

# Specimen Collection, Handling, and Transport

## Electronic Resources for Testing and Specimen Collection

### Quality Results Depend on Quality Specimens

Accurate laboratory results begin with proper specimen collection and preparation. With a comprehensive menu of more than 3,500 tests, DLO performs testing on a wide variety of specimen types. Correct collection and handling practices help ensure reliable results and support optimal patient care.

### Specimen Collection Requirements

Refer to the digital resources below for detailed instructions on patient preparation and specimen collection procedures for individual tests.

- **Test Directory** - Comprehensive information on all tests offered through DLO and Quest Diagnostics can be found at <https://testdirectory.questdiagnostics.com/test/home>
- **DLO Virtual Test Guide** - Collection and preparation guidance for frequently ordered and DLO-specific tests can be found at <https://www.dlolab.com/virtual-test-guide>
- **Directory of Services** - Testing and specimen collection information, including standard Quest policies and procedures can be found at <https://www.questdiagnostics.com/healthcare-professionals/test-directory>
- **IntelliTest Manager™** - Online resource for new test information, updates, and changes can be found at <https://intellitestmanager.questdiagnostics.com/>
- **Quantum™ Solutions** - Displays specimen collection requirements at the time of test ordering. <https://www.questdiagnostics.com/healthcare-professionals/lab-tools-it-systems/quantum-lab-services-manager>

### Specimen Volume, Collection Device(s), and Temperature

Specimen requirements may include collection volume, approved transport containers, and temperature guidelines. An adequate specimen volume must be submitted to allow for both initial analysis and any required confirmatory testing. Insufficient specimen volume may result in testing delays or inability to perform the requested analysis.

### Patient Preparation

Many laboratory tests require specific patient preparation to ensure accurate results. Refer to the digital tools listed above or contact Customer Service for clarification when needed.

For most serum, plasma, and whole blood testing, a **fasting specimen is preferred**. Non-fasting specimens may contain lipids that can interfere with certain analytical procedures.

### Supplies

Specimen collection supplies provided by DLO are intended only for the collection and transport of specimens to DLO for testing. These supplies must not be used for storage or disposal of biological materials, sharps, or for any purpose unrelated to specimen collection for DLO processing.

Specimens collected or transported in **expired collection or transport devices may be rejected**. Regularly review inventory to ensure supplies are within their expiration dates.

### Health and Safety Precautions

All specimens must be handled safely and in accordance with applicable laws, regulations, and professional guidance. Safety information is available through the [Occupational Safety and Health Administration \(OSHA\)](#) and the [Centers for Disease Control and Prevention \(CDC\)](#).

#### Additional Safety Guidelines:

- Do not submit specimens with leakage or contaminated collection devices.
- Never freeze specimens in glass tubes.
- Do not include needles or other sharps in specimen packaging.

**DLO reserves the right to refuse any specimen transport that presents a safety risk to employees or facilities.**



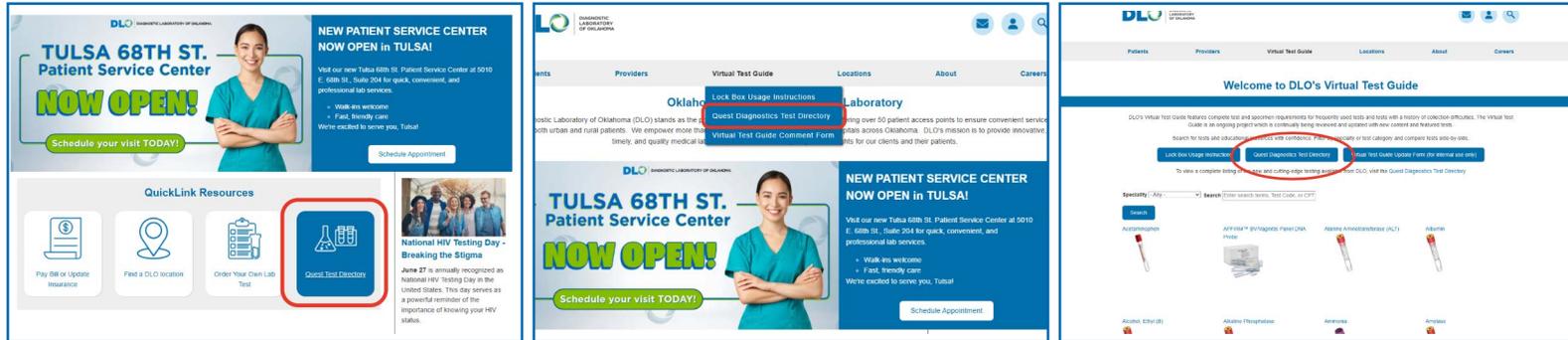
# Specimen Collection, Handling, and Transport

## Electronic Resources for Testing and Specimen Collection - Quest Diagnostics' Test Directory

### Quest Test Directory

#### Improved Access to the Latest Testing Information

Quest Diagnostics' [Test Directory](#) is a comprehensive resource available to healthcare providers and their staff for current testing information. Links to the Test Directory are accessible on the [dlolab.com](#) homepage by clicking on the Quest Test Directory button in the QuickLink Resources section, within the Virtual Test Guide menu drop-down, and on the Virtual Test Guide page.



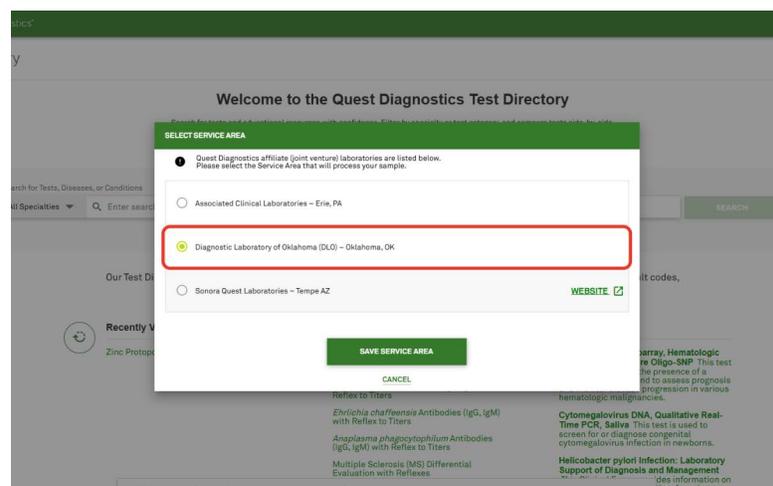
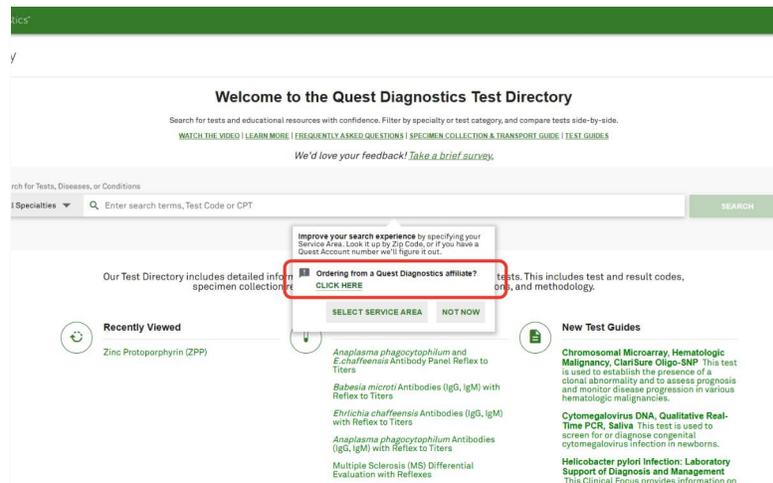
### Navigating the Quest Test Directory

During your first visit to the Test Directory, select "Click Here" under "Ordering from a Quest Diagnostics affiliate," then choose DLO to save your service area. Once selected, all future searches will automatically display test information specific to DLO.

The Quest Test Directory provides detailed information for all tests available through DLO and Quest Diagnostics, including:

- Dedicated search engine for Test Center
- DLO/Quest test names
- Test code(s)
- Billing CPT code(s)
- Reflex and additional testing criteria
- Methodology and limitations
- Reference Ranges
- Clinical Significance
- Links to FAQs, testing algorithms, reference materials, and related articles
- Preferred and acceptable alternative specimen types
- Direct links to related sections of [questdiagnostics.com](#)

This tool helps ensure accurate ordering, appropriate specimen collection, and access to the most up-to-date laboratory testing guidance.



# Specimen Collection, Handling, and Transport

## Electronic Resources for Testing and Specimen Collection - Virtual Test Guide (VTG)

### DLO's Premium Laboratory Testing Reference Tool

The DLO Virtual Test Guide (VTG) is an innovative, no-cost online resource designed to provide healthcare providers with comprehensive testing information, specimen guidelines, and visual collection instructions. Available at [dlolab.com](http://dlolab.com), the VTG offers detailed guidance for frequently ordered tests as well as tests with a history of collection or submission challenges.

The VTG homepage can be accessed directly through the navigation menu on [dlolab.com](http://dlolab.com). Tests are listed alphabetically by name, and filtering options allow users to sort by specialty or alphabetical range for faster navigation.

### Search and Navigation Features

The VTG includes a dedicated search engine that allows users to search by:

- Keywords
- Disease states
- Test Names
- Test Numbers
- Specimen collection devices

Search results display all relevant tests containing any portion of the entered criteria and are ranked by percentage of match to help users quickly locate the most applicable information.

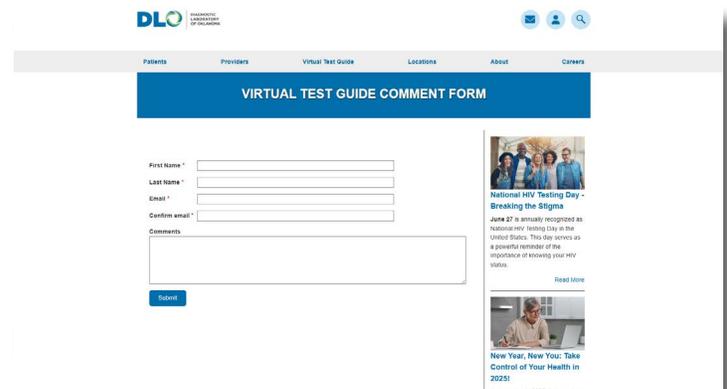


### Specimen Handling Guidance

The VTG provides clear instructions for proper specimen storage and transport, including temperature segregation requirements. **Lock Box Usage** guidelines outline the necessary steps to maintain specimen integrity until pickup by a DLO Route Service Representative (RSR).

For tests not found within the VTG, providers can reference **Quest's Test Directory**, which contains information on more than 3,500 tests available through DLO and Quest Diagnostics.

Users may also submit questions or feedback through the [Virtual Test Guide Comment Form](#), which routes inquiries directly to the DLO VTG Team for review and response.



# Specimen Collection, Handling, and Transport

## Electronic Resources for Testing and Specimen Collection - Virtual Test Guide (VTG)

### Information Available Within the VTG

The Virtual Test Guide is designed to support accurate ordering and specimen collection by providing:

- DLO/Quest test name
- Images of collection device(s)
- Test code(s)
- Billing CPT code(s)
- Reflex and additional testing criteria
- Methodology and limitations
- Reference Ranges
- Clinical Significance
- Links to FAQs, algorithms, reference materials, and related articles
- Alternative test names
- Complete specimen and collection device listings
- Associated clinical specialties

### Collection and Transport Details

Each test entry may also include:

- Easy-to-understand collection instructions and clinical explanations
- Collection device images with DLO supply order numbers
- Preferred specimen type
- Illustrated collection instructions, when available
- Specimen storage and transport requirements
- Approved transport containers
- Transport temperature guidelines
- Specimen stability timeframes
- Rejection criteria

The Virtual Test Guide centralizes the information providers need to make informed clinical and operational decisions, helping ensure accurate specimen collection and reliable laboratory results.

The screenshot shows the DLO Virtual Test Guide interface. At the top, there is a navigation bar with links for Patients, Providers, Virtual Test Guide (selected), Locations, About, and Careers. Below the navigation bar is a large blue header with the text "CULTURE, THROAT". Underneath the header is an image of a transport swab. The main content area contains the following information:

- Test code:** 394
- CPT code(s):** 87070
- Includes:** If culture is positive, identification will be performed at an additional charge (CPT code(s): 87077 or 87140 or 87143 or 87147 or 87149). Antibiotic susceptibilities are only performed when appropriate (CPT code(s): 87181 or 87184 or 87185 or 87186).
- Methodology:** Bacterial culture, Aerobic routine isolation and Identification procedures; Antibiotic susceptibility testing (when appropriate)
- Limitations:** Test does not differentiate between patient with acute infection or an asymptomatic carrier.
- Clinical significance:** The significance of any isolate in pure or mixed culture must be assessed with respect to the source cultured, the organism's pathogenic potential, the possibility of colonization versus infection, and the number of other organisms recovered in the same culture. This test may be useful in the detection of agents of epiglottitis and thrush and a. Haemolyticum.
- Alternative name(s):** Throat culture and susceptibility
- Collection Guide**
- Supply:** #S07 TransPorter® Transport Swab, Liquid Amies, Dual Swab
- Preferred Specimen:** Collect throat specimen using BD double swab in Amies Liquid
- 1.** Ask the patient to open their mouth and say "AH".
- 2.** Gently depress the tongue with a tongue depressor.
- 3.** Guide the swab over the tongue to the posterior pharynx.
- 4.** Gently swab the mucosa behind the uvula and between the tonsillar pillars back and forth.
- 5.** Remove the swab without touching the tongue, uvula, or lips.
- Transport container:** Double swabs in Amies liquid
- Transport temperature:** Room temperature
- Specimen stability:** Deliver to the microbiology lab as soon as possible.  
Room temperature: 2 days
- Reject criteria:**
  - Expired transport device
  - Frozen
  - Request for anaerobic culture
- For additional supply or collection device information, please contact DLO's Customer Service at (800) 851-2517, option 2.**
- The CPT codes provided 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 Payor being billed.**
- Infectious Disease**
- Primary Care**
- A-C Test Listings**
- Additional names**
- Throat culture and susceptibility**
- CPT Code(s)**
- 87070**
- Test Code**
- 394**

At the bottom of the page, there is a footer with the DLO logo and a navigation bar containing links for Sitemap, Privacy Policy, Notice of Privacy Practices, Non-Discrimination Notice / Language Assistance, DO NOT SELL MY PERSONAL INFORMATION, Privacy, Cookies Notice, Privacy Shield, and Terms.

# Specimen Collection, Handling, and Transport

## Electronic Resources for Testing and Specimen Collection - IntelliTest Manager™

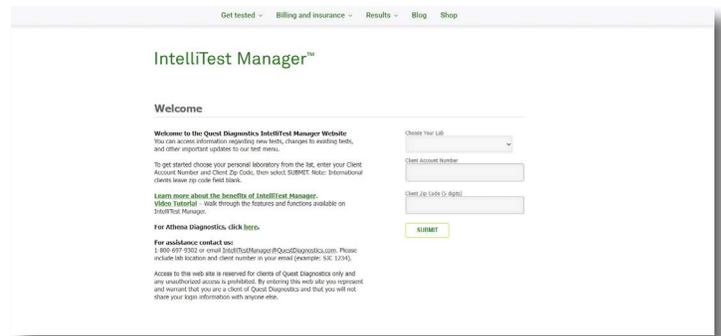
### Easily Manage the Test Changes Most Important to You

IntelliTest Manager™ is a flexible online tool that provides convenient access to new test information, updates, and changes based on your organization's specific account utilization.

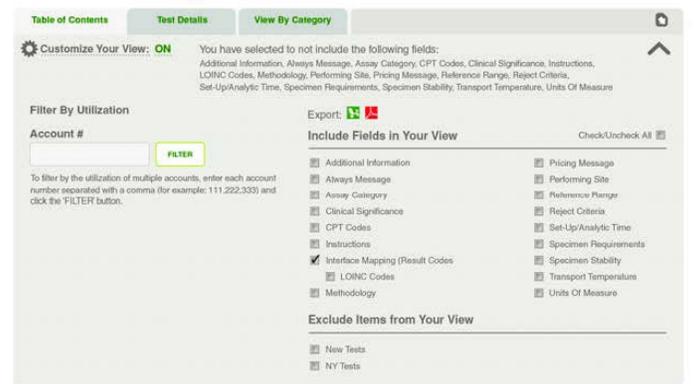
Clients can access the tool at [intellitestmanager.com](http://intellitestmanager.com) by logging in with their client number and 5-digit ZIP code.

### Key Features

- Filter test updates by utilization across multiple client accounts
- Browse and perform keyword searches across all updated tests
- Manage recipients for laboratory update email notifications
- Export data in formats compatible with your EMR or LIS vendor specifications
- Customize views by selecting or hiding data fields
- Sort information by criteria such as:
  - » New Tests
  - » CPT codes
  - » Specimen requirements
  - » Transport temperature
  - » Specimen Stability
  - » Reference ranges
  - » Methodology
- View test change documentation online, 24/7
- Access detailed test update histories with effective date ranges
- Review specimen requirements and effective dates for updated tests
- Export and download lists of updated tests in Excel or PDF format
- Receive update notifications via email
- Access interface mapping information, including LOINC codes
- View pricing notifications related to test code changes or price matching
- Browse and print information on newly available tests



Homepage



Customize your view

### Support and Assistance

For questions or technical support:

- **Email:** [intellitestmanager@questdiagnostics.com](mailto:intellitestmanager@questdiagnostics.com)
- **Phone:** 1-800-697-9302 (Option 1, then Option 6)
- **Video Tutorial:** <https://www.questdiagnostics.com/business-solutions/hospitals-health-systems/intellitest-manager-video-tutorial>

# Specimen Collection, Handling, and Transport

## Proper Blood Collection & Preparation

### Quality Testing Starts with Proper Specimen Collection and Preparation

Accurate collection and preparation of patient blood specimens are essential for minimizing errors, preventing inaccurate results, and reducing delays or cancellations in testing. The following instructions provide details on the most commonly used evacuated blood collection tubes for specimens sent to the Diagnostic Laboratory of Oklahoma (DLO).

This guide includes information on the additives present in each tube, the required number of inversions, and the recommended order of draw. Please note that the order of draw and the number of inversions are applicable only to specimens collected in plastic tubes.

### Order of Draw

To ensure a blood specimen is suitable for testing, it must be collected in a specific sequence. The following *Order of Draw* procedure must be followed to obtain an appropriate specimen and to prevent cross-contamination from additives that may be present in previously filled tubes or containers.

#### Blood Collection Tube Guidelines

- Blood Culture Bottles**  
 Color: Varies  
 Inversions: 8–10 gentle inversions  
 Volume: 8–10 mL
- Citrate Tube (Coagulation) – Light Blue**  
 Inversions: 3–4 gentle inversions  
**Critical Volume Requirement:** The tube **must** be filled to the designated volume to ensure accurate results.  
**Special Collection Instruction:** When using a winged blood collection set (butterfly needle) and the light blue citrate tube is the first tube drawn, a discard tube must be collected first. This discard tube fills the tubing dead space and preserves the correct blood-to-additive ratio in the citrate tube. The discard tube should be filled with 5–10 mL of blood.
- Serum Separator Tube – Red (No Gel)**  
 Inversions: 8–10 gentle inversions  
 Volume: 6 mL
- Serum Separator Tube – Red/Yellow (Gel)**  
 Inversions: 8–10 gentle inversions  
 Volume: 3.5 mL or 8.5 mL
- Heparin Tube – Green or Tan**  
 Inversions: 8–10 gentle inversions  
 Volume: 4.5 mL
- EDTA Tube – Lavender**  
 Inversions: 8–10 gentle inversions  
 Volume: 4 mL or 10 mL
- EDTA (K2) Tube – Royal Blue**  
 Inversions: 8–10 gentle inversions  
 Volume: 6 mL
- Sodium Fluoride (Glucose) Tube – Gray**  
 Inversions: 8–10 gentle inversions  
 Volume: 5 mL or 10 mL

*Note: All inversions should be performed gently to avoid hemolysis.*

| TUBE/COLOR   | ADDITIVE                       | INVERSIONS | VOLUME                                  |
|--|--------------------------------|------------|---|
| <br>Clear/White  | Blood Cultures                 | 8-10       | 8-10mL                                  |
| <br>Light Blue   | Sodium Citrate                 | 8-10       | See <i>Critical Volume Requirements</i> |
| <br>Red         | No Gel, Serum (Clot Activator) | 8-10       |   |
| <br>Red/Yellow | Gel, Serum (Clot Activator)    | 8-10       | 8.5mL<br>3.5mL                          |
| <br>Green      | Lithium Heparin                | 8-10       | 4.5mL                                   |
| <br>Lavender   | EDTA                           | 8-10       | 4mL<br>10mL                             |
| <br>Royal Blue | (K2) EDTA                      | 8-10       | 6mL                                     |
| <br>Gray       | Sodium Fluoride (Glucose)      | 8-10       | 5mL<br>10mL                             |

SPECIMEN MUST BE COLLECTED IN THE LISTED SEQUENCE TO PREVENT CROSS-CONTAMINATION (top to bottom)

# Specimen Collection, Handling, and Transport

## Proper Blood Collection & Preparation

### Whole Blood

Collect whole blood according to instructions provided for the individual test. Thoroughly mix the blood with the additives by *gently* inverting the tube according to the instructions in chart above (8-10 times in the case of light blue-top (sodium citrate) tubes). Maintain the specimen at room temperature or on cool packs before submitting to the laboratory unless instructed otherwise by the specimen requirements. **Never freeze whole blood unless specifically instructed in the specimen requirements.**

For cool packs stored in the freezer, be sure to allow enough 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 inside a frozen specimen pouch.** You can place the specimen directly on a cold pack by placing a rubber band around the specimen and the cold pack, ensuring they're secured together, or you can place the specimen in a separate bag with the frozen cold pack included in the bag.

### Serum

Please check individual specimen requirements for restrictions. When using a serum separator tube, follow these instructions:

1. Perform venipuncture as with any other blood collection device.
2. Invert the tube gently no more than ten (10) times. Further inversion may cause alterations in sample integrity.
3. 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 to 45 minutes but not longer than one (1) hour before centrifugation.
4. Centrifuge for 10 minutes at 1100-1300 RCF(g)\* within one (1) hour of collection. Fixed-angle centrifuge should spin for 15 minutes. Transfer the serum to a plastic screw-cap vial for transport to the laboratory.

**Note:** Do not use serum separator tubes for therapeutic drug monitoring or toxicological analysis. The plastic serum separator material extracts lipophilic substances (most drugs), resulting in a falsely low drug concentration result. Instead, collect the specimen in a plain red-top tube containing no anticoagulants or preservatives. Transfer the serum with a pipette to a plastic vial for transport to the laboratory. Serum should be clear and free from all red cells. ([See diagram 1.2 on next page](#))

### Plasma

Plasma contains fibrinogen and other clotting factors when separated from the red blood cells. Evacuated tubes used to collect plasma specimens contain anticoagulant and, frequently, a preservative. The additive in each tube is specified on the label and tube stoppers are color coded according to the additive present. Consult the individual test specimen requirements to determine the correct additive/tube to use. Indicate that the specimen is plasma on the label for transport and test requisition.

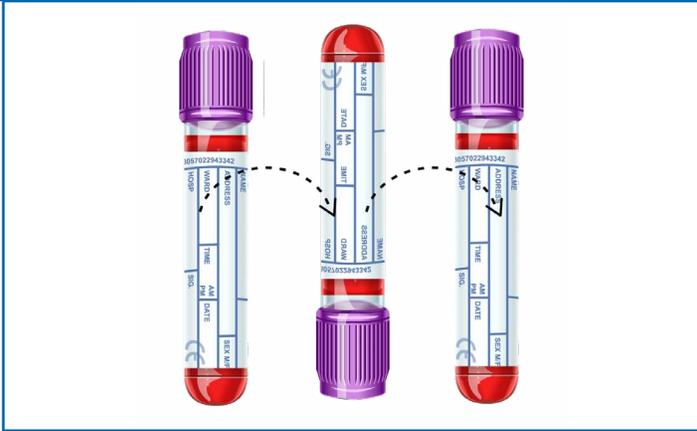
When plasma is required, follow these instructions:

1. Refer to the Test Directory or VTG for appropriate volume of blood.

# Specimen Collection, Handling, and Transport

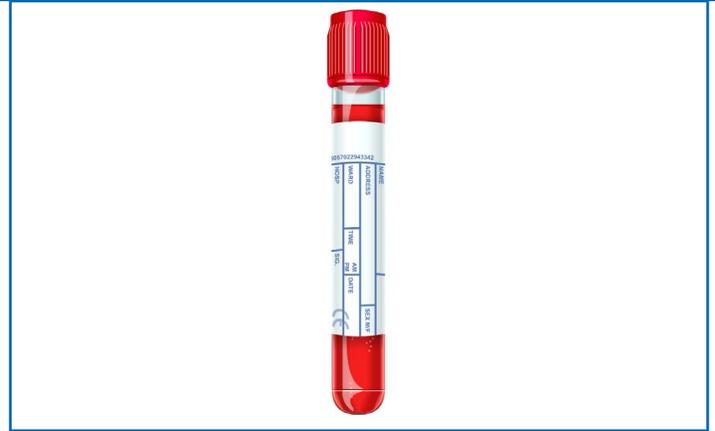
## Proper Blood Collection & Preparation

### For all blood collection



After collection, gently invert each blood tube the required number of times as indicated to prevent clotted specimens (CBC)

### For serum separator tubes only (diagram 1.2)



Allow specimen to clot upright for 30 - 45 minutes



### Centrifuge instructions

- Swing-head centrifuge: Spin at full speed (1100 - 1300g) for 10 minutes.
- Fixed-angle centrifuge: Spin at full speed (1100-1300g) for 15 minutes.
- Always ensure tubes are properly balanced before centrifuge.



When applicable, use a pipette to transfer the serum into a clear transport vial. Clearly label the vial with the specimen type and two patient identifiers.

# Specimen Collection, Handling, and Transport

## Factors That Compromise Specimen Integrity/Quality

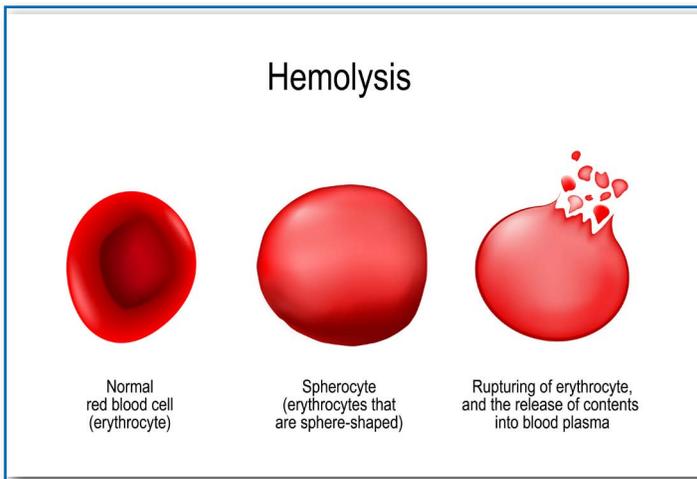
### Hemolysis

Hemolysis occurs when the membrane of red blood cells (erythrocytes) is disrupted, causing hemoglobin and other intracellular components to leak into the serum or plasma. A hemolyzed specimen typically appears light pink to bright red rather than the normal straw colored appearance. Even slight hemolysis can significantly alter certain laboratory results—most notably potassium and lactate dehydrogenase (LDH) levels. Specimens that are moderately or grossly hemolyzed may be rejected.

#### Common Causes of Hemolysis

- Use of a needle that is too small for specimen collection
- Difficult or traumatic venipuncture
- Refrigerating red-top tubes before allowing at least 30 minutes at room temperature for complete clot formation
- Vigorous shaking or improper mixing of tubes
- Exposure to excessive heat or storage in a refrigerator that is too cold

Proper collection technique, gentle inversion, and appropriate storage conditions are essential to maintain specimen integrity and ensure accurate test results.

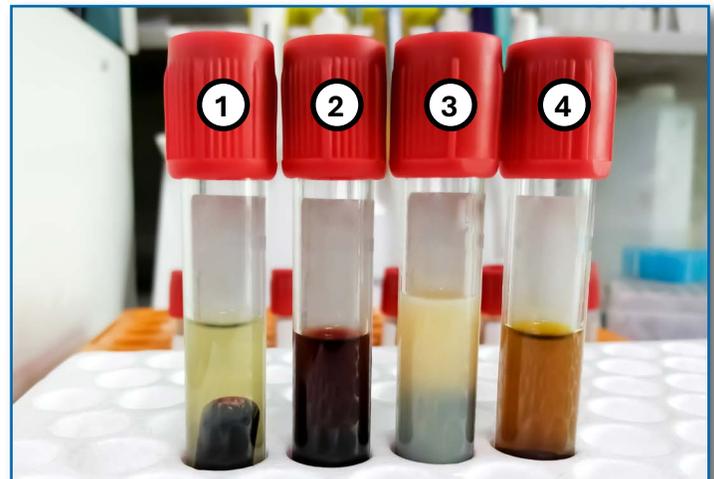


### Hyperbilirubinemia (Icteric Specimens)

Icteric serum or plasma ranges in color from dark to bright yellow rather than the normal straw appearance. Elevated bilirubin levels may interfere with certain laboratory test results. When an icteric specimen is received, an additional specimen may be requested to ensure accurate and diagnostically reliable results.

### Lipemia / Turbidity

Lipemia refers to the presence of excessive lipids (fats) in the blood, which can cause serum or plasma specimens to appear turbid, cloudy, or milky. Moderately to severely lipemic specimens may interfere with or invalidate certain laboratory test results. Lipemia is commonly caused by a recent meal prior to blood collection, though bacterial contamination may also contribute to specimen cloudiness. To reduce the risk of lipemia and ensure accurate results, patients should follow standard fasting guidelines and refrain from eating or drinking anything other than water for 8–12 hours (or up to 12–16 hours, when specified) before specimen collection.



1. Normal 2. Icteric 3. Lipemic 4. Hemolyzed

### Quantity Not Sufficient (QNS)

Each assay requires a minimum specimen volume to ensure accurate testing. If the submitted specimen does not meet the required minimum volume, the test will not be performed.

For serum or plasma specimens, please collect more than the stated minimum requirement—ideally at least 2.5 times the requested volume—to allow for processing and potential repeat testing.

If there is a concern that the specimen volume may be insufficient, please indicate the order of test priority on the requisition.

### Radioisotope Interference

Diagnostic procedures or treatments involving radioactive compounds may interfere with or invalidate radioisotope assay results. When a radioisotope assay is anticipated, specimens should be collected prior to administering radioactive materials to the patient.

### Specimens Collected with Expired Supplies

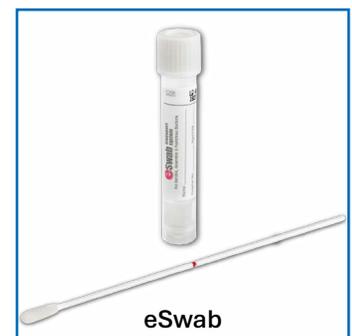
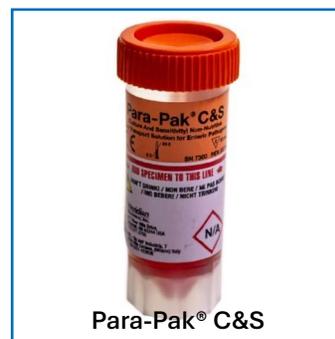
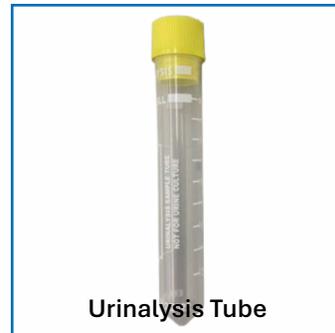
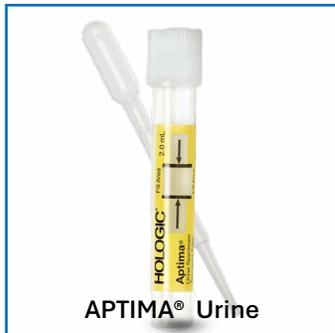
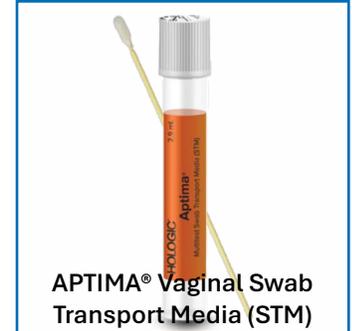
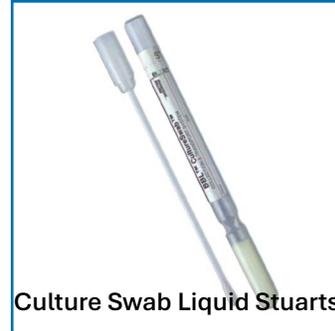
Please routinely verify that all collection and transport supplies are within their expiration dates. Specimens submitted in expired collection or transport tubes will be rejected by DLO.

# Specimen Collection, Handling, and Transport

## Microbiology Collection Device(s)

This chart provides the test code, test name, transport medium, and transport temperature for commonly ordered microbiology tests, along with images of the available transport devices.

Before collecting a specimen, please verify the expiration date on the collection medium. Expired swabs or containers may result in specimen rejection. All specimens must be clearly labeled with the patient's full name, date of collection, and the initials of the individual collecting the specimen.



# Specimen Collection, Handling, and Transport

## *Urine Collection Device(s) & Transport Temperature*

### Random Urine Collection

The normal composition of urine varies considerably during a 24-hour period. Most reference values are based on analysis of the first morning voided urine. This specimen is preferred because it has a more uniform volume and concentration, and its lower pH helps preserve the formed elements.

To reduce contamination, the specimen submitted for urinalysis should be a clean catch “mid-stream” sample.

Submit a first morning voided specimen whenever possible. 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 label of the container. For urine chemistry tests, the 24-hour urine collection is the usual standard. For some of these tests, there are dietary restrictions that must be observed. For others, there are drugs that must be avoided prior to obtaining the specimen. This information is included as part of the specimen requirements for the individual tests in the Test Directory.

**Note:** Specimens for Urinalysis must be submitted in a yellow/red swirl-top preservative tube or yellow-capped UA pour-off tube. See Urinalysis test for specific information.

If a frozen specimen is required, freeze the urine immediately after collection. Pack in dry ice for transport to the laboratory.

### 24-Hour Urine Collection

Because proper collection and preservation of 24-hour urine specimens are essential for accurate test results, patients should be carefully instructed in the correct procedure.

**Important Note:** For those analyses requiring the addition of 6N HCl, add the acid at the start of collection. Have the patient collect each voiding in a smaller container and carefully pour the urine into the 24-hour container to avoid any possible acid burns to the patient (make sure the patient understands the hazard presented by the acid preservative). Be sure to mix urine thoroughly before removing the aliquot.

Follow these instructions if someone other than the patient is to collect the urine:

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 Quest Diagnostics 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 the General Test Listing section for any information on required preservatives.)

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 it as soon as possible to the 24-hour container.
5. 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.
6. Mix the contents of the container gently but thoroughly. Examine to ensure that the contents appear homogeneous.
7. Measure and note the total volume of urine.
8. Transfer the required aliquot to the plastic screw-cap plastic containers provided by Quest Diagnostics.
9. Record the total 24-hour urine volume on the specimen container and on the Test Requisition before sending to the laboratory.
10. If required, refrigerate the aliquot until it can be sent to the laboratory. For frozen specimens, freeze before packing in dry ice for transport. (See section on FROZEN SPECIMENS.)
11. Ensure the lid is properly tightened to prevent leakage.

Follow these instructions if the patient is to collect the urine:

**Important Note:** For those analyses requiring the addition of 6N HCl, add the acid to the 24-hour container at the start of collection. Have the patient collect each voiding in a smaller container and carefully pour the urine into the 24-hour container to avoid any possible acid burns to the patient (make sure the patient understands the hazard presented by the acid preservative). Be sure to mix urine thoroughly before removing the aliquot.

Give the patient the clean, labeled container provided by Quest Diagnostics, and instruct the patient not to remove any sponge or 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.

- Unless the physician indicates otherwise, instruct the patient to maintain the usual amount of liquid intake, but to avoid alcoholic beverages.
- Instruct the patient to carry out steps 3-5 above and return the 24-hour collection to office for specimen pick-up.

# Specimen Collection, Handling, and Transport

## Urinalysis & Urine Culture Specimen Collection Guide

| Test Name   | Test Code | Collection Container  | Patient Instructions  | Pour-off Container(s)   | Special Notes   |   |   |   |  |  |   |   |
|---|-----------|---|---|---|---|---|---|---|--|--|---|---|
| <b>Urinalysis (UA):</b>                                 |           |    | <b>Midstream:</b><br>Allow a small amount of urine to pass into toilet. Midway through urination, place container in the flow of urine to catch a sample. Finish voiding in toilet. |  | Transfer urine from pediatric bags to a clean container, then to pour-off container, dispose of the bag while following hygiene guidelines. |   |   |   |  |  |   |   |
| UA, Complete  | 5463      |   |   |   |   |   |   |   |  |  |   |   |
| UA, Macroscopic (dipstick)                              | 6448      |   |   |   |   |   |   |   |  |  |   |   |
| UA, w/Reflex to microscopic                             | 7909      |   |   |   |   |   |   |   |  |  |   |   |
| UA, Microscopic   | 8563      |   |   |   |   |   |   |   |  |  |   |   |
| UA, Screen  | 7048      |   |   |   |   |   |   |   |  |  |   |   |
| <b>Urine Culture (UCx):</b>                             |           |    | <b>Clean Catch Midstream:</b> Wash hands. Use one (1) soap towelette, then three (3) saline towelettes. Follow midstream instructions listed above.                                 |  | No additional tests can be conducted using this tube.   |   |   |   |  |  |   |   |
| UCx (Routine)   | 395       |   |   |   |   |   |   |   |  |  |   |   |
| <b>Urinalysis AND Urine Culture:</b>                    |           |   |   |   |   |  | <b>Clean Catch Midstream:</b> Wash hands. Use one (1) soap towelette, then three (3) saline towelettes. Follow midstream instructions listed above. |  | For pediatric and renal abnormality patient samples, under 5 mL, please send a refrigerated specimen in a sterile cup labeled "Pediatric and Renal Abnormalities." |  |   |   |
| UA, Complete w/ Reflex to Culture Culture & Sensitivity | 3020      |   |   |   |   |   |   |   |  |  |   |   |
| Chlamydia trachomatis RNA, TMA                          | 11361     |   |   |   |   |   |   |   |  | <b>First-Catch:</b> Should not urinate within 1 hour before collecting sample. Collect first passing of urine into container provided. 20-30 mls of urine is needed to test. |  | Using the provided pipette, add urine until the liquid level is between the two black lines |
| Neisseria gonorrhoeae RNA, TMA,                         | 11362     |   |   |   |   |   |   |   |  |  |   |   |
| Chlamydia/N. Gonorrhoeae/ TMA                           | 11363     |   |   |   |   |   |   |   |  |  |   |   |
| Albumin, Random Urine w/ Creatinine                     | 6517      |  | Random Urine Collection: Hold container a few inches from urethra and urinate until container is half full. Finish voiding in toilet. Replace lid and screw tightly.                | <b>*Keep in container</b>   | Cover the container with Parafilm lid to prevent leakage during transport. The specimen volume must remain between 1mL (min) and 5mL (max). |   |   |   |  |  |   |   |
| Osmolality Urine  | 678       |   |   |   |   |   |   |   |  |  |   |   |
| Random Urine w/Creatinine                               | 8459      |   |   |   |   |   |   |   |  |  |   |   |
| Protein, Total, Random Urine w/Creatinine               | 1715      |   |   |   |   |   |   |   |  |  |   |   |
| UDS-HOSPITAL  | 59084     |   |   |   |   |   |   |   |  |  |   |   |
| Protein, Total, 24-hr Urine w/ Creatinine               | 757       |   |   |   |   |   |   |   |  |  |   |   |
| Electrophoresis & Total Protein, Random Urine           | 8525      |   |   |   |   |   |   |   |  |  |   |   |
| hCG, Qualitative, Urine                                 | 396       |   |   |   |   |   |   |   |  |  |   |   |
| STI Panel, QL, PCR                                      | 97641     |   |   |   |   | <b>*Keep in container</b>   | Cover the container with Parafilm lid to prevent leakage during transport. The specimen volume must remain between 1mL (min) and 5mL (max).         |   |  |  |   |   |
| Vaginosis/Vaginitis Panel, QL, PCR                      | 97712     |   |   |   |   |   |   |   |  |  |   |   |
| Candidiasis Panel, Qual, PCR                            | 97642     |   |   |   |   |   |   |   |  |  |   |   |
| Women's Health Panel, Qual, PCR                         | 97711     |   |   |   |   |   |   |   |  |  |   |   |

**\* PLEASE NOTE: Urine samples sent to the laboratory that are more than 5 mL and not in the correct pour-off container will be rejected, leading to a recollection error.\***

\*Draw a line on collection container and instruct patient to notify if unable to provide quantity.

\*\*DLO accepts refrigerated specimen for UA on pediatric patients

# Specimen Collection, Handling, and Transport

## Cytology Specifications

| SureSwab® test offerings                                       |   | Test Codes |
|--|---|------------|
| Bacterial Vaginosis (BV) ●                                     | Lactobacillus spp.<br>Gardnerella vaginalis<br>Atopobium vaginae  | 10016      |
| BV/Chlamydia Trachomatis (CT)/<br>Neisseria Gonorrhoeae (NG) ● |   | 10123      |
| BV/Vaginitis ●   | Candidiasis<br>Trichomonas vaginalis  | 10119      |
| Candida albicans ●   |   | 16495      |
| Candida Vaginitis/Trichomonas<br>Vaginalis (Trich) ●           |   | 10029      |
| Candidiasis ●  | Candida albicans<br>Candida glabrata<br>Candida parapsilosis<br>Candida tropicalis                            | 10121      |
| CT ● ●   |   | 11361      |
| CT/NG ● ●  |   | 11363      |
| CT/NG (rectal swab) ●  |   | 16506      |
| CT/NG (throat swab) ●  |   | 70051      |
| CT/NG/Trich ● ●  |   | 16492      |
| Herpes Simplex Virus 1 & 2 ●                                   |   | 90570 *    |
| Mycoplasma genitalium ● ●                                      |   | 91475 *    |
| Mycoplasma hominis ●   |   | 91474      |
| Mycoplasma/Ureaplasma<br>Panel                                 | Mycoplasma hominis<br>Mycoplasma genitalium<br>Ureaplasma urelyticum<br>Ureaplasma parvum                     | 91477 *    |
| NG ● ●   |   | 11362      |
| Trich ● ●  |   | 19550      |
| Ureaplasma spp. ●  | Ureaplasma urelyticum<br>Ureaplasma parvum  | 91476      |
| Vaginitis/Vaginosis Plus ●                                     | Bacterial vaginosis<br>Candidiasis<br>Trichomonas vaginalis<br>Chlamydia trachomatis<br>Neisseria gonorrhoeae | 10120      |



- - Use Multitest Swab Transport Media (STM)
- - Use Urine Specimen Transport Tube
- \* - Requires two (2) swabs

# Specimen Collection, Handling, and Transport

## Cytology Specifications

| Out-of-the-vial test              | Test Codes |
|-----------------------------------|------------|
| CT                                | 11361      |
| CT/NG                             | 11363      |
| HPV Genotypes 16, 18/45           | 91826      |
| HPV mRNA                          | 90887      |
| HPV Reflex to Genotypes 16, 18/45 | 90942      |
| HSV-1/2                           | 90569      |
| NG                                | 11362      |
| Trichomonas vaginalis             | 90521      |



| Additional Reflex and co-testing options for Pap & HPV | Test Codes |
|--|------------|
|--|------------|

Based on ACOG Guidelines - Cytology every 3 years for patients ages 21-29; co-testing (Pap and HPV combined) for patients ages 30-65

|  |       |            |
|--|-------|------------|
| Pap  | 58315 | Ages 21-29 |
| Pap (reflexes to HPV if ASCUS)   | 90934 |            |
| Pap (reflexes to HPV if ASCUS) and CT/NG   | 91912 |            |
| Pap  | 58315 | Ages 30-65 |
| Pap & HPV  | 90933 |            |
| Pap & HPV and CT/NG  | 91339 |            |
| Pap & HPV mRNA E6-E7, reflex HPV 16, 18/45<br><i>Pap has to be neg, HPV has to be detected, then reflex to 16, 18/45</i> | 91414 |            |

| Image-guided Pap with age-based screening protocols | Test Codes |
|---|------------|
|---|------------|

SMART test codes are comprised of age-based Image Pap testing with HPV and additional STI tests, based on professional guidelines. \*Send in the specimen, patient's date of birth, and one of the following three codes

|   |       |
|---|-------|
| Image-guided Pap with age-based screening protocols                   | 91384 |
| Image-guided Pap with age-based screening protocols, plus CT/NG       | 91385 |
| Image-guided Pap with age-based screening protocols, plus CT/NG/Trich | 91386 |

**Note:** HPV test codes listed are for Aptima HPV mRNA high-risk testing. For further test collection instructions, visit <https://www.dlolab.com/virtual-test-guide>

The use of lubricants with the ThinPrep® Pap test is not recommended, as lubricants can adhere to the filter membrane and may cause poor cell transfer to the slide. If use of lubricant is unavoidable, the following lubricant brands are validated by Hologic, Inc. for use with the ThinPrep® Pap test when used as instructed.

| Lubricant                    | Manufacturer             |
|------------------------------|--------------------------|
| CerviLube Lubricant          | Sion Brands              |
| Pap Test Lubricating Jelly   | Aseptic Control Products |
| Surgilube Surgical Lubricant | HR Pharmaceuticals       |

# Specimen Collection, Handling, and Transport

## Specimen Labeling & Transport

### Specimen Labeling

Accurate labeling of patient specimens is critical for ensuring correct testing and reporting of results. All specimens must be labeled at the time of collection with at least two patient identifiers that match the information on the accompanying test requisition.

#### Required Patient Identifiers

##### 1. Patient Name (Required);

- Full last name followed by full first name or initial (e.g., Doe, Jane), exactly as it appears on the requisition.
- Alternatively, a unique patient ID code may be used.

##### 2. Second Patient Identifier (Choose One):

- Date of birth (month/day/year)
- Other unique patient identifier also listed on the requisition (e.g., hospital or office ID code, file number)
- DLO requisition number or specimen barcode label
- Other barcode labels are acceptable if they match the unique identifiers on the printed requisition; the barcode does not need to be human-readable

**Note:** Location-based identifiers (e.g., hospital room number, street address) are **not acceptable**.

##### 3. Additional Required Information:

- Each specimen container must have a securely affixed label with all required information.
- For handwritten labels, use a ballpoint pen only; felt tip pens are not acceptable.
- For glass slides, use a pencil to label the frosted or painted end. Two identifiers are preferred, though the patient's name alone is acceptable.
- For electronically-generated DLO labels, place the label lengthwise on the tube.
- When transferring specimens to a container other than the original collection tube, indicate the specimen type (e.g., serum, plasma, urine) on the label.
- For microbiological specimens (e.g., cultures, bacterial antigen, microscopic examination), include:
  - » Nature and anatomic source of the specimen
  - » Specific organism(s) to be detected, if applicable

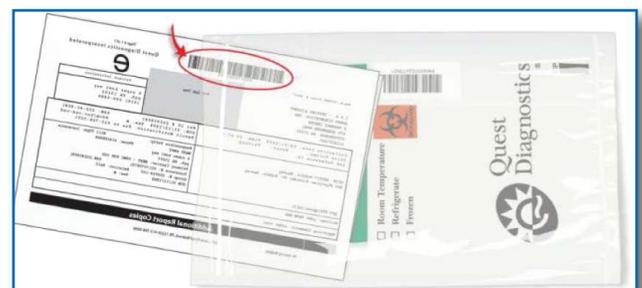
### Specimen Transport Instructions

To ensure that we can easily read and track the patient's specimen, please fold the requisition where the barcode is visibly facing out. By scanning the requisition, we can accurately capture the patient's demographics and monitor the specimen's status until the results are delivered.

#### 1. Print Requisition

#### 2. Fold Requisition with barcode facing out

#### 3. Insert requisition into clear slip with barcode facing out



# Specimen Collection, Handling, and Transport

## *Specimen Labeling & Transport*

### **Compliance**

- The College of American Pathologists (CAP), DLO's accrediting agency, requires two patient identifiers on every specimen container submitted for testing.
- Specimens that are improperly labeled will be rejected and may result in test cancellations.
- Quantum automatically prints specimen labels with submitted orders, which comply with these labeling standards

### **Test Requisition Requirements**

- Every specimen must be accompanied by a paper requisition/manifest, either hand-prepared or printed from an electronic ordering system.
- Requisitions should be packaged individually (one patient per specimen bag).
- A customizable requisition template is available; at a minimum, the requisition must include:
  - » DLO client account and provider name
  - » Patient identifiers (name, address, phone number, medical record number)
  - » Patient sex
  - » Patient date of birth or age
  - » Physician name and address
  - » Test(s) requested with DLO/Quest test codes
  - » Date and time of specimen collection
  - » Specimen source and type
  - » Clinical information, when applicable
  - » Billing responsibility and ICD diagnosis code

### **Special Instructions for Series Testing** (e.g., growth hormone stimulation, glucose tolerance tests):

- Use one requisition for the series.
- Label each specimen with the patient's name, date/time of collection, or site (if applicable).
- Submit all specimens in the series together in one specimen bag.

Proper specimen labeling ensures patient safety, accurate results, and timely processing.

# Specimen Collection, Handling, and Transport

*Review*

## Tissue Collection

- Tissue specimens must be completely covered in 10% formalin at the time of collection.
- For detailed instructions regarding the collection and preparation of tissue specimens, refer to the Virtual Test Guide, Quest Diagnostics Digital Directory of Services, or the online Test Directory.

### Collection – Other Specimen Types

Comprehensive collection procedures for trace elements, cultures, and toxicology specimens are available in the:

- Virtual Test Guide
- Quest Diagnostics Digital Directory of Services
- Online Test Directory

These resources provide test-specific requirements and should be consulted prior to specimen collection whenever possible.

## Labeling Requirements

- Every specimen container must be labeled with appropriate patient identification at the time of collection.
- Specimens missing patient identification will not be tested.
- If a significant discrepancy exists between the patient information on the specimen and the laboratory order, your facility will be contacted for clarification.
- Specimens for HIV testing, blood bank (immunohematology) testing, and other sensitive tests that are inconsistently labeled will not be tested.

## Storage

All specimens must be stored at the **appropriate temperature** prior to transport to the laboratory. Refer to the Virtual Test Guide, Directory of Services, or online Test Directory for test-specific storage requirements.

### Standard Storage Temperature Definitions

- Ambient / Room Temperature: 15–30°C
- Refrigerated: 2–10°C
- Frozen: –20°C or colder

## Minimum Volume Requirements

- Test volumes listed in the Virtual Test Guide, Directory of Services, or online Test
- Directory generally allow for multiple determinations.
- The minimum volume permits only a single test, including instrument dead volume.
- Submitting adequate specimen volume for each requested test helps prevent processing delays and expedites turnaround time.
- For specimens with limited volume, tests may be prioritized on the test order form.
- Minimum testing requirements are available by contacting DLO Customer Services.

## Collection Supplies

- Specimens collected or transported using expired collection or transport devices will be rejected by DLO.
- Facilities should routinely check expiration dates on all collection and transport supplies.

## Additional Details and Instructions

- Specimen collection and handling must always be performed using Universal Precautions.
- Do not freeze specimens in glass tubes.
- Do not submit needles or syringes to the laboratory.

Adhering to these standards helps ensure specimen integrity, patient safety, and accurate laboratory results