Audit of Overnight Red Cell Transfusions in the West Midlands Region
July 2016
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Acknowledgements
Thanks to all the hospital staff who agreed to participate and undertook the data collection.

Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>3</td>
</tr>
<tr>
<td>Methods</td>
<td>4</td>
</tr>
<tr>
<td>Results – Organisational Survey (Parts 1 and 2)</td>
<td>6</td>
</tr>
<tr>
<td>Results – Episode Data (Part 3)</td>
<td>8</td>
</tr>
<tr>
<td>Key findings</td>
<td>17</td>
</tr>
<tr>
<td>Discussion</td>
<td>18</td>
</tr>
<tr>
<td>Conclusions</td>
<td>19</td>
</tr>
<tr>
<td>Recommendations</td>
<td>20</td>
</tr>
<tr>
<td>References</td>
<td>20</td>
</tr>
<tr>
<td>Appendix 1: Additional comments regarding policies</td>
<td>21</td>
</tr>
<tr>
<td>Appendix 2: Did the patient’s clinical notes provide sufficient indication that the transfusion should proceed out of hours / overnight?</td>
<td>22</td>
</tr>
<tr>
<td>Appendix 3: Additional comments</td>
<td>25</td>
</tr>
</tbody>
</table>
Introduction

For many years it has been recognised that transfusing at night or outside of ‘routine’ hours is less safe and should be avoided unless clinically essential. At night there are often decreased staffing levels and reduction in lighting makes patient observations and pre-transfusion checks more difficult. Serious Hazards of Transfusion (SHOT) have clear evidence that there are increased numbers of transfusion-related incidents during the overnight period.

In 2005 SHOT (Serious Hazards of Transfusion) published the following recommendation:

Avoid blood transfusions outside of core hours: Available data indicate that blood administration and pre-transfusion testing outside of core hours are less safe and should be avoided unless clinically essential. Hospitals planning to move to ‘24/7’ working must employ adequate numbers of appropriately skilled clinical and laboratory staff to ensure transfusion safety. It may be useful to audit the occurrence of patient safety incidents in hospitals during different time periods.

Action: Hospital CEOs, consultant haematologists with responsibility for transfusion together with HTCs and HTTs.

In line with this, the 2009 BCSH guidelines on the administration of blood components state the following: ‘Transfusion must only take place when there are enough staff available to monitor the patient and when the patient can be readily observed. Overnight transfusions should be avoided unless clinically essential.’

In 2014 SHOT revised their recommendation and published the following:

Transfusion at night: Revised recommendation:

- Transfusions should be given with the same attention to patient observations whatever the time of day or night.
- Transfusions at night must proceed where there is a clear clinical indication, and may be given as long as the staffing is sufficient to permit transfusion according to the standards defined in the British Committee for Standards in Haematology (BCSH) guideline on administration of blood components 2009 (BCSH Harris et al. 2009). These standards include adequate pre-transfusion assessment, observations at 15 minutes after the start of each component and regular visual observation throughout the transfusion.
- Decisions to transfuse should not be made simply on the basis of the haemoglobin result, but taking into account the full medical history, the patient’s current medical condition and the wishes of the patient. Junior medical staff should review the patient, consult the case notes and take advice from senior medical staff before deciding to transfuse at night, particularly when the team concerned are not familiar with the patient’s case and are not responsible for the overall management plan.

Action: Trust/Health Board Chief Executive Officers, Hospital Transfusion Teams, Medical Directors responsible for all clinical staff.

This revised recommendation reflects the fact that in practice transfusion out of hours sometimes occurs for reasons that are not deemed to be clinically essential, but take place for more pragmatic reasons. This may be acceptable providing patient safety is paramount. The recommendation does reinforce the importance of pre-transfusion assessment and monitoring throughout the transfusion to detect any potential reactions.
The 2007 National Comparative audit of overnight red blood cell transfusion found that for 32% of patients there was no clinical or pragmatic reason for the transfusion to occur overnight. Only 55% of patients audited had observations documented within 15 minutes of the start of the unit putting a significant number of patients at risk of an undetected transfusion reaction.

Recommendations from the audit included the following:

- Patients without a clinical need should not be transfused overnight.
- Hospitals should include guidelines for transfusion overnight in their transfusion policy.
- For all overnight transfusions, clinical staff should, within 15 minutes of the start of each unit, take and record observations in the clinical notes.
- Overnight transfusions should only be started if observations can be undertaken within 15 minutes of the start time.
- The reason for transfusion, beneficial effects and adverse incidents must be documented in the patient’s clinical notes.

This audit aims to look at how hospitals manage overnight transfusions. The main focus of the audit was to look at numbers of transfusions being administered overnight and establish whether these appeared to be appropriate. Also to establish whether any delays contributed to the transfusion being given overnight and if this was the case, where in the process these delays occurred. The audit also aimed to determine whether patients transfused overnight were being monitored in line with National guidelines.

Methods

All NHS Trusts and independent hospitals in the West Midlands region were invited to participate in the audit individually as practice may vary from hospital to hospital within a Trust.

A letter, explaining the reason for the audit, the purpose of the audit, the proposed timescale, and the proposed dataset to be collected, was sent via email to Chairs of Hospital Transfusion Committees, Trust Transfusion Laboratory Managers, Transfusion Practitioners, and Consultant Haematologists with responsibility for blood transfusion in June 2016. For independent hospitals a letter was sent to the hospital manager.

The audit consisted of 3 parts which were completed using a secure online questionnaire facility. A paper option in PDF format was also made available for any hospital unable to complete the audit online.

Parts 1 and 2 comprised organisational questionnaires to be completed once for each participating hospital. These looked at the following:

- The timeframe the hospitals laboratory classes as out of hours,
- Whether the laboratory has a cut-off time for routine crossmatches,
- The timeframe the hospitals clinical areas class as out of hours,
- What the hospitals policy states about transfusing out of hours,
- Whether any mechanisms are in place for monitoring out of hours transfusions,
- Total numbers of components collected out of hours,
- Dates audit undertaken.
For part 3 hospitals were asked to audit all episodes of overnight transfusions (red cells or platelets), up to a maximum of 20 cases, over a 1 week period of their choosing (09:00hrs Monday to 09:00hrs Monday).

Data collected included the following:

- Specialty and location of patient at time of transfusion
- Indication for transfusion
- Reason for out of hours transfusion
- Did the patient have any significant co-morbidities
- When was the unit requested, available, collected and transfused
- What was the position of the unit in the transfusion episode
- Were any other components transfused
- Were observations performed in accordance with national guidelines
- Were any transfusion reactions recorded / reported
- What was the post-transfusion haemoglobin
- When was the patient discharged, was there any evidence the patient was transfused to permit this

The collection, analysis and presentation of this data will facilitate benchmarking among Trusts within the region.
Results - Organisational Survey – Parts 1 and 2

15 / 33 sites submitted response to episodes questionnaire (45%)
13 / 33 sites submitted response to organisational questionnaire (36%)

Do you have a cut off time for routine crossmatches in the laboratory?

N=12

Yes 2 No 10
Do you employ any mechanisms for reviewing and monitoring out of hours transfusions?

N=12

Yes 4 No 8

Are you intending to exclude any clinical areas in your audit

N=11

No 11

Total Numbers of units collected OOH for the audit period – 1 week of the hospitals choice

N=9

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Red Blood Cells (lab out of hours)</th>
<th>Platelets (lab out of hours)</th>
<th>Red Blood Cells (clinical out of hours)</th>
<th>Platelets (clinical out of hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidderminster Hospital</td>
<td>12</td>
<td>0</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>Birmingham Children's UK</td>
<td>UK</td>
<td>UK</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Worcestershire Royal</td>
<td>38</td>
<td>8</td>
<td>31</td>
<td>7</td>
</tr>
<tr>
<td>Hereford County Hospital</td>
<td>18</td>
<td>0</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>Queens Hospital BoT</td>
<td>56</td>
<td>5</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>Birmingham Womans</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>New Cross</td>
<td>26</td>
<td>0</td>
<td>26</td>
<td>0</td>
</tr>
<tr>
<td>Russells Hall Hospital</td>
<td>8</td>
<td>0</td>
<td>21</td>
<td>1</td>
</tr>
<tr>
<td>North Staffordshire Royal</td>
<td>216</td>
<td>19</td>
<td>174</td>
<td>12</td>
</tr>
</tbody>
</table>

The results circled above appear to be anomalous. It is likely that these values represent all units collected within the audited week rather than those collected out of hours.

Additional comments regarding policies are at appendix 1
Results – Episode Data – Part 3

West Midlands RTC - Out of Hours Audit

<table>
<thead>
<tr>
<th>Participating Organisations</th>
<th>No of Cases Submitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alexandra Hospital Redditch</td>
<td>1</td>
</tr>
<tr>
<td>Stafford Hospital</td>
<td>1</td>
</tr>
<tr>
<td>Birmingham Women’s Hospital</td>
<td>6</td>
</tr>
<tr>
<td>Princess Royal Hospital</td>
<td>7</td>
</tr>
<tr>
<td>Birmingham Children’s Hospital</td>
<td>8</td>
</tr>
<tr>
<td>Russell’s Hall Hospital</td>
<td>8</td>
</tr>
<tr>
<td>Worcestershire Royal Hospital</td>
<td>8</td>
</tr>
<tr>
<td>Kidderminster Hospital</td>
<td>11</td>
</tr>
<tr>
<td>Hereford County Hospital</td>
<td>12</td>
</tr>
<tr>
<td>New Cross Hospital</td>
<td>13</td>
</tr>
<tr>
<td>City Hospital</td>
<td>15</td>
</tr>
<tr>
<td>Sandwell General Hospital</td>
<td>16</td>
</tr>
<tr>
<td>North Staffordshire Royal Infirmary</td>
<td>17</td>
</tr>
<tr>
<td>Birmingham Heartlands Hospital</td>
<td>18</td>
</tr>
<tr>
<td>Queen Elizabeth Hospital</td>
<td>18</td>
</tr>
<tr>
<td>Queens Hospital Burton-upon-Trent</td>
<td>18</td>
</tr>
</tbody>
</table>

177 cases submitted from 16 WM RTC hospitals.

Age distribution of submitted cases

(N=165, 12 cases no age given)
Delays in the transfusion process

Time: Hb to Request for Blood Component (N)

- Under 30 minutes: 10
- 30 to 60 minutes: 20
- 1 to 2 hours: 30
- 2 to 3 hours: 40
- 3 to 4 hours: 50
- Over 4 hours: 60

Specialty the patient was under at the time of the transfusion

- General Medicine, 45
- Obs & Gynae, 18
- GI, 17
- General Surgery, 16
- Renal, 3
- Urology, 7
- Neonatal / paeds, 10
- T&O, 12
- ED / A&E, 13
- Haematology, 16
- Burns / plastics, 1
- Cardiac / cardiothoracic, 8
- Liver, 7
- Liver, 7
Time of Collection to Component Given

Time in hours from last Hb result to unit transfused
Indications for platelet transfusions:

**Bone marrow failure (3):**
1 to prevent bleeding (reversible BMF) - platelet count <10 x 10^9/l
2 to prevent bleeding - platelet count <20 x 10^9/l with additional risk factors for bleeding such as sepsis or haemostatic abnormalities
3 to prevent bleeding - platelet count <20 x 10^9/l with additional risk factors for bleeding such as sepsis or haemostatic abnormalities and inherited platelet dysfunction disorders – bleeding or pre-op

**Critical care / surgery (3):**
2 Massive blood transfusion
1 Acquired platelet dysfunction, non-surgically correctable bleeding

**Bone marrow failure and critical care / surgery (1):**
1 to prevent bleeding - platelet count <20 x 10^9/l with additional risk factors for bleeding such as sepsis or haemostatic abnormalities and inherited platelet dysfunction disorders – bleeding or pre-op

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**Indication for red cell transfusion (n=177)**
(Based on NBTC indication codes for transfusion 2016)

- Acute blood loss (R1) 34%
- Hb <70g/l (R2) 32%
- Hb <80g/l (patient with cardiovascular disease) (R3) 10%
- Chronic anaemia (R4) 15%
- Not given 9%
- Exchange transfusion (R6) 0.5%
In some cases more than one option was selected, detailed below:

Low Hb / platelets, patient at risk of bleeding and patient started bleeding / became symptomatic n=27
Low Hb / platelets, patient at risk of bleeding and haematology patient with limited line time n=3
Low Hb / platelets, patient at risk of bleeding and patient not available in the clinical area during the day n=1
Low Hb / platelets, patient at risk of bleeding and pre-operative / pre-procedure n=4
Low Hb / platelets, patient at risk of bleeding and delay in Blood Bank receiving a valid sample n=1
Patient started bleeding / became symptomatic and haematology patient with limited line time n=1
Patient started bleeding / became symptomatic and patient choice n=1
Haematology patient with limited line and for discharge home following day n=1
Pre-operative / pre-procedure and patient not available in the clinical area during the day n=1

In 38 cases ‘other’ was selected, however in 19 cases another option had also been selected. 3 further cases were placed into other appropriate categories. This left 16 cases which could not be categorised, information given relating to these is below:
16 others:
MDS patient with acute coronary syndrome.

2ND UNIT
ITU patient - MOF
Request Form not completed earlier by day staff
samples sent to NHSBT due to antibodies
Respiratory ITU
Patient observations unstable, thought to be related to low Hb
chronic anaemia
Admitted A&E late afternoon
Profound anaemia. Not cross matched in A&E
Cardiac Arrest
Childbirth, post C section
Childbirth and sepsis
Neonate
Childbirth
Childbirth

Did the patient have any known significant co-morbidities?

<table>
<thead>
<tr>
<th>Co-morbidities</th>
<th>Number of cases</th>
<th>Percentage of total number of cases audited (n=177)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ischaemic heart disease</td>
<td>30</td>
<td>17%</td>
</tr>
<tr>
<td>Current / recent acute coronary syndrome</td>
<td>10</td>
<td>6%</td>
</tr>
<tr>
<td>Respiratory disease</td>
<td>15</td>
<td>8%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>55</td>
<td>31%</td>
</tr>
</tbody>
</table>

For 62 cases the ‘other’ option was selected. 7 of these have been included in the relevant categories in the table. The other 55 have not been included as these all related to co-morbidities which were not cardiac or respiratory in nature.

Did the patient’s clinical notes provide sufficient indication that the transfusion should proceed out of hours / overnight?

61 / 177 (34% of cases) – NO
For Yes / Unclear please see appendix 2
Was there evidence of a delay in issue due to a second sample being required for crossmatching?

Yes 6
No 171

Location at the time of transfusion

Was this a single unit red cell transfusion:

Yes 47 / 175 – 27%
No 128 / 175 – 73%

If not, what was its position in the transfusion episode:

Position of unit in the transfusion episode
Were any other components given during the transfusion episode? (n=50)

Platelets 11   Red cells 39   FFP 6   Cryoprecipitate 1.

Observations – all removed due to limitations with the data collected

Transfusion reactions/reported

163/177 (92%) answered this question of which 1 transfusion reaction was recorded. This was not appropriately reported.

Was a post-transfusion Hb taken? (n=158)

Yes 141 (89.2%)
No 17 (10.8%)

![Post Transfusion Hb Levels (n = 158)](image)

Is there any evidence that this transfusion occurred overnight to facilitate discharge home? (n=169)

Yes - 4
No – 165
Key findings

- All laboratories in hospitals that submitted an organisational questionnaire class 9pm to 6am as out of hours.
- Clinically all hospitals class between 11pm and 6am as out of hours.
- The longest delays in the transfusion process appear to be the clinical area. In particular, the longest delays are from Hb result being made available to request made for components and time to collection once components were available.
- In 6% of cases audited, time of collection to completion of transfusion was >4 hours which is out with current guidelines.
- Most red cell transfusions appeared to be appropriate, with the majority (66%) given either for Hb <70g/l or acute blood loss.
- Most transfusions were considered to be appropriate to proceed overnight. 74% of reasons given for overnight transfusion related to the patient bleeding, being at risk of bleeding or being symptomatic.
- 12% of transfusions were given overnight for no clear reason.
- Most patients had a post-transfusion Hb taken and the majority fell within acceptable levels but in 4% of cases the post-transfusion Hb was >120g/L.
Discussion

The organisational questionnaire showed some differences between hospitals in terms of what they class as the out of hours period in the lab and what clinical areas consider to be out of hours. All laboratories however classed 9pm to 6am as out of hours. There were two general groups, those with a 12 hour out of hours period (eg. 20:00 – 08:00), and those with a 14-16 hrs out of hours period (eg. 17:00 – 09:00) On the wards, all hospitals class between 11pm and 6am as out of hours. 6 hospitals out of hour’s period start between 8pm and 11pm. 1 hospitals out of hours period starts at 18:00.

83% of hospitals that submitted an organisational questionnaire do not have a cut off time for routine crossmatches, and only 33% of hospitals have mechanisms in place for reviewing and monitoring out of hours transfusions. It is possible that this could reflect a move towards 24/7 working patterns, though an explanation was not sought in the questionnaire.

46% of patients audited were > 70 years of age. Use of blood by speciality roughly reflects that which would be expected overall with approximately 60% of transfusions given by medical specialties and 40% given by surgical specialties.

Delays in the transfusion process:

There are considerable delays in the transfusion process and the audit showed that the longest delays were from Hb result being available to unit being transfused are in the clinical area, and in particular the time from Hb result being available to the time of the request, and the time from the blood being issued by blood bank to it being collected by ward staff.

In the majority of cases (57%), the request for blood components was made 4 hours or more after the Hb result had been available.

Blood bank turnaround times did not appear to be a major factor in delaying transfusion with the majority( 68%) crossmatches being available within 2 hours of request; however 18% did take more than 3 hours from request to issue. Some of these appear to be due to delays in blood bank receiving a sample for pre-transfusion testing. Additionally 3 cases required referral to NHSBT for pre-transfusion testing.. Only a small number of transfusions were delayed due to Blood Bank requiring a second sample.

Overall, 63% of transfusions were given within 12 hours of the Hb result being available. In 41% of cases components were collected more than 4 hours after they were available which could have pushed the transfusion into the overnight period.

The time of the most recent Hb result was available in 174 transfusion episodes, and in 58 of these (33%), it was available before midday. It is accepted that there may be other reasons why transfusions may be given out of hours, though this suggests that in a significant proportion this may have been avoided if the delays in the process were reduced.

In 6% of cases audited (n=10), time of collection to completion of transfusion was >4 hours which is against current adult guidelines. 3 of these were paediatric patients in which this may have been appropriate.
**Indication for transfusion:**

Multiple indications for transfusion were given in some cases and this required the data to be cleaned so that only the most relevant indication was used (e.g. if Hb <70g/l and Hb <80g/l both selected this was only included in the Hb <70g/l category). Most red cell transfusions appeared to be appropriate, with the majority (66%) given either for Hb <70g/l or acute blood loss. All platelet transfusions were considered to be appropriate. It was interesting to note that 27% of red cell transfusions were single unit transfusions.

Most transfusions were considered to be appropriate to proceed overnight, especially those given because the patient was bleeding / symptomatic or at risk of bleeding with a low Hb or platelet count.

However, 21 transfusions were given overnight for no clear reason. In addition 2 transfusions were given overnight for discharge the following day and 2 transfusions were given overnight due to a delay in sample receipt in Blood Bank. These are inappropriate reasons for transfusing overnight. In some cases the patient was discharged the next day and it could be suggested that transfusion went ahead overnight to facilitate this, but the auditor did not feel there was sufficient evidence to support this conclusion.

31% of patients audited had significant cardiac or respiratory co-morbidities which may have influenced the clinical team’s decision to transfuse overnight.

There were 7 platelet transfusions documented as given overnight (4%) and these all appeared to be appropriate. (1 patient received platelets and RBCs).

Most patients had a post-transfusion Hb taken and the majority fell within acceptable levels. However in 4% (6 cases) the post-transfusion Hb was >120g/L suggesting that they may have been over transfused.

**Monitoring of patients during transfusion:**

It was intended that this audit should also collect data on monitoring of patients during overnight transfusions, especially as the 2007 National Comparative audit of overnight red cell transfusion found that only 55% of patients audited had observations documented within 15 minutes of the start of the unit. Unfortunately due to an error in the electronic audit proformas the data collected was meaningless and so could not be used.

**Conclusions**

The majority of transfusions occurring out of hours appear to be appropriate transfusions, and it also appears that it was appropriate that they were given out of hours given the clinical reasons and indications provided. There were however quite significant delays observed in the process and it has to be asked whether a significant number might have been given during normal working hours had the delays not occurred.
Recommendations

1. Although it is recognised that there is a move towards 7 day working, more errors in the transfusion process have been shown to occur out of hours. Trusts should therefore put mechanisms / guidelines in place to limit out of hours transfusions to only those clinically appropriate.

2. Trusts should put mechanisms in place to review and monitor out of hours transfusions to ensure that only appropriate transfusions are requested and administered out of hours.

3. Trusts should develop agreed guidelines detailing the categories of patients and the applicable investigations which are acceptable for laboratory staff to process out of hours.

4. Trusts should explore the local reasons for delays in the transfusion process and put in place measures to limit these to facilitate transfusions during normal working hours wherever possible. The findings of this audit should be fed back to clinical teams to promote discussion around clinical delays in the transfusion process and how this can be improved.

5. RTC audit group to scope and pilot an audit specifically looking at delays in the transfusion process.

References


Stainsby, D et al. on behalf of the Serious Hazards of Transfusion (SHOT) Steering Group. The 2005 Annual SHOT Report. Available at: http://www.shotuk.org/shot-reports/


## Appendix 1

### Additional comments regarding policies

11 replies were received

### What does your policy say about transfusion out of hours?

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Transfusion Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidderminster Hospital</td>
<td>Policy does not mention out of hours transfusions.</td>
</tr>
<tr>
<td>Birmingham Children’s Hospital</td>
<td>Blood components are not routinely transfused between the hours of 23.00 and 07.00 due to the risk of transfusion reactions. Blood transfusions that are clinically indicated as urgent and time critical or due to surgery should, however, be given as required.</td>
</tr>
<tr>
<td>Birmingham Women’s Hospital</td>
<td>Blood transfusion should not take place between the hours of 22:00 to 08:00, except in clinically urgent/emergency situations.</td>
</tr>
<tr>
<td>Hereford County</td>
<td>No mention</td>
</tr>
<tr>
<td>Worcester Royal</td>
<td>The current transfusion policy does not include information on out of hours transfusions.</td>
</tr>
<tr>
<td>New Cross Hospital</td>
<td>The commencement of the transfusion of blood products out of core working hours i.e. between 2000 and 0800 must only occur if clinically indicated and the reason must be documented in the patient’s medical records. Under no circumstances will routine transfusions be commenced during this period.</td>
</tr>
<tr>
<td>Russells Hall Hospital</td>
<td>Transfusions must not take place at night unless clinically indicated. All night-time transfusions (except in certain areas – ED, EAU, Critical Care, Coronary Care Unit, Theatres, Obstetrics, Neonatal Unit, Georgina isolation unit) must be authorised by a Site Coordinator. Night-time transfusions are considered to be those taking place between 9pm and 7am.</td>
</tr>
<tr>
<td>North Staffordshire</td>
<td>Transfusion must only take place when there are enough staff available to monitor the patient and when the patient can be readily observed. Overnight transfusions should generally be avoided unless clinically essential.</td>
</tr>
<tr>
<td>Queens Hospital, Burton-on-Trent</td>
<td>Transfusions at night (between 8pm and 8am) should be avoided to minimise the increased risk of errors. This also minimises sleep disturbance, checking errors, and allows for easy identification and treatment of adverse events and subsequent care of the patient. Exceptions to this include transfusions required for urgent clinical need. Queries about this should be discussed with the prescribing doctors, and if necessary, with the Clinical Site Practitioner.</td>
</tr>
<tr>
<td>Princess Royal Hospital, Telford</td>
<td>Transfusion policy Nov 2015. Transfusion at night must proceed where there is a clear clinical indication and may be given as long as the staffing is sufficient to permit the transfusion. The transfusion should be given with the same attention to patient observations as a transfusion given during the day.</td>
</tr>
</tbody>
</table>
Appendix 2

Did the patient’s clinical notes provide sufficient indication that the transfusion should proceed out of hours / overnight?

YES:
- Still PR bleeding with abdo pain.
- sepsis HDU admission
- Total abdominal hysterectomy, low Hb symptomatic of blood loss
- Need urgent dialysis at New Cross Hospital, single unit to be transfused immediately.
- road traffic collision, #NOF, usually on warfarin, heparin infusion.
- 1 unit to be given due to low hb for MDS and acute coronary syndrome
- sepsis dropping Hb
- multiple laparatomys, drop in Hb,
- PV bleeding sepsis, PE, multiple inotropes
- HAEMATEMESIS & MELAENA
- PRB LOW HB TRANSFUSION ASAP
- pre procedural endoscopy
- Patient unwell required admission to PICU Increased RR decreased HB . Theatre for drainage
- PICU patient Dropping HB
- Patient was bleeding PR 17 episodes. patient very tachycardia.
- patient short of breath and dizzy when standing
- Operation record recorded with the details of the procedure
- Patient returned from theatre, later respiratory arrest , Transferred to PICU
- patient was bruising easily and nose bleed with reducing HB throughout the day
- chest pain radiating down left arm, dyspnoea, melaena

PR BLEED
- Patient has IHD, for surgery in the morning. Need to optimise pt. Hb 71 First on list symptomatic. acute fatigue. Hb 65.
- Chronic GI bleed with IAD. Requires 3 x SAGM overnight as pt transfer to Stoke tomorrow for a proc
- If HB less than 80 overnight for 1 unit SAG-M.
- Nurse- active PR bleeding, Tx delayed due to cannulation, dr verbal request to Tx overnight.
- Cardiac arrest so urgent situation
- Patient in theatre. Documented blood loss.
- For 1 unit of RBC overnight, then 2 during the day.
- Developed at 4th degree tear during a ventouse delivery with estimated blood loss of 1,000ml.
- Hb71 Tachycardia
- 3000mls PPH
- Transfuse 2 units RBC tonight.
- PPH 1300mls Tachycardia
- Hb 87 acutely unwell
- 2 units RBC planned, sudden drop in Hb. Patient requesting overnight transfusion.
- In view of PMH- MI and HB73 patient for 1 unit of blood overnight
- On Call SHO advised to give blood @ night as patient became symptomatic
- Vomited fresh blood x 2. For 2 units of RBC.
- Drop in Hb 93 - 79, daytime medical staff requested night staff to chase results for transfusion.
- Dizziness, SOB
Hb 61. PR bleed. 2 x RBC overnight.  
Patient initially refused transfusion  
Post op drop in Hb to 52  
Hb was low, patient had low BP, Dr spoke with haematologist who advised transfusion. 
Patient unresponsive, recovered but MEWS 5, Hb low, transfuse RBC asap  
Hb 99.6 before transfusion  
Hb on ABG 68, 1 pool PLTS in view of ooze from R vas cath femoral line  
BP 94/56, HR 106; PLAN: 1 UNIT TONIGHT, 1 UNIT AM  
BREATHELESS, UNABLE TO COMPLETE SENTANCES, HB 76, 2 UNITS RC 1 OVERNIGHT, 1  
TOMORROW  
MASSIVE TRANSFUSION IN THEATRE, ON ITU WITH OPEN WOUND, HB LOW  
PATIENT WAS IN THEATRE, GIVEN AS PART OF MASSIVE TRANSFUSION  
Increased Fatigue and Dizzy  
Post op bleeding  
Spoke to Cons Haem due for surgery #NOF, patient in a lot of pain, trans delayed due to inc in  
Temp  
Post op Hb 65  
Hb 51 patient symptomatic due to have vivostat procedure  
Low Hb post op, L Hemi  
Symptomatic anaemia for colonoscopy  
Melena and GI Bleed  
Anaemia from slow bleeding gastric ulcer  
# bilateral pubic rami with pelvic haematoma with active bleeding. MHP activated  
Patient had high pulse and low BP, thought to be related to Hb 70. Doctor advised to give 2nd  
unit.  
Patient symptomatic - weak, headache, dizzy  
Patient bleeding from stoma, Hb 66. On rivaroxaban  
Post-op patient very tachycardic, hypovolaemic. Hb on ABG 62.  
Coffee ground vomit then cardiac arrest  
Hb 63, unwell, dizziness  
Needed urgent bloods taking prior to surgery. Surgery scheduled for early am. Bloods taken at  
05:00  
Due to low platelet count on evening of blood test result. Authorised by consultant haematologist  
Second of 2 units. Patient to have further 2 units next day during normal hours  
Elective - 2nd OOH Tx ended at 22:46  
Low Hb, very ill  
Severe anaemia  
Drop in Hb. Patient tachycardic  
Cardiac Arrest  
Active bleeding  
Childbirth  
Justified due to patients condition  
Unable to locate notes  
Tx due to patients condition  
Neonate- received cryoprecipitate transfusion  
Childbirth  
Childbirth
Unclear - please state what was noted:
HB NOTED TO HAVE DROPPED FROM 99 TO 63 AT 15:50
HB 74
States in patients notes at 20.00 blood not ready. Blood was available at 18.58. Platelets given.
Discusses Patients declining of hygiene needs
There was no clear plan for out of hours transfusion
Duodentitis with active bleeding.
anaemic, symptomatic
PLAN 3 X RED CELL ON ADMISSION
BT X 2 UNITS
INITIAL MANAGEMENT PLAN 2 UNITS RBC
TRANSFUSE IF HB <80
16:40 1 UNIT TODAY, ONE TOMORROW
For 2 units of blood then iron infusion.
Appears that the transfusion started early in the morning to facilitate discharge.
"1 unit of RBC may give symptomatic relief for low BP."
Transfusion prescribed for anaemia
Transfusion prescribed for anaemia
For 2 RBC prior to ERCP tomorrow.
For discharge following transfusion.
All documentation regarding transfusion was not available as on postnatal notes.
Will ask night colleague to repeat bloods, if still anaemic for consideration transfusion
Patient bleeding
If not too late for 1 unit tonight, if not then 1 unit in the morning
Patient in theatre
In theatre
IDA
Anaemia
Hb 79
Chronic lung disease, on CPAP
Post-op Hb <80
Unable to get notes
Unable to get notes
Pt admitted for anaemia correction. 1 unit on day of admission and 1 following day. 2nd sample delay
Unable to locate notes
Drop in BP but no clear plan by Doctors for transfusion
Unable to locate notes
Transfuse 2 units then check am
Red cell plus platelet transfusion. Platelets given later in the day
Unable to find notes
Unable to locate notes
Appendix 3

Additional comments

Q25 TEMPERATURE TAKEN 30 MINS AFTER TRANSFUSION NOT 15
Q5- LOWER GI BLEED

Patient became symptomatic and required surgery. Transfusion was not based on HB result alone
Patient was 11 days old with a new diagnosis of a metabolic disorder. Nursed in PICU
Delay in sample being taken on ward 11.55 and arriving in the lab 13.25
Patient has lots of social issues and requires negotiation.
Issues related around receiving samples due to patient’s clinical picture and poor venous access.
Blood was issued in advance for the maxi
It is documented in the notes that the 2 units of blood were requested at 16:40. Sample not received in the laboratory until 20:46
Patient became unwell and transferred to theatres blood given as part of the procedure
Patient 3.5 months old complex ex prem
Hb 100 after 2 units. The third unit of the episode was given in recovery at 10:40
Post transfusion Hb recorded after the 2 unit of 4. Hb 99 on the 9/7/16 following 4 units
Patient was admitted from haematology clinic with severe fatigue for transfusion and then home as was starting third cycle of chemo
PATIENT PRE TRANSFUSION HB = 46. Massive UGIB. TX 5 units in total in this episode
Received in lab 12.00.
Received in lab 21.52.
Transferred to ITU and died following severe type 2 necrotising fasciitis. Sample received in lab 17.21.
Sample received in lab 19.14
Sample received in lab 17.05. Delay between unit 1 and 2 due to cannula problems.
Sample received in lab 20.59.
Sample received in blood bank 03.34.
Sample received in lab - 02.52
Sample received in lab - 01.22.
Sample received in lab - 20.47. NHSBT cross-match
Sample received in lab - 23.55
Sample received in lab - 22.24.

4 units were ordered, 2 administered. Due to on-going bleeding during the following day a decision was made to administer the other two.
Died 7 days post transfusion
Sample received in lab 16.21. NHSBT cross-match.
Sample received in lab 16.05. Patient having ERCP and stent the following day.
Sample received in lab 19.00.
Patient refused 15 minute obs
Sample received in lab 12.37. Patient in clinic. Tx commenced when admitted.
All documentation relating the transfusion was made in the patient's postnatal booklet, this was sent home with the patient on discharge and

UNABLE TO LOCATE OBSERVATION CHART, NO DETAILS RECORDED IN NOTES.

UNABLE TO LOCATE CARE PATHWAY OR OBSERVATION CHART TO IDENTIFY WHEN TRANSFUSION STARTED OR BE ABLE TO RELATE ANY OBSERVATIONS FOR THIS TR

Patient deceased

Patient due at stoke hospital for planned procedure

Patient died day 4 post transfusion

Unknown time transfusion completed, next set obs 07:12

Unknown time when unit completed, next set obs 05:59.

Next set obs 04:04 - likely post transfusion

Next set obs 11:41 - presumably post transfusion

Next set of obs 12:52

Next set obs 17/07/16 at 01:50

Blood requested electively for 15/07/16 12 noon. Subsequent unit started 15/07/16 21:05, presume 1st unit completed by then.

Patient died 3 days post transfusion

Patient died

Not overnight - at weekend, classed as out of hours in lab

Crossmatched during Sunday day - classed as out of hours in lab. Not given until Monday day.

Transfused during weekend-day. Classed as out of hours for lab.

Crossmatched weekend day - out of hours for lab. Not transfused until Monday day.

RIP

Patient obs recorded using "Vitalpac" - no access to this system so details not recorded

Unable to find a lot of data for this transfusion

This episode refers to a platelet transfusion

Obs and transfusion times etc not known

TP does not have access to obs info etc

Pt admitted from OP clinic for a 3 unit transfusion

Unable to locate notes

Platelet transfusion (see dates times). Post transfusion platelet count taken = 42 at 07:55, 15/07/2016

Patient died

Patient died

Post Tx Hb after 2 units

Patient died

Unable to find notes for data

Unable to locate notes

Baby - received cryo and FFP

Data missing - unable to locate notes