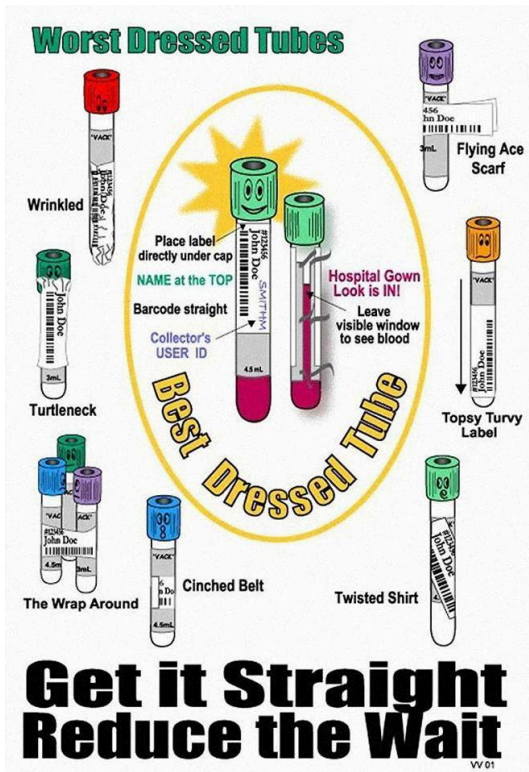


CONCLUSION

Providing lab results requires everyone's cooperation. The process of drawing the blood is the most crucial step to obtaining accurate results. **Thank you** for all of your hard work and dedication to providing the best care possible for our patients.

For more comprehensive information, refer to the Standards for Acceptable Clinical and Anatomic Pathology Specimen Collection on *OneSource*

THANK YOU



Lid Color	Collection Tube / Additive
	BD Bactec Blood Culture Collection Tubes 8-10 mL of blood for full draw 1-3 mL of blood in pediatric draw vials OR
	BD Vacutainer SPS Culture Tube
If not drawing blood culture, START here:	
If drawing with a butterfly or from a line, an appropriate amount of waste blood must be drawn for discard to eliminate contamination and erroneous results. Typically one waste tube or 5mL.	
	Citrate Tube: must be filled to fill line
If not drawing blood cultures or coagulation testing, START here:	
	BD Vacutainer SST Gel Separator Tube
	Serum Tube no gel
	Heparin Tube (lithium or sodium depending on test)
	EDTA Tubes
	Fluoride (glucose) Tube

ID badge order of draw tip sheets available through RR Donnelly MC202531



THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER



Effects of Improper Specimen Collection

Department of Clinical Laboratories
The Ohio State University Wexner Medical Center
Revision 1



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HEMOLYZED SPECIMENS

Hemolysis is caused when red blood cells (RBCs) are destroyed and hemoglobin is released into the plasma or serum. Hemolysis can be seen after the blood sample is spun down in a centrifuge. The plasma or serum will be pink (slight hemolysis) to red (gross hemolysis).

Patient Conditions that May Cause Hemolysis

- Hemolytic anemia
- Liver disease
- Transfusion reactions

Procedural Causes of Hemolysis

- Using a needle with a bore too small for the vein
- Using too large of a tube when using a small-diameter butterfly needle
- Drawing blood from a vein that has a hematoma
- Continuing sluggish draws caused by collapsed veins or improper needle placement
- Excessive squeezing of the site when obtaining a skin puncture specimen
- Mixing the tubes too vigorously or rough handling during transport
- Frothing of the blood caused by improper fit of the needle on a syringe
- Excessive force on the syringe plunger
 - keep < 1 mL dead space
- Forcing the blood from a syringe into an evacuated tube

Hemolysis Chart



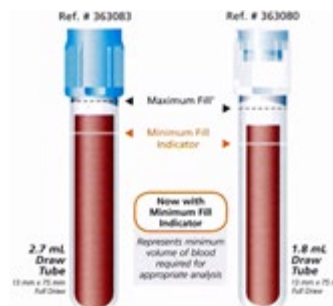
STERILE TECHNIQUE

- Clean with 70% alcohol or >0.5% Chlorhexidine Gluconate sponge prep (Chloraprep) with back and forth motion
- Use needles **one time only**

UNDERFILLED/OVERFILLED TUBES

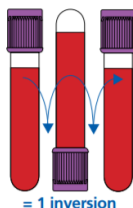
Tubes that are not filled to their stated capacity can lead to **erroneous lab results** for some tests. Drawing enough blood is particularly important for coagulation testing (light blue sodium citrate tubes).

The sodium citrate tube must be filled to the line. There is a crucial 9:1 ratio of blood to anticoagulant. If the ratio is disturbed by **either too little or too much blood** (the tube is filled up to the cap) the lab results will be inaccurate.



It is also very important to draw a **discard tube before collecting a sodium citrate tube** because of tissue thromboplastin (a clotting factor that is activated when the skin is pierced). If using a butterfly, a discard tube ensures the tube will fill properly by getting rid of the air in the tubing.

CLOTTED SPECIMENS



Lack of or inadequate mixing of tubes is the major cause of clot formation. To help stop the specimen from clotting, mix the tube by **gently** inverting it a minimum of 3 times **immediately** after filling it with blood. Then continue to **gently** invert the tubes a total of **8 times** to completely mix. Line draws into a syringe must be transferred without delay and gently mixed to avoid clotting.

IMPROPERLY COLLECTED OR PATIENT ID ERRORS

Correct identification of patient specimens **using 2 patient identifiers** is essential for reporting accurate laboratory results. The responsibility for labeling a specimen is that of the person who collects the specimen and **must** be labeled **immediately** after collection in the patient's presence.

A variety of blood collection tubes and urine preservatives are necessary to maintain specimen stability until testing can be performed in the laboratory. Refer to the Lab Testing Menu on *OneSource* or the lab test label for acceptable tube types.

<https://clinicallabs.osumc.edu/Pages/TestCatalog.aspx>

IV CONTAMINATION

If a patient has an IV, best practice is to draw from the opposite arm. If it is not possible to draw from the opposite arm, make sure to **draw below (distal) the IV**. Drawing above (proximal) the IV will lead to IV fluid contaminating the tube and inaccurate lab results. Total parenteral nutrition (TPN) contamination will also lead to erroneous lab results, especially chemistry testing.

Whenever possible, collect blood from the opposite arm of infusions and vascular access devices.

- If blood needs to be collected on an arm in which an infusion is taking place:
 - The infusion must be turned off for at least two minutes
 - Line flushed with 5-10 mL of saline
 - Waste tube up to 5 mL discarded.
 - Any venipuncture **must be below the IV** to prevent extravasation

HOW DOES THIS AFFECT TEST RESULTS?

Hemolysis - Falsely increased potassium (K), Magnesium (Mg), Phosphate, D-Dimer is affected unpredictably

Clotted - Falsely decreased platelets (plt) and hemoglobin (Hgb), and the PT and PTT can be either falsely increased or decreased depending on the size and composition of the clot

IV Contamination - Failure to adequately flush the line can cause erroneous results affecting many analytes due to a dilution effect and contamination of the fluids/medications. Falsely low Hgb, plt, and WBC count and/or falsely increased sodium (Na) and Chloride (Cl), falsely prolonged PT and PTT are some examples

Venipuncture above the IV site - Erroneous results due to contamination and increased risk of extravasation

TPN contamination - Falsely increased glucose and K, the turbidity of the plasma will also affect the hemoglobin

EDTA Contamination in a Chemistry tube = Falsely increased K and falsely decreased Calcium (Ca)

Delayed turnaround time - Recollecting the sample adds time

Prolonged tourniquet time - Possible hematoma formation and erroneously high values for all protein based analytes, Hgb, and other cellular elements. Do not exceed 1 minute.

Patient ID Errors - Potential for serious injury to the patient if clinical decisions or blood products given based on mislabeled specimens