# South West Regional Transfusion Committee

# Report on the regional Platelet use survey 2012

# November 2012

A survey of the use of platelets in hospitals
in the South West region conducted March 2012

## Acknowledgements

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Jackie McMahon, SWRTC Administrator;

for their help with the development, launch, collection and reporting of this survey.

**The South West Regional Transfusion Committee would like to thank all of the hospitals that participated in this survey.**

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## Contents

## Executive summary

The South West Regional Transfusion Committee conducted a survey of all platelet use by NHS hospitals in the region during March 2012.

**Response:**

- 17/19 (90%) of NHS hospitals responded
- Data was reported for 1002 transfusion episodes:
- 1,122 Adult Therapeutic Doses of platelets were given at 969 episodes
- 36 Paediatric Therapeutic Doses were given at 33 episodes

**Findings**

- The median age of recipients was 62 years

*Specialty:*

- 65% of all use was in Haematology, 18% in other medical specialties, and 17% in surgical specialties
- Cardiac surgery was the biggest surgical user (7%)

*Clinical reason:*

- 65% of all use was associated with Bone marrow failure (BMF): of this 69% was used for patients with reversible BMF and 31% for those with chronic BMF

*Prophylaxis/therapeutic:*

- 46% of all units were given as prophylaxis and 26% for bleeding (neither or not stated in 28%)
- Prophylaxis use - 19% were pre-procedure
- 3% of episodes for adult prophylaxis, not associated with a procedure, were given more than 1 dose of platelets

**Discussion**

This was a simple audit with a clear objective, and a good level of participation.

The findings confirm haematology as the largest user of platelets (65% of overall use).

The most common clinical reason for transfusion was reversible bone marrow failure at 44%, with chronic bone marrow failure using 21%. In comparison the largest surgical indication, cardiac surgery, used only 7%. This is of concern as conditions causing bone marrow failure will increase as the elderly population expands.

Only 3% of episodes where platelets were used for adult prophylaxis, not associated with a procedure, were >1 dose. This compares favourably to the finding of 10% in the National Comparative Audit of use of platelets in haematology (2010).

**Recommendation:**

- Each hospital should review their own data from this survey and implement changes to practice as required

## Introduction

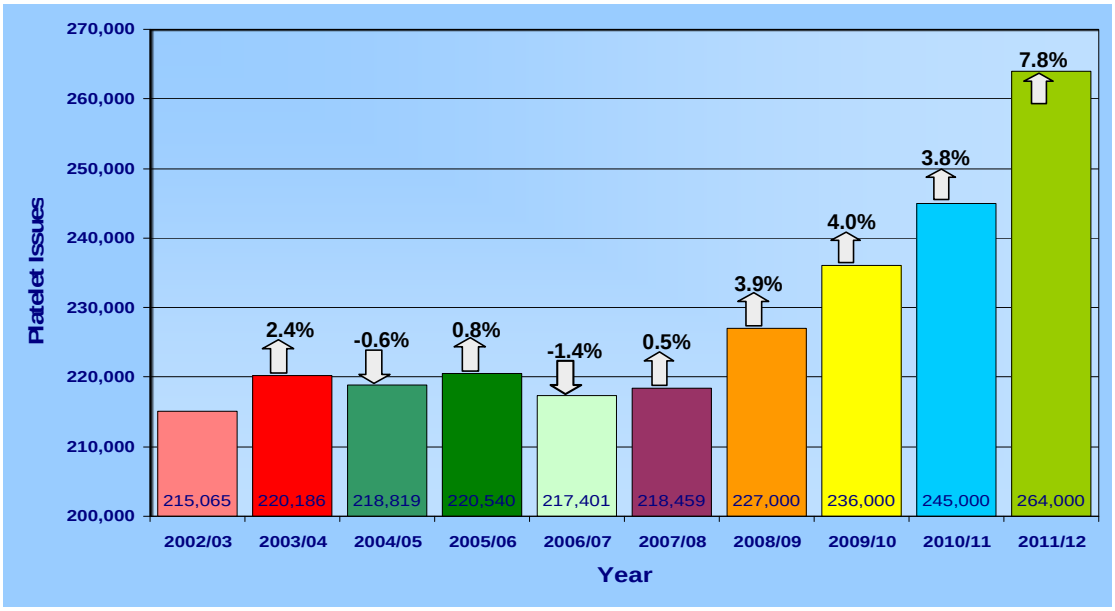
Platelet issue to hospitals from NHS Blood and Transplant (NHSBT) has increased significantly over the last 3 years, and dramatically over the last year (see figure 1).

The National Comparative Audit of Blood Transfusion performed an audit of the use of platelets in haematology in 2010. Recommendations included reducing inappropriate use which was reported at 28% of all platelet transfusions reported.

Subsequently NHSBT requested all hospitals in England [(1)] to identify which other specialties were using platelets and how many.

In response to this request the South West Regional Transfusion Team (SWRTT) proposed a survey of all platelet use by hospitals in the South West region.

Figure 1:




## Methods

The SWRTT developed a prospective survey for completion by NHS transfusion laboratory staff. Private hospitals were not included because of known very low or zero use.

The survey consisted of a proforma and coding sheets for clinical reason and specialty. National Blood Transfusion Committee Indications for Transfusion were used, however to capture all use (including inappropriate) a chronic bone marrow failure with no additional risk factors for bleeding category was added (see Appendix 1 and 2).

This was sent out electronically in February 2012 to all hospital Transfusion Laboratory Managers in the South West Regional, for use by each transfusion laboratory.

Data collection ran from 1st to 31st March 2012.

(1) NHSBT letter to hospitals re: reducing inappropriate use and wastage of platelets dated 7th December 2011; accessed at: http://hospital.blood.co.uk/library/pdf/Platelet_letter.pdf

## Results

### i) Responses and data collected

Out of the 19 NHS hospitals with a transfusion laboratory in the South West region, 17 responded (a response rate of 90%).

Data was reported for 1002 transfusion episodes:

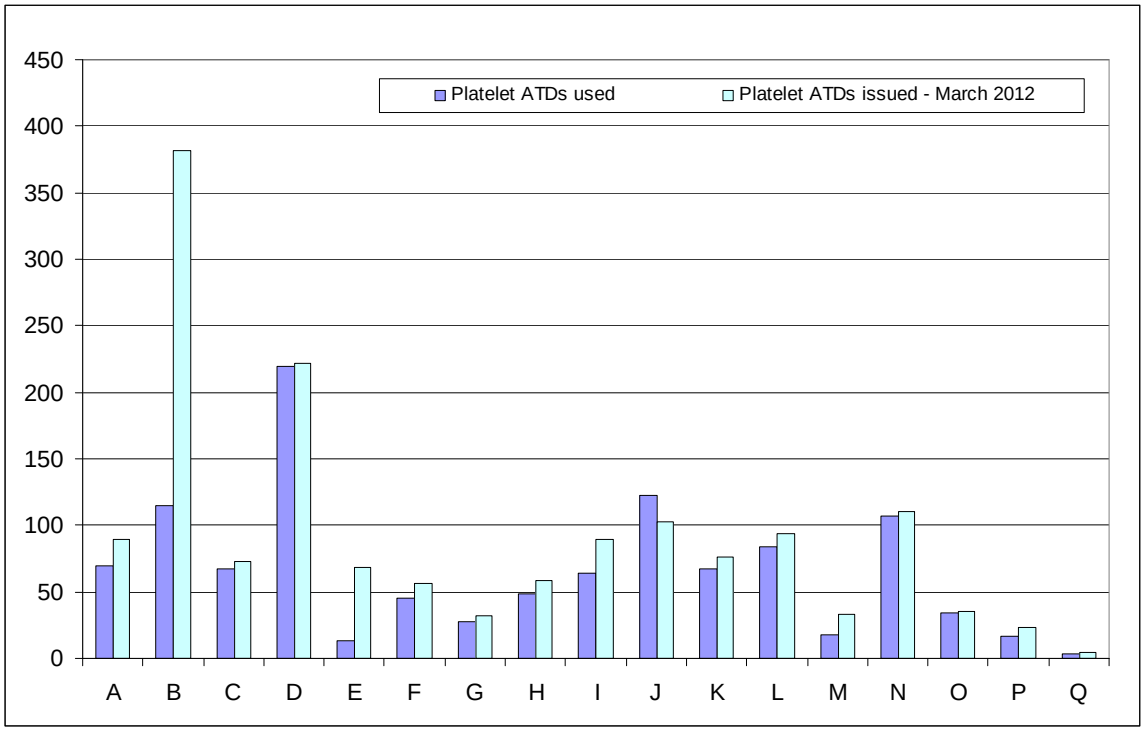
- 1,122 Adult Therapeutic Doses (ATDs) of platelets were given in 969 episodes (in 5 episodes the number of ATDs was not stated, and assumed to be 1).
- 36 Paediatric Therapeutic Doses (PTDs) were given in 33 episodes.

Some hospitals specified PTDs and not ATDs. In other cases where the patient age was under one year, it was assumed the units issued were PTDs.

Hospital specific data has been anonymised, with the letters used applying consistently to the same hospital.

Data submission (in units) for each hospital was matched against NHSBT issues for the month of March 2012. A good level of fidelity in data capture has been achieved (see figure 2).

Figure 2:




Note: hospitals B and E only submitted 14 days worth of data.

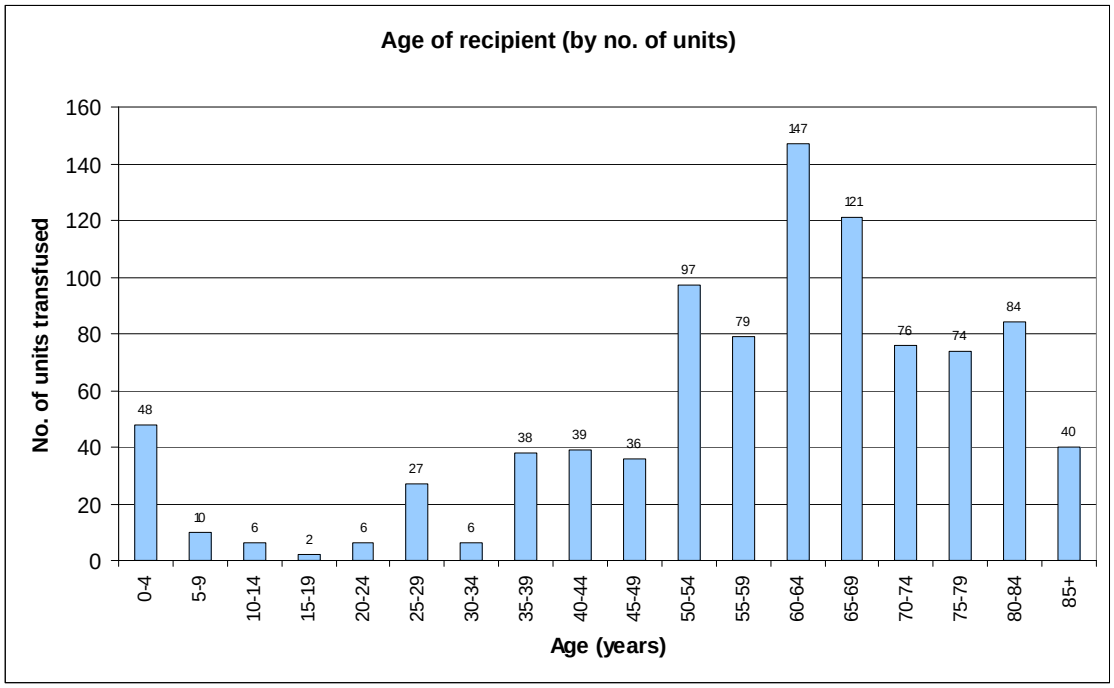
In all bar one of the hospitals the figure for platelets used is less than that for issued - some of the difference here may be due to under-reporting (for a variety of reasons), and some may be wastage.

## ii) Age of recipients

The median age of recipients was 62 years (see figure 3 for full range of ages).

In 166 episodes (222 units) the age was not given. None of those in which the age was not stated had been transfused PTDs and only one was listed as specialty code 21 – paediatric medicine.

Figure 3:




Note: the transfusion laboratory that supplies the regional children's hospital submitted 2 weeks worth of data – PTDs made up 12% (n=15) of their data.

## iii) Platelet use by specialty

This survey confirms haematology as the biggest user of platelets at 65% (see figures 4, 5 & 6). Cardiac surgery was the largest surgical user of platelets (see figure 6) but was still only one tenth of haematology use.

Individual hospitals data for use by specialty is given in Appendix 3.

Figure 4:

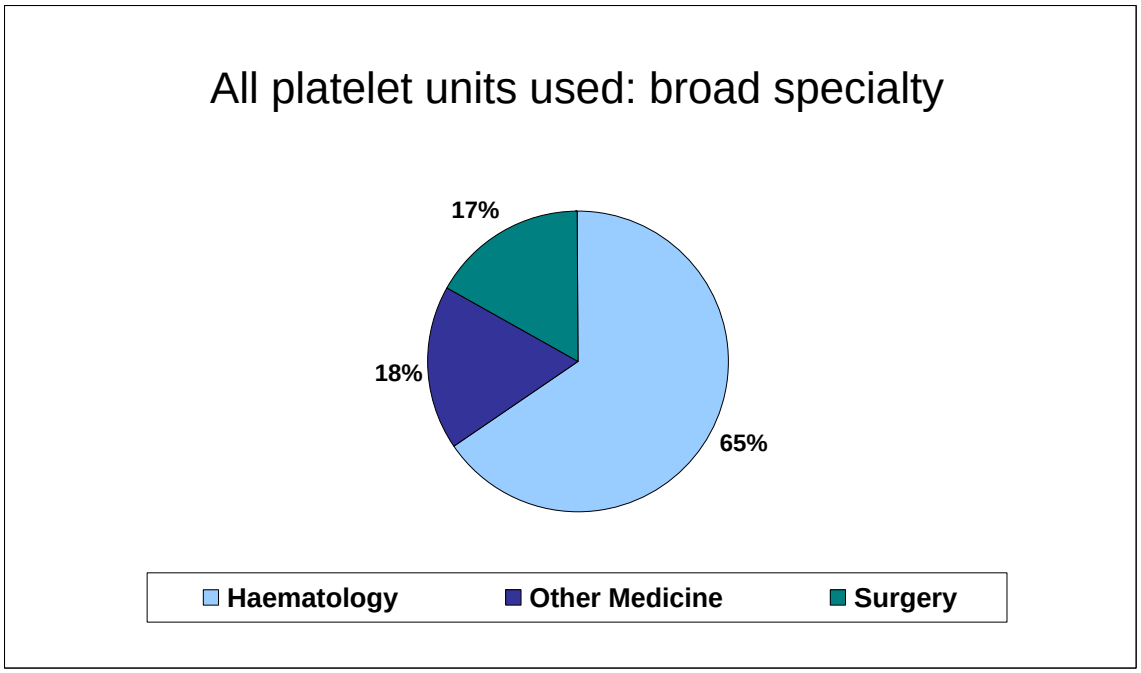


Figure 5:

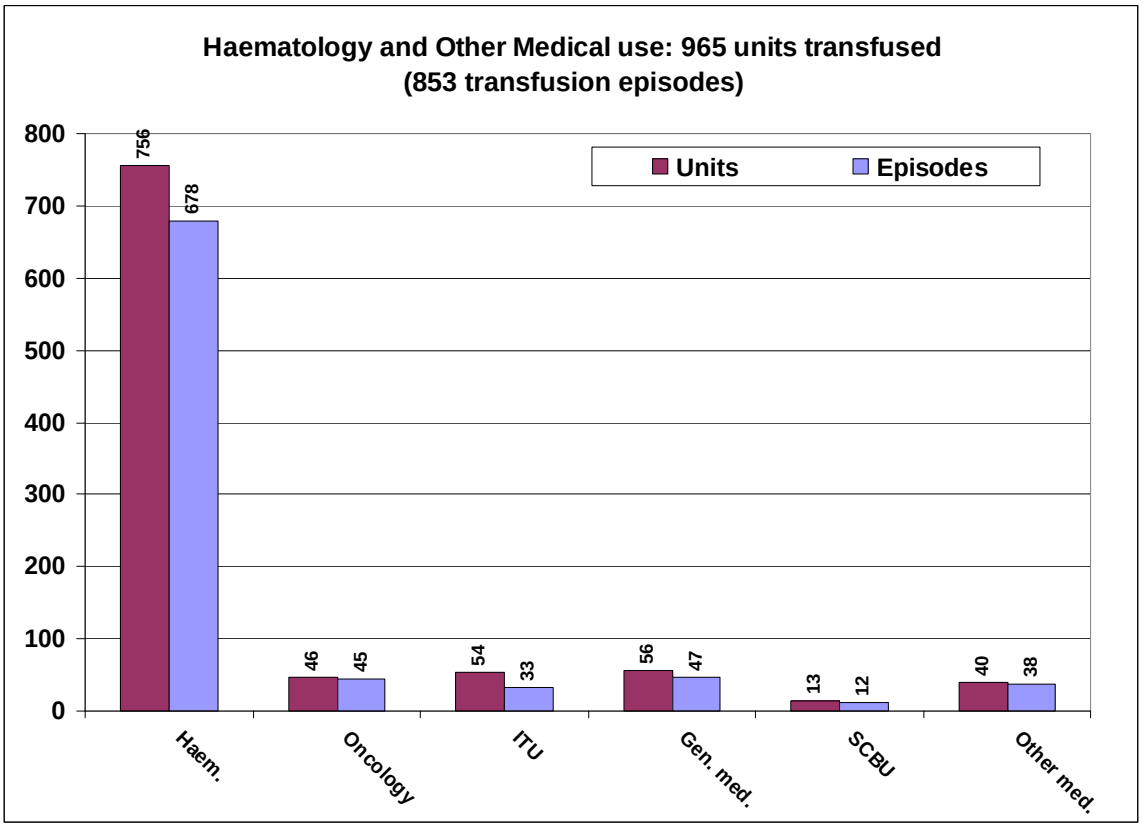
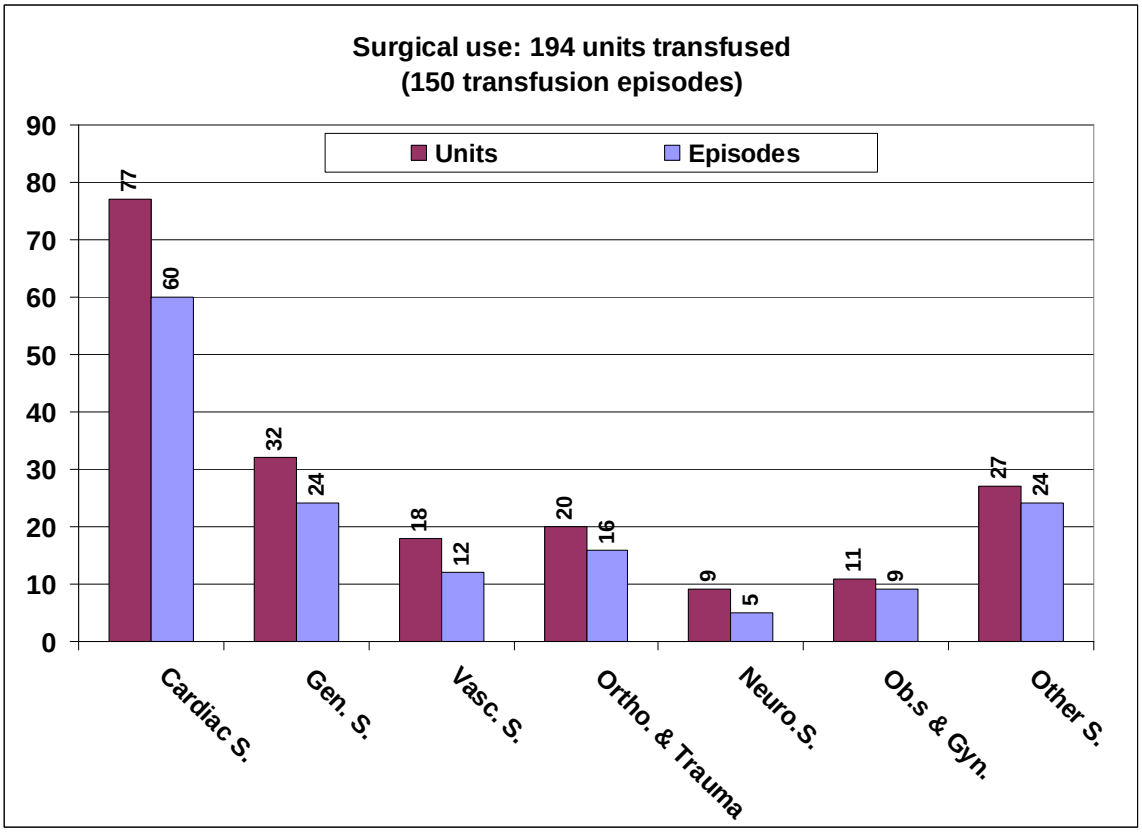



Figure 6:



**iv) Platelet use by clinical reason**

Data for the clinical reason for transfusion is shown in figures 7 and 8, both by number of units and number of episodes. There were episodes where more than one reason was listed, but this accounts for only a small number of units (16/1158). In these cases both reasons have been included. Consequently the sum of the data in the ATDs given and episodes transfused columns in figure 7 is greater than the numbers stated earlier on page 4.

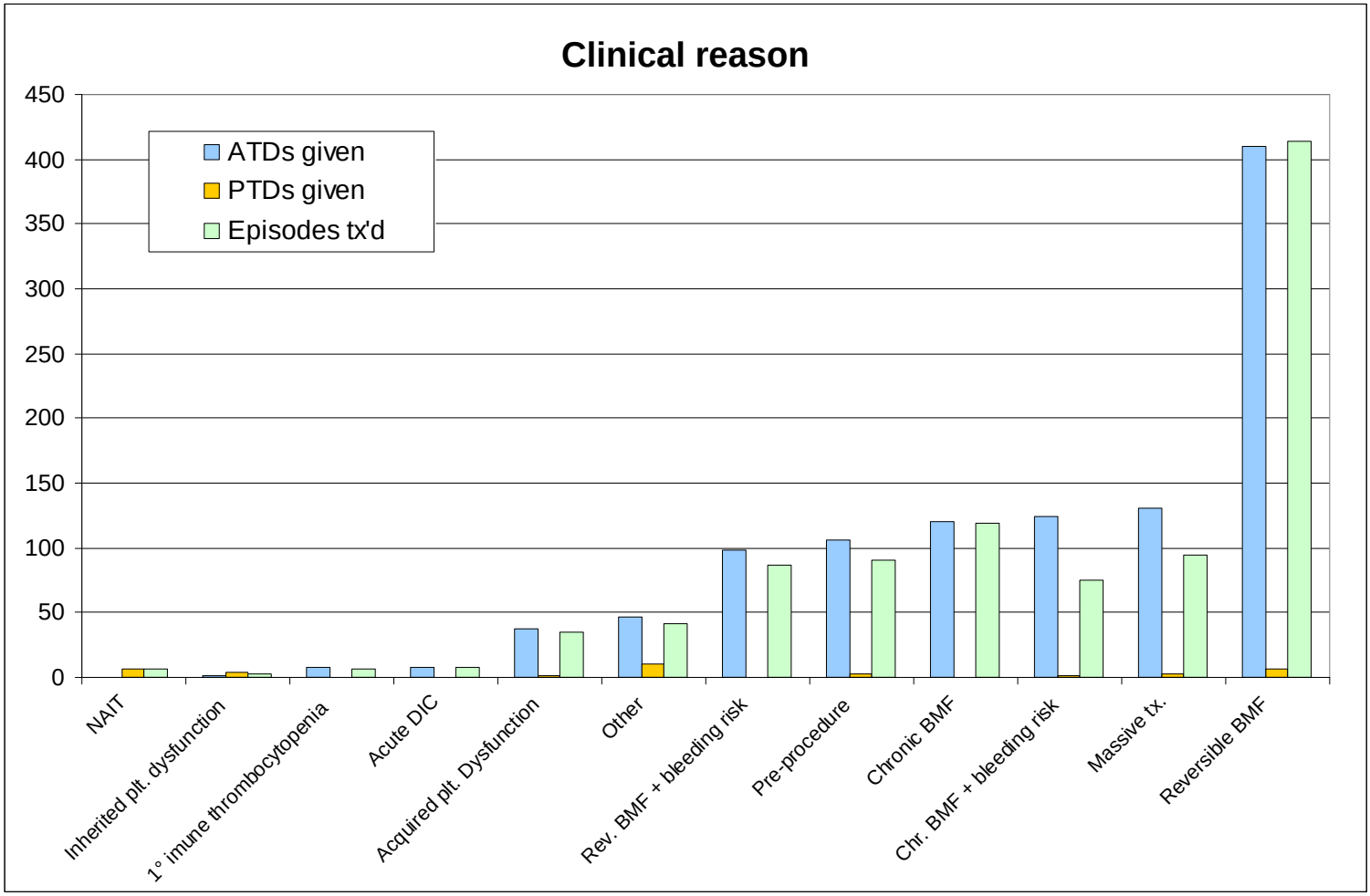
Bone marrow failure (BMF) accounted for 65% of all units transfused. Within this category 69% was used for patients with reversible BMF and 31% for those with chronic BMF.

Individual hospitals data for use by clinical reason is given in Appendix 4.

Figure 7:

| CLINICAL REASON | Code | ATDs given | PTDs given | Episodes transfused | Instances where more than one clinical reason given (all were ATDs): |
|---|---|---|---|---|---|
| Reversible Bone Marrow Failure [BMF] (e.g. disease, pre or post chemotherapy) | **P1R** | 410 | 7 | 414 | 1 unit P1R / P3 |
| Chronic BMF (e.g. MDS) | **P1C** | 120 | 0 | 119 | 2 units P1C / P3<br>Note: *Yes* to 'Bleeding?' was stated for 7 of the units given for P1C |
| Reversible BMF with additional risk factors for bleeding | **P2R** | 98 | 0 | 86 | |
| Chronic BMF (e.g. MDS) with additional risk factors for bleeding | **P2C** | 124 | 1 | 75 | 1 unit P2C / P5<br>1 unit P2C / P3 |
| Pre-invasive procedure or surgery | **P3** | 106 | 3 | 90 | 3 units P3 / P5<br>3 units P3 / P8 |
| Massive transfusion (including surgery) | **P4** | 131 | 2 | 95 | 5 units P4 / P5 |
| Acquired platelet dysfunction, e.g. anti-platelet drugs, renal failure | **P5** | 37 | 1 | 35 | |
| Acute Disseminated Intravascular Coagulation | **P6** | 8 | 0 | 8 | |
| Inherited platelet dysfunction | **P7** | 1 | 4 | 3 | |
| Primary immune thrombocytopenia | **P8** | 8 | 0 | 7 | |
| Post-transfusion purpura | **P9** | 0 | 0 | 0 | |
| Neonatal alloimmune thrombocytopenia | **P10** | 0 | 7 | 6 | |
| Other | | 47 | 10 | 41 | |
| Not given | | 48 | 1 | 47 | |

Figure 8:


Clinical reason
ATDs given
PTDs given
Episodes tx'd
450
400
350
300
250
200
150
100
50
0
NAIT
Inherited plt. dysfunction
1° imune thrombocytopenia
Acute DIC
Acquired plt. Dysfunction
Other
Rev. BMF + bleeding risk
Pre-procedure
Chronic BMF
Chr. BMF + bleeding risk
Massive tx.
Reversible BMF

## v) Prophylaxis vs therapeutic use

Use of platelets for bleeding or prophylaxis (and primary indication) is given in figures 9, 10 & 11.

46% of all units were given as prophylaxis, 26% for bleeding, and in 28% the reason provided was either neither or not stated.

'No' was given to both of these survey questions for 128 units transfused, and information was 'not given' or 'not known' for 195.

Where use was stated, therapeutic use was higher in surgical patients and prophylactic use higher in medical patients.

Within prophylaxis only 19% was pre-procedure use.

Figure 9:

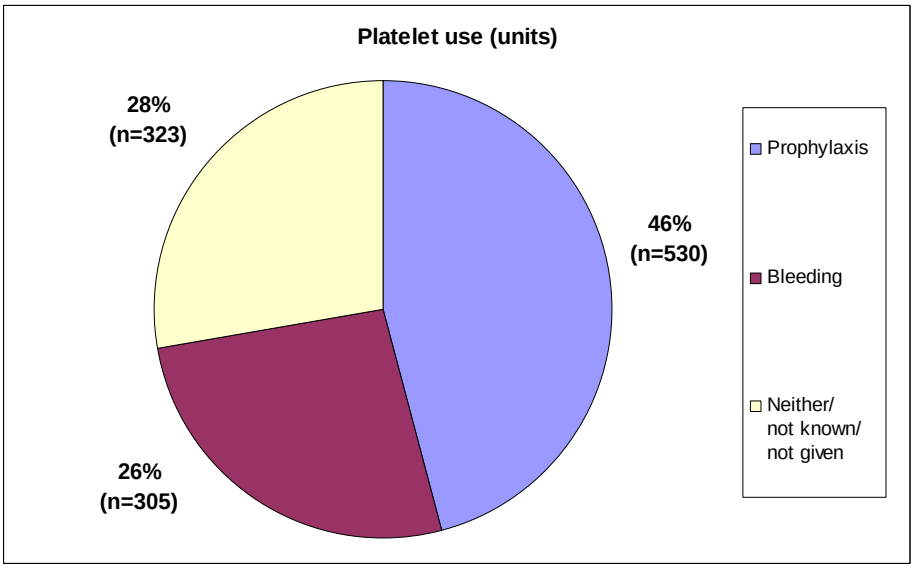



Figure 10:

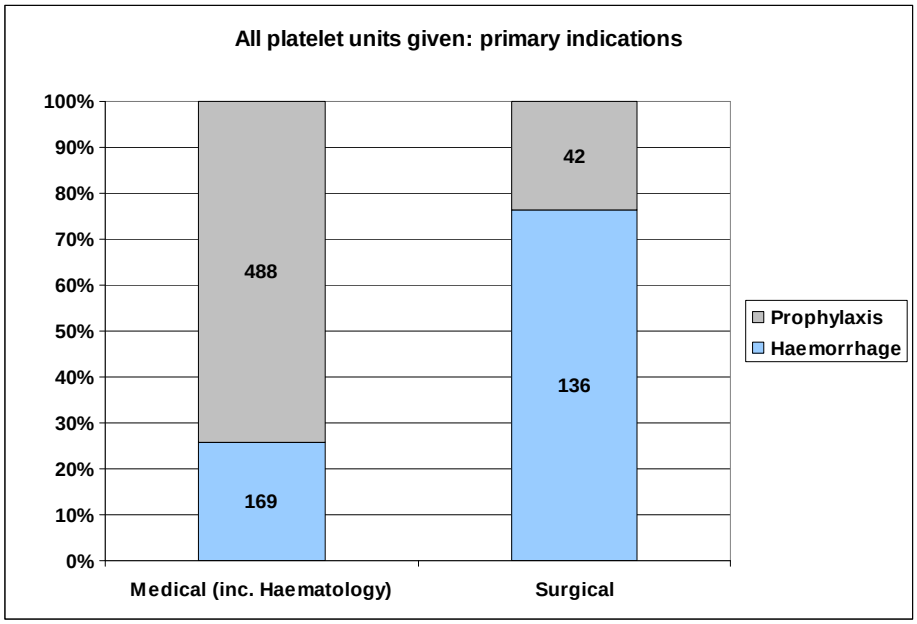
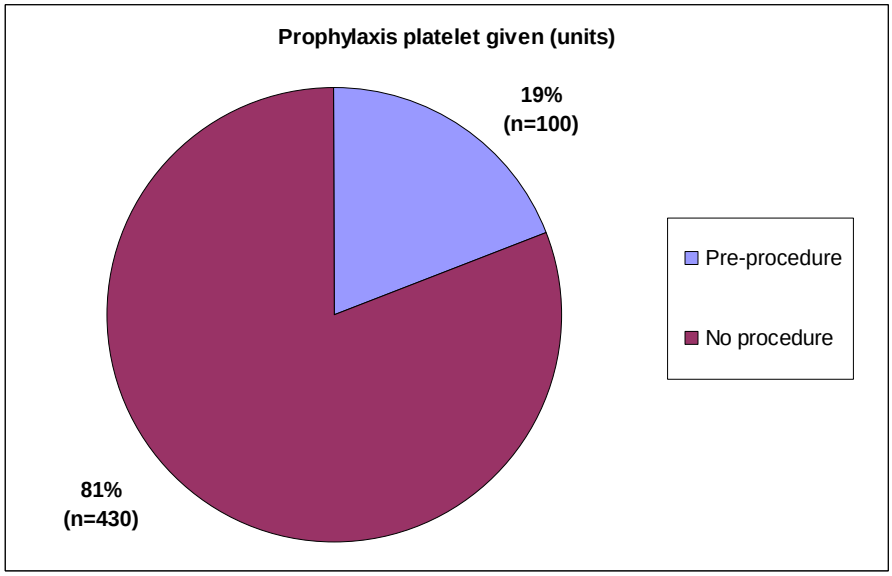


Figure 11:




## vi) Use of multiple doses

***Prophylaxis:***

No procedure: In 401 episodes where ATDs were given for prophylaxis, only 11 (2.7%) were double doses, and 1 (0.25%) was a triple dose. 10 of the double doses and the triple dose were given to haematology patients.

Pre-procedure: In 78 episodes where ATDs were given for prophylaxis, 19 (24.4%) of these were double doses. None of these double doses (and in fact only one single ATD dose) were given pre-bone marrow biopsy.

Only 1 PTD double dose was given for prophylaxis, and this was not associated with a procedure. Individual hospitals data for prophylactic use is given in Appendix 5.

***Bleeding:***

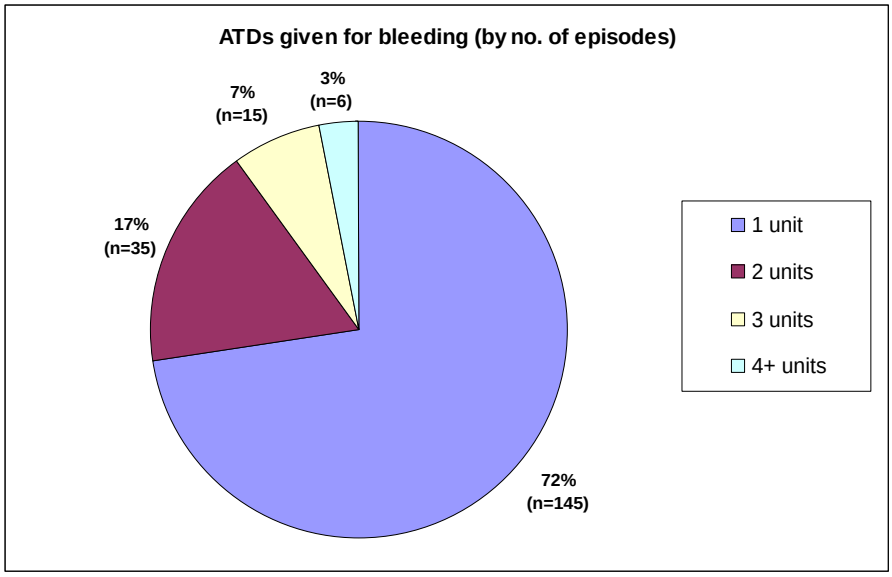
In 56 episodes (27%) more than one unit was transfused (see figure 12).

At one hospital, D, 42% of all units transfused for bleeding (49/117) were guided by TEG® (all surgical massive haemorrhage). Individual hospitals data for use in bleeding is provided in Appendix 6.

***Prophylactic or bleeding use not stated:***

In 300 episodes either no bleeding/no prophylaxis or unknown was stated. 17 double doses and 2 quadruple doses were used. This equates to 6% (19/300) double or higher doses for this category.

Figure 12:



## Discussion

This was a simple audit with a clear objective, and a good level of participation. Only two problems were encountered with data collection. In 28% of transfusion episodes use as either prophylaxis or bleeding was not stated. This response may, at least in part, be explained by uncertainty between therapeutic and prophylactic use for more minor bleeding e.g. skin/mucosal symptoms/signs. Although this figure is high only 6% in this category were double or higher doses and therefore unlikely to have affected double dose (or higher) calculations for prophylaxis or use in bleeding. The second problem was comparatively minor and consisted of two laboratories indicating several units as one episode when these were actually stated/likely to have been transfused over several days.

Our findings confirm haematology as the largest user of platelets (with 65% of overall use). Furthermore it highlights reversible bone marrow failure as the single biggest reason for transfusion at 44%, with chronic bone marrow failure the second largest at 21%. In comparison the largest surgical indication, cardiac surgery, used only 7%. This is of concern as conditions causing bone marrow failure will increase as the elderly population expands.

Of some reassurance only 3% of all adult prophylactic transfusion episodes, not associated with a procedure, were associated with more than one dose. This compares favourably to the finding of 10% in the National Comparative Audit of use of platelets in haematology (2010).

Data was compared with a similar audit conducted in the North East:

- Rankings of use in terms of medical and surgical specialties were the same
- The age of recipients was higher in the South West (median 62 yrs. vs. 56 yrs. in the NE)
- In terms of broad specialty the SW used 7% more units in haematology and 5% fewer in surgery.

## Recommendations

Each hospital should review their own data from this survey and implement changes to practice as required.

Although this survey was not designed to scrutinise appropriate use of platelets, there were 3 hospitals, H, J and K, where a significant proportion of all their use (35%, 18%, and 50%) were given for chronic BMF with no additional risk factors (clinical reason P1C). Conversely there were two hospitals with significant platelet use and excellent compliance with guidelines, A and N, where none were used for this reason.

## Glossary

| | |
|---|---|
| 1° | Primary |
| A & E | Accident and Emergency unit |
| ATD | Adult Therapeutic Doses |
| BMF | Bone marrow failure |
| ITU | Intensive Therapy Unit / Intensive Care Unit |
| MDS | Myelodysplastic syndrome |
| NAIT | Neonatal alloimmune thrombocytopaenia |
| NE | North East |
| NHSBT | NHS Blood and Transplant |
| Plt | Platelet |
| PTD | Paediatric Therapeutic Doses |
| SCBU | Special Care Baby Unit |
| SW | South West |
| SWRTC | South West Regional Transfusion Committee |
| SWRTT | South West Regional Transfusion Team |
| TEG® | Thromboelastography® |
| Tx | Transfusion |
| Tx'd | Transfused |

**Appendix 1: Data collection form**

| DATE | Patient ID number | SPECIALTY <see codes on sheet 2> | AGE | CLINICAL REASON <see codes on sheet 2> | Name of OPERATION or PROCEDURE (if relevant) | PROPHYLAXIS including pre-procedure ( Y / N ) | Is the patient BLEEDING ( Y / N ) | Pre transfusion Platelet Count (optional, for hospital use only) | No. of ATDs TRANS-FUSED | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
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**Appendix 2: Specialty and Clinical reason codes**

| SPECIALTY | Code |
|---|---|
| General Surgery | **1** |
| Vascular Surgery | **2** |
| Urology | **3** |
| Plastics/burns | **4** |
| Cardiac Surgery | **5** |
| Neurosurgery | **6** |
| Orthopaedics/Trauma | **7** |
| ITU | **8** |
| A&E | **9** |
| SCBU | **10** |
| Obstetrics | **11** |
| Gynaecology | **12** |
| General Medicine | **13** |
| Haematology | **14** |
| Oncology | **15** |
| Renal | **16** |
| Cardiology | **17** |
| Neurology | **18** |
| Rheumatology | **19** |
| Care of the Elderly | **20** |
| Paediatric Medicine | **21** |
| Other | **<please specify>** |

| CLINICAL REASON (more than one code may be used) | Code |
|---|---|
| Reversible Bone Marrow Failure [BMF] (e.g. disease, pre or post chemotherapy) | **P1R** |
| Chronic BMF (e.g. MDS) | **P1C** |
| Reversible BMF with additional risk factors for bleeding | **P2R** |
| Chronic BMF (e.g. MDS) with additional risk factors for bleeding | **P2C** |
| Pre-invasive procedure or surgery | **P3** |
| Massive transfusion (including surgery) | **P4** |
| Acquired platelet dysfunction, e.g. anti-platelet drugs, renal failure | **P5** |
| Acute Disseminated Intravascular Coagulation | **P6** |
| Inherited platelet dysfunction | **P7** |
| Primary immune thrombocytopenia | **P8** |
| Post-transfusion purpura | **P9** |
| Neonatal alloimmune thrombocytopenia | **P10** |
| Other | **<please specify>** |

**Appendix 3: Hospital platelet use by specialty (units)**

| Specialty | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | SWRTC Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | | 1 | 2 | 6 | | 5 | 1 | 1 | | 9 | | 1 | | 3 | 2 | | 1 | ***32*** |
| **2** | 4 | 4 | 2 | 2 | | 3 | | | | 2 | | | | 1 | | | | ***18*** |
| **3** | | | 7 | 1 | | | | | | | | | | 1 | | | | ***9*** |
| **4** | | | | | | | | | | 2 | | | | | | | | ***2*** |
| **5** | | 28 | | 48 | | | | | | | 1 | | | | | | | ***77*** |
| **6** | | | | 7 | | 2 | | | | | | | | | | | | ***9*** |
| **7** | | | 1 | | | 4 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 3 | 2 | | | ***20*** |
| **8** | 8 | 6 | 4 | | 1 | 10 | 4 | | | 7 | 2 | 6 | 2 | | 3 | 3 | | ***56*** |
| **9** | | | 1 | 1 | | | | 3 | | 1 | | 5 | | | | | | ***11*** |
| **10** | | | | | | | 1 | 2 | | 3 | | | 7 | | | | | ***13*** |
| **11** | | | | | | | 3 | | 2 | 2 | | | 1 | | | | | ***8*** |
| **12** | | | | | | | | | | 3 | | | | | | | | ***3*** |
| **13** | | | 4 | | | 8 | 6 | 2 | 3 | 17 | 2 | 1 | | 6 | 5 | | | ***54*** |
| **14** | 56 | 64 | 46 | 145 | 12 | 13 | 12 | 42 | 52 | 66 | 49 | 65 | 11 | 89 | 21 | 12 | 1 | ***756*** |
| **15** | | 15 | | 4 | | | | | 5 | 3 | 11 | 2 | | 3 | 1 | 2 | | ***46*** |
| **16** | | | | 5 | | | 1 | | | | | | 1 | | | | | ***7*** |
| **17** | | 4 | | | | | | | | 2 | | 1 | | | | | | ***7*** |
| **18** | | | | | | | | | | | | 1 | | | | | | ***1*** |
| **19** | | | | | | | | | | | | | | | | | | ***0*** |
| **20** | 1 | | | | | | | | | | | | 1 | | | | | ***2*** |
| **21** | | 4 | | 1 | | | 1 | | | 11 | 1 | 1 | | | 1 | | | ***20*** |
| **Other** | | 4 | | | | | | | 1 | | 1 | | | 1 | | | 1 | ***8*** |

**Appendix 4: Hospital platelet use by clinical reason (units)**

| Reason | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | SWRTC Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **P1R** | 37 | 58 | 9 | 83 | | | | 17 | 50 | 38 | 20 | 50 | 1 | 28 | 18 | 6 | 2 | ***417*** |
| **P1C** | | 2 | 8 | 8 | | 1 | 6 | 18 | 3 | 25 | 36 | 7 | 5 | | | 1 | | ***120*** |
| **P2R** | 17 | 11 | | | 3 | | 1 | | | 1 | 1 | 7 | 3 | 48 | 5 | 1 | | ***98*** |
| **P2C** | 10 | 3 | 2 | 58 | | 16 | 3 | 1 | 3 | 8 | 3 | 2 | 1 | 9 | | 6 | | ***125*** |
| **P3** | 1 | 14 | 8 | 4 | 1 | 7 | 5 | 6 | 3 | 18 | 6 | 7 | 5 | 14 | 8 | 2 | | ***109*** |
| **P4** | 4 | 20 | 4 | 56 | | 16 | 6 | 5 | | 4 | | 9 | 3 | 5 | | | 1 | ***133*** |
| **P5** | | 9 | 1 | 7 | | 1 | 8 | | 4 | 1 | 2 | | 1 | 4 | | | | ***38*** |
| **P6** | | | | 1 | | 4 | 1 | | 2 | | | | | | | | | ***8*** |
| **P7** | | | | 1 | | | | | | 4 | | | | | | | | ***5*** |
| **P8** | | 1 | | 2 | | | | 4 | | 1 | | | | | | | | ***8*** |
| **P9** | | | | | | | | | | | | | | | | | | ***0*** |
| **P10** | | | | | | | 1 | 2 | | 3 | | | | | 1 | | | ***7*** |
| **Other** | | 13 | 5 | | 4 | | | 1 | | 19 | 2 | 2 | 6 | 1 | 4 | | | ***57*** |
| **Not given** | | 2 | 31 | | 5 | | 1 | | | 9 | | | | | | 1 | | ***49*** |

**Appendix 5: Hospital prophylactic platelet use (by number of episodes)**

| Prophylaxis ATDs | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | SWRTC Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1 unit** | 2 | 50 | 2 | 97 | 0 | 10 | 10 | 1 | 47 | 52 | 55 | 1 | 3 | 78 | 31 | 9 | 0 | ***448*** |
| **2 units:** pre-procedure | 0 | 2 | 1 | 1 | 0 | 2 | 2 | | 0 | 8 | | 0 | 1 | 2 | 0 | 0 | 0 | ***19*** |
| **2 units:** no procedure | | 1 | | 2 | | 2 | | | | 2 | 2 | | | 2 | | | | ***11*** |
| **3+ units** | 0 | 0 | 0 | 0 | 0 | 1* | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1** | 0 | ***2*** |
| | | | | | | | | | | | | | | | | | | |
| **Prophylaxis PTDs** | | | | | | | | | | | | | | | | | | |
| **1 unit** | | 6 | | | | | | | | | 1 | | 3 | | 1 | | | ***11*** |
| **2 units** | | | | | | | | | | 2[#] | | | | | | | | ***2*** |

*** 4 units given over several days**
**** 3 units given – 'no procedure'**
**[#] Both episodes 'no procedure'**

**Appendix 4: Hospital therapeutic platelet use (by number of episodes)**

| Bleeding dose ATDs | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | SWRTC Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 unit | | 35 | 2 | 33 | 3 | 8 | 5 | 5 | 2 | 11 | 8 | 7 | 3 | 16 | 3 | 2 | 2 | |
| 2 units | 2 | 3 | 2 | 16 | | 5 | 2 | | 1 | | | 1 | 1 | 1 | | 1 | | |
| 3 units | | | | 11 | | | 1 | | | 1 | | | | 1 | | | | |
| 4 units | | | | 2 | | 1 | | | | | | | | | | | | |
| 5 units | | | | 1 | | | | | | | | | | | | | | |
| 6 units | | | | 1 | | | | | | | | | | | | | | |
| 15 units | | | | | | | | | | 1* | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| Bleeding dose PTDs | | | | | | | | | | | | | | | | | | |
| 1 unit | | 8 | | | | | | | | | | | | | | | | |
| 2 units | | | | | | | | | | 1 | | | | | | | | |

*** Consumptive coagulopathy, presumed as several separate episodes**