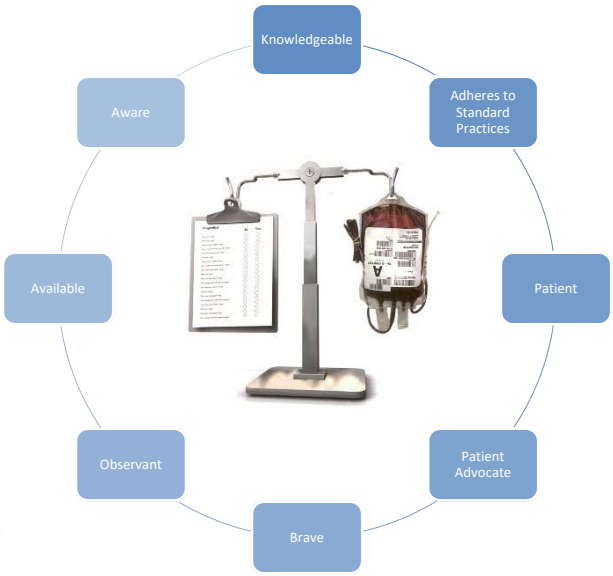
1

Learning Objectives

- Review the Transfusionist' s responsibilities
- Detail the steps the transfusionist must take prior to the transfusion of blood products
- Describe blood product compatibility and its requirements

2

The Transfusionist's Responsibility



3

Preparing to Transfuse

4

Preparing to Transfuse

- Order
- Consent
- Pre-transfusion laboratory testing
- Intravenous access
- Equipment
- Baseline assessment
- Blood component
- Verification steps
- Evaluation / Ongoing Assessment
- Documentation

www.aabb.org 5

5

Order for Blood Product

- Order to prepare – *directed to the transfusion service*
  - Recipient name and another independent identifier (e.g., date of birth or medical record number)
  - Component [e.g., Red Blood Cells (RBCs) or Apheresis Platelets] to prepare or to administer
  - Associated lab testing (Type and Crossmatch, ABO Type, etc.)
  - Special processing if required (e.g., irradiation, or washing)
- Order to transfuse – *directed to the transfusionist*
  - Number of units or volume to administer
  - Date and time for the infusion
  - Flow rate or duration for administering the component
  - Indication for transfusion

www.aabb.org 6

6

Informed Consent

The AABB *Standards for Blood Banks and Transfusion Services (Standards)* states, “The blood bank or transfusion service medical director shall participate in the development of policies, processes, and procedures regarding recipient consent for transfusion.”

www.aabb.org 7

7

Recipient Informed Consent

- Must address indications for; risks, benefits, and possible side effects of; and alternatives to transfusions of allogeneic blood components
- The recipient has the right to choose or refuse a transfusion and must have an opportunity to ask questions of a learned professional before providing consent
- Documentation of the consent process must be entered into the recipient’s medical record
- Each institution must have a process for recording a patient’s refusal to receive blood or blood components in the patient’s medical record
- Institutional policies must identify health-care providers who are permitted to obtain consent and must indicate the length of time and range of patient care (eg, in- and outpatient) for which a consent remains valid
- Consent for transfusion must be obtained from patients who have the requisite capacity to make such decisions

www.aabb.org 8

8

Pre-transfusion Laboratory Testing

- In nonemergent situations, a pretransfusion blood sample is required before all RBC transfusions
- In some hospitals where a historical ABO type is known, a pretransfusion sample might not be required for plasma and platelet transfusions
- Typically, the sample is obtained within 3 days of transfusion, with the draw date considered to be day 0
- Institutional policies may vary regarding the sample outdate
- Containers used for blood specimens must be labeled in the presence of the recipient. The sample must be labeled at the recipient's side with at least two unique identifiers (eg, the recipient's name, date of birth, or identification number).
- The identification of the person collecting the sample and the date the sample was collected must be traceable
- Some policies may also require documentation of the time the sample was collected
- In some institutions, computer-assisted positive patient identification and collection of confirmatory ABO samples are additional methods used to further mitigate patient identification errors

9

Preparation of the Recipient

- Intravenous access
  - IV catheter sizes for use in transfusing cellular blood components range from 25 to 14 gauge
  - A 20- to 18-gauge IV catheter is suitable for the general adult population and provides adequate flow rates without excessive discomfort to the recipient
  - When an infant or a toddler receives transfusion, a 25- to 24-gauge IV catheter may be suitable, but a constant flow rate using an infusion device must be applied
  - In some circumstances when IV access cannot be achieved, intraosseous infusions may be warranted
- Prophylactic Medications – if ordered
  - Recent evidence indicates use of premedication does not minimize transfusion-related adverse events
  - "in the absence of definitive evidence-based studies, pretransfusion medication to prevent transfusion reactions should not be encouraged."

10

Preparation of the Recipient

- Prophylactic Medications – if ordered
  - Recent evidence indicates use of premedication does not minimize transfusion-related adverse events
  - "in the absence of definitive evidence-based studies, pretransfusion medication to prevent transfusion reactions should not be encouraged."
  - For patients with a history of FNHTR with rigors, meperidine may be used to premedicate, though its efficacy in this setting has not been studied
  - If premedication is required, it must be administered before obtaining the component from the transfusion service
    - Oral premedication should be administered 30 minutes before the start of the transfusion.
    - Intravenous medications should be given 10 minutes before the transfusion is initiated.
  - Nonpharmacologic methods have been shown to reduce the incidence of common transfusion reactions
    - Pre-storage leukocyte reduction reduces the incidence of febrile reactions.
    - For anaphylactic reactions, all cellular components should be washed, and plasma lacking the cognate allergen [such as immunoglobulin A (IgA)-deficient plasma] should be used.
    - Pooled solvent/detergent-treated plasma may also be used to mitigate the risk of an allergic reaction.

11

Equipment

- Blood Warmers
- Infusion Systems
- Syringe Infusion Pumps
- Pressure Devices
- Emergency Equipment
- Infusion Sets
- Microaggregate Filters
- Compatible IV Solutions

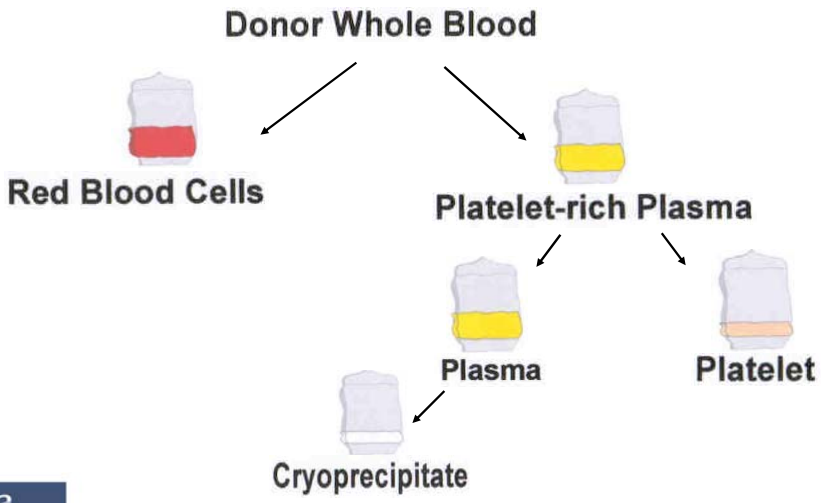
12

Baseline Assessment

- A baseline physical assessment must minimally include measurement of
  - blood pressure
  - heart rate
  - Temperature
  - respiratory rate
- Many institutions also routinely measure oxygen saturation
- The pretransfusion assessment must include symptoms, such as shortness of breath, rash, pruritus, wheezing, and chills, as a basis for comparison after the transfusion is initiated

13

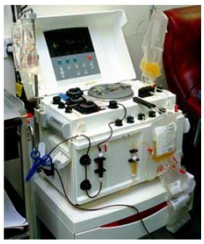
Blood Components



14

Blood Components

Donor Whole Blood



Single donor / Apheresis Platelet

15

15

Red Blood Cells

- Indications:
  - Hct <24%; Hgb <7, symptomatic anemia
- Effect:
  - In and adult, one unit will increase
  - Hct approximately 2 to 4%
- Dose:
  - One bag = One unit
- Rate (non-emergent):
  - 2 to 4 mL/kg/hr, 1 unit over 1.5 to 2 hours, up to 4 hours
- Testing – Requires crossmatch compatibility

16

16

Platelets

- Indications:
  - Thrombocytopenia, Platelet dysfunction, Platelet count <50,000 mm³
- Effect:
  - In and adult, one unit will increase platelet count by approx. 26,000mm³
- Dose:
  - Pooled (multiple donor) or Apheresis (single donor)
- Rate (non-emergent):
  - 4 to 8mL/kg/hr, 1 unit over 30 minutes to 1 hour
- Testing – Requires historical ABO

17

17

Plasma

- Indications:
  - INR > 1.6 – dependent on clinical situation
  - reversal of anticoagulation
- Effect:
  - In an adult, one unit will increase clotting factor approximately 2 to 5%
- Dose:
  - One bag = One unit
- Rate (non-emergent):
  - 2 to 4 mL/kg/hr, 1 unit over 1.5 to 2 hours, up to 4 hours
- Testing – Requires historical ABO

18

18

Cryoprecipitate

- Indications:
  - Fibrinogen < 100mg/dL
- Effect:
  - In and adult, one 6 pooled-unit will increase Fibrinogen approximately 45mg/dL
- Dose:
  - One bag = +/- 6 pools unit (multiple donors)
- Rate (non-emergent):
  - 4 to 8mL/kg/hr, 1 unit over 30 minutes to 1 hour
- Testing:
  - Requires historical ABO

19

19

Blood Bank Testing

- **Hold** – no testing performed
- **ABO Type** – determines blood type and Rh
- **(ABO) Type and Screen** – determines blood type and Rh as well as any antibodies*
- **Type (and Screen) and Crossmatch** – intended donor unit selected and tested with patient sample to determine compatibility

20

20

Sample Collection

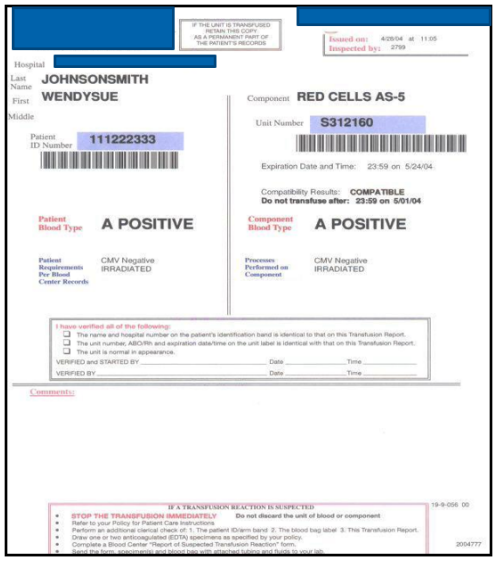
Must adhere to standard 2-person verification process that includes:

- ID Band to Sample Label
  - Name
  - MRN #
- ID Band to Order
  - Name
  - MRN#
- Verification of collection from specific patient
- Labeling of sample in presence of patient

21

21

Transfusion Report Sample



IF THE UNIT IS TRANSFUSED RETAIN THIS COPY AS A PERMANENT PART OF THE PATIENT'S RECORDS

Issued on: 4/28/04 at 11:05
Inspected by: 2759

Hospital

Last Name: JOHNSONSMITH
First: WENDYSUE
Middle

Component: RED CELLS AS-5
Unit Number: S312160

Patient ID Number: 111222333

Expiration Date and Time: 23:59 on 5/24/04

Compatibility Results: COMPATIBLE
Do not transfuse after: 23:59 on 5/01/04

Patient Blood Type: A POSITIVE

Component Blood Type: A POSITIVE

Patient Requirements Per Blood Center Records: CMV Negative IRRADIATED

Processes Performed on Component: CMV Negative IRRADIATED

I have verified all of the following:
- The name and hospital number on the patient's identification band is identical to that on this Transfusion Report.
- The unit number, ABO/Rh and expiration date/time on the unit label is identical with that on this Transfusion Report.
- The unit is normal in appearance.

VERIFIED and STARTED BY _____ Date _____ Time _____
VERIFIED BY _____ Date _____ Time _____

Comments:

IF A TRANSFUSION REACTION IS SUSPECTED
STOP THE TRANSFUSION IMMEDIATELY Do not discard the unit of blood or component
- Refer to your Policy for Patient Care Instructions.
- Perform an additional clerical check of: 1. The patient ID/arm band 2. The blood bag label 3. This Transfusion Report.
- Draw one or two anticoagulated (EDTA) specimens as specified by your policy.
- Complete a Blood Center "Report of Suspected Transfusion Reaction" form.
- Send the form, specimen(s) and blood bag with attached tubing and fluids to your lab.

19-9-056 00
2094777

22

22

Verification Steps

The transfusion must not be initiated if any discrepancy or abnormality is found in the following steps:

- *Identification of recipient and unit*
  - The transfusionist must verify that the recipient's two independent identifiers (eg, name and identification number) present on the patient's armband match the information on the unit label or attached tag. The requirements of the institution for recipient identification must be satisfied.
- *Donation identification number*
  - The DIN and donor ABO/Rh type on the blood component label must match the attached tag.
- *Blood type*
  - The recipient's ABO group (and Rh type if required) must be compatible with that of the unit. Interpretation of any crossmatch tests (if performed) must also be verified.
- *Medical order and consent to transfuse*
  - The transfusionist must verify the component matches the provider's order and that any special processing requested in the order was performed. The consent must be present on the patient's record.
- *Expiration date (and time, if applicable)*
  - The transfusion of the unit must start before the expiration date or time has passed.

www.aabb.org 23

23

Evaluation / Ongoing Assessment

- Vital Signs – baseline, at 15 minutes, and at completion
  - B/P, Pulse, Respirations, SaO2, Temperature
- Assessment – baseline, at least every 30 minutes, at completion
  - Skin, Lung (focus on volume status), general assessment

24

24

Patient Education

"Call me if you feel any differently than you do right now."

25

Documentation

Required by AABB Standards:

1. Transfusion order
2. Recipient Consent
3. Component Name (Kind of component)
4. Donation identification number
5. Date and Time of Transfusion
6. Pre- and Post transfusion vital signs – ongoing documentation
7. Volume transfused
8. Identification of transfusionist(s)
9. Transfusion-related adverse events, if applicable

Note: although AABB Standards does not specify documentation of the start and end time of transfusions, the *Circular of Information for the Use of Human Blood and Blood Components* requires that the transfusion be completed within 4 hours. Documentation of start/end time would be required to demonstrate compliance.

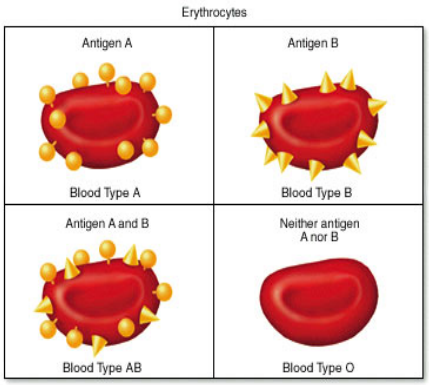
26

Compatibility

27

ABO Group System

- Determined by antigens on the red blood cell membrane
  - Antigens are inherited traits
- There are hundreds of antigens on red blood cells
  - Found universally or rarely
- Two most important antigens
  - A & B



28

ABO Compatibility

Recipient's ABO Group	Red Cell Antigens	Compatible RBC	Plasma Antibodies	Compatible Plasma	Whole Blood
A	A	A and O	anti-B	A and AB	A
B	B	B and O	anti-A	B and AB	B
AB	A and B	O, A, B, and AB	None	AB	AB
O	None	O	Anti-A, anti-B	O, A, B and AB	O

Platelets - While the same ABO as the patient is the first choice, any ABO type component may be used.
Cryoprecipitate - While the same ABO as the patient is the first choice; any ABO type component may be used.

29

Rh Blood Group System

- Rh Compatibility only applies to RBCs and Platelets
- Defined by the presence or absence of the D antigen
  - Rh+ has D antigen
  - Rh- lacks D antigen
- Rh + recipients – can receive either Rh + ***or*** Rh- components
- Rh – recipients – will preferably receive Rh – components

30

A Blood Transfusion…

- Is not without risk
- Requires careful consideration
- Requires specific testing
- Relies on strict adherence to safe policies and procedures

31

31