 BLOOD PRODUCT UTILIZATION

Who gets what & when

BLOOD PRODUCT UTILIZATION

Why not to give blood?

- Volume Expander
- For specific number (except as related to procedures)
- To patients with religious objections to blood transfusions

BLOOD PRODUCT UTILIZATION

- Blood given only when necessary
- Specimen for crossmatch required
- Specimen for crossmatch MUST be properly identified
 - Name of patient
 - Unit Number
 - Date
 - Initials of phlebotomist on tube & requisition

BLOOD PRODUCT UTILIZATION

- Whole blood - Virtually never used
- Platelets
- Fresh frozen plasma
- Cryoprecipitate
- Packed RBCs
- Concentrates

BLOOD PRODUCT UTILIZATION

- Autologous blood best
- If autologous blood not available, then blood from the general donor pool is next safest
- Designated donors to be discouraged strongly

BLOOD PRODUCT UTILIZATION

- Irradiation - To prevent graft vs host disease - Kills lymphocytes in transfused unit

BLOOD PRODUCT UTILIZATION

- Leukodepletion Filtration
 - Removes WBCs
 - Decreases sensitization
 - Prevents CMV spread
- Mostly done at point of processing at present
- All products currently given here are leukodepleted

BLOOD PRODUCT UTILIZATION

- 20,000 figure comes from acute leukemia data, & consists of 1 poorly done study
- In aplastic anemia patients, not infected, CNS bleeding did not increase until platelets < 5000

BLOOD PRODUCT UTILIZATION

CMV-Negative Products

- 50% of population CMV Negative
- CMV Negative blood reserved for:
 - Neonates
 - Transplant Patients
 - Allogeneic Bone Marrow Transplant
 - Heart/Lung/Liver/Pancreas/Gut Transplants
 - Autologous Bone Marrow Transplant
 - Renal Transplant
- If CMV Negative Products not available, leukodepletion filtration as good for removing CMV

BLOOD PRODUCT UTILIZATION

Platelet Transfusions - Prophylactic

- If not febrile, < 10,000/ μ l
- If febrile, < 20,000/ μ l

BLOOD PRODUCT UTILIZATION

Platelets

- Used for patients with thrombocytopenia
 - < 20,000 prophylactically, or
 - < 50,000 & bleeding or in need of a procedure

BLOOD PRODUCT UTILIZATION

Platelets - Exceptions to 10,000 rule

- ITP, TTP, Myelodysplastic syndromes, or aplastic anemia
 - Platelets for bleeding or procedures ONLY
- Platelets with known thrombocytopathy may require platelets even with normal count
 - Patients who have received Reopro® may require double dose
- In general, for patient in ER, use platelets only for bleeding problems

BLOOD PRODUCT UTILIZATION

Platelets - Special Needs

- Single donor platelets – Mostly for leukodepleted units; most of what is now given
- Random donor platelets – rarely used anymore
- HLA Matched platelets - only for sensitized patients
- Platelet Cross-Match

BLOOD PRODUCT UTILIZATION

Packed Red Blood Cells

- Used to increase oxygen carrying capacity
- Transfuse for symptoms, not for number
- No blood/hemoglobin substitute currently available

BLOOD PRODUCT UTILIZATION

Fresh Frozen Plasma

- For repletion of clotting factors
- TAKES ½ HOUR TO THAW!
- Usual dose for adult is 4-6 units (2 units virtually useless)
- Should not be used for volume resuscitation alone
- Only good for 4-6 hours

BLOOD PRODUCT UTILIZATION

Red Blood Cells

- Products available:
 - Packed red blood cells - Usual product
 - Washed RBC's - For sensitized patient or IgA deficient patient
 - Frozen washed RBC's - For highly sensitized patient &/or patients with antibodies against very common antigens

BLOOD PRODUCT UTILIZATION

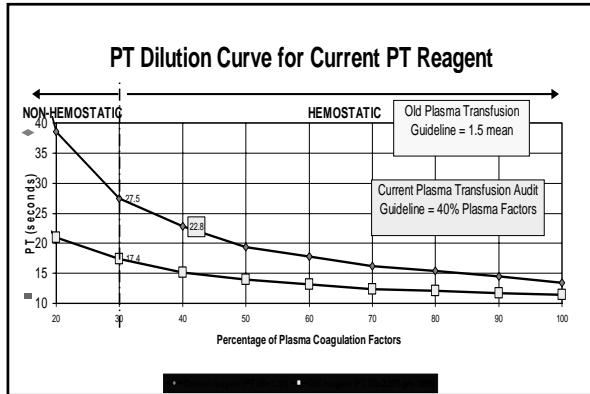
Cryoprecipitate

- Fraction of blood that doesn't dissolve on thawing at 4° C
- Rich in fibrinogen, fibronectin, factor VIII, von Willebrand factor
- For correcting hypofibrinogenemia, treating von Willebrand disease
- Also used in renal dysfunction to correct uremic thrombocytopenia

BLOOD PRODUCT UTILIZATION

Massive Bleeding/Hemodilution

- Usually surgical bleed
- Try to tailor products to studies - esp PT, fibrinogen, platelet count; based on fact that 30% of normal value of any clotting factor is ordinarily hemostatic
 - FFP for PT > 21 seconds
 - Platelets for count < 50,000
 - Cryoprecipitate for fibrinogen < 100



BLOOD PRODUCT UTILIZATION

Crossmatch-Incompatible Blood

- Usually arises in setting of patient with autoimmune hemolytic anemia
- Need help from blood bank RE: probable cause of incompatibility
- Should start transfusion slowly, and stop if signs of major transfusion reaction
- More die from failure to transfuse than from transfusion reaction

DILUTIONAL COAGULOPATHY

Treatment

- Guided by numbers:
 - Platelets - 6 unit packs; 1 pack should raise count of average sized adult by 40,000-50,000
 - FFP - 4 units at a time minimum; sometimes 6-8 units depending on coags & volume of bleeding
 - Cryoprecipitate - For raising fibrinogen quickly, & in cases of fibrinolysis
 - Factor concentrates - To be avoided if possible b/o high risk of DIC

BLOOD PRODUCT UTILIZATION

Factor Concentrates

- Used for specific clotting factor deficiencies
 - Hemophilia A
 - Hemophilia B
 - Von Willebrand disease
 - Factor XI deficiency (Israel only)
 - Recombinant Factor VIIa
 - Other clotting factor deficiencies

BLOOD PRODUCT UTILIZATION

Uncrossmatched or Type O Blood

- Used in exsanguination
- Prefer Type specific (takes 5 minutes)
- If no time for typing, O positive should be used for males & females beyond child-bearing years; O negative reserved for females of childbearing years
- Crossmatching is done retrospectively

BLOOD PRODUCT UTILIZATION

Factor Concentrates

- Small volume of administration
- Safest products on market RE: viral disease transmission
- Exact product to be used depends on patient's deficiency
- ALL REQUIRE HEMATOLOGY APPROVAL!

BLOOD PRODUCT UTILIZATION

Designated vs Random Donors

- Donor pool safer than designated donors:
 - Greater than 90% of donor pool is repeat donors, eliminating window period for many tests
 - > 95% of designated donors are first time donors
 - People are not always honest RE: risk factors