Dartmouth-Hitchcock

Job Aid	Tube Additives and Order of Draw Job Aid - Laboratory	ID:	1502
Keywords	**add, tube, order, DRAW**		
Department	**Support Services**		

Purpose: This job aid identifies the blood sample order of draw and tube anticoagulants.

The following "order of draw", is the approved order as established by the Clinical and Laboratory Standards Institute (CLSI). This "order of draw' should be followed whenever multiple tube draws are undertaken using a vacutainer type needle set.

- When performing a syringe draw, the order of tube transfer differs, Lavender anticoagulant tubes are filled first.
- Blood/Isolator cultures always need to be drawn first, when ordered, to maintain the aseptic field that is needed.
- Each colored stopper has specific uses in the Laboratory. If the order of draw is not followed, cross contamination may occur, which could lead to erroneous lab results.
- Mix all tubes with additives by gentle inversion, not by shaking.

A. Full tube order of draw

	ORDER OF DRAW
	Blood Cultures
	Discard no additive
	Light blue (Na Citrate)
	Royal Blue (trace/no additive)
	Red Top Tube
	Gold Top Tube (SST)
	Light Green (Lithium Heparin)
	Dark Green (Na Heparin)
	Lavendar Top Tube (EDTA)
	Pink Top Tube (EDTA) study kits only
	Royal Blue (EDTA)
	Grey Top Tube (Na, FL, K, Oxalyte)
	Yellow Top Tube (ACD)
	Red Top Tube/Discard Tube
	Grey QuantiFeron Tube
	Red QuantiFeron Tube
	Lavendar QuantiFeron Tube

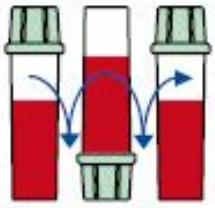
B. Microtainer® order of draw:

Order of Draw	Additive	Mix by Inverting
 365974	K_2EDTA	10x
 365965	Lithium Heparin	10x
 365985 365987	Lithium Heparin and Gel for Plasma Separation	10x
 365992	NaF/Na_2EDTA	10x
 365967 365978	Clot Activator and Gel for Serum Separation	5x
 365963	No Additive	0x

Processing of Tubes

Why

- Most tubes contain an additive or clot activator that needs to be mixed with the blood sample.



- Tubes with anticoagulants such as EDTA need to be mixed to ensure the specimen does not clot.

How

- Holding tube upright, gently invert 180° and back.
- Repeat movement as prescribed for each tube.

When

- Immediately after drawing.

Consequences if not mixed

- Tubes with anticoagulants will clot.
- BD SST™ tubes may not clot completely.
- Specimen will often need to be redrawn.

C. Additives

1. Blood Culture/Isolator Culture: Each contains an appropriate media to preserve/promote growth of specific microbes. (See "Special Considerations" chapter for in depth explanation).
    - Aerobic Culture: Bottle 30 mL contains 22 mL complex media and 8 mL of a charcoal suspension with an average density of 1.0155 g/mL. The media component consists of soybean-casein digest (2% w/v), brain heart infusions solids (0.1% w/v), sodium polyanetholesulfonate (0.05% w/v), pyridoxine HCL (0.001% w/v), Medadione (0.0000725% w/v), hemin (0.000725% w/v), L-cysteine (0.03% w/v) and other complex amino acid and carbohydrate substrates in purified water. The bottle contains an atmosphere of CO_2 in oxygen under vacuum.
    - Anaerobic Culture: Bottle 40 mL contains 32 mL complex media and 8 mL of a charcoal suspension with an average density of 1.0215 g/mL. The media component consists of soybean-casein digest (2% w/v), brain heart infusions solids (0.1% w/v), sodium polyanetholesulfonate (0.044% w/v), pyridoxine HCL (0.001% w/v), Medadione (0.0000625% w/v), hemin (0.000625% w/v), L-cysteine (0.025% w/v) and other complex amino acid and carbohydrate substrates in purified water. The bottle contains an atmosphere of nitrogen under vacuum.

2. **Red No Additive Discard Tube**
    - RED 10 mL Anticoagulant amount: None
3. **Light Blue Stopper (plasma):** Contain sodium citrate as anticoagulant. These tubes are used for coagulation studies and need to be filled. Allow the tube to fill until the vacuum is exhausted and blood flow ceases to ensure proper ratio of blood to anticoagulant. A discard tube (without additives) must be used if only a citrate tube is to be drawn using a winged blood collection set (butterfly) or a line draw. It is important to remove the air from the blood collection set or line to insure the proper blood volume is obtained in the tube.
    - BLUE na citrate 2.7 mL Anticoagulant amount : 0.109 M 3.2%
    - BLUE na citrate 1.8 mL Anticoagulant amount : 0.109 M 3.2%
4. **Royal Blue (plasma or serum):** Will contain Sodium Heparin or nothing at all. They are "cleaner" than red stoppers and are used for specific drugs and heavy metals.
    - ROYAL BLUE TRACE ELEMENT NO ADD SERUM 6.0 mL No Additive
5. **Red Stopper (serum):** No anticoagulant or clot activator. Usually used by Chemistry and Mailouts.
    - RED 10 mL Anticoagulant amount : None
6. **SST or Gold Stopper (serum).** According to the approved standard of the NCCLS guideline, the Gel separator tubes with clotting activators or anticoagulants are classified as additive tubes.
    - Gold Top SST 5 mL Clot Activator
7. **Green Stopper (plasma):** Contains lithium heparin. These tubes are used primarily by Chemistry
    - GREEN Lithium 4.5 mL Anticoagulant amount: 83 units
8. **Dark Green (plasma):** Sodium Heparin. Used by several departments
    - GREEN NA HEP 10 mL Anticoagulant amount: 150 USP

- GREEN NA HEP 4 mL Anticoagulant amount: 68 USP

9. **Lavender stopper (plasma):** Contains EDTA as the anticoagulant in either a liquid or powder form. These tubes are used primarily for Hematology and some Chemistry procedures.
    - LAV EDTA 4 mL Anticoagulant amount : 7.2 mg
    - LAV EDTA 6 L Anticoagulant amount : 10.8 mg
10. **Pink Top (EDTA)** Study Kits Only
11. **Royal Blue (K2 EDTA)**
    - ROYAL BLUE k2 EDTA TRACE Element 6 mL Anticoagulant amount : 10.8 mg
12. **Gray Stopper (plasma):** Contains sodium fluoride/potassium oxalate as the anticoagulant. These tubes are used by Chemistry.
    - GRAY NA Fluoride 6 mL Anticoagulant amount : 15 mg/ 12 mg
13. **Light Yellow ACD:** Contains Acid Citrate Dextrose. Used by numerous departments
    - YELLOW ACD TYPE A 8.5 mL Anticoagulant amount consist of 22 g/L trisodium,8.0 G/L citric acid, 24.5 g/L dextrose
    - YELLOW ACD TYPE B 6 mL Anticoagulant amount consist of 13.2 g/L trisodium citrate, 4.8 g/L citric acid, 4.8 g/L dextrose
14. **QUANTIFERON TUBES**
    - Grey top tube 1 mL NIL CONTROL
    - Red top tube 1 mL TB ANTIGEN
    - Lavender top tube 1 mL Mitogen Control

Responsible Owner:	Laboratory – Support Services	**Contact(s): email**	James Tracy
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