

Towards Optimal Use of Platelets

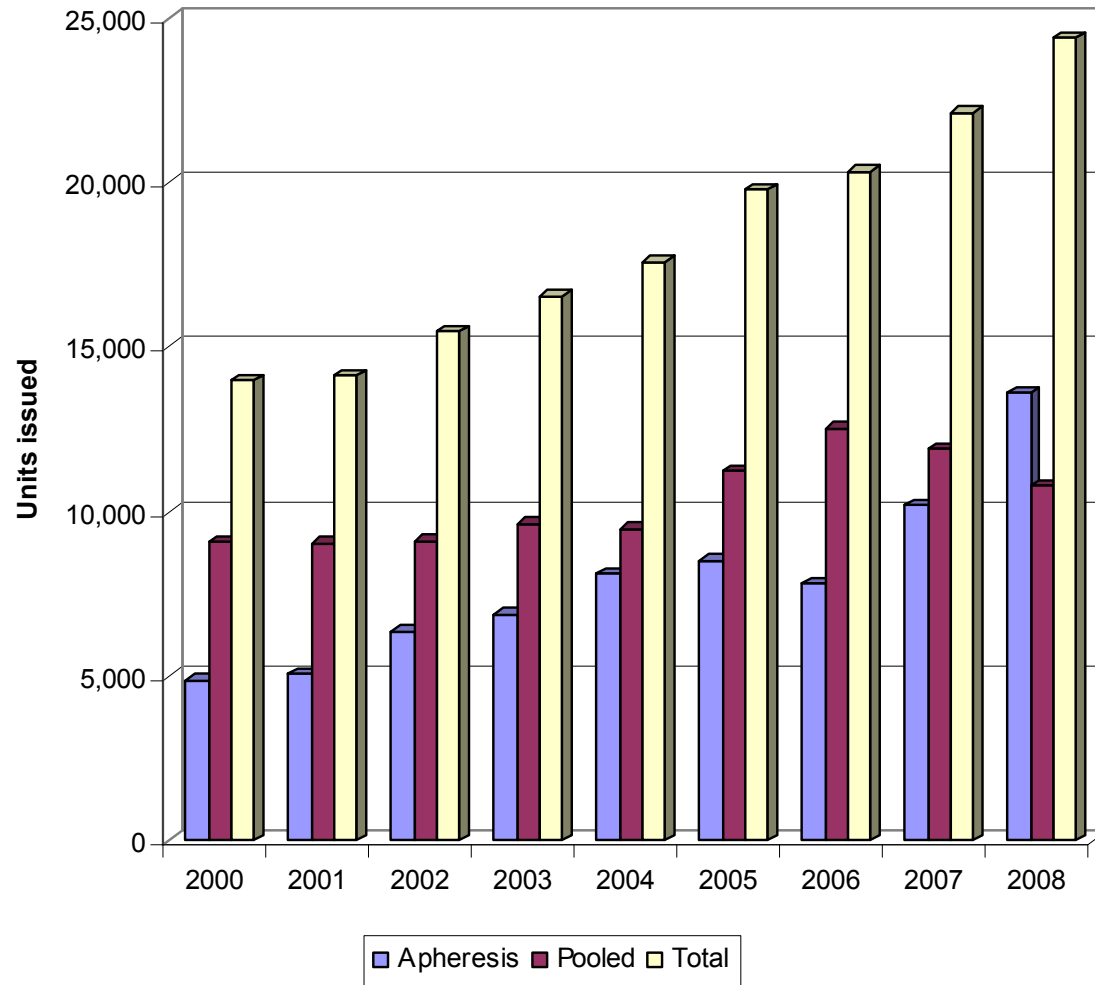


**National survey of current
platelet usage and
forward projections**

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Study protocol Version 2 (short) 30/10/08

Platelets issued 2000-2008



OBJECTIVES

- Fate of platelet components issued
- Reasons for increasing demand
- Consultant opinion of anticipated future needs
- Local policies &/or guidelines & compliance
- Need for agreed national guidelines for platelet use

METHODOLOGY

- *Qualitative:* Structured interviews based on pre posted questionnaire
- *Quantitative:* Retrospective analysis of national sample of consecutive platelet transfusions

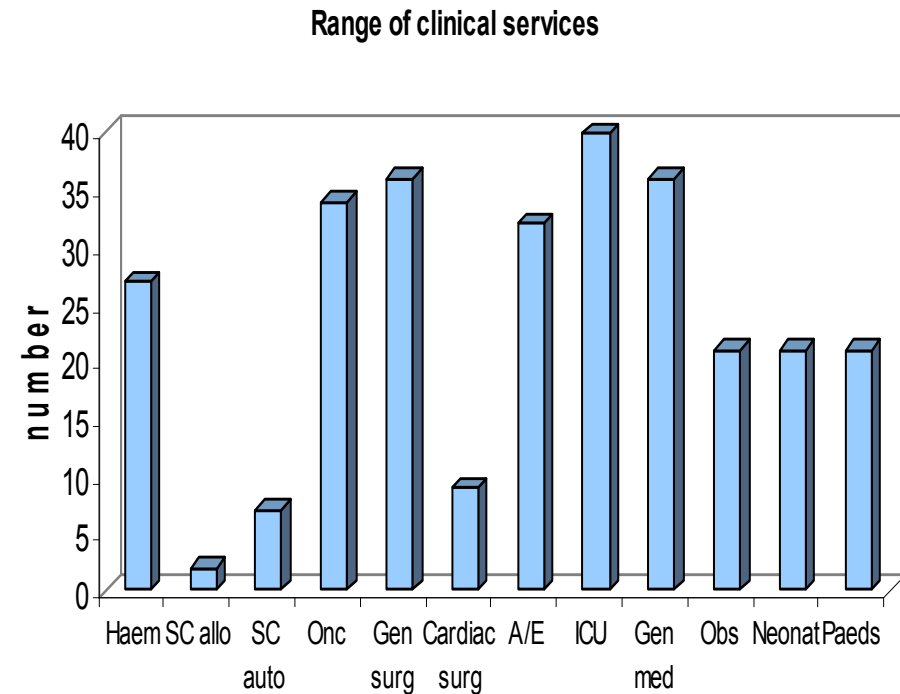
CATEGORISATION OF USER HOSPITALS

(study period 1/1/07-30/6/08)

Category	Hospitals (n)	Total	61
• <10	excluded	18	
• 10-<50	v low user	19	
• 50-<100	low user	5	
• 100-500	mod user	11	
• > 500-1000	high user	4	
• > 1000	v high user	4	

STUDY RESULTS VALID

- 93.5% consultants at 41/43 hospitals interviewed
- 40/41 hospitals participated in analysis 1,200 platelet transfusions (95% RR)
- Selection bias eliminated by provision of identifying details of relevant components
- Hospitals representative of population served



KEY QUALITATIVE FINDINGS

- Unaware of usage/wastage - Audit at only 13 hospitals
- 9 hospitals had no policy/guideline as recommended
- Lack of compliance with recommended dose & indication
- Consultants gave clear mandate for national guidelines
- Consensus developed by haematologists + other user representation

PROJECTION OF FUTURE NEED

- Aware of increased demand (86%)
- Demand not increasing at their hosp(s) (14%)
- Demand will continue to increase (53%) stabilise (40%) reduce (7%)
- Use at the highest user hospital expected to continue to increase (15% p.a.)

REPORTED REASONS FOR INCREASING DEMAND

Increasing clinical activity

- Haemato-oncology
- SCT (PBSC allografts + ATG)
- Cardiac/other surgery
- Trauma
- Obstetrics
- Neonatology
- Anti-platelet therapy

Over ordering

REMAINING AREAS OF UNCERTAINTY

- Reported areas of uncertainty in **common** situations (62%)
- Most common (27%) associated with anti-platelet therapy (Quantitative 6% use)
- ATG therapy
- Prophylaxis chronic haemato-oncology (MDS)
- Tunnelled central line insertion
- Endoscopy

KEY QUANTITATIVE FINDINGS

- Details of 1199 platelet components sent to 41 hospitals
- RR 95% (39/41) hospitals
- Details of 1159 components provided

- 94% transfused to 423 recipients
- 6% not transfused
- 5% outdated at hospital
- 1% cancelled before shipping from NBC (9), re-routed hosp (3) returned unusable (1)

CLINICAL USE OF PLATELET TRANSFUSION

Reason documented (>90%)

Qualitative

- Prophylaxis @71%
- Control bleeding @29%
hospitals

Quantitative

- Prophylaxis 67%
- Control bleeding 32%
- Additional risks factors 41%
 - most cm fever/sepsis

CLINICAL AREA WHERE PLATELETS MOST OFTEN TRANSFUSED

Anaesthetists (bleeding cardiac), Haematologists & oncologists
(prophylaxis) highest users

Qualitative

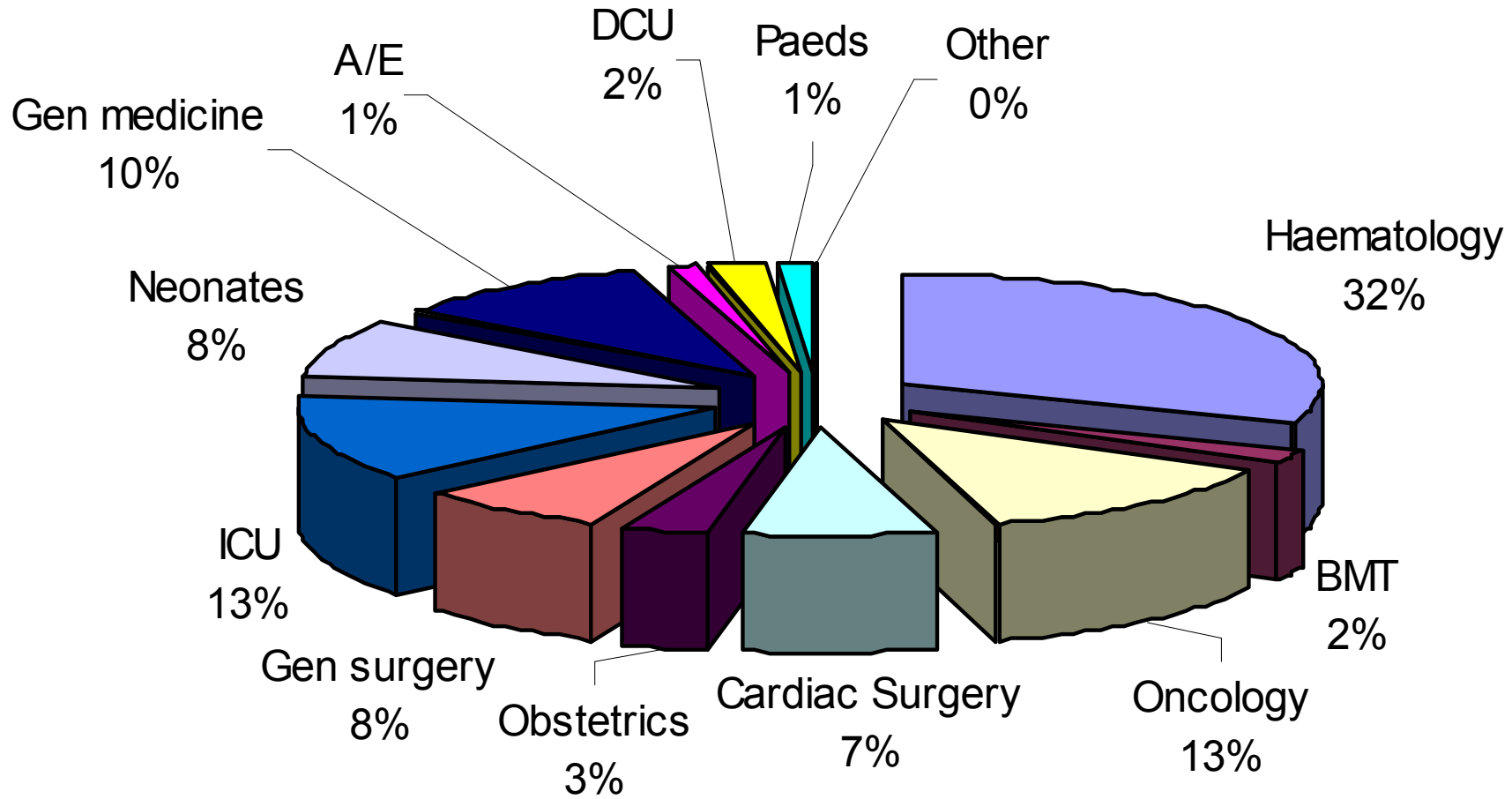
- Haematology (exceeds all other use)
- Oncology
- ICU
- Cardiac
- General surgery

Quantitative

- Haematology (33%)
- ICU (13%)
- Oncology (12%)
- **General medicine*** (10%)
- **Neonatology*** (8%)
- Cardiac surgery (7%)
- General surgery (7%)

*Under estimated in qualitative survey

Clinical unit



PROPHYLACTIC PLATELET TRANSFUSION

Qualitative

- Chemotherapy induced thrombocytopenia
- Sepsis associated thrombocytopenia
- Invasive procedures
- BMF syndromes
- Massive trauma

Quantitative

Plus

- General medical conditions
- Neonatology
- Correct effect of anti-platelet therapy (6%)
- **Not massive trauma**

631 COMPONENTS (PROPHYLAXIS)

Pre transfusion platelet count (96%)

- median $17 \times 10^9/l$ mode $10 \times 10^9/l$ range 1-625 $\times 10^9/l$
- 5% (32) components to recipients with normal platelet counts ($>150 \times 10^9/l$)

THERAPEUTIC PLATELET TRANSFUSION TO CONTROL BLEEDING

Trigger platelet count mode $50 \times 10^9/l$ range 20-100 $\times 10^9/l$ (except cardiac)

Qualitative

- **Sepsis-associated thrombocytopenia**
- **Massive trauma**
- **Obstetrics**
- **Non-cardiac surgery**
- **Chemotherapy-induced thrombocytopenia**

Quantitative

- **27% Frank bleeding thrombocytopenic patients (most cm GIT)**
- **9% surgical bleeding (62% cardiac)**
- **6% normal platelet count (45% cardiac, 15% other surgery, 13% GIT)**
- **None sepsis-associated thrombocytopenia (us prophylactic)**
- **Few massive trauma, obstetrics, chemotherapy-induced t'penia**

DOSE & INDICATIONS FOR > 1 DOSE

Qualitative

- **93% routine dose = 1 pool**
 - > 1 pool
- Massive haemorrhage (cardiac surgery, massive trauma, DIC, sepsis)
- Pre invasive procedures + inadequate incremental count after 1
- Routine prophylaxis haematology (4%)
- Drift towards routine use 2 doses prophylaxis haematology/other patients

Quantitative

- **24% >1 dose**
- Not all bleeding
- Most often prophylaxis haem.(20%) /oncology (15%) patients
- Cardiac surgery 21%
- ICU 15%
- **General medicine* 12%**
- **Non cardiac surgery* 10%**
- Obstetrics 4%
- **Neonatology* 3%**
- Anti platelet therapy

*Not reported in the qualitative survey

AUDIT & WASTAGE OF PLATELET COMPONENTS

Qualitative

- Aware of wastage at 80% hospitals dt outdated, over ordering & inappropriate Tx
- 45% consultants had audited platelet usage at 13 (32%) hospitals
- Documented evidence at 10 hospitals. Reported range <1-20% p.a.

Quantitative

- 5.3% wastage outdated alone (€1,108,361 p.a.) before dt over-ordering/inappropriate Tx considered
- Over Tx up to 19% components surveyed based on platelet trigger/no reason >1 dose
- Consultants overestimated wastage dt change in clinical condition of patient & underestimated wastage dt over-ordering & inappropriate transfusion

OVERORDERING

Reported delivery times:

38% 1hr

31% 2 hrs

28% 4 hrs

3% 6 hours

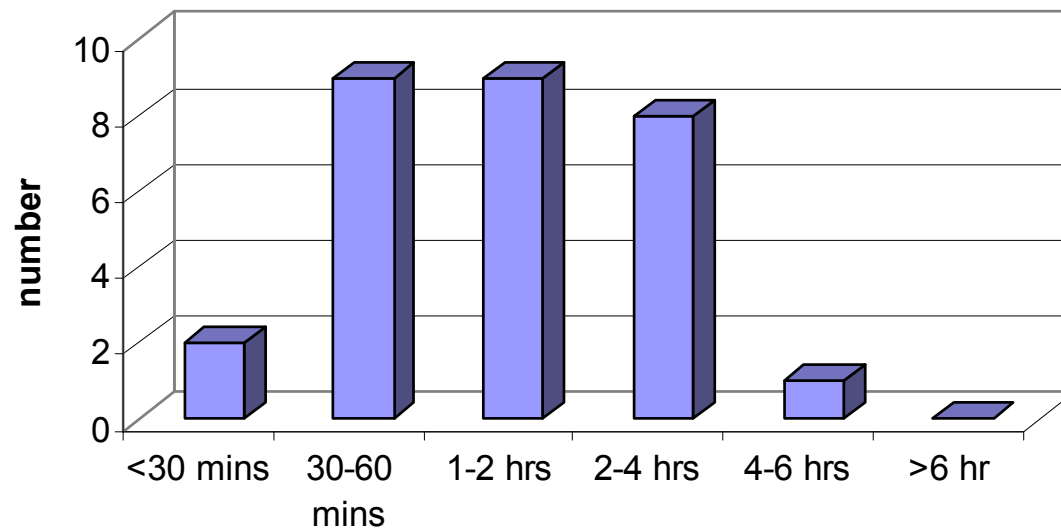
Disadvantages patients

Anxiety

Over ordering

Dissatisfied hospital staff (50%)

Delivery time for emergency orders



OVER ORDERING

Inability to hold stock platelets (93%) underlies over ordering & consequent wastage

Proposed solutions

- Holding 'stock' platelets at individual hospitals
- Regional holding Centres/'hubs'
- Redistribution from hospitals within regions
- Use of ABO non identical platelets

CONCLUSIONS

- Majority of platelets issued transfused some unnecessarily so
- Significant wastage at almost all hospitals dt outdated, over ordering & inappropriate use. Estimated cost, outdated alone, €1,108,361 p.a.
- Increasing demand dt increased clinical activity & inappropriate use (higher platelet triggers & >1 dose)
- No guidelines at many hospitals. Variable standard. Reported poor compliance with dose confirmed
- Consensus need for national guidelines



Platelet Transfusion in Ireland:
a survey of current usage patterns,
and projection for future requirements

Author: Dr. David Kelly, MD, FRCS, FRCR

Editor: Dr. Maura Kelly, MD, FRCS, FRCR

THE IRISH BLOOD TRANSFUSION SERVICE

2010

RECOMMENDATIONS

- Regular IBTS & in- hospital audit to monitor & optimise platelet use esp. orders >1 dose to ID reasons, active filtering of such requests & regular feedback to increase awareness & reduce inappropriate over-ordering
- IBTS should ask all user hospitals to monitor & provide information on platelet components not transfused **Since Jan 2011 – 5% nationally**
- IBTS should lead development of national guidelines for platelet transfusion with representation of all users **In progress**

Version of June 2011

For pilot purposes only. Review due November 2011

Guideline for the Transfusion of Platelet Concentrates to Adult Patients*

HSE Clinical Strategy and Programmes Directorate

***See also**

Platelet Transfusion Guideline – Practice Points: available in Bookmark and Poster Formats from hospital blood banks

Platelets: Summary of Product Characteristics. Available from hospital blood banks

RECOMMENDATIONS

- Platelet Tx in cardiac surgery should be compared vs. international norms
- Better use of available CMV neg platelets by ensuring used for patients who truly need them. Blanket policies of universal administration of CMV neg platelets should be modified to optimise use of CMV neg platelets
- CMV status of platelet components not issued from IBTS should be analysed to determine if CMV positive components disproportionately represented

3 hospitals take 37% of all platelets issued as CMV neg only
assuming 75%:25% CMV neg/pos pop IBTS have to supply c. 85%
CMV neg

RECOMMENDATIONS

Platelets should be available within 30-60 mins for emergency use. Consideration given to holding stock platelets at individual hosps or regional hubs holding stock for redistribution in emergency

Endorsed by IHS - should be available in hospitals with EDs &/or obstetric unit

Not yet implemented

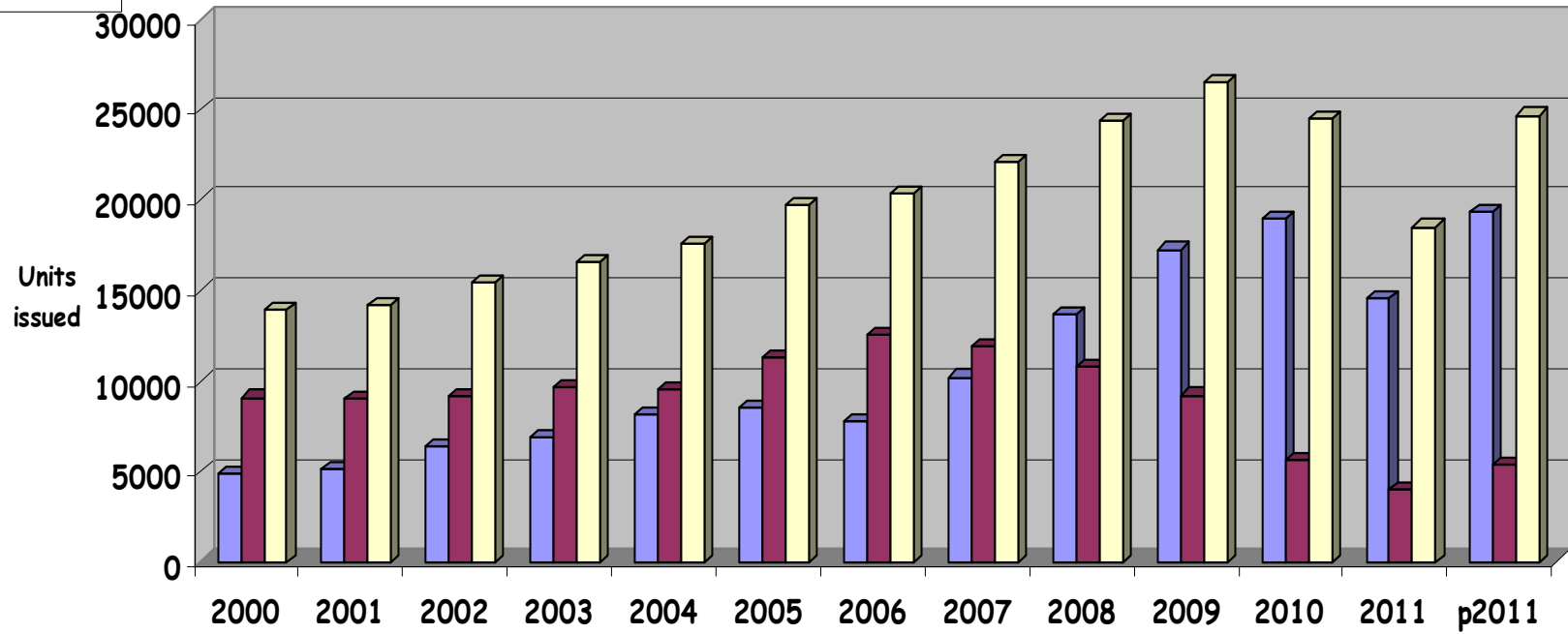
Chief Executive's Report



There were two really significant developments during 2010. The first was the reduction of 7% in the use of platelets after 10 years of year on year growth and the

Projected Platelets issued to yr end 2011

- Apheresis
- Pooled
- Total



SINCE 2008 ?STABILISING

•	Total doses issued	apheresis	pooled	cost
•	2008 24415	13629 (56%)	10786	€20,168,520.88
•	2009 26474	17271 (65%)	9203	€21,691,925
•	2010 24557	18967 (77%)	5590	€20,182,531
•	2011* 18527	14511 (78%)	4016	€15,156,613

*(9 mths)

Unnecessary donor exposure, squandering goodwill & donor commitment

Donor risk vs. Patient need

CONCLUSION

Use is not optimal

- Implementation & Adherence to National Guidelines
- Proactive IBTS & Hospital audit & monitoring of demand
- indication & dose
- Improved communication
- Timely availability of platelets for emergency use

Use could be optimised

ACKNOWLEDGEMENTS

- Consultant haematologists
- Haemovigilance officers
- Hospital blood bank staff
- IBTS staff

