

# Care of the Apheresis Donor

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# Disclosures

I have no actual or potential conflict of interest in relation to this presentation.

# Objectives

- Apheresis patient / apheresis donor
- Types of apheresis donors
- Selection of apheresis donors
- Assessment and monitoring of apheresis donors
- Education of apheresis donor
- Prevention and treatment of adverse events

# Apheresis Patients

Individuals with a clinical condition where therapeutic apheresis is an integral part of their care plan. Patient demographics, co morbidities and concurrent treatments have the potential for more adverse sequelae. Regulatory bodies provide guidance in the performance of TA but allow the clinician more flexibility to properly care for the patient.

# Apheresis Donors

Donors are healthy volunteers who arrive at a Blood Donation Center to donate a blood product for transfusion to a patient.

Regulatory bodies have strict criteria for donor acceptance to ensure safety of donor and recipient .

# Types of Apheresis Donors

- Platelet
- Plasma
- Red Blood Cell
- Granulocyte
- Peripheral Blood Progenitor Cell

# Prevention

- Selection
- Pre Donation Assessment
- Coaching /Education
- Monitoring
- Treatment
- Post donation instructions

# Donor Selection- Recruitment

- Most common and efficient way to recruit apheresis donors is to convert from whole blood donors
  - These donors have qualified and tolerated a whole blood donation
- Less ideal-“Motivated donor”- relative of patient, community blood drive/announcement



# Education

- Describe the apheresis donation procedure in an age appropriate manner using clear instructions and explanations
- Inform donor of targeted products for planned donation
- Inform donor of potential adverse reactions and treatments

# Coaching

- Coach donors
  - When:
    - When making appointment
    - Reminder call
    - While filling out paper work
    - During donation
    - Post donation
  - What:
    - Increase fluids
    - Increase calcium rich food , especially day of donation
    - Eat within 3 hours of donation
    - Eat salty snacks day of donation

# Available resources

- Compliance with regulatory standards, Code of Federal Regulations and guidance documents reduce or eliminate adverse events for both donors and patients.
- FDA- <https://www.fda.gov> for example
  - *Implementation of Acceptable Full- Length and abbreviated Donor History Questionnaires and Accompanying Materials for use in Screening Donors of Blood and Blood Components*
- AABB <http://www.aabb.org>
  - Donor History Questionnaire v2.0 approved by FDA May 27, 2016
- AABB Standards, Version 30

# Pre Donation Assessment

- Universal Donor History questionnaire v2.0 developed by AABB approved by FDA May 27, 2016
  - Questionnaire
  - Educational Materials
  - Medication Deferral List
  - User Brochure (UB)
  - vCJD Countries of Risk
  - Flowcharts
  - References
  - Additional questions for risk of ZIKA and Ebola

# Pre Donation Assessment

- Age: conform to applicable state law or  $\geq 16$ .
- Gender and pregnancy history
  - Donors with a history of pregnancy must be tested and negative for HLA antibodies
- Total blood volume.
  - Donors with higher TBV are more likely to safely give multiple components concurrently
- Height and Weight.
  - minimum of 110 lbs (50 kg) for platelet donation
  - double-RBC donation
    - height of male donors at least 5'1", weight at least 130 lbs
    - Height of female donors at least 5'5" and weight at least 150 lbs.
- Platelet count.
  - minimum pre-donation platelet count must be  $>150,000$  platelets/ $\mu\text{L}$ .

# Pre Donation Assessment

- Blood Pressure:
  - Systolic  $\leq 180$  mmHg and  $\geq 80$  mmHg
  - Diastolic  $\leq 100$  mm Hg and  $\geq 50$  mmHg
- Pulse:  $\leq 100$  b/min  $\geq 50$  b/min
- Temperature:  $\leq 37.5$  °C (99.5 °F )
- Hemoglobin/Hematocrit
  - Female  $\geq 12.5$  g/dL or  $\geq 38\%$
  - Male  $\geq 13.0$  or  $\geq 39.0$  %
  - Double red cell donation  $\geq 13.3$  g/dL or  $\geq 40\%$
- Vein Assessment- adequate for apheresis donation and free of lesions

# Pre Donation Assessment

- Donation frequency
  - Platelet donor – maximum of 24 donations in a rolling 12 month period, minimum of 2 days between donations and no more than 7 donations in a 7 day period
  - Double RBC every 112 days ( 16 weeks)
  - RBC every 56 days ( 8 weeks)
  - Plasma every 28 days ( concurrent with other donations)
  - Incomplete or failed procedure deferral periods
- Annual RBC and Plasma losses:
  - Annual RBC loss is 1540 mL within a rolling calendar year
  - Plasma loss no greater than 12 liters ( 110-175lbs) or 14.4 liters (175lbs) in a rolling calendar year

# Monitoring

- Distract donors
  - Conversation!
- 20 minute checks
  - Check Access
  - Check Product
  - Check Donor
- Comfort measures
  - Warm blankets
  - Fluids
  - Snacks



# Vascular Access

- Ensure donor has adequate venous access for apheresis procedure, lesion free
- Encourage hydration pre procedure
- Warm packs can be applied day of donation to increase vein dilation.

# Anticoagulant

- ACD-A
  - Anticoagulates extracorporeal circuit to prevent clotting blood
  - Lowers pH of the blood
  - Inhibits platelet clumping
  - Binds to  $\text{Ca}^{++}$  , may cause hypocalcemia
  - Rapidly metabolized by liver
  - Encourage increase in oral calcium intake ( TUMS<sup>®</sup>, milk based products)

# Iron/ Ferritin levels

- AABB Standard 5.2.1.5 “requires procedures to ensure donors are given, and acknowledge reading, educational materials that include the risks of post donation iron deficiency.”
- AABB Association Bulletin #17-02 suggests recommendations which may be incorporated into next version of standards.

# Potential Adverse Reactions

- Citrate Reactions
- Vasovagal type reactions
- Needle Infiltration
- Rare reactions:
  - Allergic reactions
  - Hemolysis (damage to red blood cells)
  - Air embolism

# Treatment of Adverse Reactions

- Citrate complications and treatment
  - Signs and symptoms: sensations of vibration, twitching, tremors, muscle cramping, nausea/vomiting, paresthesia, sneezing, metallic taste in mouth, lightheadedness, and chills
    - Slowing the inlet flow rate or pausing the collection may cause resolution of symptoms
    - Encourage intake of additional oral calcium.

# Treatment of Adverse Reactions

- Vasovagal Reactions

- Transient drop in blood pressure
- Symptoms: pallor, sweating, nervousness, weakness, nausea, lightheadedness, and dizziness
  - Place donor in Trendelenburg position
  - Cold, wet compresses to the neck and forehead
  - Encourage donor to take slow, deep breaths
  - Encourage fluid intake if the donor is able to tolerate it

# Infiltration

- Infiltration occurs when fluids breach the vein walls and leak into the surrounding tissue.
- Signs and symptoms:
  - pain, pressure, swelling at the needle site, and poor venous access noted by poor blood flow
- Operator should remove the needle immediately and apply moderate pressure to the site until bleeding stops.

# Allergic reaction

- Allergic reactions are extremely rare occur predominantly in repeat apheresis donors who react to the ethylene oxide used to sterilize the disposable set.
  - Stop procedure temporarily in any allergic donor reactions
  - Simple reactions treated with oral antihistamines
  - Anaphylactic or severe allergic reactions, emergency services should be contacted immediately and vascular access should be maintained using saline, if possible.



# Rare reactions

- Hemolysis
  - damage to red cells
  - evidenced by pink or red-colored plasma.
- STOP the procedure immediately and do not reinfuse the red cells
  - Remove the instrument from service
  - If the donor is stable, he or she may be released
  - Donor should be instructed to monitor the color of his or her urine. If it becomes pink, or cola colored, medical attention should be sought for evaluation.

# Rare reactions

- Air embolism is a rare complication
  - Signs and symptoms:
    - chest pain, shortness of breath, pallor, hypotension, diaphoresis, nausea, mental confusion, and/or syncope
  - Immediately STOP the procedure and clamp the return line if there is visible air
  - Place donor in the Trendelenburg position
  - Contact emergency services

# Documentation

- Document all aspects of donation completely
  - Computer or paper based
  - RBC and plasma losses
- Document reactions including treatment and follow up

# Post donation instructions

- Provide all donors with post donation information regarding any potential adverse reactions that may have delayed onset.
- Include
  - eating a hearty meal, drinking plenty of non-caffeinated and non-alcoholic beverages
  - increasing sodium intake
  - avoiding heavy lifting and strenuous exercise
  - Leave the bandage on for approximately 4 hours
  - Donors should be instructed to wait a minimum of 15 minutes prior to leaving the collection site to allow for proper recovery and monitoring by trained staff

# References

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# References

FDA- <http://www.fda.gov>

AABB- <http://www.aabb.org>

21 C.F.R Additional Standards for Human Blood and Blood Products. Part 640

Standards for Blood Banks and Transfusion, 30<sup>th</sup> edition Bethesda, MD: AABB Press, 2015.

# Newest resource !



