



The Order of Draw Blood - The sequence needs to be maintained during Blood Collection procedure by Nurses and Phlebotomist

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ABSTRACT -

Collection of Blood is one of the most common nursing procedures practised in all clinical setups, this technique is practised in all departments that enables the patient's blood values to be examined, it is not without its risks. It is therefore extremely important that the results obtained are true and free of errors. For getting high-quality laboratory results is necessary to follow instructions and nurses needs to be extra vigilance during the collection of blood samples. Several studies have shown that almost 75% of all analytical errors occur during blood collection. Inappropriate drawing of blood causes Additive Contamination. Conclusion – Nurses play a key role in the collection of various types of samples. Blood collection is one of the factors which may alter the diagnosis and treatment of patients.

Keywords – Order to draw blood, blood collection, Blood collection process.

Introduction -

Collection of Blood is one of the most common nursing procedures practised in all clinical setups, this technique is practised in all departments that enables the patient's blood values to be examined, it is not without its risks. It is therefore extremely important that the results obtained are true and free of errors (1). For getting high-quality laboratory results is necessary to follow instructions and nurses needs to be extra vigilance during the collection of blood samples. Several studies have shown that almost 75% of all analytical errors occur during blood collection (2)(3).

The most common types of errors that could occur during the blood collection are –

1. Wrong Patient Identification.
2. Insufficient amount of Blood.
3. Filling an Incorrect Sample Tube.
4. Additive Contamination.
5. Diluted Sample due to use of IV cannulated vein or continuation of it.
6. Not following mixing inversion of additive Properly.

Inappropriate drawing of blood causes –

Inappropriate drawing of blood causes Additive Contamination, which may cause the following effects -

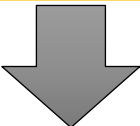










1. Contamination with EDTA can lead to incorrect electrolyte results such as hyperkalaemia, hypocalcaemia, hypomagnesaemia, hypozincaemia, hypophosphatemia, and longer clotting times (4).
2. The coagulation parameters could even be changed by contamination with heparin (5).
3. Haematological parameters could be changed by fluoride or oxalate, as they can destroy the cell membranes (6).



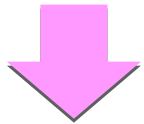





Mechanism of contamination -

1. Direct transfer of blood from one tube to another; It is strongly recommended not to transfer blood from one tube to another, as adding the first tube will contaminate the blood (7)(8).
2. Backflow of blood from the first tube into the second tube using the vacutainer system, the contaminated blood from the first tube could flow back into the needle and be transferred to the second tube (8)(7).
3. Contamination of the syringe needle when blood is poured into different blood collection tubes since blood is drawn with a syringe and the tubes are filled one after the other. If the addition of a tube contaminates the needle of the syringe, incorrect blood values may result from the subsequent tubes.(8)(7).

Preventive measure

Following an order to draw shown in picture

Sequence	Additives	Mixing Inversion	Tests	Bottlecap
	Culture Media		Blood culture to identify the presence of any micro-organism	
Light blue 	Tri-Sodium Citrate	4 Times	Prothrombin time (PT), Activated Partial Thromboplastin Time (APTT), Fibrinogen thrombin time, and other blood Coagulation tests.	
Dark blue 	No additives/Clot activator	8 Times	Amitriptyline, zinc, copper, clomipramine, doxepin, Imipramine,	
Red 	Clot Activator	8 Times	BMP, CMP, Lipid Profile, Serology tests, Therapeutic drug monitoring, blood bank procedures etc.	
Gold 	Polymer Gel and Powdered Glass Clot activator	5 Times	BMP, CMP, LFT, KFT, Lipid Profile and other biochemistry assays, Serological tests etc.	
Light green / Dark green 	Lithium Heparin/ Sodium Heparin	8 Times	Basic Metabolic Panel (BMP), Comprehensive Metabolic Panel (CMP) and other plasma determination tests/ABG, alpha-TNF, Lymphocyte Immunotherapy etc.	

Lavender 	EDTA (Ethylene diamine tetra-acetic acid)	8 Times	CBC, BLOOD TYPING (Rh Factor & ABO Screening), Crossmatch, Hb, Red cell Indices, ESR by Wintrobe's method etc.	
Pink 	K2EDTA	8 Times	Rh factor, ABO typing, CBC, Blood banking procedures etc.	
Dark blue 	K2EDTA	8 Times	Trace Elements like Cu, Zn, etc, Toxicology and Nutrient determination, etc.	
Yellow 	White-EDTA with plasma separator Yellow - ACD (Acid-Citrate Dextrose) Gary - Sodium Fluoride		White-PCR for adenovirus, toxoplasma and HHV-6 Yellow - Blood Bank studies, HLA Phenotyping, Paternity testing, Tissue typing, etc. Gary - Blood Sugar Testing, Toxicology tests, etc.	

Conclusion –

Nurses play a key role in the collection of various types of samples in the Hospital. Blood investigation contributes the major part of investigation advised in health care setup. Correctly collection of blood with right method and right order in very important to provide good and valuable result which may helpful for good planning of the treatment for patients. Wrongly collection of blood is one of the factors which may alter the diagnosis and treatment of patients. According to the various study, this problem is seen in the various healthcare sector. So, this is very necessary for nurses to follow order of blood draw for the correct blood collection process.

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