

Sample Collection Transport & Storage

By Dr Jemil Makadia

SAMPLE COLLECTION

- **Samples to be analyzed in Biochemistry laboratory are generally**

- a) Blood

- b) Urine

Blood / Serum / Plasma

Blood is most commonly used & it can be obtained as:

1. Venous blood -- venous puncture
2. Arterial blood – arterial puncture
3. Capillary blood – Skin puncture

Either whole blood or plasma or serum may be required for biochemical tests. Anticoagulants are added to obtain plasma.

Patient Identification

- Ask the patient
 - Full name
 - Age
 - Ward/OPD
- Tube labeled
- Date and Time of collection

Preparation

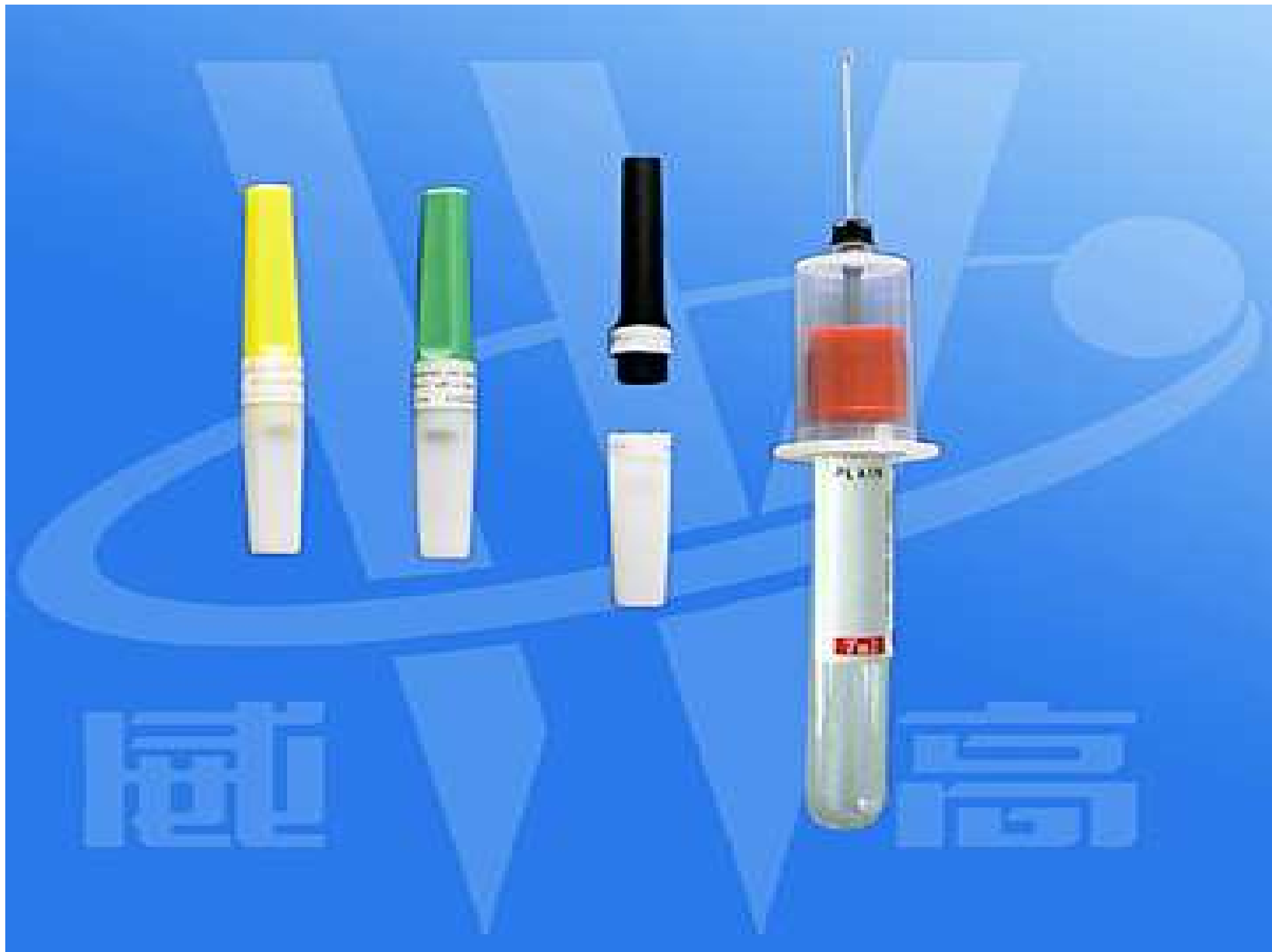
- Patient preparation
 - Diet (fasting 12hr)
 - Exercise (LDH, Creatinine, Cortisol)
 - Timing
 - Smoking
- Preparation of site
 - Allow to dry (30-60 sec)

Procedures

- Phlebotomist
- Patient
- Identify the site
- Tourniquet
- Needle
- Order of draw
- Tube mixing
- Volume

SYRINGE Vs TUBE COLLECTION











- Vigorous suction on a *Syringe* during collection or forceful transfer from the syringe to the receiving vessel may cause hemolysis (hemolysis is less in large bore needle).
- *Evacuated blood tubes* are preferred to syringes because they are easy to use and there is less likely-hood of their outside surfaces being contaminated with blood.



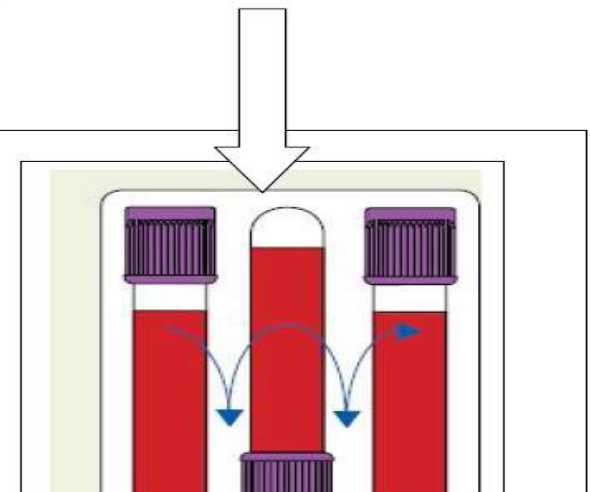
- Phlebotomist
 - Lab. Coat
 - Gloves
 - Face mask
- Patient
 - Sitting position
 - Should be relax
- Site
 - Find out appropriate vein
- Needle
 - Adult – 20 gauge
 - Children – 22-24 gauge

- Tourniquet
 - 4-6 inches above the site
 - Not more than 1 min.
 - Hemo concentration
 - Cholesterol, Tg, Albumin
 - Constituents bound to protein
 - No fist clenching ---> Increase K, IP, Lactate(pH)

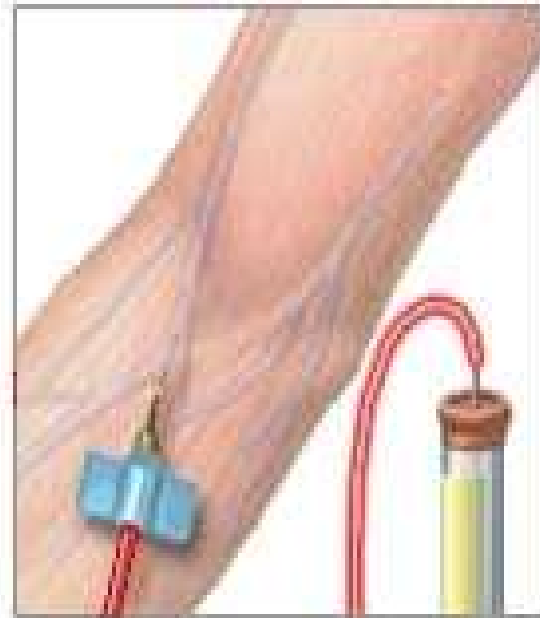
- Order of draw (CLSI- Clinical and Laboratory Standards Institute)
 - To prevent cross contamination for blood additive
 - 1. Culture --- Yellow
 - 2. Sod. Citrate --- Blue
 - 3. Plain (clot activator) --- Red
 - 4. Heparin --- Green
 - 5. EDTA --- Lavender
 - 6. Fluoride --- Gray
 - 7. Sod. Citrate(3.8%) --- Black

<u>Cap Colour</u>	<u>Anticoagulant</u>	<u>Order of Draw</u>	<u>Times of Inversion</u>
	Sodium Citrate	 Citrate	<ul style="list-style-type: none"> • 3-4 times
	Plain tube	 Plain	<ul style="list-style-type: none"> • 5-8 times
	Heparin	 Heparin	<ul style="list-style-type: none"> • 8 times
	K2/K3 EDTA	 EDTA	<ul style="list-style-type: none"> • 8 times
	Sodium Fluoride	 Fluoride	<ul style="list-style-type: none"> • 8 times

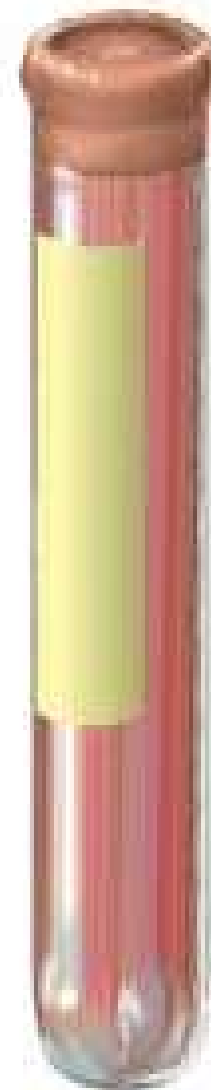
Order of draw: In case of multiple tube collections blood must be drawn in a specific order to avoid cross-contamination.



Tourniquet is applied
and area is disinfected



Needle is introduced
into vein, blood is drawn
into vial and analyzed





- Back flow
 - Hand should be in lower position
- Blood in tube should be mixed properly
- Volume should be in proportion to additive

Urine Collection

- Urine should be collected in clean, disposable plastic container
- Most preferable method of Urine collection is Mid-stream urine collection
- Urine should be analyzed within 2 hr of collection
- If not, it should be preserved on 2-8⁰ C or preservatives should be used like thymol crystals, HCL, Toluene ect.

Transportation

- The time between sample collection and receipt by the lab. should **not exceed 45 min.**
- During transportation tubes should be kept in test-tube stand & keep in Up right positions
- Vertical
- No shaking
- Away from light
- Temperature
- Time < 2 hr

Separation and Storage

- Plasma or serum should be separated from cells as soon as possible, and certainly **within 2 hours**.
- If it is impossible to centrifuge a blood specimen within 2 hours, the specimen **should be held at room temperature rather than at 4°C** to decrease hemolysis.
- If the specimen can not be analyzed at once, the **separated serum should generally be stored in capped tubes at 4°C until analysis**, to maintain stability of the specimen.

Thank you