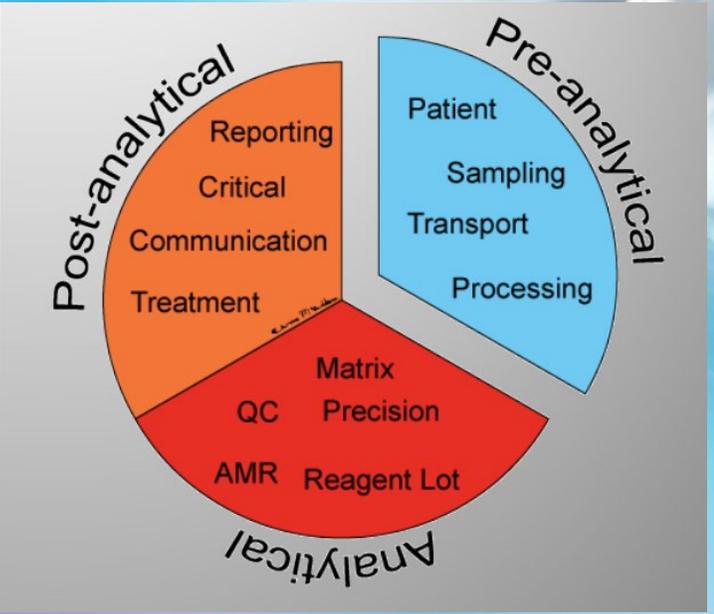


INTRODUCTION TO PRE- ANALYTICAL LAB ERRORS



AMY KINGSLEY, CLS, MLS(ASCP)^{CM}
SHARON MCGOLDRICK M.ED, CLS



BASIC PHLEBOTOMY PRACTICES TO REDUCE PRE-ANALYTICAL LAB ERRORS



Over 70% of diagnostic and treatment decisions made by clinicians are based on medical laboratory test results.

Lab team-
Pathologists and Pathologists' Assistants
Medical Directors
Clinical Lab Scientists
Medical Laboratory Technicians
Phlebotomists
Lab Assistants





UC Davis Health Clinical Laboratory Locations

Core Lab (SESP)

- Specimen Processing
- Hematology & Coagulation
- Transfusion Medicine
- Chemistry



Specialty Testing Center

- Microbiology
- Toxicology
- Special Chemistry
- Immunology





■ The Department of Pathology has **4** testing locations that are CAP accredited.

■ Testing Volume

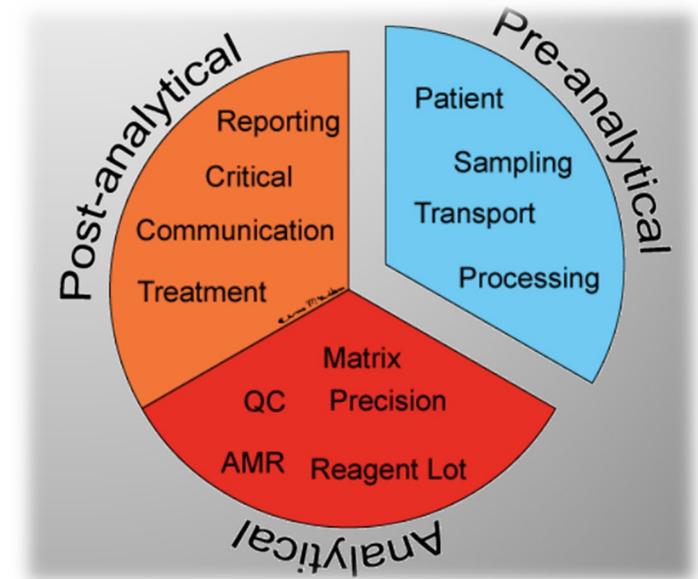
1. Main Lab at SESP: 8,648,673
2. STC Lab- Specialty Testing Lab: 898,447
3. Pathology Building: 261,849
4. Cancer Center Lab: 135,971

Last year's total volume: 9,944,940

■ Daily Average: ~27,250 tests

Laboratory Errors

- ❑ Pre-Analytical
 - Order
 - Specimen collection**
 - Processing
 - Transportation
 - Storage
- ❑ Analytical
 - Testing wrong patient
 - Instrument problems
 - Quality Control failure
- ❑ Post-Analytical
 - Calculation error
 - Posting results to wrong patient's record
 - Not reporting or not documenting critical values



Goal is to draw specimens correctly to provide the lab with a quality sample, the healthcare team with a meaningful test result and the patient with a minimum number of sticks.



Quality Specimens = Quality Results

Over 70% of diagnostic and treatment decisions made by clinicians are based on medical laboratory test results

Pre-Analytical Errors: **Specimen Collection**

- Patient ID (misabeled/unlabeled specimens)

- IV contamination-dilution effect

- Hemoconcentration

- Carryover Effect

- Hemolysis

- Clotting

- Quantity Not Sufficient (QNS)

- Wrong container for test (often seen in Microbiology)

PHLEBOTOMY QUIZ

- What is recommended time to leave ***tourniquet*** on during specimen collection by venipuncture?
- What is meant by “***order of draw***”?
- What is “carryover effect”?
- Name 3 results of incorrect phlebotomy technique.
- Name 3 tests that can be affected by incorrect phlebotomy technique.
- Name 3 things that can cause hemolyzed or clotted specimens.

Patient Identification- is a **MUST**

- Make positive patient identification using at least 2 identifiers
The Joint Commission NPSG01.01.01
UCDHS Venipuncture Verification and Blood Withdrawal Policy # 13029
UCDHS Specimen Labeling for Laboratory Processing Policy # 18004
- Compare identification on lab order to patient identification on wrist band
- Compare each label to patient identification on wrist band

Venipuncture Preparation

- Needle

Vacuum system – preferred

Syringe with needle – used for small & fragile veins (Requires Transfer Device to fill tubes)

Butterfly – hand veins, pediatric patients

- Tourniquet

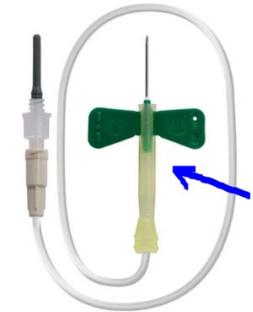
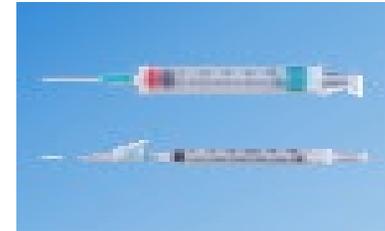
- Alcohol routine blood draws

- CHG (Chloro-Prep) for blood cultures

- Tubes – based on tests ordered and volume required

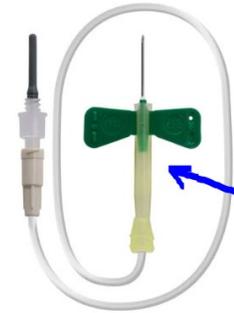
- PPE: gloves, goggles, mask, gown, respirator

- Post-venipuncture care (gauze, tape, Band-Aid)



Venipuncture

- Cleanse site and allow to **air dry**
- Tourniquet < **1 minute**
- Anchor vein and insert needle at ~ **30-degree angle**
- If blood is flowing freely, release tourniquet (<**1 minute**)
- Fill tubes using **correct “Order of Draw”**
- **Fill tubes completely** to the required volume
- **Invert each tube 8-10 times immediately** after collecting
- Remove needle and use safety device
- **Use transfer devices** for syringe draws
- Recheck labels
- Specimen transport



Specimen Integrity Problems

- Hemolysis
- Clotting
- IV contaminated-dilution effect
- Quantity Not Sufficient (QNS)
- Hemoconcentration
- Carryover Effect

Commonly Used Tubes & Correct Order of Draw

- Sterile Blood Cultures
- LTBLU: Blue top (sodium citrate)
- RED: Red top (serum tube, has clot activator)
- SST: Gold top (serum separator tube, has clot activator + gel separator)
- LTGRN: Light Green top PST (lithium heparin)
- DKGRN: Dark Green (sodium heparin)
- LAV: Purple top (EDTA)
- ACD: Yellow top (acid citrate dextrose)
- GRAY: Gray top (sodium fluoride/potassium oxalate)

Carryover Effect- When trace amounts of additives in one tube are transferred to the next tube

FOLLOW CORRECT ORDER OF TUBE DRAW

UC Davis Health System
Department of Pathology & Laboratory Medicine
Order of Draw Guide - Vacutainer Common Tubes

Sterile Blood Culture Bottles are always collected first when drawn at the same time as other lab tests/tubes.



Lab Test Directory www.testmenu.com/ucdavis
 Client Services (916) 734-7373

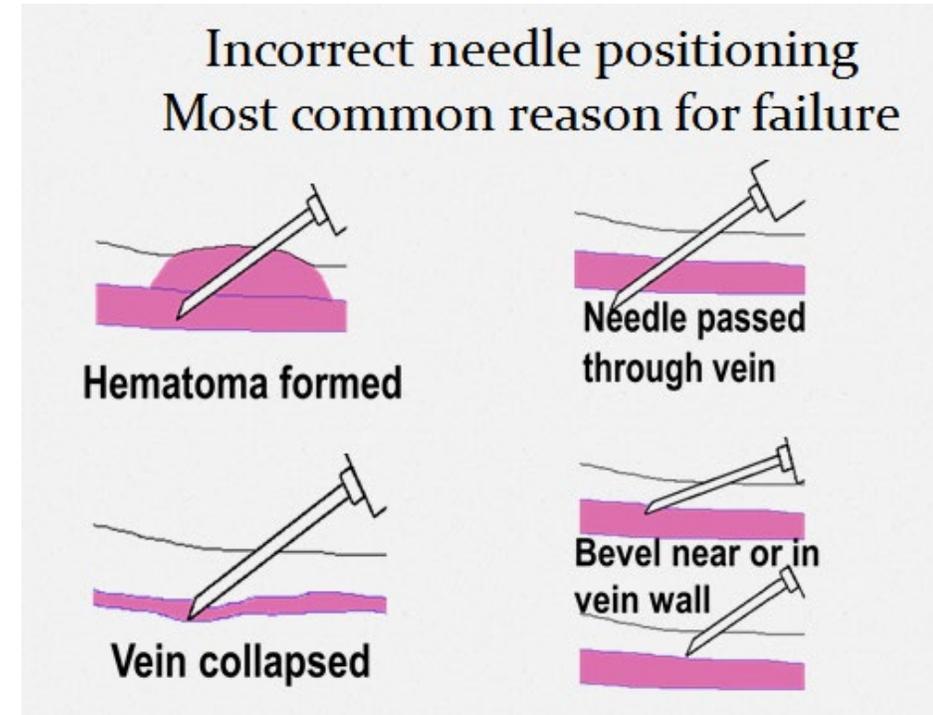
	# 1: [LTBLU] Blue/Lt Blue Top Sodium Citrate 2.7 mL or 1.8 mL (pediatric)		# 5: [DKGRN] Dark Green Top Sodium Heparin 4 mL
	# 2: [RED] Red Top 4 mL or 0.6 mL microtainer		# 6: [LAV] Lav/Purple Top (EDTA) 4 mL or 0.5 mL microtainer
	# 3: [SST] Gold Top Serum Separator Tube (SST) 5 mL, 3.5 mL, or 0.6 mL microtainer		# 7: [ACD] Acid Citrate Dextrose 8.5 mL
	# 4: [LTGRN] Light Green Top Lithium Heparin (PST) 3 mL or 0.6 mL microtainer		# 8: [GRAY] Gray Top (Sodium Fluoride/Potassium Oxalate) 4 mL or 0.6 mL microtainer

Collecting blood in wrong order may cause cross contamination of additives in lab tubes, false increase in coagulation times, contaminated blood cultures, inaccurate test results.

Hemolysis

Hemolysis caused by mechanical trauma to cells:

- not letting alcohol dry before venipuncture
- excessive pulling on syringe
- needle too small (causes increased pressure)
- improper needle placement in vein
- not using transfer device and/or pushing blood through stopper of tube
- vigorous shaking of tube instead of inverting
- drawing thru IV or Central Line
- milking site of capillary puncture or scooping or scraping of blood into tube



Clotting

Clotting may be caused by

- Leaving blood too long in syringe before transferring to tubes
- Improper mixing-Best practice is to invert tubes 8-10 times immediately after collection (includes microtainers)

IV Contamination

- **IV contamination & dilution effect**

Avoid arm with IV

Shut off IV for 2 minutes *(follow nursing policy) and draw below IV

Discard first 5 cc blood (usu. 2.5 times dead space volume; follow nursing policy)

- **Vascular Access Devices (VADs)**

Vascular access devices, such as catheters and needles, exert shear forces during blood flow, which creates a predisposition to cell lysis

Limited access (who can access, # times can access); requires flushing and may require discard-reinfusion of blood for neonates/critically ill

Can result in heparin contamination of sample: ensure to use proper discard volume

Higher rate of hemolyzed samples compared to venipuncture: avoid pulling too hard or too fast on the syringe when withdrawing blood from VAD

QNS (Quantity Not Sufficient) & Under Filled Tubes

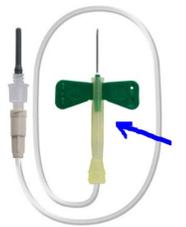


QNS typically encountered difficult sticks & add-on tests

- “Hard stick”, poor blood flow- microtainers available

Correct volume is critical to maintain correct blood to anticoagulant ratio. Use the Lab Test Directory as a guide to minimum volumes

- Underfilled CBC tube (lavender) causes falsely decreased HCT and MCV
- Must use “discard” tube for Coags (blue top) **IF** a butterfly is used; allows for dead space/air in the line to be cleared allowing proper tube filling
 - Under filled blue top tubes: yield falsely increased coagulation times
 - blue top tubes -Underfilled, clotted, and hemolyzed are all canceled
- Volumes are critical for Blood Culture bottles for best organism recovery (QNS may lead to false-negative result)



Hemoconcentration



- Blood can pool at the venipuncture site when occluded
 - Some analytes will remain in vessel and temporarily and significantly increase in concentration WBC, RBC, Hgb, Hct, glucose, K+, ionized calcium, albumin, triglycerides, alk phos, total protein
 - Can lead to erroneously high or low levels of certain analytes.

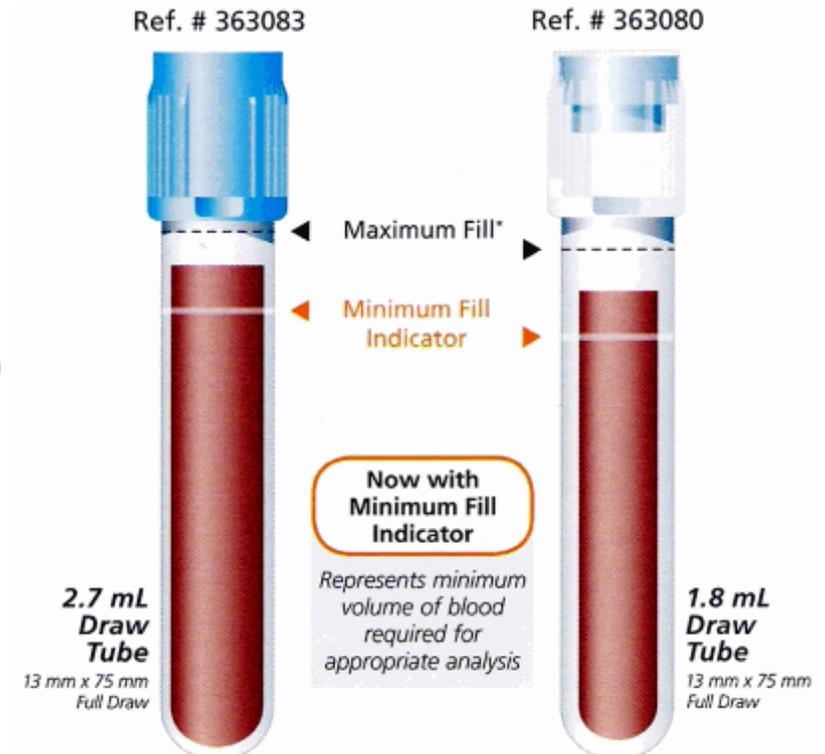
DON'T LEAVE TOURNIQUET ON > 1 MINUTE (DON'T RECOMMEND FIST PUMPING)



Error	Effect	1 st Tube Drawn	2 nd Tube Drawn	Analyte to be Tested
None	No carryover	1st = light green (lithium heparin)	2nd = purple (potassium EDTA)	K+ = 3.5 mEq/L
incorrect order of draw	carryover of anticoagulant	1st = purple (potassium EDTA)	2nd = light green (lithium heparin)	K+ = 4.5 mEq/L
incorrect order of draw	carryover of anticoagulant	1st = light green (lithium heparin)	2nd = blue (sodium citrate)	PTT > 150 seconds
hemolysis	↑ K+	light green	n/a	K+ = 5.7 mEq/L
hemolysis	↓Hct ↓Hgb	purple	n/a	Hct = 20 % Hgb = 6.7 gm/dL
clotted	↓PLTS	purple	n/a	PLTS = 15,000
mislabelled	WBIT	purple	n/a	ABO/RH = A+ type = B+) (historical
IV contamination	↓Hct	purple	n/a	Hct = 13 %
IV contamination	↑ glucose	gray	n/a	Glucose = 800 mg/dL
QNS (underfilled)	wrong anticoagulant to blood ratio	blue top	n/a	INR = 0.7

Common Pre-analytical Errors

- Sample collected in wrong tube (CBC ordered – red tube collected/sent)
- Glucose ordered; sample not spun
 - Glucose obtained from unprocessed blood samples can decrease 5%–7% per hour due to glycolysis
- Clotted
- Hemolyzed
- Incorrectly filled (QNS)
 - ESR
 - Coagulation Studies (Blue top/Citrate Tube- binds Ca^{++})



SPECIMEN PHASES

Patient Identification
Pre-Analytical

- Ordering Issues
- Specimen collection
- Labeling Issues
- Specimen processing
- Transport

Analytical

- Testing Issues
- Quality Control
- Device Malfunction

Patient Identification
Post-Analytical

- Reporting
- Interface Issues
- Delayed communication to clinician

COMMON SPECIMEN ERRORS

Collection Issues	Labeling Issues
Wrong Container for Test	Unlabeled specimens
Underfilled/ Overfilled Tubes (Urine specimens, QuantiFERON Tubes)	Mislabeled Specimens/ Incomplete Labels
Expired collection tubes/ kits	Unlabeled primary containers - Slides to Micro, container labeled, slide unlabeled
Results	Ordering Issues
POCT tests performed on expired cartilages/ kits	Unclear or Incorrect orders
POCT procedures not followed	Missing requisitions

CULTURE URINE, BACTI
MICG000051

Ordering **Collection** Result Interpretation Administrative

Performed

Daily

Methodology

Standard reference procedures for aerobic bacterial culture and identification

Reported

Preliminary: 1 day

Final: (typically) 1-3 days

Synonyms

- URINE CULTURE



Ordering **Collection** Result Interpretation Administrative

Collect

URINE - Midstream clean catch or catheter urine >= 4 mL, submit in a Urine C&S Preservative - gray top tube.

Only when volume is less than 4 mL, submit in sterile urine cup on ice. Deliver to the laboratory immediately.

Indwelling Catheter

1. After proper site cleansing, use a syringe to enter the sampling port or 21-gauge needle and syringe if sampling port is not available. Withdraw approximately 10 mL of urine.
2. Place collected urine in a Urine C&S Preservative tube - gray top. If less than 4 mL collected, place urine in a sterile container and transport on ice immediately to the lab.

Clean-voided Urine

1. After proper site cleansing, grasp the collection cup on the outer surface only. Fingers should be kept away from the rim and inner surface of the container. Pass a small amount of urine into the toilet and then move the cup into the urine stream while urinating. Collect at least 15-20 mL or fill the cup half full.
2. Void remaining urine into the toilet. Securely close the cap of the container.
3. Place collected urine in a Urine C&S Preservative tube - gray top. If less than 4 mL collected, place sterile cup on ice and transport immediately to the lab.

For Infants

1. Collect urine specimens through a catheter or infant bag. Check the bag frequently so urine specimen can be collected immediately after it is voided. If the patient has not voided within 30 minutes, remove the bag, rescrub the patient and attach a new collection bag. Do not submit urine collected from diapers.
2. Place collected urine in a Urine C&S Preservative tube - gray top. Do not submit infant bag. If less than 4 mL collected, place in sterile cup on ice and transport immediately to the lab.

Notes

If culture and urinalysis are desired, order URINALYSIS AND CULTURE IF IND. Two separate urine samples must be submitted, one sample in a yellow-top Urinalysis tube and the other sample in a Urine C&S Preservative gray-top tube.

CASE STUDY 1

Issue: Wrong transport container used

- Urine sample collected for Bacterial Urine Culture.
- Micro Lab received 50ml of urine in a sterile container
- Correct transport container = boric acid (grey top) tube

Resolution:

- Specimen recollection
- Staff Education

CASE STUDY 2

Issue: Mislabeled specimen

- UACII collected at the clinic, received in the clinical lab and test resulted at 1257 HRS.
 - Specimen clear, microscopic/culture not required.
- 1720 HRS the same day- a new specimen received **labeled with same order label number**, not batched to lab WITH collection time 1115.
- Unknown where the second specimen came from (not batched).
- Second sample received was visibly markedly different (turbid not clear) than the initial patient sample received
 - turbid specimens require microscopy.
- lab had no ability to tell which specimen received was collected from the intended patient
 - original results from day shift were amended as possible mislabel, and physician informed.
 - Client services notified to contact md for new order and follow up with patient for recollection.

Resolution:

- Clinic notified
- Specimen recollected

CASE STUDY 3

Issue: Specimen unlabeled and received in the lab greater than 24 hours after collection.

- Micro Lab received a swab for culture-collected at 1345 HRS on a Tuesday which was received on a Thursday morning
 - two labels were in the specimen bag with a comment "MA came down and labeled specimen 1315".
- It was unclear if the specimen was completely unlabeled, or if there was a question as to which label belonged on the specimen. If specimen was unlabeled, it is also unacceptable.
- *specimens greater than 24 hours old are unacceptable for culture due to specimen degradation.*
- Sample canceled- and request for recollection made

Resolution:

- Provider and MA notified of need to recollect
- Additional training provided to the back office (and float) teams-
 - place samples in transport buckets to be picked up QUICKLY
 - labeling and correcting labeling must take place at bedside- not after collection completed and sample placed in common area

CASE STUDY 4

Issue: Unauthorized Instrument operator

- When lab addressing results flagged for interface to EPIC, a MRN discrepancy was discovered
- operator documented in EPIC as running the patient sample in question, was contacted.
 - Clarified to pathology that she had only scanned her badge into the LIAT
 - sample was run by another individual.
- All Point of Care instruments require training, All appropriately trained staff will have access to Point of Care devices under their own badge.
- With further investigation, the staff that ran the test did not have complete training or skills assessment completion at the time of the incident to perform patient testing
- **Resolution:**
- incident discussed with clinic management and Staff Involved
- Issue to compliance
- Staff educated on use of badge access

CASE STUDY 5- ENSURE ALL SAMPLES ARE CORRECTLY IDENTIFIED AND LABELED

Issue Discrepant Order:

- Surgical Pathology lab received a specimen container which did not match specimen source in EPIC(mislabeled sample).
- Ordering RN **entered** specimen D as, "**colon, CECUM-polyp x 2 biopsy forceps.**" & labeled samples the same
- Per GI fellow **EMR specimen** message- the correct designation for specimen D is "**rectum.**"
- Per policy, Unlabeled, Mislabeled, and Incomplete Requisitions/Sub-Optimal Specimens, "specimens submitted [...] with discrepant information may be returned to the submitting area for corrective action or held until discrepant information is corrected or resolved."

Resolution:

- re-education to staff placing orders to correctly order the specimens by selecting the appropriate source/laterality. Email reminder with reference to policy and Joint Commission National Patient Safety Goal sent to employee;
- Reminder staff to also verify the specimen container matches the accompanying requisition form.
- Specimen ID clarified via EMR message and processed.

CASE STUDY 6- TRANSPORT CONTAINER LABELED; TUBES UNLABELED

Lab received

- Ambry Kit with transport box labeled and paperwork included. Tubes were not labeled but loose in the transport box.

Resolution:

- Unlabeled tubes may not be processed for testing- regardless if received in a clearly labeled box with completed paperwork.
- Reminder to verify all specimens are labeled, regardless if placed in a collection transport unit.
- Specimen were canceled and nursing notified of a required recollection.



SAMPLE COLLECTION, SAMPLE LABELING AND SAMPLE TRANSPORT

PENDING LABS – KARDEX

John Doe
Legal: Travis Xxtestmytonomy
Male, 35yr, 11/18/1989
MRN: 9401283
Bed: D11T-11745-117452
Service: (A) Hospital Medicine Faculty Service
Level of Care: Med/Surg
Code: Not on file
ACP Docs: None on file

Johl, Hershan S, MD
Attending

Allergies: Not on File

ADMITTED: 11/18/2024 (141 D)
Patient Class: Inpatient
No expected discharge
No active principal problem
No vital signs recorded for this encounter.

Summary

Kardex | Inf Ctl Micro Report 2 Yrs | Bedside Handoff Rpt | Transfer Report | Flowsheet hyperlink | 72-Hour Summary | Discharge View | Order History | Active LDA's | UCD PATI

Lab and Blood Bank Orders to be Collected

Scheduled	Task	Status
04/08/25 0945	Print Label for Culture Urine, Bacti	Incomplete
04/08/25 0945	Print Label for Urinalysis and Culture if Ind	Incomplete
04/08/25 0945	Print Label for Urinalysis-Complete	Incomplete
04/08/25 0945	Print Label for CBC No Differential	Incomplete
04/08/25 0945	Print Label for Urea Nitrogen, Blood (BUN)	Incomplete
04/08/25 0945	Print Label for Lactic Acid	Incomplete
04/08/25 0945	Print Label for DIC Screen, Surgical	Incomplete

Diet Orders

(From admission to next 72h)

None

Expiring Orders

(From admission, onward)

None

PENDING LABS – MANAGE LABS



John Doe
 Legal: Travis Xxtestmytonomy
 Male, 35yr, 11/18/1989
 MRN: 9401283
 Bed: D11T-11745-117452
 Service: (A) Hospital Medicine
 Faculty Service
 Level of Care: Med/Surg
 Code: Not on file
 ACP Docs: None on file

←
Snapshot
Order In...
Summary
Chart Re...
Results
Problems
History
Demograp...
Medications
Allergies
Implants
Patient ...
Manage O...
RN Admis...
RN Transfer
RN Disch...
Immuniza...
MAR
Intak

Manage Orders

Active Signed & Held Home Meds Order History **Manage Labs**

Manage Labs

Diagnostic / Lab / Blood Admin Orders Related Communication- Max 2000 Characters

Document Collection
[Jump to Work List to document specimen collection](#)

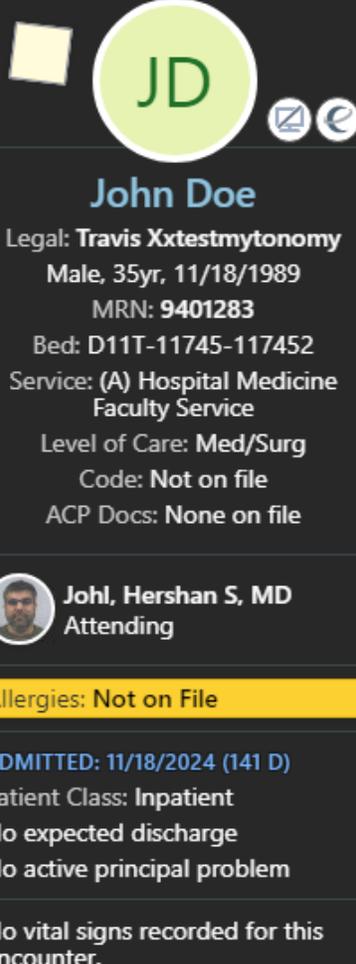
Update Collection Status
[Update Collection Status](#)

NOTE:Cancel an individual lab collection by clicking the appropriate Discontinue hyperlink. Use the Discontinue link on the right-hand side of the screen associated with the specific lab that was not collected. Do not use the Discontinue

Lab Orders
(24h ago, onward)

Start	Order	Action	Question	Answer	Comment
04/08/25 1000	Culture Respiratory (Includes GS), Bacti ONCE Status: Needs to be Collected References: Test Information: Specimen Type: SPUTUM Suspect Coccidioidomycosis? No Release to patient: Immediate	Collect Discontinue			
04/08/25 1000	Culture Respiratory, AFB ONCE Status: Needs to be Collected References: Test Information: UCDHS TB Indicators Adult Patient TB Clinical Predictor Tool Specimen Type: SPUTUM What degree of suspicion do you have for pulmonary Mycobacterium tuberculosis? Low/None Release to patient: Immediate	Collect Discontinue			
04/08/25 1000	Culture Respiratory, Fungal ONCE Status: Needs to be Collected References: Test Information: Specimen Type: SPUTUM Suspect Coccidioidomycosis? No Release to patient: Immediate	Collect Discontinue			

PENDING LABS – ORDER INQUIRY



John Doe
 Legal: Travis Xxtestmytonomy
 Male, 35yr, 11/18/1989
 MRN: 9401283
 Bed: D11T-11745-117452
 Service: (A) Hospital Medicine
 Faculty Service
 Level of Care: Med/Surg
 Code: Not on file
 ACP Docs: None on file

Johl, Hershman S, MD
 Attending

Allergies: Not on File

ADMITTED: 11/18/2024 (141 D)
 Patient Class: Inpatient
 No expected discharge
 No active principal problem
 No vital signs recorded for this
 encounter.

← →
SnapShot
Order In...
Summary
Chart Re...
Results
Problems
History
Demograp...
Medications
Allergies
Implants
Patient ...
Manage O...
RI

Refresh
Views ▾
Current
History
All
Release
Collect Specimens
CC Results
Pat. Reports ▾
Proc. Catalog

S..	Re...	Priority	P	Specimen Type	Specimens	Order	Lab Order Comments	Order Date	Q..
Lab									
		Routine		BLOOD		DIC Screen, Surgical		04/08/2025	
		STAT	↑	BLOOD		Lactic Acid		04/08/2025	
		Routine		BLOOD		Urea Nitrogen, Blood (BUN)		04/08/2025	
		Routine		BLOOD		CBC No Differential		04/08/2025	
		Routine		URINE		Urinalysis-Complete		04/08/2025	
		Routine		URINE		Urinalysis and Culture if Ind		04/08/2025	
Micro									
✓		Routine		SPUTUM		Culture Respiratory, Fungal		04/08/2025	✓
✓		Routine		SPUTUM		Culture Respiratory, AFB		04/08/2025	
✓		Routine		SPUTUM		Culture Respiratory (Includes ...		04/08/2025	✓
		Routine		URINE		Culture Urine, Bacti		04/08/2025	

SPECIMEN COLLECTION FUNCTIONALITY – KARDEX & MANAGE LABS

- All available tests relating to a specific specimen type will be pulled into the Collection Sequence
 - Example: Sample type = Urine

Collect specimens for Doe, John, Male, 35 yrs, MRN:9401283

Collection Sequence

- x2 UR
Urinalysis and Culture if Ind
Urinalysis-Complete
- UTT
Culture Urine, Bacti

URINE Specimens

Lab: UCD PAVILION LAB

- x2 UR
 - Urinalysis and Culture if Ind Scheduled: 4/8/2025 1000
Label (1) Yellow-top. Label (2) Grey-top.
[See Test Menu](#)
 - Urinalysis-Complete Scheduled: 4/8/2025 1000
[See Test Menu](#)

Lab: UCD SPECIALTY TESTING CTR

- UTT
 - Urine transport tube or sterile container. **SEE VOLUME INSTRUCTIONS**
>4mL collected: Transfer into a boric acid (gray top) urine transport tube (UTT) to the fill-line and transport to the lab at Room Temp.
<4mL collected: Transport urine in sterile container on ice, immediately to the lab.
 - OUTPATIENT COLLECTION ONLY: If changing source from what was indicated during order entry, please use the "Add Comment" button to enter reason.
[See Test Menu](#)
 - Culture Urine, Bacti Scheduled: 4/8/2025 1000

SPECIMEN COLLECTION FUNCTIONALITY – KARDEX & MANAGE LABS

- If you DO NOT want to collect one or more of the tests pulled into the Collection Sequence
 - Click “Collect Later”. This returns the orders to the list of pending labs to be collected later.

Collect specimens for Doe, John, Male, 35 yrs, MRN:9401283

Collection Sequence

- ⊖ x2 UR
 - Urinalysis and Culture if Ind
 - Urinalysis-Complete
- ⊖ UTT
 - Culture Urine, Bacti

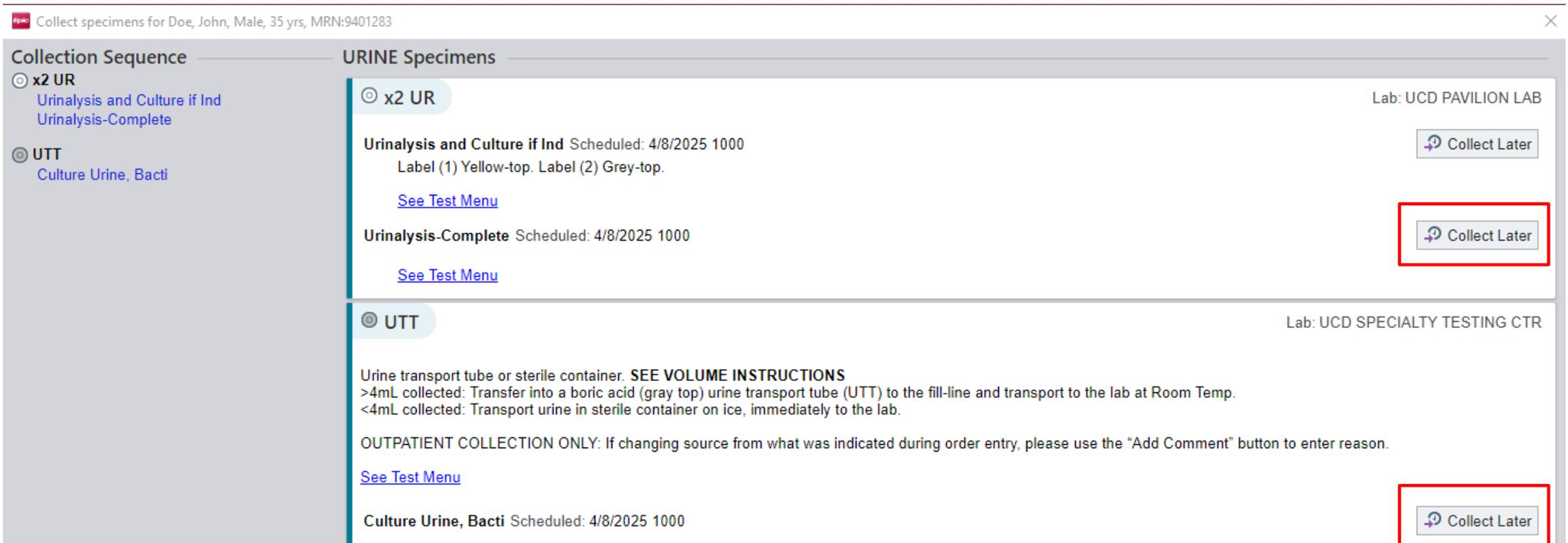
URINE Specimens

Lab: UCD PAVILION LAB

- ⊖ x2 UR
 - Urinalysis and Culture if Ind** Scheduled: 4/8/2025 1000
Label (1) Yellow-top. Label (2) Grey-top.
[See Test Menu](#)
 - Urinalysis-Complete** Scheduled: 4/8/2025 1000
[See Test Menu](#)

Lab: UCD SPECIALTY TESTING CTR

- ⊖ UTT
 - Urine transport tube or sterile container. **SEE VOLUME INSTRUCTIONS**
>4mL collected: Transfer into a boric acid (gray top) urine transport tube (UTT) to the fill-line and transport to the lab at Room Temp.
<4mL collected: Transport urine in sterile container on ice, immediately to the lab.
OUTPATIENT COLLECTION ONLY: If changing source from what was indicated during order entry, please use the “Add Comment” button to enter reason.
[See Test Menu](#)
 - Culture Urine, Bacti** Scheduled: 4/8/2025 1000

The screenshot shows a web interface for specimen collection. On the left, a 'Collection Sequence' sidebar lists 'x2 UR' (Urinalysis and Culture if Ind, Urinalysis-Complete) and 'UTT' (Culture Urine, Bacti). The main area, titled 'URINE Specimens', is divided into two lab sections. The top section, 'Lab: UCD PAVILION LAB', contains two test entries: 'x2 UR' (Urinalysis and Culture if Ind, Urinalysis-Complete) and 'UTT' (Culture Urine, Bacti). The bottom section, 'Lab: UCD SPECIALTY TESTING CTR', contains one test entry: 'UTT' (Urine transport tube or sterile container, Culture Urine, Bacti). Each test entry includes a 'Collect Later' button with a circular arrow icon. The 'Collect Later' buttons for the 'Urinalysis-Complete' and 'Culture Urine, Bacti' tests are highlighted with red rectangular boxes.

SPECIMEN COLLECTION FUNCTIONALITY – ORDER INQUIRY

- Only “check mark” the test(s) you want to collect.
 - All un-checked tests will remain as pending labs for later collection

John Doe
Legal: Travis Xxtestmytonomy
Male, 35yr, 11/18/1989
MRN: 9401283
Bed: D11T-11745-117452
Service: (A) Hospital Medicine
Faculty Service
Level of Care: Med/Surg
Code: Not on file
ACP Docs: None on file

Johl, Hershman S, MD
Attending

Allergies: Not on File

ADMITTED: 11/18/2024 (141 D)
Patient Class: Inpatient
No expected discharge
No active principal problem

Order Inquiry

Refresh Views Current History All Release Collect Specimens CC Results Pat. Reports Proc. C

S..	Re...	Priority	P	Specimen Type	Specimens	Order	Lab Order Con
				Lab			
		Routine		BLOOD		DIC Screen, Surgical	
		STAT	↑	BLOOD		Lactic Acid	
		Routine		BLOOD		Urea Nitrogen, Blood (BUN)	
		Routine		BLOOD		CBC No Differential	
		Routine		URINE		Urinalysis-Complete	
✓		Routine		URINE		Urinalysis and Culture if Ind	
				Micro			
		Routine		SPUTUM		Culture Respiratory, Fungal	
		Routine		SPUTUM		Culture Respiratory, AFB	
		Routine		SPUTUM		Culture Respiratory (Includes ...	

SPECIMEN COLLECTION FUNCTIONALITY – ORDER INQUIRY

- The test(s) you checked will be pulled into Collection Sequence

Specimen Collection

Collection Sequence	URINE Specimens
x2 UR & UTT-MICRO* Urinalysis and Culture if Ind	x2 UR & UTT-MICRO* Label (1) Yellow-top. Label (2) Grey-top. See Test Menu Urinalysis and Culture if Ind Scheduled: 4/8/2025 1000

Specimen Collection

Pre-collection Steps

✓ Answer collection questions

Collection Sequence

x2 {SPEC}*

Culture Respiratory, AFB

Culture Respiratory, Fungal

Culture Respiratory

SPUTUM Specimens

{SPEC}* (OTHER (SPECIFY IN ADDNL INFO))

Lab: SACTO. CO. PUBLIC HEALTH LAB

Send specimens on ICE. If Blood/CSF: AMBIENT
Swab specimens are inappropriate and will not be processed.
Specimens should not be placed in Anaerobic Transport Medium (ATM).

Refer to the Lab Test Directory for additional specimen collection instructions and acceptable specimen containers.

<https://www.testmenu.com/ucdavis>

Culture Respiratory, AFB Scheduled: 4/8/2025 1000

Collect Later

{SPEC}* (OTHER (SPECIFY IN ADDNL INFO))

Lab: UCD SPECIALTY TESTING CTR

Culture Respiratory, Fungal Scheduled: 4/8/2025 1000

Collect Later

Suspect Coccidioidomycosis?

Answer

No



Enter a comment



Enter a comment

Culture Respiratory Culture Respiratory (Includes GS), Bacti Scheduled: 4/8/2025 1000

Collect Later

Suspect Coccidioidomycosis?

Answer

No



Enter a comment



Enter a comment

Additional information – link to the Lab Test Directory

LAB TEST DIRECTORY

CULTURE RESPIRATORY, AFB SENDOUT

MICG000026  

Ordering

Collection

Result Interpretation

Administrative

Collect

NASOTRACHEAL ASPIRATE, SPUTUM, BRONCHIAL WASHINGS, SINUS, BRONCHOALVEOLAR LAVAGE, ENDOTRACHEAL ASPIRATE

Sputum - Collect only material brought up from the lungs after a productive cough. Do not collect sputum immediately after a mouth wash. A series of three daily early morning specimens, each submitted promptly to the lab after collection, is recommended. A minimum of 3mL is required. Do not pool specimens. For patients who have difficulty in producing sputum, specimens collected by inhalation of hypertonic saline induction may be used. Submit the specimen in a sterile, labeled container. Close lid tightly.

Type in specific specimen information in the comments field.

Unacceptable Conditions

Swab specimens are inadequate and will not be processed.
Frozen specimens

Storage/Transport Temperature

Specimen in a sterile, leak-proof container on ice. Place each specimen in an individual sealed bag.

Stability (from collection to initiation)

Room Temperature: 1 hr

Refrigerated or on ice: 24 hrs

INTERPRETING SPECIMEN LABELS



INTERPRETING SPECIMEN LABELS

Lab Location	
P	Pavilion Lab (Main hospital)
S	Specialty Testing Center
X	External Reference Lab

Clinical Pathology	
BB	Blood Bank
BG	Blood Gas
CC	Cancer Center Chemistry
CG	Coagulation
CP	Main Lab Chemistry
CS	Cocci Serology
EX	External Reference Lab
HC	Cancer Center Hematology
HP	Hematology
IM	Immunology
MI	Microbiology
MP	Molecular Pathology
SC	Special Chemistry
TX	Toxicology
UA	Urinalysis

Anatomic Pathology**	
SP	Surgical Pathology
CN	Cytology Non-GYN
CP	Cytopathology (pap smears)
FN	Fine Needle Aspirate
OC	Outside Consultation
OS	Outside Slide Consultation

****Anatomic Pathology specimen collection labels will not have the above case mnemonics until the specimen is received by the respective lab section. See subsequent slides for details.**

SPECIMEN LABEL EXAMPLES



Additional instructions

Specimen Container & Transport Conditions

Specimen Containers

{SPEC} = Anaerobic Transport Media (ATM), Sterile Container, Culture Swab

STERILE CONTAINER = Sterile cup or tube

Transport Conditions

T = Room Temperature

IC = On Ice

R = Refrigerated

Pre-collection Steps

🚫 Patient scan overridden

✅ Answer collection questions

Collection Sequence

STERILE CONTAINER

✅ 25S-098MI0005.1

🚫 Specimen scan overridden

SPUTUM Specimens

STERILE CONTAINER 25S-098MI0005

✅ Collected on 4/8/2025 at 1052 by KINGSLEY, AMY in D11 TRAUMA NURSING UNIT

Time	Date	Collector	Department
1052	4/8/2025	KINGSLEY, AMY	D11 TRAUMA NURSING UNIT

Source	Draw Type
OTHER (SPECIFY IN AD...)	Non-blood Collection Non-blood Collection

📝 Add Lab Comments

Culture Respiratory Culture Respiratory (Includes GS), Bacti Scheduled: 4/8/2025 1000

	Answer	Comment
Suspect Coccidioidomycosis?	No	Enter a comment

Add specimen comments

Collect specimens for Doe, John, Male, 35 yrs, MRN:9401283

Pre-collection Steps

⚠ Patient scan overridden

Collection Sequence

- ✔ LTGRN
✔ 25P-098CP0001.1
⚠ Specimen scan overridden
- ⊖ LAV
⚠ 25P-098HP0001.1
- ⊖ GRAY*
⚠ 25P-098CP0002.1
- ⊖ LTBLU*
⚠ 25P-098CG0001.1

Post-collection Steps

📄 Accept to save

Collection Details

Time: 1056 | Date: 4/8/2025 | Collector: KINGSLEY, AMY | Department: D11 TRAUMA NURSING UNIT

[Document individually](#)

BLOOD Specimens

✔ **LTGRN 25P-098CP0001** ✔ Collected on 4/8/2025 at 1056 by KINGSLEY, AMY in D11 TRAUMA NURSING UNIT

[See Test Menu](#)

Source: BLOOD, VENOUS | Draw Type: Venipuncture

Urea Nitrogen, Blood (BUN) Scheduled: 4/8/2025 1000

⊖ **LAV 25P-098HP0001** ⚠ Scan label or click to document collection

[See Test Menu](#)

Source: BLOOD, VENOUS | Draw Type: Venipuncture

CBC No Differential Scheduled: 4/8/2025 1000

⊖ **GRAY* 25P-098CP0002** ⚠ Scan label or click to document collection

*DELIVER STAT ON ICE
[See Test Menu](#)

Source: BLOOD, VENOUS | Draw Type: Venipuncture

Lactic Acid Scheduled: 4/8/2025 1000 **STAT**

No labels printed

📄 Reprint Labels

✔ Accept

- Unable to complete collection for all samples?
- Click Accept to complete collection for what you were able to collect and follow the pop-up prompts.

Go Back and Finish Collecting Specimens ✕

Consider collecting the remaining containers.

- ✓ LTGRN 25P-098CP0001
- ❗ LAV 25P-098HP0001
❗ 25P-098HP0001.1 needs to be scanned.
- ❗ GRAY* 25P-098CP0002
❗ 25P-098CP0002.1 needs to be scanned.
- ❗ LTBLU* 25P-098CG0001
❗ 25P-098CG0001.1 needs to be scanned.

- Selecting “Continue and Close” will let you finish completing the collection for the specimens you were able to collect.
 - NOTE: The tests you did NOT collect will fall off the Kardex Summary screen.

Summary

← **Kardex** Inf Ctl Micro Report 2 Yrs Bedside Handoff Rpt Transfer Report Flowsh

Update Collection Status
[Update Collection Status](#)

PRN Labs & POC Orders
 (From admission to next 72h)
 None

Scheduled POC Orders
 (From admission to next 72h)
 None

Point of Care Orders to be Released
[POC Orders to be Released](#)

Lab and Blood Bank Orders to be Collected

Culture Respiratory, AFB - ONCE, Prio: Routine, Needs to be Collected		
Scheduled	Task	Status
04/08/25 1000	Print Label for Culture Respiratory, AFB	Incomplete
<hr/>		
Culture Respiratory, Fungal - ONCE, Prio: Routine, Needs to be Collected		
Scheduled	Task	Status
04/08/25 1000	Print Label for Culture Respiratory, Fungal	Incomplete

- Review the Work List or Manage Labs tab for tests that still need to be collected

Work List

+ Add Task | Labs 8 | Today 0900 - 2200 | Only Overdue | Filter: My Discipline

Show: Completed

Time	Type	Task	Frequency	Priority	
0945	U	Collect Culture Urine, Bacti	One Time	Routine	Collect
0945	U	Collect Urinalysis and Culture if Ind	One Time	Routine	Collect
0945	U	Collect Urinalysis-Complete	One Time	Routine	Collect
0945	U	Collect CBC No Differential	One Time	Routine	Collect
0945	U	Collect Lactic Acid	One Time	STAT	Collect

Manage Orders

- Active
- Signed & Held
- Home Meds
- Order History
- Manage Labs**

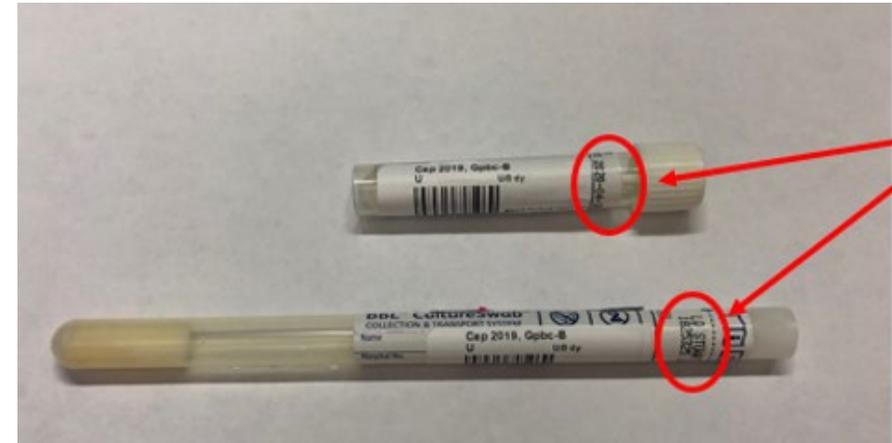
Lab Orders

(24h ago, onward)

Start	Order	Frequency	Action	Question	Answer	Comment
04/08/25 1000	Culture Respiratory (Includes GS), Bacti	ONCE	Collect	Specimen Type:	SPUTUM	
				Suspect Coccidioidomycosis?	No	
				Release to patient	Immediate	
04/08/25 1000	Culture Respiratory, AFB	ONCE	Collect	Specimen Type:	SPUTUM	
				What degree of suspicion do you have for pulmonary Mycobacterium tuberculosis?	Low/None	
				Release to patient	Immediate	

SPECIMEN CONTAINER LABELING GUIDE

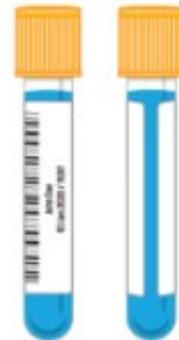
- Place the label so the barcode is parallel to the longest part of the tube or container
- Do not cover any manufacturer barcodes or expiration dates



Do not cover
lot # or
expiration
date



DO



DON'T



SPECIMEN LABELING



Do not cover the manufacturer barcode or lot information

Do not place label on the bottom of bottle



Leave window open for specimen volume to be visible to lab staff

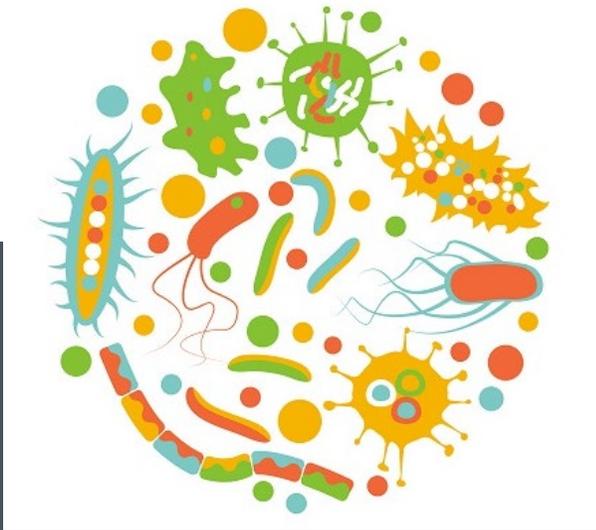


DO NOT cover **BLACK** line on the manufacturer label.
Black line indicates correct blood volume.

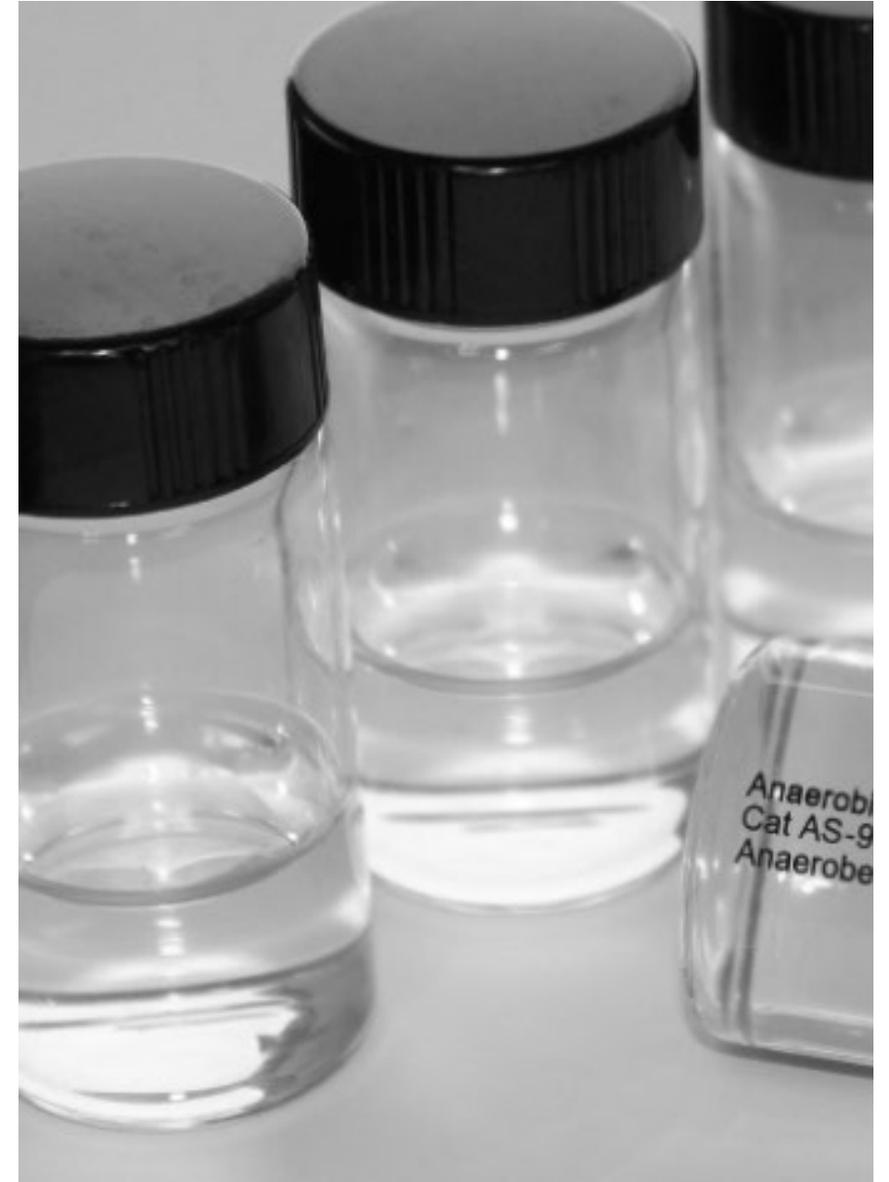
CORRECT SPECIMEN HANDLING

- ❑ One specimen per biohazard zip lock bag
- ❑ Send under proper temperature conditions
 - Refer to the Lab Test Directory or specimen label
 - Use a secondary bag for specimens transported “on ice”. Do not add ice directly to same bag as the specimen or submerge the specimen in ice.
- ❑ Send promptly to the lab – delays can cause specimens to be rejected





MICROBIOLOGY SPECIMEN COLLECTION



PURPOSE OF THE TRANSPORT CONTAINER

STABILIZE THE SPECIMEN DURING TRANSIT TO THE LAB

MICROBIOLOGY SPECIMEN CONTAINERS

- Check transport container expiration date**

- Transport media expires

- CAP prohibits testing specimens that have been collected in expired transport containers

- NO EXCEPTIONS**

MICROBIOLOGY SPECIMENS

❑ Collection container matters

- ❑ Use the correct collection container for the specimen and test ordered

RECTAL SWAB ONLY
C. diff Surveillance, ESBL Surveillance
&
Carbapenem Resistance Surveillance

Aerobic & Fungal Cultures, MRSA Surveillance,
Candida Auris Surveillance ONLY

Anaerobic Cultures



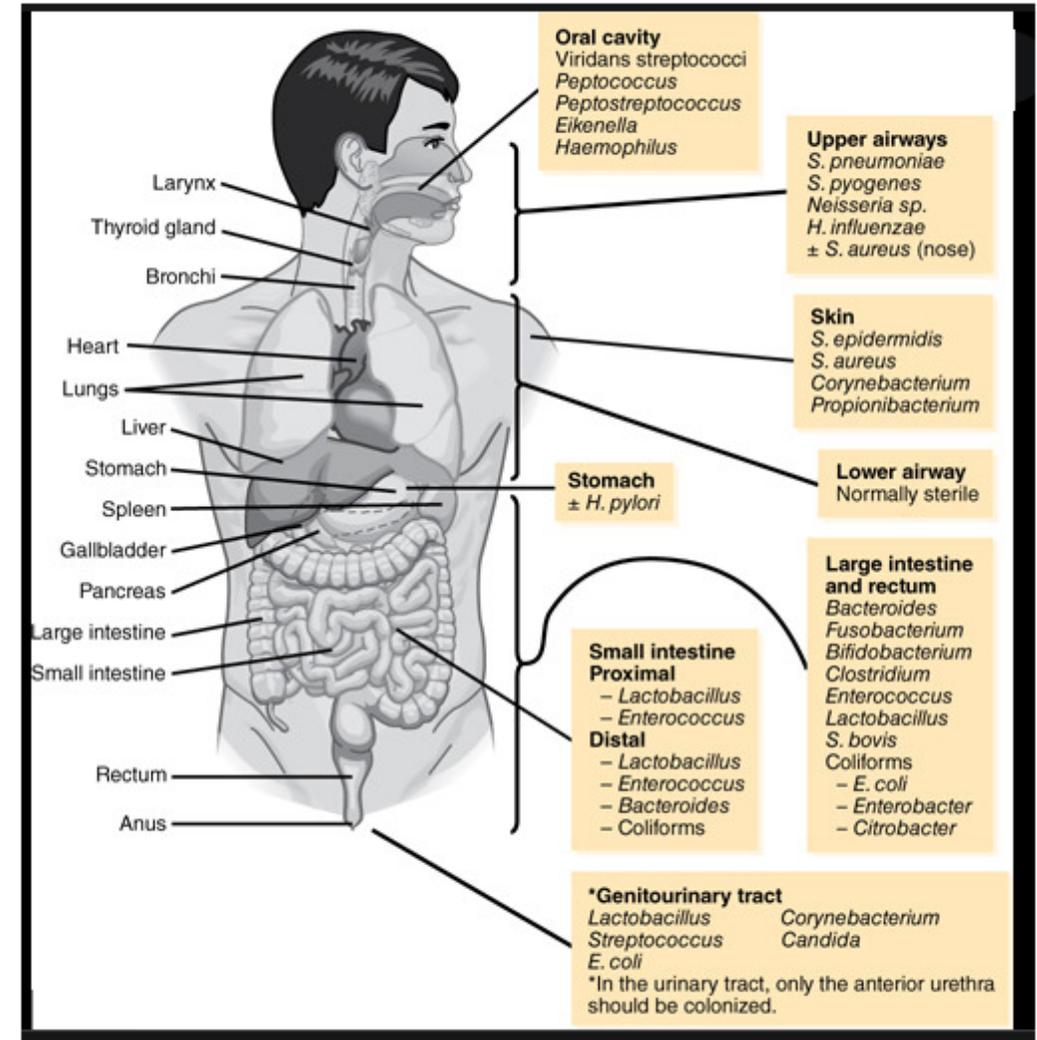
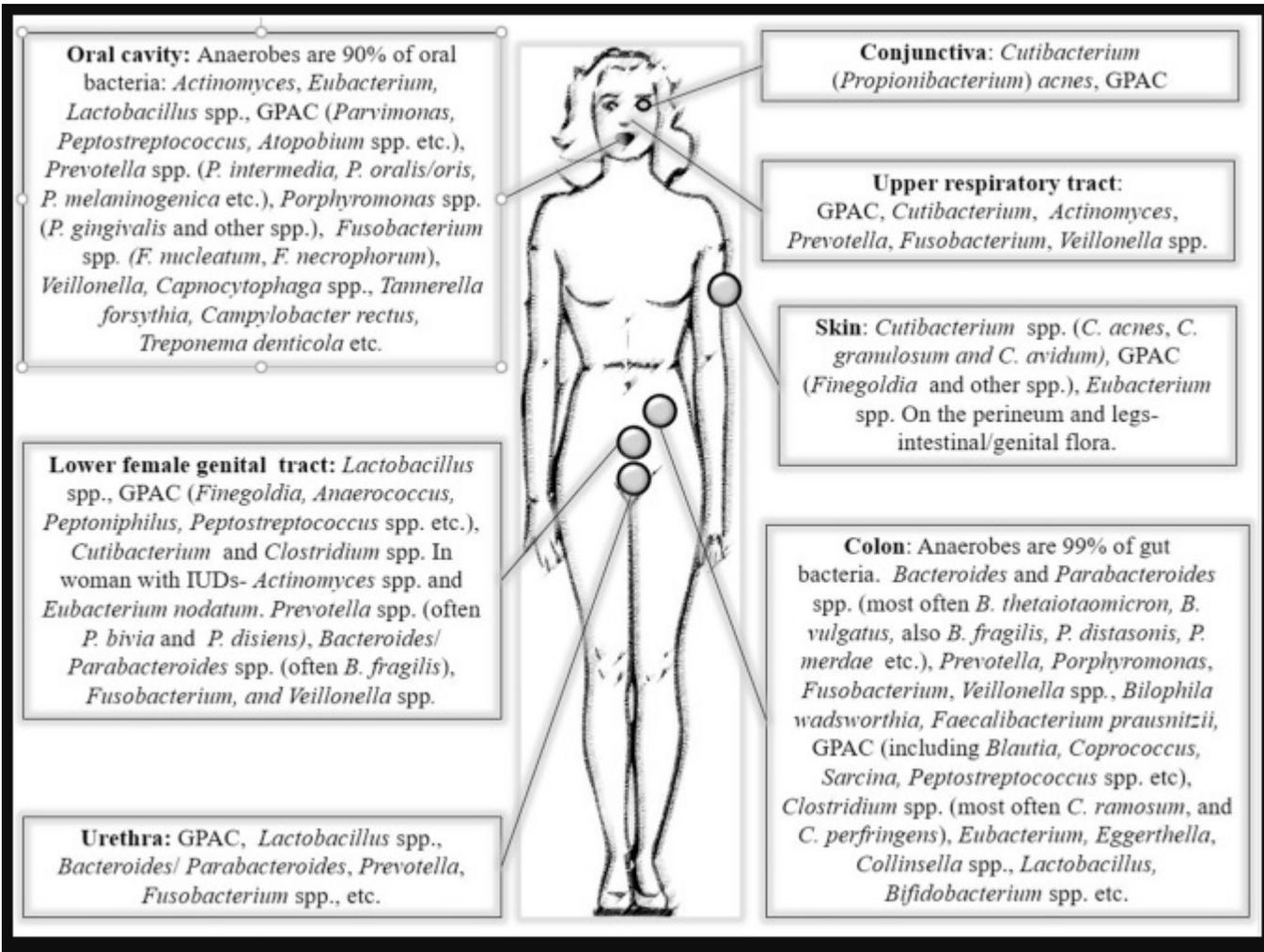
- ❑ Use correct transport conditions for the test
- ❑ Correct specimen:preservative ratio
- ❑ Do not over or under fill containers
 - ❑ Blood cultures – low volume will not be canceled

MICROBIOLOGY SPECIMENS

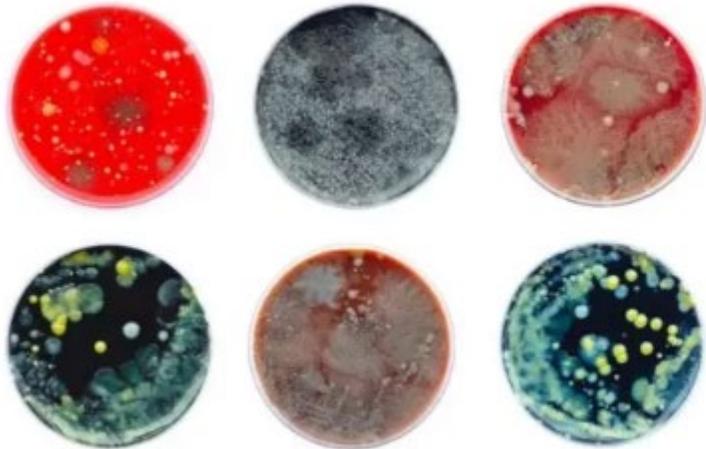
- ❑ **Source of specimen is very important!**
 - Bacterial cultures are set up based on the anatomical location of the body from which the specimen was obtained
 - **We must know the source of the specimen to process it correctly**



NORMAL BACTERIAL FLORA



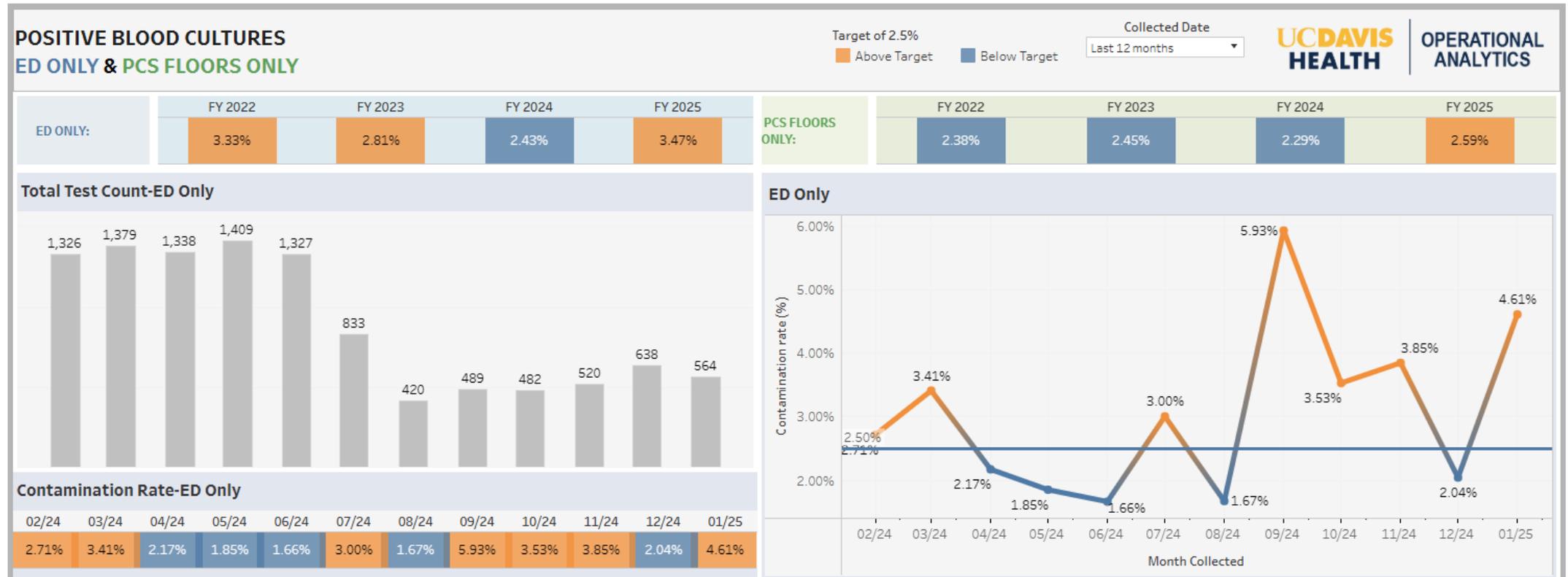
STANDARD AND SPECIALTY MEDIA



Medium	Composition	Uses
Nutrient agar	Nutrient broth, agar 2%	Routine culture
MacConkey medium	Peptone, lactose, sodium taurocholate, agar, neutral red	Culture of Gram-negative bacteria, such as <i>Escherichia coli</i>
Blood agar	Nutrient agar, 5% sheep or human blood	Routine culture, culture of fastidious organisms, such as <i>Streptococcus</i> spp.
Chocolate agar	Heated blood agar	Culture of <i>Haemophilus influenzae</i> and <i>Neisseria</i>
Deoxycholate citrate agar	Nutrient agar, sodium deoxycholate, sodium citrate, lactose, neutral red, etc.	Culture of <i>Shigella</i> spp. and <i>Salmonella</i> spp.
Thiosulfate citrate bile salt sucrose agar	Thiosulfate, citrate, bile salt, sucrose, bromothymol blue, thymol blue	Culture of <i>Vibrio cholerae</i>
Loeffler's serum slope	Nutrient broth, glucose, horse serum	Culture of <i>Corynebacterium diphtheriae</i>
Lowenstein-Jensen medium	Coagulated hen's egg, mineral salt solution, asparagine, malachite green	Culture of <i>Mycobacterium tuberculosis</i>

MICROBIOLOGY SPECIMENS – BLOOD CULTURES

- Follow specimen collection policies and instructions
 - **Policy 13015: Blood Culture Collection**
 - Thorough cleaning of the site is required to prevent contamination



AEROBIC VS. ANAEROBIC CULTURE

- Aerobic = with oxygen
 - Examples:
 - *Pseudomonas aeruginosa*
 - *Mycobacterium (AFB)*
- Anaerobic = without oxygen
 - Examples:
 - *Bacteroides fragilis*
 - *Clostridium perfringens*
- Facultative = with or without oxygen
 - Examples:
 - *Staphylococcus aureus*
 - *Escherichia coli*



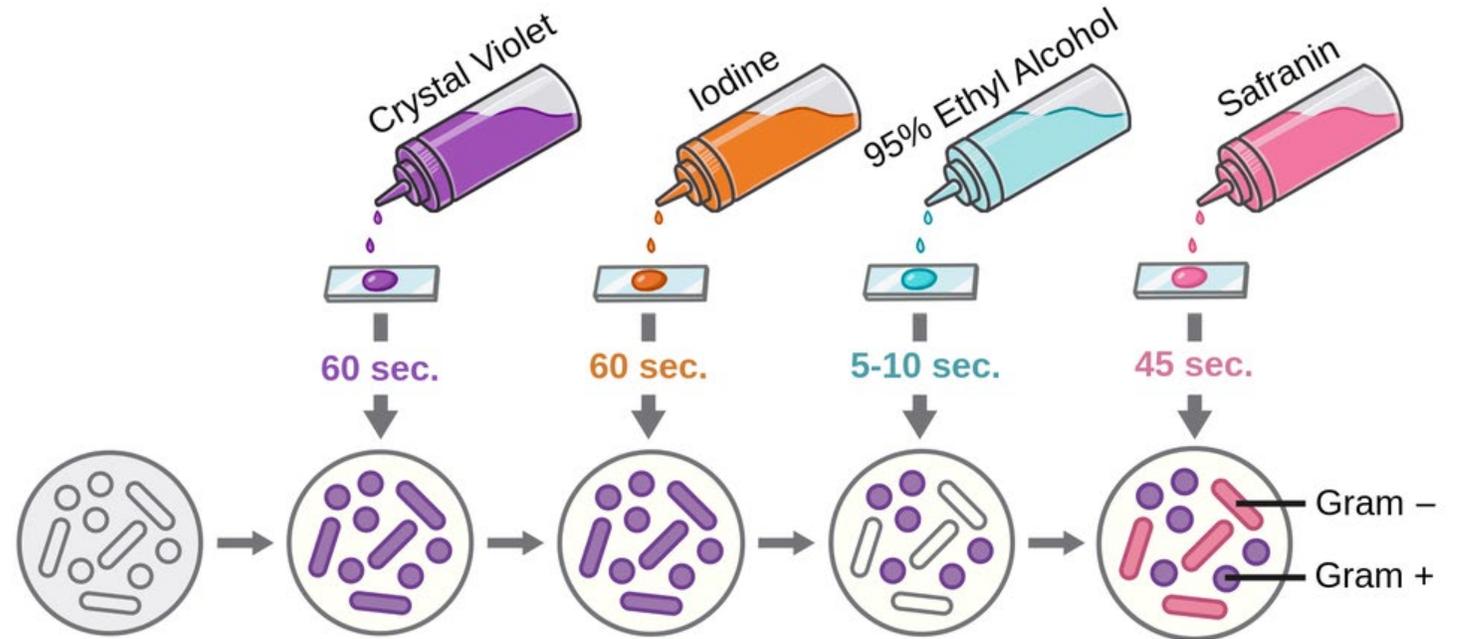
TESTS IN THE MICROBIOLOGY LAB

- Culture Tests
- Rapid or Spot Tests
- PCR Tests

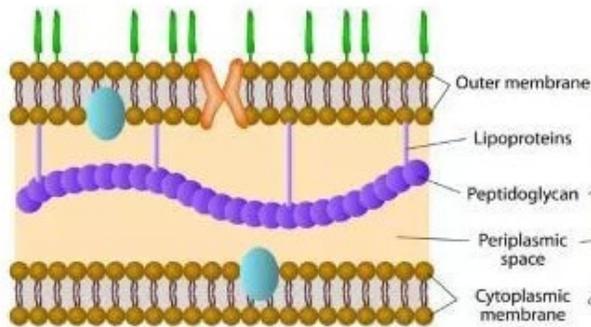


GRAM STAIN

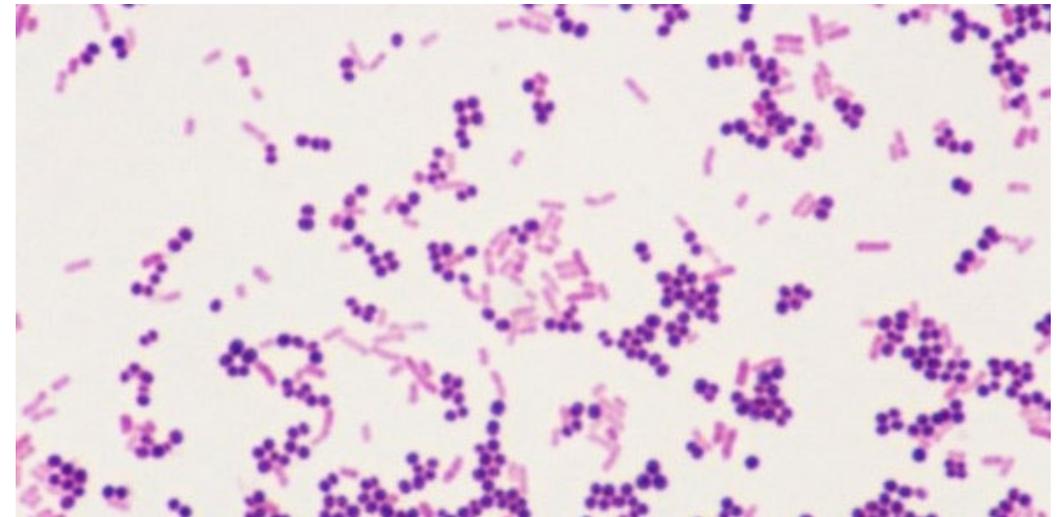
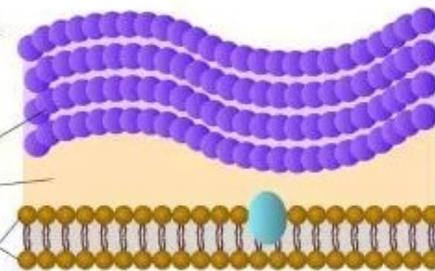
- Stains bacterial cell walls to differentiate between Gram-Positive and Gram-Negative bacteria



GRAM-NEGATIVE



GRAM-POSITIVE



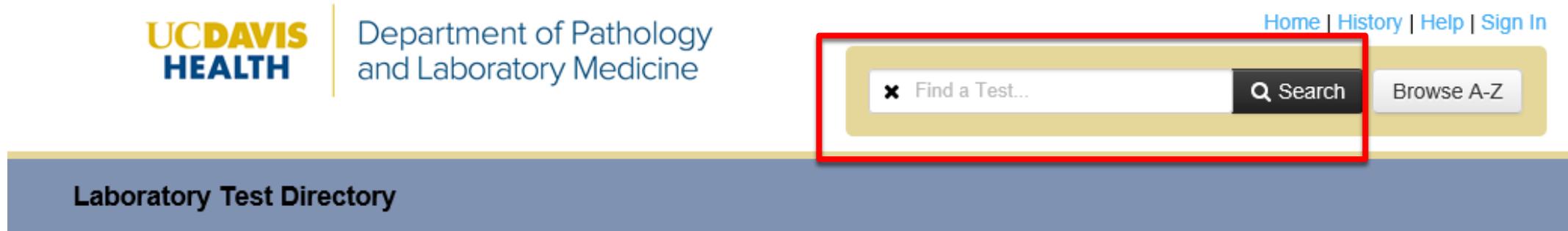


CRITICAL VALUE NOTIFICATIONS

- Hospital Policy 2720
 - Lab staff will notify the appropriate party of the critical lab value
 - Person receiving the critical value will read back the result to the laboratory caller.

LAB TEST DIRECTORY USERS' GUIDE

WWW.TESTMENU.COM/UCDAVIS



* Search by analyte, specimen type, or test name



Also accessible from within EPIC - Type in Search Bar **“Laboratory Test Directory”**

UC Davis Health- Laboratory Test Directory



UC Davis Health Department of Pathology and Laboratory Medicine serves UC Davis Medical Center, Clinics, Primary Care Network Physicians, Researchers, as well as many Hospitals, Physicians, and Patients throughout Northern California and the West.

UC Davis Health Laboratory operates 24 hours a day 7 days a week providing physicians and patients both Anatomic Pathology and Clinical Pathology reports which render accurate, clinically relevant diagnosis in a timely fashion, in an academic and interactive setting.

UC Davis Health Department of Pathology and Laboratory Medicine is fully accredited by the College of American Pathologists (CAP), licensed by the State of California, the Clinical Laboratory Improvement Act (CLIA), and the Association for the Advancement of Blood and Biotherapies (AABB).

UC Davis Health; Department of Pathology and Laboratory Medicine specialties include:

Anatomic Pathology:

- Autopsy
- Cytopathology
- Dermatopathology
- Molecular Pathology
- Neuropathology

Surgical Pathology:

- Bone & Soft Tissue

[New\(1\)](#)
[Updated\(75\)](#)

- [Blood Gas Lab\(26\)](#)
- [Chemistry SESP\(145\)](#)
- [Hematology\(43\)](#)
- [Immunology\(155\)](#)
- [Microbiology\(76\)](#)
- [Molecular Pathology\(26\)](#)
- [Point of Care\(30\)](#)
- [Sendouts\(923\)](#)
- [Special Chemistry STC\(95\)](#)
- [Special Coagulation\(26\)](#)
- [Toxicology\(19\)](#)
- [Transfusion Services\(13\)](#)

View tests by performing lab section

- [Licenses and Accreditations](#)
- [Collection Labeling and Requisition Instructions](#)
- [Phlebotomy Locations and Service Hours](#)
- [Phlebotomy Order of Draw](#)
- [Stool Collection Guide](#)

- [Microbiology and POC-Swab/Test Media Guide](#)
- [Specimen Collection Container Guides](#)

Helpful links to specimen collection swabs and containers

Rectal Swab:

C. DIFF SURVEILLANCE
ESBL SURVEILLANCE
VRE SURVEILLANCE
CARBAPENEM RESISTANCE SURVEILLANCE

Preferred:

- BLUE label BBL CultureSwab
- Lawson #: 100816

Alternative:

- RED cap BBL DUAL CultureSwab
- Lawson # 155284

Note: BBL swabs are ONLY for rectally collected Surveillance Tests. Collect one swab per test.

CANDIDA AURIS SURVEILLANCE

Preferred:

- BD ESwab WHITE-cap
- Lawson # 146106

Alternative:

- BD ESwab BLUE-cap
- Lawson #: 152835

VAGINAL PANEL BY PCR

- BD Molecular Swab Collection Kit
- Lawson #: 179882

**MRSA SURVEILLANCE
BACTERIAL CULTURE (Aerobic Only)
FUNGAL CULTURE**

Preferred:

- BD ESwab WHITE-cap
- Lawson #: 146106

Alternative 1:

- Fisherbrand Fisherfinest Transport Swab
- Lawson #: 156086

Alternative 2:

- BD ESwab BLUE cap
- Lawson #: 152835

HSV 1 & 2 / VZV DNA Swab

- Transport ON ICE
- BD UTM
- Lawson #'s: 100983 & 153147

**BACTERIAL CULTURE (Aerobic & Anaerobic)
FUNGAL CULTURE**

Note: Swabs are NOT appropriate for Anaerobic culture

Preferred:

- Anaerobic Tissue Transport Medium (ATTM)
- Lawson #: 100666

Alternative:

- Anaerobic Transport Medium (ATM)
- Lawson #: 100664

URINE CULTURE

> 4 mL Urine Collected

- BD Vacutainer – Urine C&S Preservative

< 4 mL Urine Collected

- Transport ON ICE
- Sterile cup / or tube

**POINT OF CARE: COVID, FLU A/B and RSV
POC LIAT SARS-CoV-2 ± FLU A/B
POC LIAT COVID PCR
POC LIAT FLU A/B + RSV**

Preferred:

- BD UTM
- Lawson #'s: 100983 & 153147

Alternative:

- MART (Note: there are various options for MART)
- Lawson #'s: 154003, 154004 & 154357

POINT OF CARE: RAPID STREP A

Preferred:

- BD ESwab WHITE-cap
- Lawson #: 146106

Alternative:

- BD ESwab BLUE cap
- Lawson #: 152835

Please write NAME, DOB,
collected DATE AND TIME on all
samples

**GI (Gastrointestinal) Panel
C. difficile Toxin A & B EIA
Norovirus PCR**

CONTAINER – Cary Blair C&S medium (Yellow top, red liquid)

COLLECTION – Transfer a portion of stool from collection container to C&S medium vial, up to the red fill line. Do not discard the red liquid in the vial. Mix specimen and preservative thoroughly. Tighten lid.

RETURN – Must be returned to the lab immediately, no later than 48 hours of collection.



Helminth OVA & LARVA (O&P) Test

CONTAINER – Ova and Parasite vials (Para-Paks)
Optimal collection is three separate stool specimens within a 7-10 day period.

COLLECTION – Transfer a portion of stool from collection container to each vial in the Para-Pak kit. Do not discard the liquid in each vial prior to filling. Only fill to the fill line and thoroughly mix the specimen.

RETURN – Must be returned to the lab within 3 days (72 hrs.) of collection.



3 day collection kits will need to be 24 hour apart

**Helicobacter Pylori Antigen, Fecal by EIA
Calprotectin
Pancreatic Elastase**

CONTAINER – Sterile Cup

COLLECTION – Collect at least 4 grams of stool. Make sure lid is securely tightened.

RETURN – **Must be placed on ice** and returned to the lab within 3 days (72 hrs.) of collection.



Stool Culture & E.coli SHIGA-LIKE TOXIN by EIA

CONTAINER – Cary Blair C&S medium (Yellow top, red liquid)

COLLECTION – Scoop stool into the container until the liquid reaches the red line on the label. Secure lid and gently shake to mix specimen.

RETURN -- **Must be placed on ice** and returned to the lab within 1 day (24 hrs.) of collection.



SURGICAL PATHOLOGY

SPECIMEN SUBMISSION

AND ORDERING

USING ORDER ENTRY



Note: Most Surgical Pathology tissue specimens are considered irretrievable and cannot be re-collected. Please ensure proper specimen ordering, collection, handling and labeling to avoid testing delays.

SURGICAL PATHOLOGY SPECIMENS COLLECTED IN CLINIC

- TISSUE BIOPSY SPECIMENS ARE SUBMITTED IN FORMALIN FIXATIVE
 - Specimen containers are pre-filled with 10% neutral buffered formalin.
 - Formalin fixed tissue cannot be used for Microbiology cultures, Flow Cytometry or Cytogenetics (Chromosome Analysis).
 - MUST submit a separate order for fresh specimens to be submitted to Microbiology, Flow Cytometry, and/or Cytogenetics.
 - DO NOT submit ancillary studies on the same order as the formalin fixed tissue.

SURGICAL PATHOLOGY

ORDERING BASICS

- Surgical Pathology specimens collected within the same procedural encounter are placed on one Surgical Pathology order.
- Each specimen container is assigned an alphabetic letter designation
 - ex: A, B, C, D, etc.
- **DO NOT** order Surgical Pathology with any other pathology tests (e.g., Cytology, Dermatology Pathology, Flow Cytometry or Microbiology).
- Print Surgical Pathology order from Epic and submit with specimen(s).

ORDER ENTRY

Surgical Pathology Accept Cancel

Reference Links: • Test Information:

Process Instructions: For any SKIN SPECIMENS (or related sentinel lymph node or other specimens to be sent directly to Dermatopathology), MUST use "DERMATOLOGY PATHOLOGY" Order

Class: Back Office LAB Normal Historical Back Office LAB/AVS Hidden

Status: Normal Standing Future

Expected Date: 12/29/2022 Today Tomorrow 1 Week 2 Weeks 1 Month 3 Months 6 Months Approx.

Expires: 12/29/2023 1 Month 2 Months 3 Months 4 Months 6 Months 1 Year

Priority: Routine

Specimen(s):

CERVIX- 2 O'CLOCK	
VULVA	Anterior
VULVA	Posterior

❗ Suspected Diagnosis:

❗ Clinical Information:

Special Requests:

Comments:

Next Required Accept Cancel

- Type **Surgical Pathology** in the Order Entry screen.
- Use the “**Specimen(s):**” field to indicate the source for **each** specimen container from the source list (e.g., “CERVIX – 2 O’CLOCK”).
- For expanded source specificity or orientation, use the adjacent description field (e.g., “ANTERIOR”).

View of Surgical Pathology order showing multiple sources and comments

SURGICAL PATHOLOGY ORDER COLLECTION ACTIVITY

INPATIENT ORDERS

- Inpatient orders are collected via the *Manage Labs* Activity.
- Select the *Collect* link next to the appropriate Surgical Pathology order to be collected.

The screenshot shows the 'Orders' interface with the 'Manage Labs' tab selected. It displays a 'Lab Orders' section with a table of orders. The order 'Surgical Pathology ONCE' is highlighted, and the 'Collect' link is circled in red. The order details include specimen information and clinical information.

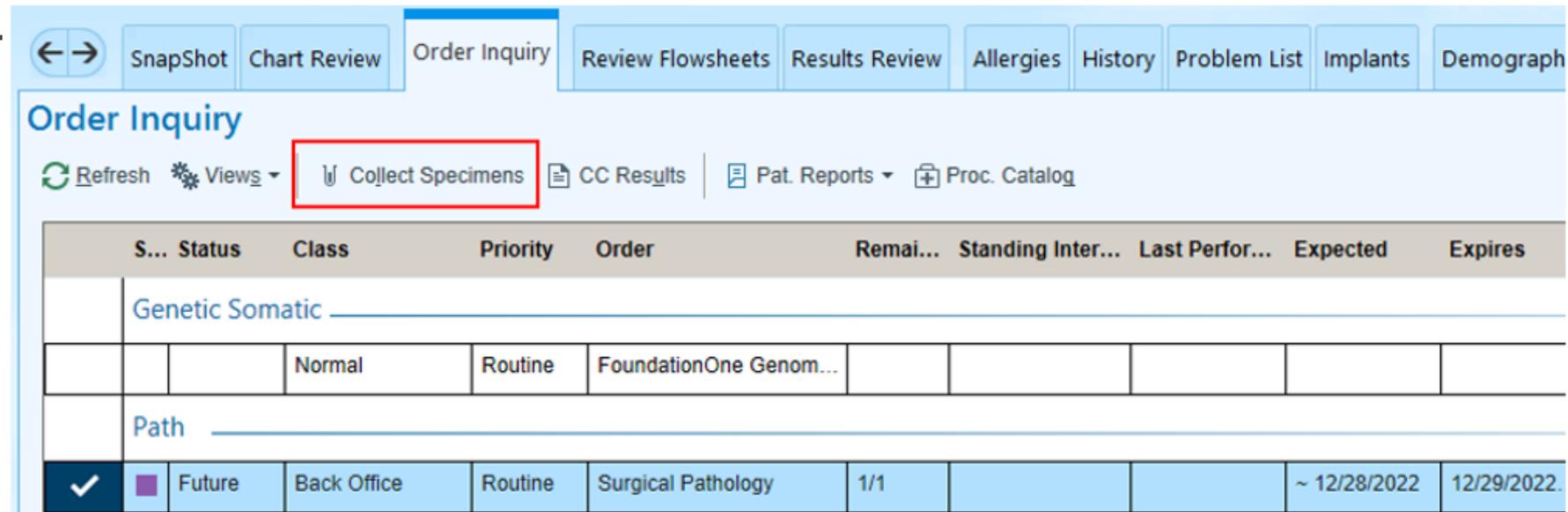
Question	Answer	Comment
Specimen(s):	CERVIX- 2 O'CLOCK	
Specimen(s):	VULVA	Anterior
Specimen(s):	VULVA	Posterior
Suspected Diagnosis:	DX	
Clinical Information:	CI	
Release to patient	Immediate	

View of Surgical Pathology order needing to be collected via Manage Labs

SURGICAL PATHOLOGY ORDER COLLECTION ACTIVITY

OUTPATIENT ORDERS

- Outpatient orders are collected via the Order Inquiry activity.
- Select the appropriate Surgical Pathology order and click *Collect Specimens* to launch the Specimen Collection activity.



The screenshot displays the 'Order Inquiry' interface. At the top, there are navigation tabs: SnapShot, Chart Review, Order Inquiry (selected), Review Flowsheets, Results Review, Allergies, History, Problem List, Implants, and Demograph. Below the tabs, there are action buttons: Refresh, Views, Collect Specimens (highlighted with a red box), CC Results, Pat. Reports, and Proc. Catalog. The main area contains a table with the following columns: S..., Status, Class, Priority, Order, Remai..., Standing Inter..., Last Perfor..., Expected, and Expires. The table has three rows. The first row is for 'Genetic Somatic'. The second row is for 'Normal' with priority 'Routine' and order 'FoundationOne Genom...'. The third row is for 'Path' with a checkmark in the first column, status 'Future', class 'Back Office', priority 'Routine', order 'Surgical Pathology', remaining '1/1', and expected dates '~ 12/28/2022' and '12/29/2022'.

S...	Status	Class	Priority	Order	Remai...	Standing Inter...	Last Perfor...	Expected	Expires
		Genetic Somatic							
		Normal	Routine	FoundationOne Genom...					
✓	Future	Back Office	Routine	Surgical Pathology	1/1			~ 12/28/2022	12/29/2022.

SPECIMEN COLLECTION ACTIVITY

- The specimens entered in Order Entry will display along with any specimen specific comments/descriptions.
- Specimen sources and any specific comments/descriptions can be edited in this activity.
- Once all sources and descriptions are accurate, click the *Print Labels* button.

The screenshot shows a web application interface for 'Specimen Collection'. It is divided into two main sections: 'Collection Sequence' and 'TISSUE Specimens'. In the 'Collection Sequence' section, 'STERILE CONTAINER' is selected, with 'Surgical Pathology' listed below it. The 'TISSUE Specimens' section is active, showing 'STERILE CONTAINER' and 'Surgical Pathology Scheduled: 12/28/2022 1330'. A 'Collect Later' button is visible. Below this, there is a table for entering specimen sources and comments:

Answer	Comment
CERVIX- 2 O'CLOCK	Enter a comment
VULVA	Anterior
VULVA	Posterior
	Enter a comment

At the bottom right, there are two buttons: 'Procedure Catalog' and 'Print Labels'. The 'Print Labels' button is highlighted with a red box.

View of Specimen Collection activity for the Surgical Pathology order

SPECIMEN COLLECTION ACTIVITY

- Accurately label each specimen container with the associated specimen collection label.
- Confirm the accuracy of the Collection Details by updating the Collector and Collection date/time.
 - Each specimen must have a collection date/time recorded.
 - The Collector **must** be the name of the provider performing the specimen collection.
- For Inpatient, scan the label for each specimen to document collection information.
- For Outpatient, click the *Collect All* button to document collection information.



Specimen Collection

Collection Sequence

- x3 STERILE CONTAINER
- 280879000-A
- 280879000-B
- 280879000-C

Collection Details

Time	Date	Collector	Department
Now	Today	UCDNOLAN, KATHLEEN LICNRS-ANCSTF	OB/GYN GLASSROCK

Document individually

TISSUE Specimens

STERILE CONTAINER

Surgical Pathology

A. CERVIX- 2 O'CLOCK

Scan label or click to document collection

Source
CERVIX- 2 O'CLOCK

Add Specimen Description

Draw Type
Non-blood Collection Non-blood Collection

B. VULVA

Scan label or click to document collection

Source
VULVA

Specimen Description
Anterior

Draw Type
Non-blood Collection Non-blood Collection

C. VULVA

Scan label or click to document collection

Source
VULVA

Specimen Description
Posterior

Draw Type
Non-blood Collection Non-blood Collection

Procedure Catalog Reprint Labels **Collect All** Accept

Update Collector and Collection Date/Time

For Inpatient orders, scan label to document collection

For Outpatient orders, click *Collect All*

View of Specimen Collection activity for the Surgical Pathology order after Print Labels has been selected

- Note the *Collection Sequence* lists each specimen collection ID number with the corresponding letter designation.
- *Reprint Labels* if a source was updated after Print Labels was selected.
- Click *Accept* to close the Collection Activity.

Specimen Collection

Collection Sequence
x3 STERILE CONTAINER
✓ 280712608-A
✓ 280712608-B
✓ 280712608-C

Collection Details

Time: 1720 | Date: 1/18/2023 | Collector: UCDECKELS, LISA F... | Department: INFUSION ADULT I... | Document individually

TISSUE Specimens

STERILE CONTAINER
Surgical Pathology Scheduled: 1/18/2023 1730

A. CERVIX- 2 O'CLOCK ✓ Collected on 1/18/2023 at 1720 by UCDECKELS, LISA FAC-PHY in INFUSION ADULT IV INFUSION CENTER CA CTR
Source: CERVIX- 2 O'CLOCK | Draw Type: Non-blood Collection

B. VULVA ✓ Collected on 1/18/2023 at 1720 by UCDECKELS, LISA FAC-PHY in INFUSION ADULT IV INFUSION CENTER CA CTR
Source: VULVA | Draw Type: Non-blood Collection
Specimen Description: Anterior

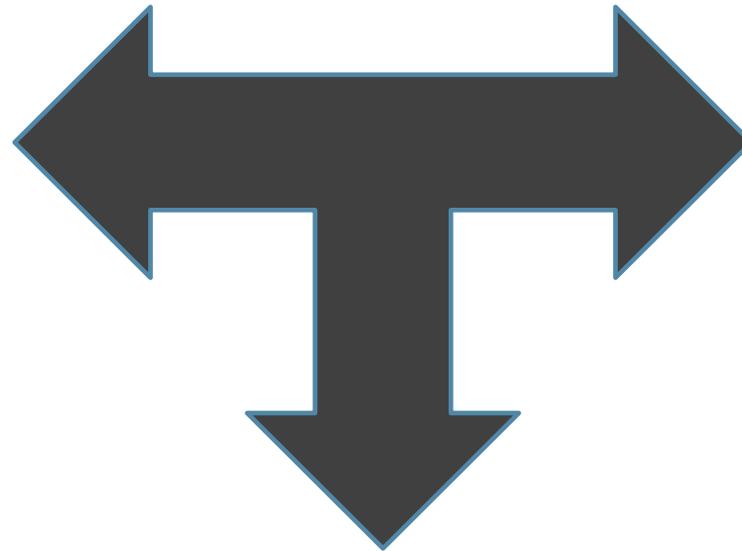
C. VULVA ✓ Collected on 1/18/2023 at 1720 by UCDECKELS, LISA FAC-PHY in INFUSION ADULT IV INFUSION CENTER CA CTR
Source: | Draw Type:

All collections documented!

Procedure Catalog | **Reprint Labels** | Collect All | **Accept**

**CLINICAL
TEAM**

**LABORATORY
TEAM**



**QUALITY
PATIENT CARE**

REVIEW – PATIENT IDENTIFICATION

- Do
 - Properly perform a two patient ID
 - Compare name and MR on ID bracelet and all labels
 - When possible, have patient state name and DOB
- Don't
 - State patients name and wait for patient to nod/agree

Failure to properly identify the patient may cause laboratory identification error that may lead to patient treatment and/or medication mismanagement.

REVIEW – TOURNIQUET APPLICATION

- Do
 - Apply tourniquet 3-5 inches from intended draw site
 - Dispose of tourniquet after each collection
 - If tourniquet on longer than 1 min, release and retie after 2 minutes.
- Don't
 - Leave tourniquet on for longer 1 minute
 - Hint: not longer than you can hold your breath

Prolonged tourniquet application alters the blood sample which may yield falsely elevated or falsely decreased lab test results (hemoconcentration).



REVIEW – VEIN SELECTION

- Do
 - Choose an appropriate site to perform venipuncture
- Don't
 - Draw a clinical lab specimen above an IV site
 - Draw through an existing hematoma

Drawing above an IV results in a diluted specimen, yields inaccurate test results.

REVIEW – DILATING THE VEIN

- Do
 - Tie the tourniquet and palpate the vein
 - May ask patient to tighten fist to dilate the vein
 - May rotate hand to better position the vein
- Don't
 - Ask patient to pump fist or hold fist while drawing a blood sample.

Fist pumping may increase K⁺ and ionized calcium levels, yields inaccurate lab results.

REVIEW – SITE CLEANSING

- Do
 - Use alcohol to clean site and allow to air dry
 - <1 minute
- Don't
 - Blow, fan or dry with cotton ball or gauze
 - Stick while alcohol is still wet

Alcohol cleans surface bacteria by desiccation- allow alcohol to dry to properly cleanse the site. Performing venipuncture while alcohol is still wet may cause hemolysis- leading to inaccurate results.



REVIEW – NEEDLE SELECTION

- Do
 - Use appropriate gauge needle
 - 21 or 23 gauge
- Don't
 - Use small gauge needle such as a 25 gauge unless small vein or baby/pediatric patient

Using too small of a needle has an increased risk of hemolysis.

REVIEW – SYRINGE COLLECTION

- Do

- Pull gently on plunger
- Remove safety needle and dispose in a sharps container
- Attach transfer device to syringe and let vacuum fill evacuated tubes

- Don't

- Apply excessive force while pulling back on the plunger
- Forcibly fill evacuated tubes with syringe
- Use needle to directly fill the tubes

Excessive pulling on the syringe plunger may cause the vein to collapse and hemolyze the sample.

REVIEW – TUBE INVERSION

- Do
 - Invert tubes end to end, immediately after collection 8-10 times
- Don't
 - Shake tubes
 - Not invert tubes

Shaking or not properly inverting tubes may cause hemolysis or clotting- resulting in recollection and delay in patient care.

REVIEW – SPECIMEN DELIVERY

- Do

- Label specimens at bedside
- Recheck patient ID and labeled specimens
- Bag single patient collection in one biohazard bag
- Tube the specimen bag to the lab in a timely manner

- Don't

- Label patient's specimens at the nursing station
- Bag more than one patient's collected samples in a single bag
 - Two names in one bag- all samples are cancelled
- Delay tubing samples to the lab

Bagging multiple patients in one bag may result in identification errors and delay in specimen delivery will delay test results turnaround time and possibly inaccurate results for certain tests.