

# Specimen Collection & Handling Manual, Laboratory

25512

Official (Rev: 12)

**Source:**

Clinical  
Laboratory - Clinical  
General Laboratory

**Applies to Facilities:**

Palomar Medical Center  
Downtown  
Palomar Medical Center  
West  
Pomerado Hospital

**Applies to Departments:**

Laboratory - Clinical

**I. PURPOSE:**

- A. Laboratory test results are dependent on proper collection and handling of the specimen. It is also important that all specimens and requisition slip be properly labeled. Specific instructions for the proper collection and handling of specimens must be made available to laboratory personnel and to anyone collecting patient test materials that are sent to the laboratory.
- B. This manual is reviewed at least annually by the current Medical Director or by the owner of this procedure as the Medical Director's designee. However, the Medical Director must approve all revisions to this procedure manual.
- C. This specimen collection manual is available to all specimen collecting areas within the hospital (nursing stations, operating room, emergency room, outpatient areas) as an electronic copy via LUCIDOC and to areas outside the main laboratory (such as physicians' offices or other laboratories) as hard copies.

**II. DEFINITIONS:**

- A. PHLS- Palomar Heath Laboratory Services
- B. LUCIDOC- Electronic procedure format.
- C. CTS - Closed tube system
- D. PTS - Pneumatic tube system
- E. CSF Cerebral Spinal Fluid

**III. STANDARDS OF PRACTICE:**

- A. Performed by: Laboratory staff, Clinical staff
- B. **Coagulation** - see [Specimen Collection and Handling for Coagulation](#) for special specimen collection and handling
- C. **Transfusion Services**- Note: All patients for possible blood product transfusion can only be drawn by the laboratory.
  1. Patient Identification - The identification data shown on the specimen must agree with the information on the requisition or in the computer. The **minimum** information required is:
    - a. Patient's first and last name.
    - b. Hospital medical record number, if any.
    - c. BB number (if any blood components are to be administered).
    - d. Time and date of draw.
    - e. Initials of person or employee id number of the person collecting the specimen, not "NL" (Non Laboratory collected).
    - f. Number of units, date of use, product, ordering physician, and order priority are provided by written or electronic order.
    - g. **All specimen for transfusion must be hand labeled (except for the BB number). No computer-generated labels are allowed**
    - h. The Cerner label will be placed on the specimen by a Clinical Laboratory Scientist who will leave the original patient name visible and initial the Cerner label with their email id.
  2. Specimen Volume:
    - a. A 7 ml lavender top is the preferred specimen for routine tests: ABO and Rh type, type and crossmatch, type and screen.

- b. A plain red top can also be accepted.
- c. Minimum volume is 2 ml for an adult, one capillary EDTA for a newborn.
- d. Minimum sample for antibody id is 10 ml red top plus 10 ml lavender top.

#### IV. STEPS OF PROCEDURE:

A. **Equipment:** Not part of this procedure.

B. **Specimen Collection:** Proper patient identification and specimen collection are key to quality laboratory results.

##### 1. **Blood**

a. Specimen Collection Procedure - See [Phlebotomy Procedure](#) and below for individual bottle information.

b. Inspect Requisitions/Review Demographics, Testing And Tube-Type:

I. Re-examine requisitions/labels and ensure the appropriateness of tubes for specimen collections of ordered testing.

II. Label/Requisition should include:

A. Patient's full name.

B. Medical records# (hospital ID#)

C. Patient location

D. Sex

E. Age

F. Ordering physician's name

G. Collection/reporting priorities; RT, ASAP, STAT, timed study (TS), etc. Time and date of desired collection should also be included on requisition/label.

H. Testing required:

1. Color tube required for desired testing; detailed list including color coding vs. additive, and sample size included in Phlebotomy Section collection manual. The alpha listing includes test name(s), sample size, tube color, additive, and special specimen handling (see [Specimen Requirements Procedure](#)).

2. Recommended sample size; pediatric or minimum sample size requirements included in detail in lab procedure [Neonatal Specimen Requirements](#).

3. Specimen handling; e.g. refrigerate, freeze, etc.

I. Additional information.

1. Date of birth

2. Accession number

J. Downtime Requisition:

1. During periods of computer down- time, manual requisitions will be used. All floors requesting lab collection for testing will notify lab immediately by phone or beeper of STAT, ASAP or impending timed study. Downtime requisition should have patient information. These requisitions, manual downtime, or Trauma, may not contain all the information needed.

2. However, they should include: patient's full name or trauma assigned name (e.g. "Trauma B55"), medical records # if known, Blood Bank band number as indicated, sex, date, physician's name, testing required (consult alpha listing for lab testing/color coding and sample size), and patient location.

c. Outpatients:

I. The first identifier is to ask patient to state his/her name.

II. Secondly, patient identity can be verified by any pictured ID. This may include, but not limited to the following: valid driver's license, workplace badge, a pictured credit card, state ID card or military card

III. Minors may be verified by having the parent or guardian identify them as a second identifier in lieu of a pictured ID.

d. Inpatients:

- I. All inpatients must have a hospital armband affixed to their person (usually the wrist or ankle). The first identifier is to ask the patient his or her name. If patient is incoherent ask the nurse taking care of the patient to identify the patient.
  - II. The second identifier is to check patient name and medical record number on the armband against the name & medical record number printed on the test order labels.
- e. Patient Preparation:
- I. Before proceeding with the blood collection, review first if the patient needs special preparation or any special instructions such as fasting sample.
    - A. An overnight fast is required for most fasting specimens. Some tests, particularly lipids, triglycerides and lipoproteins, require further dietary restriction. For these tests, nothing should be eaten 14 hours prior to specimen collection. The evening before the specimen is drawn, the meal should contain no fatty foods or alcohol and must be complete before 6 pm.
  - II. Always identify yourself to the patient upon entering room; be congenial, professional, and polite. Be careful not to startle patient; this may alter test results.
  - III. Patient Identity: Absolute patient identity must be established prior to phlebotomy. At least two forms of patient identification should be used before obtaining blood samples.
- f. **Blood Cultures:**
- i. Contact laboratory for collection bottles. No more than three (3) draws in a 24-hour period of time
  - ii. BD Bactec blood culture bottles:
    - I. Aerobic bottle
      - A. BD Bactec Plus Aerobic/F Culture Vials
        - 1. Grey plastic cap, Blue septum ring, Grey label
        - 2. Optimal blood volume 8 - 10 ml.
        - 3. Acceptable blood volume 5 - 10 ml.
    - II. Anaerobic bottle
      - A. BD Lytic /10 Anaerobic/F Culture Vials
        - 1. Purple plastic cap, Purple septum ring, Purple label
        - 2. Optimal blood volume 8 - 10 ml.
        - 3. Acceptable blood volume 5 - 10 ml.
    - III. Pediatric bottle
      - A. BD Bactec Peds
        - 1. Pink plastic cap, Grey septum ring, Pink label
        - 2. Optimal blood volume 1 - 3 ml.
        - 3. Acceptable blood volume 0.5 - 5 ml.
    - IV. Store bottles in a cool dry place ( 2 - 25 degrees C) out of direct light.
    - V. DO NOT refrigerate once the bottles have been inoculated.
  - iii. See [Blood Culture Specimen Collection](#) procedure or contact laboratory for detailed instructions regarding special preparation of site.
  - iv. It is important to always try and obtain the recommended volume of blood for each bottle. Culturing adequate volumes of blood is the most important variable in optimizing microbial recovery.
    - I. Adult draw: 16 - 20 ml of blood per venipuncture.
    - II. Pediatric draw: 0.5 - 5 ml of blood per venipuncture
    - III. Fill bottles as outlined in table that follows:

Amount per Venipuncture	Amount in BACTEC Plus Aerobic Vial	Amount in BACTEC Plus Anaerobic Vial	Amount in BACTEC Ped Plus Vial
16 – 20 mL	Split equally between aerobic and anaerobic vials		

13 – 16 mL	8 mL	5 – 8 mL	
10 – 12 mL	5 – 7 mL	5 mL	
3 – 9 mL	entire blood amount	0	
< 3 ml			entire blood amount

- v. Blood Culture Collection from I.V.Site:
  - I. Collection of blood cultures from an I.V. site should only be performed when specifically ordered by the physician.
  - II. Have nursing personnel stop the I.V. for 3 minutes prior to drawing the specimen
  - III. Avoid drawing from lines within an hour of completion of antibiotic administration through I.V.
  - IV. Clean the catheter hub for 15 seconds with 70% alcohol prep.
  - V. Allow hub to air dry.
  - VI. With a syringe, discard the first 3ml of blood, for pediatric patients, discard the first 0.2ml of blood
  - VII. Using a new syringe, collect the blood for the culture.
  - VIII. Inoculate the bottles as outlined above.
  - IX. Mark each bottle using large lettering as "Line Draw".
- vi. Requests for AFB and fungus blood culture require special collection tubes. Contact laboratory
- g. **QuantiFERON TB Gold:**
  - i. Use the following collection tubes:
    - I. Nil Control (Grey cap with white ring)
    - II. TB Antigen (Red cap with white ring)
    - III. Mitogen Control (Purple cap with white ring)
    - IV. The labels on the tubes are also color-coded.
    - V. It is best to collect tubes in this order but not mandatory.
    - VI. Note: All 3 tubes must be collected and filled properly in order for the test to be run.
  - ii. Collect 1 ml of blood by venipuncture directly into each of the QFT-TB Gold blood collection tubes.
    - I. The 1ml tubes fill relatively slowly, keep the tube on the needle for 2 - 3 seconds once tube appears to have completely filled to ensure the correct volume is drawn.
    - II. The black mark on the side of the tubes indicates the 1ml fill volume. The collection tubes are manufactured to draw 1ml +/- 10% and perform optimally within the range of 0.8 to 1.2 ml. If the level of blood in any tube is not close to the indicator line, collect another sample. Under or overfilling of the tubes outside of the 0.8ml to 1.2ml range may lead to erroneous results.
    - III. If a "butterfly needle" is being used to collect blood, a "purge" tube should be used to ensure that the tubing is filled with blood prior to the QFT-TB Gold tubes being used.
  - iii. Immediately after filling, shake tube ten (10) times just firmly enough to ensure that the inner surface of the tube is coated in blood to dissolve antigens on tube walls.
    - I. Shaking should be similar to a firm hand shake. Over-energetic shaking may cause gel disruption and could lead to aberrant results.
  - iv. Tube temperature should be between 17°C to 25°C at the time of tube filling.
  - v. Label tubes appropriately.
- h. **Urine** - For culture and routine urinalysis, please follow the clean catch midstream instructions listed below
  - a. Clean-Catch Midstream Urine Collections (females):
    - i. Wash hands thoroughly with soap and water. Dry completely
    - ii. Spread labia apart with one hand and thoroughly cleanse vulva with towelette. Keep labia continuously apart until urine is collected.

- iii. Allow the first stream of urine to drain into the toilet and place a urine container under the stream and fill the container. Do not touch the rim or inner surface of the container.
  - iv. Place and tighten lid on the container.
  - v. Label container with patient's full name, medical record or requisition number date and time of collection.
  - vi. Place specimen in a bio-hazard bag together with the requisition or nurse collected downtime form.
  - vii. Keep specimen refrigerated until it can be transported to laboratory.
- b. Clean-Catch Midstream Urine Collections (males)
- i. Wash hand thoroughly with soap and water. Dry completely.
  - ii. Completely retract foreskin (if uncircumcised) and thoroughly cleanse glans penis with towelette.
  - iii. Allow the first stream of urine to drain into the toilet and place a urine container under the stream and fill the container. Do not touch the rim or inner surface of the container.
  - iv. Place and tighten lid on the container.
  - v. Label container with patient's full name, medical record or requisition number date and time of collection.
  - vi. Place specimen in a bio-hazard bag together with the requisition or nurse collected downtime form.
  - vii. Keep specimen refrigerated until it can be transported to laboratory.
- c. **Urine specimens for culture may be submitted in BD Vacutainer® C&S Preservative Tubes.**
- i. Tube must be filled to the minimum fill line.
  - ii. Mix tube 8-10 times immediately after filling.
  - iii. Specimen can be stored up to 48 hours at room temperature in preservative tube.
- d. Note: Urine specimens for AFB and Fungus should be first morning specimens; 3 consecutive clean, voided early morning specimens recommended for AFB. 24-hour collections are unacceptable.
- e. 24-Hour Urine Collections:
- i. PHLS provides 24-hour urine collection containers with various types of preservatives depending on the test requested. Use the following procedure for the correct specimen collection and preparation.
  - ii. Note: Unless indicated by the physician, patient should maintain normal daily fluid intake, avoiding alcohol and non-prescription medications.
  - iii. Warn the patient of the presence of potentially hazardous preservatives in the collection container. To avoid burns, patients must not urinate directly into these containers. Urine should be collected in a separate bottle, then carefully poured into the bottle containing the acid.
  - iv. Instruct the patient to discard the first morning specimen and to record the time of voiding on the specimen collection container.
  - v. The patient should collect all subsequent voided urine for the remainder of the day and night.
  - vi. Collect the first morning specimen on day two (2) at the same time as noted on the day one.
  - vii. \*\* Note: All urine voided during the 24-hour period must be collected and saved. If one container is not sufficient, you need to pick up another one from the laboratory. Using a container other than that provided by the laboratory may compromise the specimen and require recollection.
  - viii. Send entire container to laboratory properly labeled with patient name, dates and time of collection.
  - ix. Label specimen with patient's full name, medical record or requisition number, date and time of collection.
  - x. Complete a nurse downtime form or blue and white requisition form with patient information, collection date and time and indicated clinical data.

- xi. Creatinine Clearance:
  - I. The patient should be hydrated by administering a minimum of 600ml of water before the collection period. During the collection period, the patient should continue to drink plenty of water and avoid coffee, tea, and drugs.
  - II. In addition to the 24-hour urine sample, creatinine clearance calculation requires the patient's height and weight and serum for creatinine, preferably collected during the time of the urine collection
- xii. Specimen should be submitted to PHLS within eight (8) hours following the end of the collection.

**i. Stool**

- a. Stool for Hemosure i FOB Test - One-step Immunological Fecal Occult Blood Test
  - i. Need collection kit containing instructions
    - I. Sample collection paper
    - II. Sample collection tube
    - III. Specimen pouch
    - IV. Mailing envelope
  - ii. Lift toilet seat and position sample collection paper across the rim of the toilet bowl.
    - I. Secure adhesive tabs to the sides of the toilet rim.
    - II. Lower the toilet seat.
  - iii. Make a bowl movement onto the collection paper.
  - iv. Unscrew the purple cap from the sample collection tube.
    - I. DO NOT POUR OUT LIQUID.
  - v. Poke spiral applicator onto stool at **6** different sites.
    - I. Use only enough fecal material to cover the tip of the applicator.
    - II. DO NOT CLUMP, SCOOP, OR FILL THE TUBE.
  - vi. Screw the applicator back into the tube and secure tightly.
  - vii. Label the sample collection tube with patient name and date and time of collection.
  - viii. Place sample in specimen pouch.
- b. Stool for WBC by Leuko EZ Vue (Fecal Lactoferrin)
  - i. Collect fecal specimens into a clean, airtight container with no preservatives. Specimens should be stored between 2° and 8°C or room temperature for up to 2 weeks from time of collection then stored frozen at -20°C or lower.
- c. Stool Culture:
  - i. One stool specimen is submitted. If the initial stool culture is negative, then additional stool samples may be submitted for testing provided the patient collects them from different defecations on successive days.
  - ii. Stool specimens are not recommended on patients who have been hospitalized for >3 days and were not admitted with a diagnosis of gastroenteritis. Please indicate on the requisition if bacteria other than Salmonella, Shigella, Campylobacter, Escherichia coli 0157, Pleisiomonas, or Aeromonas are suspected. (Shiga Toxin testing is also included with all routine stool culture requests.) Vibrio and Yersinia will be cultured by special request only.
  - iii. If the specimen cannot be delivered directly to the laboratory within one (1) hour after collection, contact the laboratory to obtain the enteric transport media. (Cary-Blair, C&S medium)
  - iv. Avoid mixing stool specimen with any urine or water from toilet.
  - v. To collect specimen, you may use a wide mouth sterile container (similar to a margarine container), or raise the seat of the toilet, cover the bowl with clear plastic wrap and put the seat down.
  - vi. When you have obtained the specimen, take the enteric transport media container with the red fluid and put enough stool sample into the vial to raise the fluid level above the small arrow on the label. Shake vigorously until the contents are well mixed and store at room temperature. Do not refrigerate.

- vii. This specimen may be collected at the same time as any other stool specimen.
  - viii. Label the container with patient's name, medical record or requisition number, date and time of collection.
  - ix. If fresh stool not in transport medium is submitted for culture, the specimen should be transported to the laboratory within 1 hr. of collection or refrigerated up to 24 hrs.
  - x. Requests for gram stain, WBC smear, Leuko EZ Vue (fecal lactoferrin) rotavirus and Helicobacter pylori antigen must be submitted as raw stool.
- d. Rectal Swabs:
- i. These should only be used for infants or acutely ill patients when a stool is not available for culture. Rectal swabs are also submitted for the detection of Neisseria gonorrhoea or anal carriage of Streptococcus pyogenes. (Please indicate "r/o N. gonorrhoea or r/o S. pyogenes on the requisition.)
  - ii. If the transport collection device contains two swabs remove one swab and discard. Gently insert the swab approximately 1" beyond the anal sphincter.
  - iii. Carefully rotate swab.
  - iv. Replace swab in transport container.
  - v. Label container with patient's full name, medical record or requisition number date and time of collection.
  - vi. Transport at room temperature.
- e. Ova and Parasites: Outpatient instructions and preparation
- i. If the specimen cannot be delivered directly to the laboratory within 1 hour of collection, obtain collection kits with preservative and instructions from the laboratory.
  - ii. The collection kit will contain two (2) vials, a formalin vial and a PVA vial. Both vials must be collected from the same bowel movement or stool.
  - iii. Avoid mixing stool specimen with any urine or water from toilet.
  - iv. Collect as instructed, filling each vial so the fluid level is higher than the line or arrow on the side of vial. Select areas of the stool that are bloody or contain mucous.
  - v. Shake vigorously until the contents are well mixed.
  - vi. If collecting more than one specimen, collections must be from separate days. Three (3) specimens collected every other day are recommended.
  - vii. Store all vials at Room Temperature.
  - viii. Label container with patient's full name, medical record or requisition number date and time of collection.
  - ix. Send to laboratory as soon as possible.
  - x. Note: Specimens for O&P collected too soon after administration of mineral oil, magnesium, barium, or bismuth are unacceptable. Specimen collection should be delayed 5-10 days after any of these agents have been given.
- f. Giardia Antigen and/or Cryptosporidium:
- i. If an O & P is also ordered, the same collection procedure as outlined above can be followed. If only a Giardia Antigen or Cryptosporidium is ordered, only a formalin vial is necessary.
- g. Clostridium difficile (C.difficile)
- i. This requires a minimum of 1 ml or 1 gm of raw liquid or unformed stool.
  - ii. Collect in a sterile wide-mouth container.
  - iii. Refrigerate immediately and return to the laboratory within 24 hours of collection.
  - iv. Label container with patient's full name, medical record or requisition number, date and time of collection.
  - v. Carey Blair preservative is not acceptable.
  - vi. Colon / stool aspirates are considered fresh stool and are acceptable.
    - I. The following comment is added as an order comment automatically by Cerner on these specimen types.
      - A. Stool specimen (aspirate) obtained by physician.
  - vii. Colon washes or duodenal washes are not acceptable.

- viii. Stools collected in any type of preservative are not acceptable.
- h. Rotavirus:
  - i. Submit raw stool in sterile container
  - ii. Minimum volume 1 gram. Refrigerate.
  - iii. Refrigerated specimen is good for 72 hours.
  - iv. If testing is delayed, freeze specimen at  $-20^{\circ}\text{C}$  or lower rectal swabs are not acceptable.
  - v. Meconium stools are not recommended.
- i. Helicobacter pylori Antigen
  - i. Submit raw stool in a sterile container
  - ii. Refrigerated specimen is good for up to 72 hours.
- j. Shiga Toxin
  - i. Fresh fecal or frozen specimens Fresh specimens should be tested as soon as possible after receipt.
    - I. If testing cannot be performed upon receipt, samples may be stored between  $2^{\circ}$  and  $8^{\circ}\text{C}$  or frozen ( $\leq -10^{\circ}\text{C}$ ) for up to 14 days from sample receipt.
  - ii. Fecal specimens in Cary Blair or C&S transport media.
    - I. Do not use fecal specimens in Formalin-based fixative (e.g. sodium acetate formalin, 10% formalin) or in alcohol-based fixative (e.g. polyvinyl alcohol). Specimens in transport media (C&S or Cary Blair) can be stored between  $2^{\circ}$  and  $8^{\circ}\text{C}$  or frozen ( $\leq -10^{\circ}\text{C}$ ) for up to 14 days from sample receipt.
- k. Pin-worm Paddles:
  - i. For the collection and examination of the pin-worm *Enterobius vermicularis*. Because of the migratory habits of the female pin-worm, specimens are best obtained a few hours after the patient has retired for the night, between the hours of 9:00 p.m. and midnight, or in the morning immediately upon rising before bathing or bowel movement.
  - ii. Hold the paddle by the cap and remove from the tube.
  - iii. Separate the buttocks and press the sticky side of the paddle against several areas of the perianal region.
  - iv. Replace the paddle in the tube for transport to the laboratory. Specimen should be delivered as soon as possible.
  - v. Label tube with patient's full name, medical record or requisition number and date and time of collection.
- j. Microbiology Culture Samples:**
  - a. Aerobic Culture:
    - i. The laboratory will provide you with routine transport or Mini-Tip transport swabs for the collection of routine/ aerobic cultures, gram stains and wet mounts. Swabs containing Stuart's or Amies holding media are acceptable for bacterial culture. Only swabs containing Stuart's are acceptable for PCR testing. For viral cultures, use viral transport media.
    - ii. Typical sources are throat, ear, aerobic wound, cervical or genital specimens for routine bacterial culture, yeast screens, wet mounts, rapid group A strep screen or KOH prep.
    - iii. Peel apart package.
    - iv. Remove swab holding the plastic cap.
    - v. Collect specimen on swab.
    - vi. Replace the swab into the transport container.
    - vii. Maintain at room temperature.
    - viii. Label with patient's full name, medical record or requisition number, date and time of collection and INDICATE SOURCE on the label.
    - ix. Label must be placed on the culturette swab and not on the paper wrapper.
    - x. Forward promptly to the laboratory at ambient temperature

b. Mini-Tip Culturette:

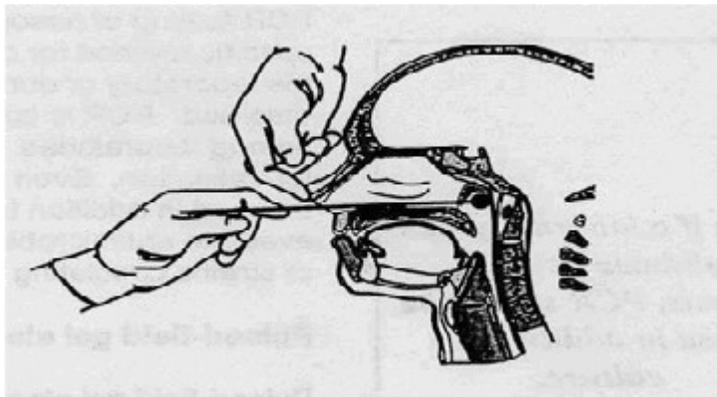
- i. Typical Sources include: nasopharyngeal, eye and male urethral specimens. (See below for special collection procedure for nasopharyngeal specimens for influenza, RSV and Pertussis.)
- ii. Peel apart package.
- iii. Remove swab holding the plastic cap.
- iv. Collect specimen on swab.
- v. Replace swab into the transport container.
- vi. Maintain at room temperature.
- vii. Label with patient's full name, medical record or requisition number, date and time of collection and INDICATE SOURCE on the label.
- viii. Label must be placed on the culturette swab and not on the paper wrapper.
- ix. Forward promptly to the laboratory at ambient temperature

c. Throat Specimens:

- i. Using a tongue blade to hold the tongue down, rub the swab over the posterior pharynx, tonsillar area, behind the uvula and any inflamed or ulcerated areas.
- ii. Withdraw the swab, being careful not to touch the cheeks, teeth or gums.
- iii. Insert swab back into the transport container.
- iv. Label container with patient's full name, medical record or requisition number date and time of collection.
- v. Forward promptly to the laboratory at ambient temperature.
- vi. \*Note: Swabs with gel preservative are not acceptable for Rapid Group A testing.

d. Nasopharyngeal Specimens:

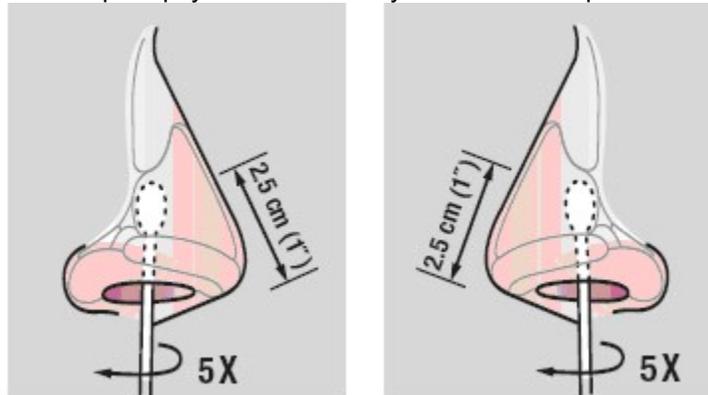
- i. Influenza A and B or RSV
  - I. Nasal washes or aspirate are preferred but Dacron, rayon, or flocked mini-tip placed in universal transport media (UTM) are acceptable.
    - A. One swab in UTM is adequate for Influenza A and B and RSV.
  - II. Gently pass the swab through the nose and into the nasopharynx.
  - III. Rotate the swab on the nasopharyngeal membrane and allow the swab to remain in place for 10-15 seconds to absorb the organisms.Keep the swab near the septum and floor of the nose.
  - IV. Remove the swab carefully and place in transport media. Be sure the lid is on tight.
  - V. Label container with patient's full name, medical record or requisition number date and time of collection.
  - VI. Forward promptly to the laboratory at ambient temperature.



ii. Bordetella pertussis (Culture, PCR or DFA)

- I. a. Collect swab from the nasopharyngeal cavity using a Green Top Mini-Tip culture swab.
  - A. Do not use wood, plastic, or calcium alginate swabs.)

- II. Collect one mini- tip swab for each test ordered, i.e. PCR and DFA, collect 2 swabs. Dacron or rayon mini-tip swabs containing Stuart's or Amies holding media are acceptable.
- III. See above procedure and illustration for proper collection technique.
- IV. Repeat the collection steps using the same swab entering the other nostril into the nasopharynx.
- V. Remove the swab carefully and insert it into the transport container.
- VI. Label container with patient's full name, medical record or requisition number date and time of collection.
- VII. Forward promptly to the laboratory at ambient temperature.
- iii. Respiratory Viral Screen to be sent to Rady Children's Hospital
  - I. Contact the PMC Microbiology Department for special media. (760-739-3043)
- e. Nasal Swabs:
  - i. Submitted primarily for detection of Methicillin Resistant Staphylococcus Aureus (MRSA) carriers.
  - ii. Insert swab approximately 2.5 cm into nares
  - iii. Firmly sample the anterior membrane by rotating the swab five times and leaving it in place for 10 - 15 seconds..
  - iv. Repeat process on the other side.
  - v. If two swabs are provided, collect the sample using both swabs.
  - vi. Routine MRSA screening will be performed by culture unless otherwise specified. IF PCR testing is required, this must be written on the requisition.
  - vii. Only swabs collected in Stuart's medium are acceptable for PCR.
    - I. Copan Venturi Tran-system Liquid Stuart dual applicators with breakable tip is preferable.
  - viii. Label container with patient's full name, medical record or requisition number date and time of collection.
  - ix. Forward promptly to the laboratory at ambient temperature.



- f. Anaerobic Culture:
  - i. When ordering a culture for ANAEROBIC ORGANISMS, always include both the aerobic culturette and anaerobic culturette. If only an aerobic culturette is submitted, the specimen will not be processed for anaerobic culture testing. (Outpatient specimens may be submitted in E swab Transport System and are acceptable for aerobic and anaerobic culture.)
  - ii. Syringe aspirates or tissue specimens are preferred.
    - I. If submitting a syringe, remove the needle and place the syringe cap on the end. DO NOT submit a specimen with the needle attached.
    - II. Tissue should be collected in sterile container rather than a swab.
  - iii. To use Anaerobic collection system:

- I. Peel apart package; pull out swab using white plunger; do not take off grey stopper at anytime.
- II. Collect specimen on swab .
- III. Replace swab and push down gently on the white plastic plunger, forcing the inner glass tube into large glass tube. Plunger should be flush with rubber stopper surface. Store at room temperature.
- iv. Label culture tube with patient's full name, medical record or requisition number, date and time of collection, and Source. Do not place label on the paper wrapper.
- v. Forward promptly to the laboratory at ambient temperature.
- g. Chlamydia/Neisseria gonorrhoeae RNA, TMA:
  - i. Endocervical or urethral swabs:
    - I. Follow instructions in the APTIMA® Combo 2 Assay Unisex Swab Specimen Collection Kit.
  - ii. Vaginal swabs:
    - I. Follow instructions in the APTIMA® Combo 2 Vaginal Swab Collection Kit.
  - iii. Urine:
    - I. Follow instruction in the APTIMA® Urine Specimen Collection Kit.
  - iv. All other sources: Contact the laboratory for specific instructions.
- h. Sure Swab® APTIMA® Vaginal Collection Kit (Orange Label)
  - i. Vaginal Swabs Only
    - I. Follow instructions in the APTIMA® Vaginal Collection kit.
  - ii. This swab can be used to test for any of the following:
    - I. Chlamydia trachomatis / Neisseria gonorrhoeae RNA, TMA
    - II. Bacterial vaginosis DNA, Quantitative PCR (Lactobacillus species, Atopobium vaginae, Megasphaera species, Gardnerella vaginalis)
    - III. Candidiasis PCR (C.albicans, C.glabrata, C.tropicalis, C.parapsilosis)
    - IV. Herpes simplex virus 1&2
- i. Wet Mounts
  - I. Vaginal wet mounts will be examined for the presence of yeast, clue cells, Trichomonas, and WBCs.
  - II. Collect vaginal secretions on a routine transport swabs.
  - III. Label container with patient's full name, medical record or requisition number date and time of collection.
  - IV. Transport at room temperature within 24 hours.
  - V. If Trichomonas is suspected, best results are obtained if the specimen is submitted within 4 hours of collection.
  - VI. Genital Culture
    - I. Note: Do Not use lubricant during procedure, it can be toxic to Neisseria.
    - II. Wipe the cervix clean of vaginal secretions.
    - III. With a sterile swab, obtain discharge from the endocervical glands.
    - IV. If no exudate is seen, insert the swab into the endocervical canal and rotate.
    - V. Place swab in culturette.
    - VI. Label with patient's full name, medical record or requisition number, date and time of collection
    - VII. Do not refrigerate, transport promptly to laboratory.
- VII. Group B Strep
  - I. For the detection of Group B Streptococci in women.
  - II. Use the Cepheid Collection Device: Copan Venturi Tran-system Liquid Stuart dual applicators with breakable tip.
  - III. Collection procedure:
    - A. Wipe away excessive amounts of secretion or discharge.
    - B. Remove both marked swabs from the transport container.

- C. Carefully insert both marked swabs into the patient's vagina. Sample secretions from the mucosa of the lower one-third part of the vagina. Rotate the swabs three times to ensure uniform sample on both swabs.
  - D. Using the same marked swabs, carefully insert both swabs approximately 2.5 cm. beyond the anal sphincter, and gently rotate to sample anal crypts.
  - E. Place both marked swabs in the transport container.
  - F. Transport to the laboratory promptly.
  - IV. Label container with patient's full name, medical record or requisition number, date and time of collection and see specimen labeling section of this procedure.
- j. Sputum Collection:
- i. Contact the laboratory for this kit.
  - ii. For the collection of sputum specimens for routine culture, AFB culture\*, fungus culture, or cytology.
    - I. For fungal culture, three consecutively collected early-morning specimens are recommended.
    - II. For AFB collect three (3) early morning specimens from a deep cough or 3 consecutively collected specimens, each collected in 8 - 24 hour intervals with at least one being an early morning specimen.
  - iii. The first morning Deep Cough specimen is the most desirable; however, Deep Cough specimens obtained at any other time are equally acceptable.
  - iv. Have patient brush his/her teeth and rinse well with water. Remove dentures if necessary.
  - v. Remove collector from plastic bag.
  - vi. Lift hinged top.
  - vii. Produce sputum with a deep cough and expectorate it into container.
  - viii. Close the lid tightly.
  - ix. Label specimen container with patient's full name, medical record or requisition number, date and time of collection.
  - x. Refrigerate specimen if unable to transport to lab within 2 hours of collection. For AFB collect three (3) early morning specimens from a deep cough or 3 consecutively collected specimens, each collected in 8 - 24 hour intervals with at least one being an early morning specimen.
- k. Fungus Specimen Collections for Culture and KOH:
- i. Hair
    - I. Examine the head for scaly patches. Broken hairs, pus or crusting may be visible.
    - II. With tweezers or forceps, grasp the hair above the infected area where the hair shaft looks healthy. Remove at least 10 hairs and place in a sterile container, such as a urine collection cup.
    - III. If the hairs are broken, and significant crusting is seen, use a sterile scalpel blade to scrape these hairs and material into a sterile container.
    - IV. Label the container with patient's full name, medical record or requisition number, date and time of collection.
  - ii. Nail
    - I. Clean the nail surface with 70% alcohol.
    - II. With a sterile scalpel, scrape off the exterior surface of the nail. Discard these scrapings.
    - III. With a new scalpel, scrape off a deeper portion of the nail into a sterile container.
    - IV. Nail clippings or a removed nail may be submitted in a sterile container.
    - V. Label the container with the patient's full name, medical record or requisition number, date and time of collection.
  - iii. Skin
    - I. Skin specimens may be the webbing between toes, a ringworm lesion, or vesicles in the skin surface.

- II. Wipe the affected area with 70% alcohol and allow to dry completely.
- III. With the flat side of a sterile scalpel, scrape the skin. Place the scrapings in a sterile container.
- IV. For loose skin, crusty lesions or large vesicles, the sharp side of a scalpel may be used to scrape away the specimen. Avoid causing nicking or bleeding, if possible.
- V. Label container with patient's full name, medical record or requisition number date and time of collection.

iv. KOH only

- I. If a KOH is requested with no culture, the skin or nail scrapings and hair shafts may be placed between two (2) glass microscope slides.
- II. Tape the slides together and place in a container.
- III. Label container with patient's full name, medical record or requisition number date and time of collection. .

I. Viral Cultures:

- i. Nasopharyngeal washing or aspirates, urine, stool or tracheal aspirate
  - I. Place in sterile, leak-proof container.
- ii. Swabs or Tissues:
  - I. Immediately transfer to viral transport media
- iii. Transport specimen immediately to the laboratory. If unable to transport immediately, specimens should be stored as follows:
  - I. Ambient 2 hours
  - II. Refrigerated 72 hours
  - III. Frozen: Unacceptable
- iv. Calcium alginate, dry or wood shaft swabs are not acceptable.

C. **Specimen Handling:** Most laboratory tests are performed on anticoagulated plasma, serum or whole blood.

1. **Labeling:**

- a. To avoid any adverse errors made due to an improperly labeled specimen, it is imperative that proper labeling criteria are met at all times.
- b. Requirements for all specimens coming to the laboratory for testing require that each specimen have a label on the container in which it is held. It is not acceptable to label the container lid, zip-lock bag or any other transport container.
- c. All specimens should be labeled legibly with the following information:
  - i. Patient's name (last name, first name). If the patient is not yet registered, a downtime ID band must be used.
  - ii. Patient's medical record number or other appropriate identification (e.g. blood bank armband number or trauma number) if medical record number is unavailable.
  - iii. Blood bank armband number must be on the label if any immuno- hematology (e.g. crossmatch, type & screen) are ordered.
  - iv. Date and time of collection.
  - v. Initials of person collecting the specimen. Employees of Palomar Health are to use their employee id number.
  - vi. The source of the specimen (e.g. throat swab, spinal fluid, bladder, etc.) if other than blood or urine.

2. **Handling:** Refer to form, [Specimen Stability and Handling](#) for details by test.

- a. Tubes should be kept in a vertical, closure-up position as much as possible during handling, transport and storage.
- b. Most specimens should be maintained at room temperature before and during transport to the laboratory.
- c. Most specimens for chemistry testing that are not tested within 8 hours of collection should be refrigerated. Specimens not tested within 48 hours of collection should be frozen. Frost free freezers are not suitable for long term frozen storage.

- d. Time sensitive specimens with special handling requirements should be processed within defined time limits and are generally not suitable for other types of testing.
- e. The following is the list of tubes referred to in the [Specimen Requirements](#) procedure:
  - i. Green top tube. This tube contains lithium heparin used for the collection of heparinized plasma for chemistry tests or whole blood for special tests. After tube has been filled with blood, immediately invert the tube several times in order to prevent coagulation. Gently invert tubes 8 - 10 times immediately after collection.
  - ii. Grey top tube. This tube contains potassium oxalate as an anticoagulant and sodium fluoride as a preservative, used to preserve glucose in white blood and for some special chemistry tests. After tube has been filled with blood, immediately invert the tube 8-10 times in order to prevent coagulation
  - iii. Lavender top tube. This tube contains EDTA as an anticoagulant used for most hematological procedures, BNP and hemoglobin A1c After tube has been filled with blood, immediately invert the tube 8-10 times in order to prevent coagulation
  - iv. Light Blue top tube. This tube contains sodium citrate as an anticoagulant used for the collection of blood for coagulation studies. After tube has been filled with blood, immediately invert the tube 3-4 times in order to activate the anticoagulant. Note: It is imperative that the tube be completely filled. The ratio of blood to anticoagulant is critical for valid coagulation study results. If using a butterfly, it is important to waste a tube of blood before drawing the light blue top tube to avoid short draw.
  - v. Red top tube (plain). This tube is a plain vacutainer containing no anticoagulant used for collection of serum for selected chemistry tests, especially drug levels.
  - vi. Serum Separator Tube (SST). This tube contains a clot activator and serum gel separator used for various laboratory tests. Note: Invert the tube 5 times to activate the clotting and let stand for 30 minutes before centrifugation.
  - vii. Special Collection Tubes. Some tests require specific tubes for proper analysis. Please contact the laboratory prior to patient draw to obtain the correct tubes.
  - viii. Note: Insufficient mixing may lead to microclot and fibrin strand formation.
- f. Some samples are required to be FROZEN. Specimens that require freezing should be centrifuged, separated, serum and/or plasma transferred to a plastic tube with the patients full name, date and time of collection. Store tubes in an upright position with at least 1 cm of airspace at the top.
- g. Some samples are tested as WHOLE BLOOD. Collect a sufficient amount of blood proportional to the appropriate anticoagulant, gently mix tube 6- 10 times immediately after collection. Take note of the proper specimen storage requirement depending on the test/s ordered. If whole blood sample needs to be refrigerated, store specimen in the refrigerator until transported to the laboratory. NOTE: Tubes intended for whole blood analysis are not to be centrifuged or separated. Tubes that have been centrifuged are generally not suitable for whole blood analysis, with some exceptions, e.g., hemoglobin A1c. DO NOT freeze whole blood unless specifically instructed to do so.
- h. Some tests require samples to be placed on ice immediately after collection. The tube is placed in a biohazard bag and the biohazard bag is placed in the ice. Ice with a small amount of water (slush) is best to assure complete chilling of the tubes.
  - i. Some tests should be stored at room temperature and not refrigerated prior to testing, e.g., lactate dehydrogenase, LD isoenzymes, coagulation tests.

### 3. Centrifugation:

- a. Allow serum tubes to clot for 30 minutes prior to centrifugation. Serum samples should be adequately clotted prior to centrifugation.
- b. Centrifugation should be performed at 3000 rpm for 10 minutes for most tests.
- c. For most tests, serum and plasma should be physically separated from contact with cells as soon as possible with a maximum time limit of two hours from the time of collection. Refer to test procedures for specific requirements.
- d. Serum and plasma must be separated from cells less than 2 hours after collection: potassium, ACTH, cortisol, catecholamines, lactic acid, homocysteine, lactate dehydrogenase. Refer to test procedures for specific requirements.

- e. Centrifuge tubes once, unless there is a specific requirement for double spinning a sample or test.
- f. Tubes of blood, serum, plasma are to be kept closed at all times. This prevents possible exogenous contamination, evaporation, concentration changes or possible spillage and aerosols.

**4. Specimen Transport:**

- a. All laboratory specimens must be placed in a bio-hazard bag for transport to the laboratory.
- b. All specimens and request slips or nurse downtime forms must be properly labeled with the name of the patient, collection date and time, the origin or source of the sample other than blood.
- c. Specimen may be sent to the laboratory via the pneumatic tube system or by hand delivery.
- d. All specimens sent to the laboratory must be properly packaged.
  - i. Note: Most problems with tube systems occur when the items are improperly packaged or carriers are not closed tightly. This can cause a jam or contamination of the system.
- e. Under no circumstances will contaminated needles or other sharp, contaminated objects be transported in the PTS system.
- f. Containment prevents leakage. Immobilization of the contents of the carrier is required to prevent breakage. Carriers are provided with padded liners to immobilize the contents in conjunction with bio-hazard bags.
  - i. Liquids must be in a leak-proof container and sealed in a secondary, zip-lock bag to prevent leakage should the primary container fail.
  - ii. Leakage is due to improper packaging and non-immobilization of contents and failure to tighten container lids or use of non-leak proof containers.
- g. Irreplaceable samples or specimens that are hard to obtain, such as amniotic fluid and CSF, must be hand carried to the laboratory instead of using the pneumatic tube system.
- h. The following specimens must be chilled and processed immediately after collection: catecholamines, ammonia, lactic acid, pyruvate, gastrin, homocysteine, ionized calcium.
- i. Time sensitive specimens must be submitted to the lab and analyzed within the specified time limits. Time sensitive specimens include, but are not limited to the following tests: Arterial blood gas, ammonia, body fluid pH, homocysteine, CSF, Ionized calcium, lactic acid, PTH Cal, PTH OR, Venous blood gas.

**5. Specimen Storage:** When testing is completed, the lab retains most specimens at refrigerated temperatures. If add-on tests are requested, the specimen will be assessed for acceptability based on specific test storage requirements.

- a. Tubes for coagulation are retained at room temperature and discarded at the end of the day.
- b. Tubes for hematology analysis are discarded after 2 days, up to 7 days depending on storage availability
- c. Tubes for chemistry analysis are discarded after 5 days, up to 7 days depending on storage availability.
- d. Tubes for Blood Bank analysis are retained for 14 days.
- e. Urine samples are discarded after 2 days, up to 3 days depending on storage availability.
- f. CSF samples are retained frozen up to 6 months, depending on storage availability.
- g. Body fluids are retained for 2 days, up to 7 days depending on storage availability.

**6. Specimen Rejection:** The accuracy and precision of laboratory results depends on the quality and integrity of the specimen collected. Refer to section specific guidelines regarding specimen acceptance.

- a. PHLS will not perform test on samples if the specimen received is:
  - i. Unlabeled - If the specimen is considered irreplaceable, such as CSF, the laboratory will call the healthcare provider to notify that the specimen would be run but with documentation that PHLS could not be certain if the result will be accurate.
  - ii. Mislabeled - If the specimen is considered irreplaceable, such as CSF, the laboratory will call the healthcare provider to notify that the specimen would be run but with documentation that PHLS could not be certain if the result will be accurate.
  - iii. Improperly labeled, mislabeled or unlabeled specimen.

- iv. Improper patient preparation relevant to specific tests.
- v. Hemolyzed - Grossly hemolyzed samples will be rejected because it could affect accuracy of some analytes.
- vi. Short draw sample will significantly affect coagulation tests because there is an insufficient amount of blood for the amount of anticoagulant present, which can lead to incorrect test results.
- vii. Clotted samples for anticoagulated sample will significantly affect platelet count and coagulation results.
- viii. Specimens which require centrifugation and have not been spun within 2 hours of collection. Refer to test procedures for specific test requirements for exceptions.
- ix. Specimens exposed to temperature extremes.
- x. Specimens that exceed specimen stability limits. See form, [Specimen Storage and Stability Summary](#).
- xi. Specimens that have not been stored properly for the test ordered.
- xii. Improperly handled. All specimens must be handled and stored as directed if not sent to the laboratory as soon as possible.

**D. References:**

1. Procedures for the Handling and Processing of Blood Specimens; Approved Guideline - Third Edition; H18-A3, Clinical and Laboratory Standards Institute, 940 West Valley Road, Suite 1400, Wayne, PA, 19087-1898 USA, 2004.

**I. PUBLICATION HISTORY:**

<b>Revision Number</b>	<b>Effective Date</b>	<b>Document Owner</b>	<b>Version Notes</b>
12 (this version)	08/11/2017	Maribel Teng, Mgr Lab QA-QM-Pt Experience	Annual review.[Owner changed from Austria, Gloria to Teng, Maribel by Avila, Julie on 10-NOV-2017]
11 (Changes)	08/09/2016	Gloria Austria, Dir Laboratory Svcs	Annual review with minor revisions.
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9 (Changes)	03/15/2015	Gloria Austria, Dir Laboratory Svcs	Revised to update micro specimen requirement
8 (Changes)	04/24/2014	Gloria Austria, Dir Laboratory Svcs	Updated direction for Aptima collection kits for Chlamydia and GC. Added Shiga Toxin.
7 (Changes)	01/31/2014	Gloria Austria, Dir Laboratory Svcs	Added urine specimens for culture may be submitted in BD Vacutainer? C&S Preservative Tubes and instructions for use.
6 (Changes)	04/04/2012	Gloria Austria, Dir Laboratory Svcs	PMC MEC Approved 1/23/2012 POM MEC Approved 1/31/2012 Annual review Formatted by ja Added at review: Annual review, no revision. [Reviewed on 3/14/2013 by Gloria Austria: Extended review to 3/14/2014]
5 (Changes)	04/07/2011	Gloria Austria, Dir Laboratory Svcs	

4 (Changes)	04/22/2010	Gloria Austria, Dir Laboratory Svcs	Review purpose, no revision
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1 (Changes)	04/25/2008	Gloria Austria, Dir Laboratory Svcs	Revised to add medical record and requisition number for specimen labeling. Revised Standard of Practice, A5 to change use initials to use employee id number for collection identification
0 (Changes)	03/11/2008	Gloria Austria, Dir Laboratory Svcs	Revised for annual review.

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**I. REFERENCES:**

Reference Type	Title	Notes
<b>Standards which reference this document</b>		
Applicable	URN.22000	
Applicable	COM.06300	
Applicable	COM.06100	
Applicable	COM.06000	
Referenced Documents	Blood Culture Specimen Collection	
Referenced Documents	Neonatal Specimen Requirements	
Related Documents	Patient Specimen Identification Standards	
Referenced Documents	Phlebotomy Procedure	
Referenced Documents	Specimen Collection and Handling f or Coagulation	Specimen Collection and Handling for Coagulation
Related Documents	Specimen Collection and Handling f or Coagulation	

Referenced Documents

Referenced Documents

Referenced Documents

[Specimen Requirements](#)

[Specimen Stability and Handling](#)

[Specimen Storage and Stability Summary](#)

[Specimen Stability and Handling](#)

[Specimen Storage and Stability Summary](#)

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<https://www.lucidoc.com/cgi/doc-gw.pl?ref=pphealth:25512>.