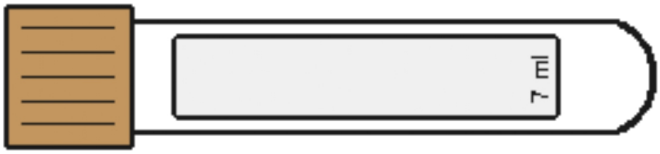
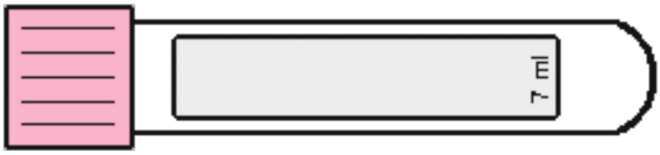
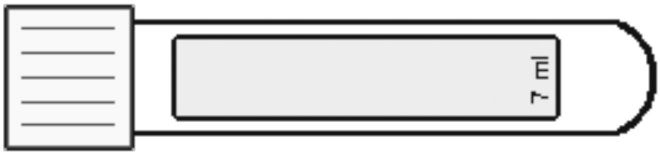
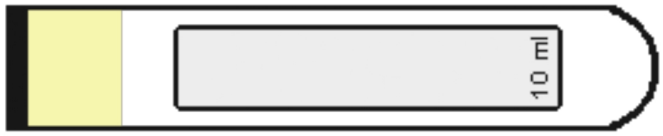
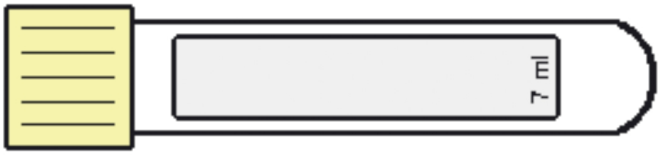
COLLECTION TUBES FOR PHLEBOTOMY

Red Top	
ADDITIVE	None
MODE OF ACTION	Blood clots, and the serum is separated by centrifugation
USES	Chemistries, Immunology and Serology, Blood Bank (Crossmatch)
Gold Top	
ADDITIVE	None
MODE OF ACTION	Serum separator tube (SST) contains a gel at the bottom to separate blood from serum on centrifugation
USES	Chemistries, Immunology and Serology
Light Green Top	
ADDITIVE	Plasma Separating Tube (PST) with Lithium heparin
MODE OF ACTION	Anticoagulates with lithium heparin; Plasma is separated with PST gel at the bottom of the tube
USES	Chemistries

Purple Top	
ADDITIVE	EDTA
MODE OF ACTION	Forms calcium salts to remove calcium
USES	Hematology (CBC) and Blood Bank (Crossmatch); requires **full draw** - invert 8 times to prevent clotting and platelet clumping
Light Blue Top	
ADDITIVE	Sodium citrate
MODE OF ACTION	Forms calcium salts to remove calcium
USES	Coagulation tests (protime and prothrombin time), **full draw** required
Green Top	
ADDITIVE	Sodium heparin or lithium heparin
MODE OF ACTION	Inactivates thrombin and thromboplastin
USES	For lithium level, use sodium heparin For ammonia level, use sodium or lithium heparin

Light Brown Top	
ADDITIVE	Sodium heparin or EDTA (read label)
MODE OF ACTION	contains virtually no lead
USES	Serum lead determination
Pink Top	
ADDITIVE	Potassium EDTA
MODE OF ACTION	Forms calcium salts
USES	Immunohematology
White Top	
ADDITIVE	Potassium EDTA
MODE OF ACTION	Forms calcium salts
USES	Molecular/PCR and bDNA testing

Yellow - Black Top	
ADDITIVE	Broth mixture
MODE OF ACTION	Preserves viability of microorganisms
USES	Microbiology - aerobes, anaerobes, fungi
Black Top	
ADDITIVE	Sodium citrate (buffered)
MODE OF ACTION	Forms calcium salts to remove calcium
USES	Westergren Sedimentation Rate; requires **full draw**
Orange Top	
ADDITIVE	Thrombin
MODE OF ACTION	Quickly clots blood
USES	STAT serum chemistries

Dark Blue Top	
ADDITIVE	EDTA-
MODE OF ACTION	Tube is designed to contain no contaminating metals
USES	Trace element testing (zinc, copper, lead, mercury) and toxicology
Light Gray Top	
ADDITIVE	Sodium fluoride and potassium oxalate
MODE OF ACTION	Antiglycolytic agent preserves glucose up to 5 days
USES	Glucoses, requires **full draw** (may cause hemolysis if short draw)
Yellow Top	
ADDITIVE	ACD (acid-citrate-dextrose)
MODE OF ACTION	Complement inactivation
USES	HLA tissue typing, paternity testing, DNA studies

Order of Draw

Blood collection tubes must be filled in a specific order to avoid specimen contamination from the additive in the preceding tube. The following order of draw is an accepted laboratory standard.

1. Tubes or bottles for blood cultures

2. Light-blue top tubes (sodium citrate)

3. Serum tubes (with or without clot activator)

4. Green top tubes (sodium or lithium heparin)

5. Lavender or pink top tubes (Potassium EDTA)

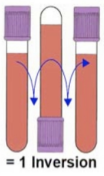
6. Gray (Sodium fluoride and sodium or potassium oxalate)

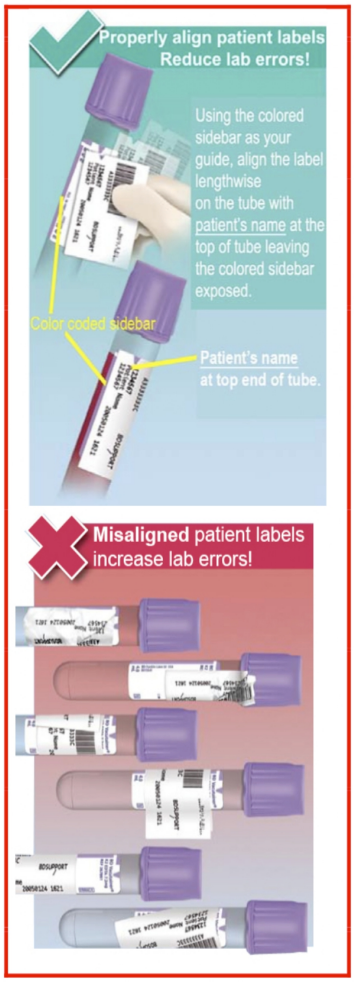
PLASTIC TUBE TOP COLOR AND ORDER OF DRAW – EFFECTIVE March 2009

Draw Blood Culture bottles first, then proceed with blood tube order of draw (1-12) below:

1. 	**LIGHT BLUE top plastic tube** PT, PTT, Fibrinogen, Fibrin D-Dimer, other Coagulation Testing **Note:** invert gently 3 - 4 times	7. 	**BRIGHT GREEN top** **(SODIUM HEPARIN)** **plastic non-gel tube** Mycobacteriology (AFB) Blood Culture, HLA-B27, Chromosome Studies
2. 	**GOLD gel plastic tube** Most Chemistry tests & Immunology Tests, Hepatitis Tests, Serologies (Do not use for Troponin, BNP)	8. 	**LAVENDER top plastic tube** Hematology: CBC, Platelet, Sed. Rate Chemistry: CD4, CD8, G6PD, Hemoglobin A1C & Hemoglobin Variants
3. 	**RED top plastic tube** For tests requiring serum **Note:** contains clot activator	9. 	**WHITE top plastic tube (PPT)** Hepatitis and HIV Viral Loads, BNP
4. 	**ROYAL BLUE top plastic tube** Copper, Zinc, Trace Elements	10. 	**PINK top plastic tube for Blood Bank ONLY.**
5. 	**LIGHT GREEN top** **(LITHIUM HEPARIN)** **gel plastic tube** Troponin, Metabolic Panels, Lipid, Liver Panels, Ammonia (ice), HIV Rapid Anti-body	11. 	**TAN top plastic tube** Lead
6. 	**DARK GREEN top** **(LITHIUM HEPARIN)** **plastic non-gel tube** Ionized Calcium (not part of blood gas), Ammonia (ice)	12. 	**GRAY top plastic tube** Glucose, Lactate (Lactic Acid) on ice

***IMPORTANT*:** Please follow the correct order of draw as numbered above and thoroughly mix all specimens (except Light Blue top) by inversion 8 - 10 times.





F:\SCM\SCM08\Plastic Tube Top Color and Order of Draw Chart 031009.doc Printed 3/11/2009 For additional copies, contact SFGH Clinical Laboratory Admin ext. 3495 Rm 2M14

Blood Collection Tubes:

Most blood collection tubes contain an additive that either accelerates clotting of the blood (clot activator) or prevents the blood from clotting (anticoagulant). A tube that contains a clot activator will produce a serum sample when the blood is separated by centrifugation and a tube that contains an anticoagulant will produce a plasma sample after centrifugation. Some tests require the use of serum, some require plasma, and other tests require anticoagulated whole blood.

Tube cap color	Additive	Additive Function	Common laboratory tests
Light-blue 	3.2% Sodium citrate	Prevents blood from clotting by binding calcium	Coagulation
Red or gold (mottled or "tiger" top used with some tubes is not shown) 	Serum tube with or without clot activator or gel	Clot activator promotes blood clotting with glass or silica particles. Gel separates serum from cells.	Chemistry, serology, immunology
Green 	Sodium or lithium heparin with or without gel	Prevents clotting by inhibiting thrombin and thromboplastin	Stat and routine chemistry
Lavender or pink 	Potassium EDTA	Prevents clotting by binding calcium	Hematology and blood bank
Gray 	Sodium fluoride, and sodium or potassium oxalate	Fluoride inhibits glycolysis, and oxalate prevents clotting by precipitating calcium.	Glucose (especially when testing will be delayed), blood alcohol, lactic acid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Adult Pediatric

BD Helping all people live healthy lives

BD Vacutainer® Order of Draw for Multiple Tube Collections

Designed for Your Safety

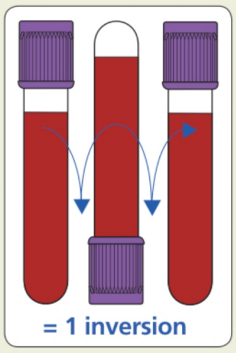
Reflects change in NCCLS recommended Order of Draw (NCCLS H3-A5, Vol 23, No 32, 8.10.2)

Closure Color	Collection Tube	Mix by Inverting
BD Vacutainer® Blood Collection Tubes *(glass or plastic)*		
	• Blood Cultures - SPS	8 to 10 times
	• Citrate Tube*	3 to 4 times
or	• BD Vacutainer® SST™ Gel Separator Tube	5 times
	• Serum Tube *(glass or plastic)*	5 times (plastic) none (glass)
	• Heparin Tube	8 to 10 times
or	• BD Vacutainer® PST™ Gel Separator Tube With Heparin	8 to 10 times
or	• EDTA Tube	8 to 10 times
	• Fluoride (glucose) Tube	8 to 10 times

* When using a winged blood collection set for venipuncture and a coagulation (citrate) tube is the first specimen tube to be drawn, a discard tube should be drawn first. The discard tube must be used to fill the blood collection set tubing's "dead space" with blood but the discard tube does not need to be completely filled. This important step will ensure maintenance of the proper blood-to-additive ratio of the blood specimen. The discard tube should be a nonadditive or coagulation tube.

Note: Always follow your facility's protocol for order of draw

Handle all biologic samples and blood collection "sharps" (lancets, needles, luer adapters and blood collection sets) according to the policies and procedures of your facility. Obtain appropriate medical attention in the event of any exposure to biologic samples (for example, through a puncture injury) since they may transmit viral hepatitis, HIV (AIDS), or other infectious diseases. Utilize any built-in used needle protector if the blood collection device provides one. BD does not recommend reshielding used needles, but the policies and procedures of your facility may differ and must always be followed. Discard any blood collection "sharps" in biohazard containers approved for their disposal.



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Franklin Lakes, NJ 07417

Order of Draw for Multiple Tube Collections

Reflects change in NCCLS recommended
Order of Draw (NCCLS H3-A5, Vol 23, No 32, 8.10.2)

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