
	Oxazepam				
	Temazepam				
Buprenorphine	Buprenorphine	16901	70249	16213	18998
	Norbuprenorphine				
Buprenorphine w/Naloxone	Buprenorphine	93093		93094	
	Naloxone				
	Norbuprenorphine				
Carisoprodol Metabolite	Meprobamate			16902	18999
Cocaine Metabolite	Benzoylecgonine	16888	70248	16916	90082
Fentanyl	Fentanyl			16900	18996
	Norfentanyl				
Gabapentin	Gabapentin			16904	70205

Prescription Drug Monitoring Tests (cont.)

S = Screen; C = Confirmation; M = medMATCH; Q = Quantitative

Drug Class	Drug/Drug Metabolite Tests	Test Codes Includes		Mass Spectrometry Quantitative	
		S, C	S,C,M	Q	Q,M
Heroin Metabolite	6 Acetylmorphine	16911	90081	90329	90333
Marijuana Metabolite	Marijuana Metabolite	16889	18989	16917	70233
MDMA	MDA	16909	90078	90331	90334
	MDMA				
Meperidine	Meperidine			16905	70206
	Normeperidine				
Methadone	EDDP	16890	18990	16918	70234
	Methadone				
Methylphenidate	Ritalinic Acid			90246	90247
Opiates	Codeine	16891	18991	16298	70237
	Morphine				
	Hydrocodone				
	Hydromorphone				
	Norhydrocodone				
Oxycodone	Noroxycodone	16892	18992	16920	70238
	Oxycodone				
	Oxymorphone				
Phencyclidine	Phencyclidine	16893	18993	16921	90083
Pregabalin	Pregabalin			16908	70208
Propoxyphene	Norpropoxyphene			16894	16922
Tapentadol	Tapentadol			90243	90244
	Nortapentadol				
Tramadol	Desmethyltramadol			16906	70207
	Tramadol				
Tricyclic Antidepressants	Amitriptyline			16903	70204
	Nortriptyline				

Drug Testing/Toxicology

Profiles with reflex confirmation are available with and without medMATCH®. Drug screen profiles include the following screening drug classes (and confirmatory drug and/or drug metabolites):

S = Screen; C = Confirmation; M = medMATCH; Q = Quantitative

Profile Number	Base			Profile 1					Profile 2		
Profile Codes	16259	16457	16260	92450	92458	92466	92451	92459	92453	92461	92467
Includes	S,C,M	S,C	S	S,C,M	S,C	S	S,C,M	S,C	S,C,M	S,C	S
Amphetamines				•	•	•		•			
Amphetamines Reflex d/l isomer							•	•			
Barbiturates				•	•	•	•	•			
Benzodiazepines	•	•	•	•	•	•	•	•			
Cocaine Metabolite	•	•	•	•	•	•	•	•			
Marijuana Metabolite				•	•	•	•	•			
Methadone				•	•	•	•	•	•	•	•
Opiates	•	•	•	•	•	•	•	•	•	•	•
Oxycodone	•	•	•	•	•	•	•	•	•	•	•
Phencyclidine				•	•	•	•	•			

Profile Number	Profile 3			Profile 4			Profile 5		Profile 6		Profile 7		Profile 8	
Profile Codes	16854	16456	16855	92454	92462	92468	92455	92463	92456	92464	92457	92465	92489	92490
Includes	S,C,M	S,C	S	S,C,M	S,C	S	S,C,M	S,C	S,C,M	S,C	S,C,M	S,C	S,C,M	S,C
Alchohol metabolites /ETG									•	•	•	•	•	•
Amphetamines	•	•	•	•	•	•			•	•	•	•	•	•
Amphetamines Reflex d/l isomer							•	•						
Barbiturates				•	•	•	•	•	•	•	•	•		
Benzodiazepines	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Buprenorphine													•	•
Cocaine Metabolite	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Heroin Metabolite									•	•	•	•	•	•
Marijuana Metabolite	•	•	•				•	•	•	•	•	•	•	•
MDMA/MDA													•	•
Methadone				•	•	•	•	•	•	•	•	•		
Opiates	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Oxycodone	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Phencyclidine				•	•	•			•	•				

Clinical Drug Testing - Substance Monitoring

Examples of clinical toxicology substance monitoring drug class tests include:

Substance Monitoring		
Alcohol, Ethanol	Cocaine Metabolite	Opiate (codeine, morphine, hydrocodone, hydromorphone)
Amphetamines	Heroin Metabolite	Oxycodone
Barbiturates	Marijuana Metabolite	Phencyclidine
Benzodiazepines	MDMA	Propoxyphene
Buprenorphine	Methadone	

Please note:

1. All reflex tests will be performed at an additional charge.
2. Urine specimens for drug testing must NOT have preservative added.
3. These results are for medical treatment only; analysis was performed as non-forensic testing.
4. Contact the laboratory for availability and test codes.

Clinical Drug Testing – General Toxicology

Drug Testing, General Toxicology (Blood, Urine, or Serum)

Test code(s)	Specimen Types
91358	Blood
91359	Urine
91360	Serum

If a compound of interest is not listed, please contact your local Quest Diagnostics laboratory, as new compounds will be added continually based upon clinical need and availability of drug standards.

Examples of drugs and/or metabolites included in testing follow. The current list and other information including limits of detection can be accessed at http://education.Quest Diagnostics.com/system/FAQ101DL.pdf.

General Toxicology Drug Testing		
2-Hydroxyethylflurazepam	Fentanyl	Oxycodone
6-Hydroxy Buspirone	Flunitrazepam	Oxymorphone
6-Monoacetylmorphine	Fluoxetine	Paroxetine
7-Aminoclonazepam	Fluphenazine	Phencyclidine
7-Aminoflunitrazepam	Flurazepam	Pentazocine
Acetaminophen	Gabapentin	Pentobarbital
Acetyl Fentanyl	Hydrocodone	Phenobarbital
Alprazolam	Hydromorphone	Phentermine
Amitriptyline	Hydroxybupropion	Phenylpropanolamine
Amobarbital	Hydroxyzine	Phenytoin
Amoxapine	Ibuprofen	Pregabalin
Amphetamine	Imipramine	Procainamide
Atenolol	Ketamine	Promazine
Atropine	Lamotrigine	Promethazine
Benzoylecgonine	Lidocaine	Propofol-B-D-glucuronide

General Toxicology Drug Testing (*cont.*)		
Brompheniramine	Lorazepam	Propoxyphene
Buprenorphine	Loxapine	Propranolol
Butabarbital	Maprotiline	Protriptyline
Butalbital	Methylenedioxy-amphetamine	Pseudoephedrine
Caffeine	Methylenedioxy-ethylamphetamine	Pyrilamine
Carbamazepine-10, 11-Epoxide	Methylenedioxy-methamphetamine	Quetiapine
Carbamazepine	MEGx	Quinidine
Carisoprodol	Meperidine	Quinine
Chlordiazepoxide	Meprobamate	Risperidone
Chlorpheniramine	Mesoridazine	Salicylic Acid
Chlorpromazine	Methadone	Secobarbital
Citalopram	Methamphetamine	Sertraline
Clomipramine	Methocarbamol	Tapentadol
Clonazepam	Methylphenidate	Temazepam
Clozapine	Metoprolol	THC-COOH
Cocaethylene	Midazolam	Theophylline
Cocaine	Mirtazapine	Thioridazine
Codeine	Morphine	Topiramate
Cotinine	N-acetylprocainamide	Tramadol
Cyclobenzaprine	Naproxen	Trazodone
Desipramine	Norbuprenorphine	Trifluoperazine
Desmethylclozapine	Nordiazepam	Trimethoprim
Desmethyldoxepin	Norfentanyl	Trimipramine
Dextromethorphan	Norhydrocodone	Tripelennamine
Dextrorphan	Norketamine	Venlafaxine
Diazepam	Normeperidine	Verapamil
Dihydrocodeine	Noroxycodone	Zolpidem
Diltiazem	Noroxymorphone	Zolpidem-Phenyl-4-COOH
Diphenhydramine	Norpropoxyphene	
Disopyramide	Nortriptyline	
Doxepin	Norverapamil	
Doxylamine	O-Desmethylvenlafaxine	
Duloxetine	Olanzapine	
EDDP	Oxazepam	
Ephedrine/Pseudoephedrine	Oxcarbazepine	

Please note:

1. Serum specimens for drug testing must be collected in a plain, red-top tube and NOT in serum separator tubes (SST®s).
2. Collect a fluoride gray-top tube.
3. Urine specimens for drug testing must NOT have preservatives added.
4. These results are for medical treatment only; analysis was performed as non-forensic testing.
5. Contact the laboratory for availability.

For additional test information, please visit our online test directory at QuestDiagnostics.com/TestDirectory

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