### Control of Platelet Transfusions in a Teaching Hospital Setting



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#### Platelet Issues by Usage Category

#### Platelet Usage - Very High



Data provided by the Blood Stocks Management Scheme - Tel 0114 358 4838 04/10/2011

# Derriford Hospital: Platelet use 2006-Oct 2011







### **Our Specialist Services**

- Kidney transplant
- Pancreatic cancer surgery
- Neurosurgery
- Cardiothoracic surgery
- Bone marrow transplant
- Upper GI surgery
- Hepatobiliary surgery
- Neonatal intensive care and high risk obstetrics
- Plastic surgery
- Liver transplant evaluation
- Stereotactic Radiosurgery
- Major Trauma Centre

### Who uses Platelets?

### Annual use: Derriford Hospital

|              | Red Cells | Platelets |
|--------------|-----------|-----------|
| Haematology  | 2,916     | 742       |
| Cardiac      | 3,121     | 438       |
| Surgery      | 1,179     | 56        |
| Neurosurgery | 168       | 52        |
| Medicine     | 528       | 40        |
| Paediatrics  | 156       | 88        |
| Massive      | 437       | 60        |
| Haemorrhage  |           |           |

## Platelet Use in Haematology

- NCA of platelet use published 2007 showed inappropriate use. In haematology -
  - 60% routine prophylaxis pre-count >10 x10<sup>9</sup>/l
  - 21% with additional risk factors pre-count >20 x10<sup>9</sup>/l
- Steady rise in platelet issues since 2008
- NCA of Platelet use in 2010 in haematology patients only as account for up to 60% total use

# NCA platelet use in haematology patients 2010 - Results

Audit report published May 2011

- Participation 139/153 NHS trusts in England & North Wales
- 3296 transfusion episodes analysed
- Local guidelines
  - 98% threshold of 10 x10<sup>9</sup>/l for routine prophylaxis but significant variation in when this threshold was raised
  - 36% routine prophylaxis for chronic bone marrow failure
  - 23% routine transfusion prior to trephine biopsy
- Clinical use
  - overall 28% inappropriate use
  - 10% of all prophylactic platelet transfusions were double dose

### TOPPS: UK Trial of prophylaxis vs no prophylaxis



This trial is really about 'individualising' platelet transfusions

### Modified WHO definition of bleeding events

#### Grade 1

- •Mild/moderate petechiae, purpura,
- •Mild/moderate oropharyngeal bleeding, epistaxis <30 minutes in duration

#### Grade 2

•Melaena, haematemesis, haemoptysis, fresh blood in stool, musculoskeletal bleeding or soft tissue bleeding not requiring red cell transfusion within 24 hours of onset and without haemodynamic instability

- Profuse epistaxis or oropharyngeal bleeding i.e. > 30 minutes in continuous duration
- •Symptomatic oral blood blisters i.e. bleeding or causing discomfort
- •Extensive petechiae, purpura i.e. numerous in number and/or positioned on either face or abdomen and/or spreading by comparison to previous assessment
- •Visible blood in urine
- •Bleeding from invasive sites requiring 2 or more dressing changes in a 24hr period because it has become saturated with blood
- •Unexpected vaginal bleeding saturating 2 or more pads with blood in a 24hr period
- •Red cells in body cavity fluids obvious macroscopically

#### Grade 3

•Melaena, haematemesis, haemoptysis, haematuria -including intermittent gross bleeding without clots, abnormal vaginal bleeding, fresh blood in stool, epistaxis, and oropharyngeal bleeding, bleeding from invasive sites, musculoskeletal bleeding, or soft tissue bleeding **requiring red cell transfusion specifically for support of bleeding within 24 hours of onset and without haemodynamic instability** 

- •Body cavity fluids reported as grossly bloody in laboratory, nursing, or medical case notes
- •CNS bleeding noted on CT (computerised tomography) without clinical consequences

#### Grade 4

- •Debilitating bleeding including retinal bleeding with visual impairment
- •Non-fatal CNS bleeding with neurological signs and symptoms
- •Bleeding associated with haemodynamic instability (hypotension, >30 mm Hg change in systolic or diastolic HP)
- •Fatal bleeding from any source

### Bleeding assessment: medical

| A Randomised Controlled Trial Of<br>Prophylactic Vs No-Prophylactic Platelet<br>Transfusions in Patients with<br>Haematological Malignancies |  |         |  |  |
|--|--|---------|--|--|
| Trial<br>Number  | Patient Date of<br>Initials Birth (day)          | .//     |  |  |
|  | MEDICAL BLEEDING ASSESSMENT                      |         |  |  |
| Time of Assessment   | (24 hr clock) Today's Date                       | .///    |  |  |
| Since completing yeste   | rday's bleeding assessment, has the patient expe | rienced |  |  |
| (1) Oropharyngeal bleed  | ing  | YES NO  |  |  |
| If yes:  | 1/2 hr or more of continuous bleeding            |         |  |  |
|  | less than 1/2 hr of continuous bleeding          |         |  |  |
| (2) Oral blood blisters  |  |         |  |  |
| lf yes∶  | symptomatic                                      |         |  |  |
| or   | non symptomatic                                  |         |  |  |
| (3) Epistaxis  |  |         |  |  |
| lf yes∶  | 1/2 hr or more of continuous bleeding            |         |  |  |
|  | less than 1/2 hr of continuous bleeding          |         |  |  |
| (4) Any new vision impa  | rment  |         |  |  |
| If yes:  | Any evidence of retinal haemorrhage?             |         |  |  |
| Assessor Nam   | e Assessor Signature                             | e]      |  |  |
| Medical Bleeding Assessment Form   |  | Page    |  |  |

| A Randomised Controlled Trial Of<br>Prophylactic Vs No-Prophylactic Platelet<br>Transfusions in Patients with<br>Haematological Malignancies |   |                    |  |  |  |
|--|---|--------------------|--|--|--|
|  | Trial Patient Initials  | Date of//          |  |  |  |
|  |   |                    |  |  |  |
| ר  | Time of Assessment<br>  | Today's Date//     |  |  |  |
| Since completing yesterday's bleeding assessment, has the patient experienced:   |   |                    |  |  |  |
| (5)  | Muscoskeletal/soft tissue bleeding                            |                    |  |  |  |
| (6)  | Bleeding from invasive sites                                  |                    |  |  |  |
| (7)  | Haemoptysis   |                    |  |  |  |
| (8)  | Haematemesis  |                    |  |  |  |
| (9)  | Visible blood in urine  |                    |  |  |  |
| (10)   | Fresh blood in stool  |                    |  |  |  |
| (11)   | Melaena   |                    |  |  |  |
| (12)   | Abnormal vaginal bleeding                                     | Not Applicable     |  |  |  |
| (13)   | Petechiael/purpuric rash and/or bruising                      |                    |  |  |  |
|  | If YES, Mild/m  | noderate           |  |  |  |
|  | or: Extens  | sive               |  |  |  |
| Listn  | List main site affected by rash:                              |                    |  |  |  |
|  | Has rash spread or evolved?                                   |                    |  |  |  |
|  | If NO, has rash remained static for 3 consecutive days?       |                    |  |  |  |
| (14)   | Evidence of cerebral bleeding                                 |                    |  |  |  |
| (15)   | 15) Other bleeding episodes (e.g. blood found in pleural tap) |                    |  |  |  |
|  | If YES, is the bleeding grossi                                | ly visable         |  |  |  |
|  | or: micros  |                    |  |  |  |
| (16) Was a red cell transfusion given to support bleeding? Not Applicable  |   |                    |  |  |  |
| <b>–</b>   | Assessor Name   | Assessor Signature |  |  |  |
|  |   |                    |  |  |  |
| Medie  | Medical Bleeding Assessment Form Page 1                       |                    |  |  |  |

### Difficulties of bleeding assessment

- Bleeding gums or lips, blood blisters in your mouth?
- Nose bleed?
- Blood shot eyes?
- Any new vision impairment?
- Red spots on any part of your body that you can see?
- Bruising?
- Any swollen or painful joints?
- Bleeding from invasive sites (eg Hickman line)?
- Bright red blood in vomit?
- Coughing up blood?
- Visible blood in urine?
- Abnormal Vaginal Bleeding?
- Bright red blood in stool?
- Black, tarry stool?
- Bleeding episode other than described above?
- Have you had a blood (red cell) transfusion in the last 24hrs?
- Have you had a platelet transfusion in the last 24hrs?

### Control of use

Transfusion Policy

 – Specialist Unit policies – Cardiac, Haem, Paeds & NICU, Obstetrics, Trauma

- Need Haematology Consultant "ok" for requests >1 ATD
- Lab staff look at haematology results and also query strange requests

### **Pre-admission clinics**



# Cardiac Surgery

- Protocols but variation in practice
- Anxieties about Clopidogrel led to restriction on >1 ATD plts
- TEG POCT

## What does TEG report?



### Normal TEG® Trace

(normal)

6 Kaolin

Sample: 27/10/1998 15:34:32 - 16:36:53



#### **Protocol for Management of Bleeding**

- No Prophylactic blood product administration -use TEG trend management to guide therapy
- All patients to have TEG 10 minutes post protamine
- If excessive bleeding with a normal TEG -caution with chest closure / consider re-exploration



Note: ACT should not be used on CICU to investigate bleeding

### Trauma

- Military keen on Rotem
- Different terms

Need to remind them to do coagulation tests as well

• "Team" work essential

### Wastage

Wastage as a percentage of issue



# Summary

- "Control" needs to be subtle
- Information is key
- Work with clinicians to help solve clinical problems
- Get them involved in Protocols
- Check they follow them
- Empower lab staff & TPs
- Accept POCT rapid answers