

# Division of Blood Transfusion Services

Ministry of Health and Family Welfare



# **Donor Room Procedures & Adverse Donor Reaction**



# Donor Room Procedures



# Teaching Aim

To address issues in blood collection to ensure the safety of the donor and the product



# Core topics

- Donor care
- Arm cleaning
- Selection of blood collection bags
- Venipuncture
- Sample collection
- Monitoring blood collection activities
- GMP in blood collection



# Donor Care

Donor should be valued & treated as a very **important** person

**Donor safety / satisfaction is critical**



# Donor Care

- **Donor care:** Before, during and after donation
  - Donating blood should be a pleasant experience
  - The venue must be a **safe** place for the donor
  - The venue must be **comfortable - temperature, surroundings**
  - Staff must be trained in interpersonal skills
  
- **Adverse reactions**
  - Facilities to deal with any reactions before, during or after donation



# Pre- Donation Checks of Equipment and Materials-Collection room

*All equipment and materials must be*

- Correct
- Clean
- Calibrated
- Checked for performance
- Ready for use

- Blood collection mixer
- Tube sealer
- Stripper
- BP instrument

- Needle destroyer
- Alcohol Swabs
- Spirit & iodine
- Multiple Blood Bags





# Blood pressure apparatus

- Mercury sphygmomanometers are considered to be the gold standard for measuring blood pressure.
- However, Aneroid sphygmomanometers ( mechanical types with a dial) are considered safer than mercury based sphygmomanometers.
- Aneroid sphygmomanometers require calibration checks.



# Donor Identification

- **Correct identification** of the donor
  - At reception
  - Immediately before venipuncture
- Cross- check the donor with available records
  - Name, address, date of birth**
- Re-check the donor's identity



# Phlebotomy

- To be performed by a trained person
- Usually cubital fossa is chosen as the vein is palpable and required volume of blood can be easily drawn from this vein
- Examination of the area chosen for the venipuncture
- Should have no local infections



# Phlebotomy Site Examination and precautions

- Check the site, as professional donors/drug abusers may have multiple punctures
- Collection is a sterile process so surgical environment should be maintained
- Phlebotomist should follow the hand washing procedures



# Use of Gloves.

- Routine use of gloves is not mandatory for phlebotomy of blood donors.
- Gloves should be made available for those who want to use them.



Reference: AABB technical manual, page 53.



## Gloves are required when:

- An employee has cuts, scratches, or breaks in skin.
- When there is a likelihood that contamination will occur.
- While an employee is drawing autologous units.
- While an employee is performing therapeutic procedures.
- During training in phlebotomy.



# Hand Hygiene

- In most situations, thorough washing of hands with ordinary soap and water is sufficient to decontaminate them.
- Wash hands with soap and water when visibly dirty.
- Alcohol-based hand-rubs may be used to decontaminate lightly soiled hands when hand-washing is not available.
- Soap and alcohol based hand rub should not be used concomitantly.



[http://www.who.int/gpsc/5may/tools/who\\_guidelines-handhygiene\\_summary.pdf](http://www.who.int/gpsc/5may/tools/who_guidelines-handhygiene_summary.pdf)



# Preparation of the area

- BP cuff should be tied and pressure maintained at 40-60 mm Hg
- Tourniquet should be used carefully, as the pressure applied cannot be gauged.
- No local anaesthetic drug need to be administered





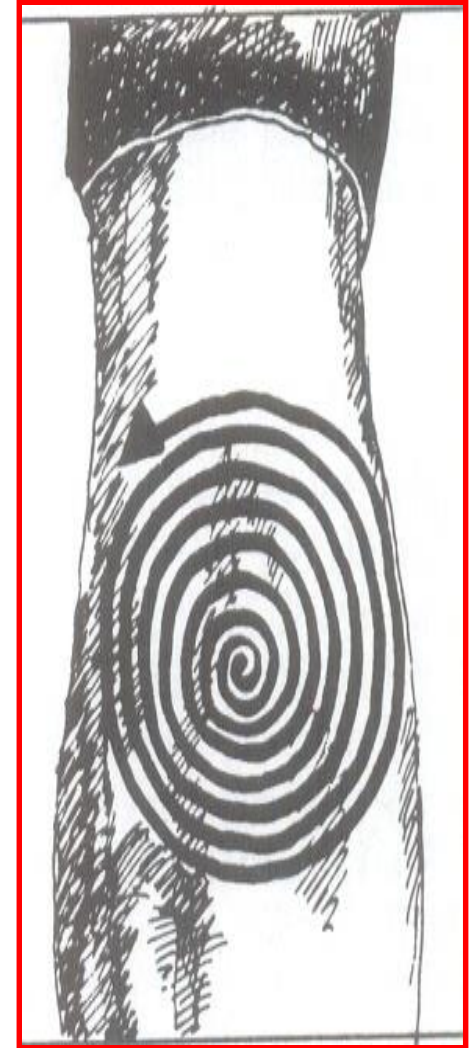
# Donor Arm Cleaning

- Important to minimise risk of bacterial contamination during vene puncture
- Follow the SOP for Methodology and selection of cleansing agent
- Trained staff
- Assessment of Compliance and effectiveness



# Cleaning the area

- Deflate the cuff and clean the area selected
- Spirit /alcohol swab and iodine should be used to do this
- Savlon etc. is not recommended.
- Clean 4-5cms area in a concentric centrifugal pattern
- Do not touch the cleaned area after preparation.



# Preparation of the bag before puncture

- Inspection of the bag for the clear anticoagulant solution
- Inspect for any leak or damage or particulate matter
- Identify the donor record with the donor and all items associated with donor include:
  - collecting and processing institution,
  - phlebotomist,
  - Date, time, expiration,
  - component type, volume, storage temperature,
  - special requirements.
- Bag should be placed in the blood collection monitor
- Remove the needle cap just before the venipuncture to maintain closed system



# Labelling

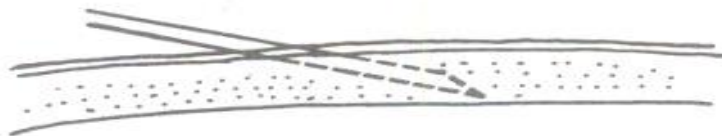
## Labels

- Identify each donor with donor record
- Label specimens collection container and all satellite bags for components.
- Attach labels at the time of collection to all future processed materials.
- Perform a recheck for all numbers and labels.
- Record type of donation and any processing of unit.

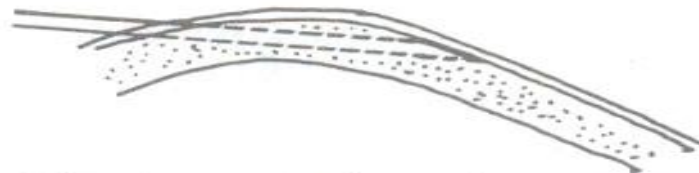


# Positioning of needle for donor phlebotomy

## Needle Positioning



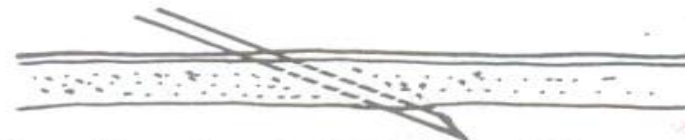
Correct insertion; blood flows freely into needle.



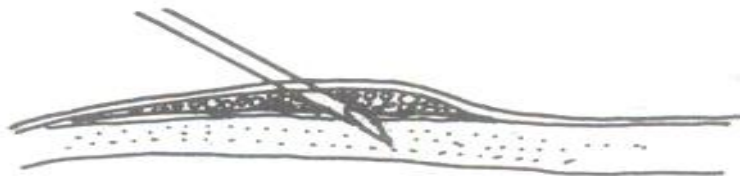
Bevel against vein upper wall does not allow blood to flow.



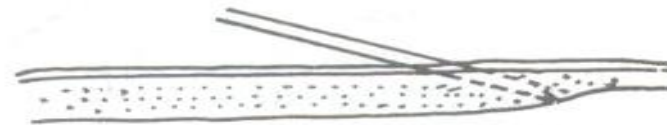
Bevel resting on vein lower wall does not allow blood to flow.



Needle inserted too far.



Needle partially inserted causes hematoma.



Collapsed vein. Blood flow slowed or halted.

# Blood Collection

Utmost Care During Blood Collection is the Key To Good Quality of Blood / Components

Confirm Donor identity with labeling of blood pack and sampling tubes



**Ensure Adequate vene puncture Site disinfection**

# Procedure

- The procedure takes about 5-10minutes
- Donor should not be left unattended
- Bag should be periodically mixed so that uniform mixing of anticoagulant with blood occurs
- 1ml of blood =1.05gm
- 350ml = 367gms +weight of the bag



# Monitoring Blood Collection

- **Constant monitoring during donation**
  - ✓ Smooth Blood flow
  - ✓ Gentle mixing of blood
  - ✓ Collection time - **5-10 min**
  
- **Appropriate Volume collected =  $\pm 10$  % of desired volume**
  
- **Sample collection**
  - Identity checks
  - Correct handling
  - Labeling





# After the procedure

- Deflate the cuff once the procedure is over
- Clamp the tubing
- Place the sterile swab and withdraw the needle
- Apply pressure and let the donor lie down for 5 minutes



## After the procedure (contd...)

- Do not recap the needle
- Stripping should be done to mix the blood in tubing with anticoagulated blood in the bag
- Collect Pilot samples for serology & grouping
- Seal tube at least 5 segments



# Pre Centrifugation Storage

- Critical elements – Time and storage conditions prior to component separation
- Store upright for 30-60min ( preferably in Laminar Flow Hood)
- Maintain Temperature Between 20 and 24 Degrees for Platelet preparation
- Maintain Temperature at 4 Degrees for Red Cell preparation/whole blood collection
- Mix Each Unit Well for Consistent Separation



# Post Donation Care

- Donor should be constantly observed
- Apply medicated adhesive when oozing stops
- Check for any haematoma
- Check for any hypovolemic signs



## Post Donation Care (contd...)

- Make them rest for 8-10 minutes before they go to refreshment area
- It is mandatory to provide light refreshments to the donors
- They should be observed for another 10 minutes while in refreshment area.
- Make sure they are completely alright



# Post-donation instructions

## *Instructions to the donor after the donation*

1. Drink more fluids than usual in the next 4 hours. Do not remain hungry.
2. Do not smoke for half an hour.
3. Do not take alcoholic drinks for at least 6 hours.
4. If there is bleeding from phlebotomy site, raise the arm and apply pressure.
5. If there is feeling of faintness or dizziness, wither lie down or sit with head between knees. If symptoms persist, ask for help, return to the blood bank or consult a doctor.
6. Remove the bandage/band-aid after 5-6 hours.



# Donor Satisfaction

- Important for retention of Donors
- Regular Donors support the BTS
  - They **understand the importance** of donating
  - They feel **valued**
  - They are **respected**
  - They are **acknowledged**
- Donors are then willing to help **‘educate’** others



# Donor Feedback and Complaints

- **Feedback** should be welcomed & acknowledged
  - Positive and negative feedback should be dealt with evenly
  - Response should be made to donors, where appropriate
  
- **Complaints should be** taken seriously
  - May be about any area of contact with the BTS
  - May range from serious to trivial
  - should be recorded and acknowledged
  
- **Investigate donor complaints**
  - Measures to ensure that identified errors/ problems are corrected and prevented from recurring





# Adverse Donor Reaction



# Teaching Aims

- You will learn all about adverse donor reaction and prevention of certain reactions.
- You will learn to define, identify/diagnose and handle all the reactions.



# Adverse Donor Reactions

**Definition:** Untoward feeling by blood donor before, during or after blood donation

- There is a psychological element to most reactions so a friendly cheerful atmosphere can reduce donor anxiety and perhaps prevent any adverse reactions



# Adverse Donor Reactions

- Majority have VASOVAGAL Reactions
- Usually mild and harmless



# Adverse Donor Reactions

- Personnel should be trained to recognize and give initial treatment, including CPR.
- Emergency equipment -must be available including an emesis basin, towels, oropharyngeal airway, oxygen and mask, and emergency drugs as determined by the blood bank physician.
- Immediate action - remove tourniquet and needle, move donor to private area, notify donor's physician if donor does not recover rapidly after initial care.



# International Society of Blood Transfusion and European Haemovigilance Network Version 2007

<b>100 Local Reactions Related to Needle Insertion</b>	
<i>Code</i>	<i>Category</i>
<b>110</b>	<b>Vessel injuries</b>
111	Haematoma
112	Arterial puncture
113	Thrombophlebitis
<b>120</b>	<b>Nerve injuries</b>
121	Injury of a nerve
122	Injury of a nerve by a haematoma
<b>130</b>	<b>Other complications (related to needle insertion)</b>
131	Tendon injury
132	Allergic reaction (local)
133	Infection (local)
<b>200 General Reactions</b>	
<b>210</b>	<b>Vasovagal reactions</b>
211	Immediate type
212	Delayed type

# International Society of Blood Transfusion and European Haemovigilance Network Version 2007

<b>300 Rare, Important Complications</b>	
<b>310</b>	<b>Related to vessel injury</b>
311	Brachial artery pseudoaneurysm
312	Arteriovenous fistula
313	Compartment syndrome
314	Axillary vein thrombosis
<b>320</b>	<b>Accidents</b>
321	Accidents related to vasovagal syncope
322	Other kinds of accidents
<b>330</b>	<b>Cardiovascular reactions</b>
331	Angina pectoris
332	Myocardial infarct
333	Acute neurological condition (TIA, stroke)
<b>340</b>	<b>Related to apheresis procedures</b>
341	Diffuse allergic reaction
342	Anaphylaxis
343	Haemolysis
344	Air Embolus
<b>350</b>	<b>Death</b>
<b>360</b>	<b>Other</b>



# Emergency Drugs

- Regular Checks for expiry
- Syringe /Needles
- IV set, IV fluid- NS, 25% dextrose
- IV Steroids
- Antiemetic
- Calcium Gluconate
- Adrenaline/Noradrenaline
- Aromatic Ammonium
- Ambu bag and oxygen cylinder





# Adverse Donor Reactions

- Vasovagal reaction
- Sudden fainting due to hypotension
- Neurophysiological response
  - Apprehension, first time donor, female
  - Emotional stress
  - Sight of blood
- Prevention
  - Donor screening
  - Psychological support through positive donor-staff relationship and reassurance
  - Physical comfort like temperature and surrounding environment



# Classification

- **MILD** - pallor ,sweating, dizziness and nausea
- **MODERATE** - vomiting ,Loss of consciousness of transient or short duration, Bradycardia , Shallow respiration, hypotension (systolic as low as 60mm Hg), Slow pulse. Also include tetany, vomiting and hyperventilation.
- **SEVERE** - Prolonged loss of consciousness, convulsions-focal or generalized with or without incontinence of urine or faeces, cardiac events.

# Management- General Principles (1)

- Reassurance/Distractation
- Loosen tight clothing
- Ensure adequate airway
- Raise legs above the level of donor head
- Check for vitals
- Donor to spend extra time at BTS/Leave only after final check up
- Guidance on future donations



# Management- General Principles (2)

## *Discontinue donation*

- Talk to donor to assure that it is nothing serious and he/she will be alright
- The donor should NEVER be left alone. He/she should feel that there is someone who is concerned and is committed for his care.
- Remove donor if possible from general donor area to another room or use a screen to prevent sympathetic fainting of other donors.





# Moderate Reactions - Management

- In addition to treatment as in mild reaction, administration of 95% O<sub>2</sub> and 5% CO<sub>2</sub> may be helpful in case of fainting with hyperventilation. If possible, remove the donor from the general area to another room or use a screen to prevent sympathetic fainting. In case facility for monitored administration of 95% O<sub>2</sub> and 5% CO<sub>2</sub> is not available, re-breathing into a paper bag is helpful.



# Severe Reactions-Management

- Observation is very essential. Keep donor under observation. If need be, assistance should be provided to accompany the donor to his place to avoid any injury or accident.
- Must prevent injury to donor, Put a padded tongue blade between teeth if convulsions are prolonged.
- If there is no improvement within 30 minutes, shift the donor to emergency medical care unit and administer 300-500 ml normal saline with or without dextrose.



# Severe Reactions-Management (contd...)

- After recovery post donation instruction must be given to the donor and some additional instructions depending upon severity of the reaction.
- Record of such reactions must be mentioned on donor card/donor register and should be explained to donor and call donor next morning or evening for follow up and for the reassurance.





# Adverse Donor Reactions- Tetany

- Mechanism of Tetany :
  - Hyperventilation : Increased inspiration and expiration either rate or depth
  - Results in excessive loss of CO<sub>2</sub>
  - Severe cases can result into hypocalcaemia (tetany) or convulsions.
  - calcium gluconate can be given for hypocalcaemia.



# Adverse Donor Reactions (contd...)

- Usually associated with anxiety
- Prevention and treatment
  - Reassure the donor
  - Ask the donor to cough to interrupt the pattern of breathing
  - Instruct the donor to re-breathe expelled air into a small paper bag



# Adverse Donor Reactions (contd...)

## Hematomas

- Usually results from the puncture of a blood vessel
- Prevention is by effective collection technique
- Should be taken care by local Pressure, Application of Ice, Thrombophob ointment application and Pain killers
- Inform the donor that there will be color changes over a period of a week and it will resolve without leaving any mark.
- Majority Resolve spontaneously



# Adverse Donor Reactions (contd...)

## Arterial puncture

- Bright coloured blood spurts with pressure

## Management:

- Stop the procedure
- Apply hard pressure on puncture site for at least 15 minutes
- Raise limb above the heart
- Reassurance and Documentation

# How to Minimise Donor Reactions ?

- Donor education before and after donation
- Volume of blood drawn – 8-9ml /Kg of donor body weight
- Audiovisual entertainment
- Hydration : a glass of water, 30 minutes before donation
- AMT-applied muscle tension-repeated rhythmic contraction of muscles of arms and legs.



# Learning Outcome

Enabled to prevent adverse donor reactions and identify, classify and handle all types of donor adverse reactions.



NACO website: [www.naco.gov.in](http://www.naco.gov.in)

