Transfusion triggers for Coagulation Components

Transfusion triggers

- Transfusion triggers are designed to guide a reasonable balance of risks/costs and benefits
- Triggers are a starting point to individualise treatment

Platelet transfusions

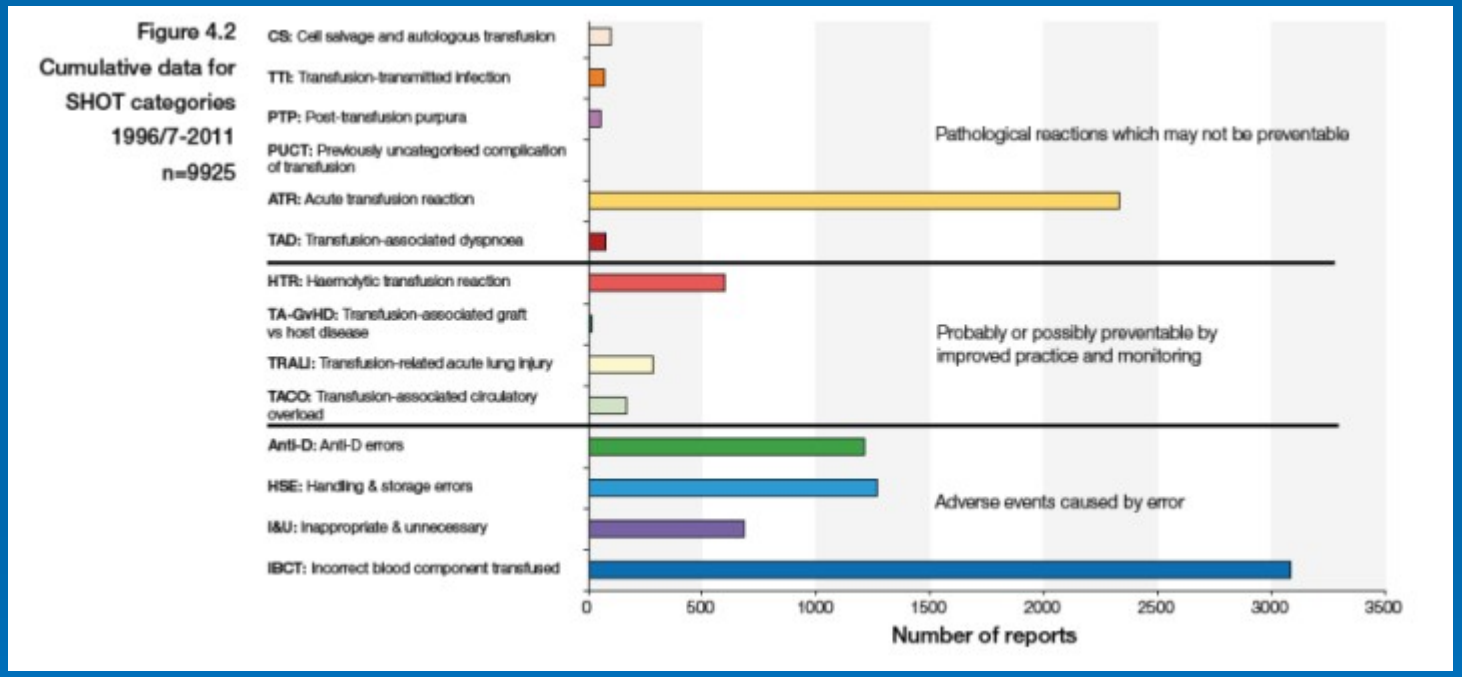
Sources
http://www.bcshguidelines.com/documents/platelettrans_bjh_04072003.pdf
British Journal of Haematology, 2003, 122, 10–23

SHOT Annual report 2011

Platelet transfusions

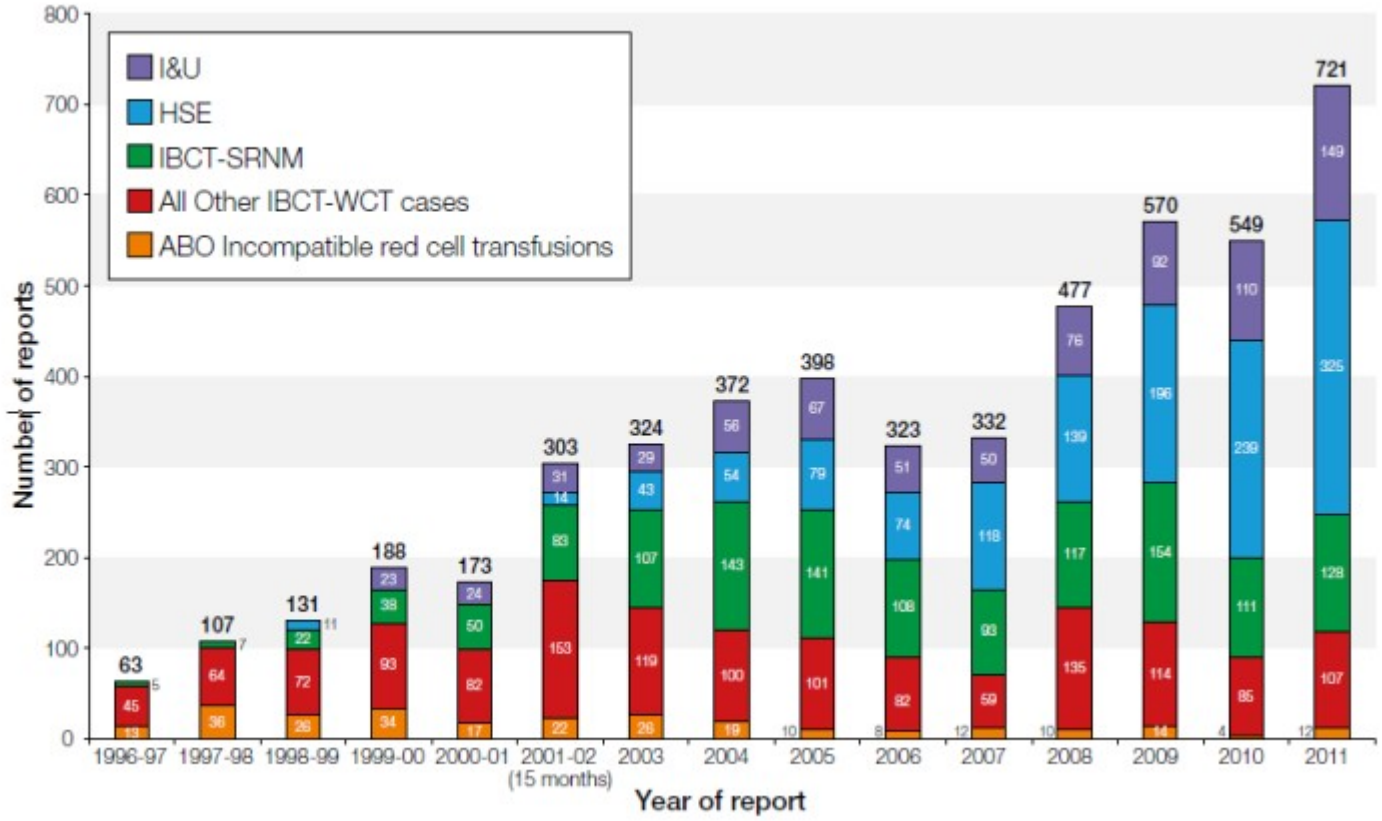
- What risks & costs to consider

SHOT 2011: categories of hazard



SHOT 2011: errors

Figure 4.3 Incorrect blood components transfused (IBCT) either due to wrong component (WCT) or where special requirements were not met (SRNM), handling and storage errors (HSE), showing the number that resulted in ABO-incompatible transfusions



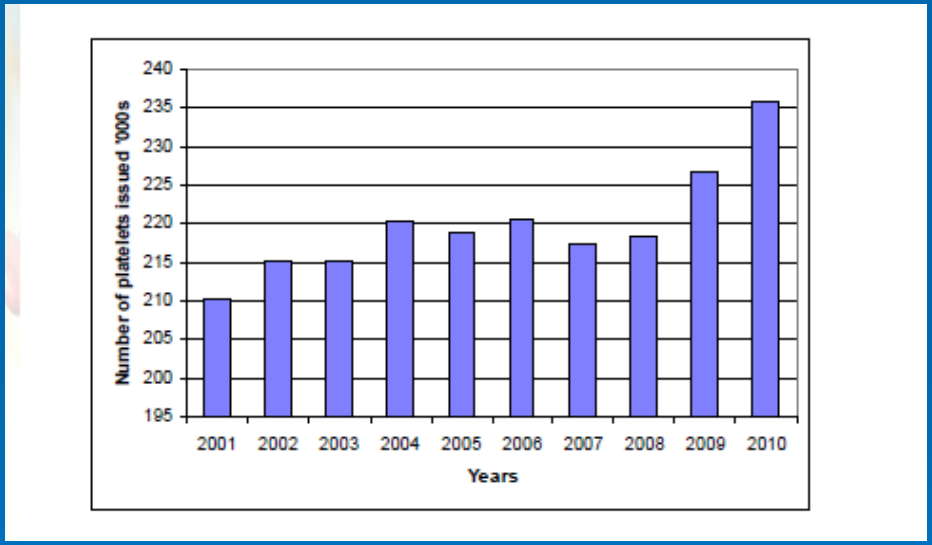
Adverse effects of platelet transfusion (SHOT 2010)

- Febrile reactions (2%).
- Allergy. (Skin rashes 4%). Anaphylaxis rare but 40% associated with platelets.
- Bacterial infection (1 in 10,000 transfusions); 25% mortality. Bacterial screening reduces this risk.
- Transfusion related acute lung injury (TRALI). Rare but 8 times more with platelets than red cells (mortality 9%).

Adverse effects of platelet transfusion

- Alloimmunisation may cause reduced response to platelet infusion.

Platelet use in the UK (National comparative audit 2010)



National audit haematological oncology

Summary of appropriateness of prophylactic, pre-procedure and therapeutic transfusions *(National data)*

Reason for Transfusion	Audited episodes in each category	Appropriate	Indeterminate	Outside guidelines
Prophylactic	69%	60%	6%	34%
Pre - procedure	15%	64%	13%	23%
Therapeutic	13%	84%	12%	5%
Unclear	3%	0%	100%	0%

Platelet use in the UK (National comparative audit 2010)

The conclusions:

28% of transfusion episodes could have been avoided, £229,000 could have been spent elsewhere and >2000 hours of donors time wasted

NCA Recommendations:

Clinical Aspects

- **Double dose** prophylactic transfusions should not be used routinely
- Reason for transfusion should be clearly **documented**
  - including any individualised platelet count threshold
- A **platelet count is required** within a few hours prior to prophylactic platelet transfusion.
  - As a minimum this should be within 24 hours in in-patients and within 48 hours in out-patients
- If platelets are necessary pre-procedure they should:-
  - be transfused close to the procedure to obtain maximum benefit
  - Allow time for a **post transfusion platelet count** to be taken to assess response

Conditions where platelet therapy may be required

Low platelet count

- Bone marrow failure
- Acute bleeding
- Massive transfusion (trauma, obstetrics, liver transplantation etc)
- DIC

Platelet disorders

- Inherited
- Drugs, clinical states e.g. clopidogrel

Special conditions

- e.g. platelets generally contraindicated in heparin induced and thrombotic thrombocytopenic purpura

Specialist haematology input essential

Indications for platelet therapy

- Stable low platelet states (e.g. bone marrow failure)
- Prophylaxis for procedures (surgery)
- Treatment of active bleeding

Platelets: routine prophylaxis for non-bleeding stable conditions (e.g. leukaemia)

- Reversible bone marrow failure >10,000
- Risk factors for bleeding (uraemia, sepsis, duodenal ulcer, antibiotics) >20,000

Platelets: prophylaxis for invasive procedures

- Arterial line, cvp, lumbar puncture — >50,000
- Epidurals — >80,000 (?)
- Involving CNS/eyes — >100,000

Platelets: treatment of bleeding

- Acute bleeding <50,000
- Bleeding involving massive transfusion <75-80,000
- Multiple trauma and/or head injury <100,000

Indications for fresh frozen plasma

bjh guideline

Guidelines for the use of fresh-frozen plasma, cryoprecipitate and cryosupernatant

British Committee for Standards in Haematology, Blood Transfusion Task Force (J. Duguid, Chairman): D. F. O'Shaughnessy (Convenor, Task Force nominee),[1,*] C. Atterbury (RCN nominee),[2] P. Bolton Maggs (RCPCH nominee),[3] M. Murphy (Task Force nominee),[4] D. Thomas (RCA nominee),[5] S. Yates (representing Biomedical Scientists)[6] and L. M. Williamson (Task Force nominee)[7]

[1]Southampton University Hospitals, Southampton, [2]Queen Elizabeth Hospital, Kings Lynn, [3]Central Manchester and Manchester Children's University Hospitals, Manchester, [4]NBS Oxford, Oxford, [5]Morriston Hospital, Swansea, [6]Blood Transfusion Laboratories, Southampton University Hospitals, Southampton, and [7]NBS Cambridge, Cambridge, UK

2004 The British Society for Haematology, **126**, 11–28

Fresh frozen plasma: adverse effects

- Allergy (1-3% associated with urticaria). Anaphylaxis rare.
- Acute transfusion reactions
- TRALI. Rare with FFP as male only FFP used.
- Viral infection per 10,000,000 (HIV 1.0, Hep B 0.83, Hep C 0.2)

Fresh frozen plasma: main indication

Multiple coagulation factor deficiencies in DIC and/or severe bleeding

Fresh frozen plasma: contraindications

- *FFP should not be used as volume replacement*
- *Fresh-frozen plasma should not be used for the reversal of warfarin when there is no severe bleeding*
- *There is no justification for using FFP to reverse a prolonged INR in the absence of bleeding.*

National comparative audit of the use of FFP 2009

AUDIT STANDARD	RESULT
Dose >= 10-15 ml/Kg	40% adults received <10 ml/lit
FFP used to treat prolonged INR only in the presence of bleeding	43% had no bleeding and 25% also had INR <1.5. A majority reduced INR by 0.1-0.2
Cryo when fibrinogen < 1gm/lit	50% with fibrinogen <1 gm/lit did not receive cryo
Beriplex for warfarin reversal	14% of warfarin overdose was treated with FFP

- Questions
- Coffee and biscuits