National Comparative Audit
of Blood Transfusion

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2011 Re-audit of Bedside Transfusion Practice

October 2011

St. Elsewhere's NHS Trust

Acknowledgements

We wish to thank all those who have participated in the 2011 Re-audit of bedside transfusion practice. We recognise that those giving up their valuable time have been many and that this will inevitably have been on top of a heavy workload. This audit would clearly not be possible without their support. We are equally grateful to many colleagues for their valuable and constructive comments.

HOSPITALS THAT AGREED TO PILOT THE AUDIT

Chesterfield Royal Hospital, Darlington Memorial Hospital, Frimley Park Hospital, Great Ormond Street Hospital, Ipswich Hospital, James Cook University Hospital, Milton Keynes Hospital, Stirling Royal Infirmary, Sunderland Royal Hospital, Tameside General Hospital, Taunton & Somerset Hospital, Trafford General Hospital and Ysbyty Gwynedd.

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Foreword by Janet Davies
Director of Nursing & Service Delivery

Dear Colleague,

It gives me great pleasure to have been part of this very valuable audit of practice. Blood is vital to the delivery of healthcare in the UK and blood safety and the safety of transfusion practices are a core element of our patient safety strategy. Whilst nurses are integral to safe and successful blood transfusion, all staff involved in the patient pathway share responsibility for identifying where risks exist and ensuring these risks are managed or removed. This report highlights the excellent progress in improving the safety of transfusion : however we can improve further. Reducing the risks associated with lack of patient identification and undertaking observations are the foundations of safe practice. The recommendations calling for 'never events' associated with lack of identification and patient observations should be welcomed in order to support staff working at the clinical level to protect patients further.

On behalf of the Royal College of Nursing I would like to extend my gratitude to all the practitioners and organisations that have contributed their time and experience to this audit and report in addition to their key roles in ensuring the safety of blood and its transfusion at the clinical level.

Janet

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How to use this report

You should use this audit report to evaluate the quality and safety of bedside transfusion practice in your hospital with reference to the national guidance and to your own local blood transfusion policy.

Immediately following the closure of the audit in July 2011, participating sites were issued with a brief interim audit report (see Appendix B) containing 'your site' results only. This report can be found on your hospital audit homepage https://www.nhsbtaudits.co.uk/. We asked you to use this interim report to validate your results and let us know of any data entry/data transmission errors or any missing data. In addition, where the interim report highlighted that one or more of the six standards were 'not met', you were encouraged to review any non-compliance with the audit standards. This gave you the opportunity to immediately take action to improve practice relating to patient identification and monitoring of vital signs during an episode of blood transfusion, where appropriate.

This national comparative audit report contains the validated audit data on the six audit standards reported to participating sites in July. There is a detailed analysis of the entire audit with a commentary on the findings from the project group.

The report is divided into discrete sections, the first of which focuses on the safety of bedside transfusion practice, while the second covers supplementary information from the audit such as forms of identification used, additional identification, documentation and training. In section three, where available, trends in national audit findings are shown for the bedside transfusion audits that cover the period from 2003 to 2011.

The results for the audit are shown as national results with 'your site' results displayed alongside for comparison purposes. Where comparison of an important variation in practice has been identified, other further comparisons have been made using subgroup analysis, where appropriate. Comparison of results for the Regional Transfusion Committee (RTC) regions in England and for Wales, Northern Ireland and Scotland will be provided in the form of regional PowerPoint slide shows.

We suggest you use both your local audit findings and the national comparisons given to assist you in evaluating the quality and safety of the administration of red blood cell transfusion in your hospital. You should also take opportunities to share these results as widely as possible.

You should bear in mind that practice may vary from that suggested by the guidelines because you have a local policy that differs from the published guidance. Before dismissing any results as not applicable to you because of policy differences, you should first ask if your policy facilitates the safe and effective checking of patient identity and monitoring of the patient during transfusion with reference to local risk assessments.

Use the documents given in the reference section, namely the 2009 BCSH Guidelines on the Administration of Blood Components and the NPSA safer practice notices for information on the evidence-base for this audit as well as links to other useful documents, templates and toolkits for implementation.

The recommendations given by the audit project group are generally addressed to all healthcare practitioners involved in blood administration but some may be specifically targeted at policy makers. Refer also to the implementation guidance at Appendix E and the best practice notes at Appendix F.

Sharing of information

The Department of Health places a requirement on NHS Trusts to provide an annual 'Quality Account' to "enhance accountability to the public and engage the leaders of an organization in their quality improvement agenda". There is a list of national audits that are to be included in a Trust's Quality Account and for this purpose we have produced a template in line with DH guidance, which you might wish to use when compiling your statement to your Clinical Governance Lead (Appendix D). Quality Accounts are publically available via the "NHS Choices" website.

We have for some years provided the Care Quality Commission (CQC)[1] with the names of sites that participate in our audit programme. Prior to this re-audit, we met with the CQC and considered whether information suggesting outlying performance for two key indicators should also be shared, according to the recently published guidance on the detection and management of outliers in national audit [2]. We notified participants at registration and when the interim report was issued that we intended to do this.

However, the statistical definition of outlying practice as an 'alert' (where performance is more than 2 standard deviations from the mean) and an 'alarm' (where performance is more than 3 standard deviations from the mean) is difficult to apply where the sample size is relatively small and the audit outcome data are categorical not numerical . The sample we collected for this audit is small compared to the number of transfusion events taking place in any one organisation. UK blood services issued 2.18 million red cells for transfusion in 2010 [3] and this re-audit covers nearly 10, 000 transfusions (less than 0.5%).

We have therefore decided that we do not have sufficient data to provide information to CQC on outliers, but instead will provide them with names of participants as before.

Hospitals should use the plot of performance against Standard One (wearing a wristband) on page 18 to see if they are outliers.

Executive summary and Key findings

The 2011 Re-audit of Bedside Transfusion Practice specifically addresses two serious risks. These are the risk of misidentifying the patient to be transfused and the risk of the patient experiencing an undetected transfusion reaction. Serious harm arising from receiving an ABO incompatible transfusion or wrong treatment administered because a patient is not wearing a wristband are considered 'never events'. The aim of this audit was to identify poor bedside practice that could potentially result in a serious adverse event related to transfusion.

This was an audit of healthcare practitioners and the majority of audited bedside practice is excellent. This audit shows that good policies, effective teaching and competent healthcare staff deliver safe blood transfusion care to patients. Successive bedside transfusion audits have shown improvement in practice. Trusts and hospitals who have performed well against the audit standards should share with others how this has been achieved.

247 sites (96.4% of NHS Trusts) participated in this audit during April, May and June 2011 and contributed data on 9250 transfusions.

Wristbands

- 2.3% of patients were not wearing wristbands at the time of the audit despite the fact that a blood transfusion was in progress. In 39% of participating sites there was at least one of the submitted audit cases not wearing a wristband.

- Children (9.5%, 36/380) and neonates (12.9%, 19/147) were less likely to be wearing wristbands at the time of transfusion than adults (1.8%, 161/8721).

- Where wristbands were being worn 99.4% contained the four core identifiers (first name, last name, date of birth and NHS or other unique patient ID number).

- Where patients were able to verbally state their full name and date of birth, 99.5% of these matched with the details on the wristband. Of the 36 cases where there was a discrepancy, the patient was able to correct the date of birth or the spelling of a name.

- 98.9% of checks between the wristband and the blood bag and 97.3% the checks between the wristband and the prescription were satisfactory and therefore could lead to safe blood administration.

Observations

- 85% of patients had all four pre-transfusion observations (pulse, temperature, blood pressure and respiratory rate) and 87% had observations within 30 minutes following the start of the transfusion, but only 84% had the required 3 observations at the end of the transfusion.

Worse case scenario

This is defined as a transfusion taking place with no wristband and no observations before, during or after transfusion. This occurred in only 3 cases, who were all adults from 3 NHS hospital sites (0.03% of all audited cases). 24 cases were given a transfusion with no wristband and no pre-transfusion observations (0.3% of all audited cases).

Conclusions and recommendations

Blood transfusion policies and patient identification policies should be compliant with the BCSH and NPSA guidance.

- The Hospital Transfusion Team should work with the hospital group responsible for the patient identification policy to ensure that the policy specifically covers blood transfusion.
- Wristbands should conform to the NPSA specifications and it is the responsibility of the hospital to include this in their patient identification policy.
- The blood administration policy should state 'no wristband, no transfusion' and it should be the responsibility of the person administering the blood to ensure a wristband is applied if it is found to be missing.
- A risk assessed alternative should be in place if the patient either cannot wear a wristband or refuses to wear a wristband. For each individual case there should be a clear rationale why an alternative has been used.
- NHS hospitals in which a unique national identification number is not currently being used should make every effort to use the unique national numbers as soon as their technology allows.

Healthcare staff involved with any aspect of blood transfusion require training against the local policies. Staff who have not been trained should not be allowed to administer blood.

- Hospitals should consider that any patient transfused without wearing a wristband has been placed at serious risk and should investigate the circumstances, taking corrective action where necessary.
- Blood should not be transfused if any discrepancy is noted by the healthcare practitioner carrying out the bedside check. Ideally the discrepancy should be corrected and the blood reissued with repeat blood sampling if necessary.
- If a form of identification other than a wristband is used it should be able to be physically attached to the patient not to the cot, incubator, bed, chair or other item of equipment that could result in the identification being transposed.

This audit is only a sample of transfusions and the healthcare staff giving them. Particular issues with identification of neonates and children have been highlighted by this audit. It is also recognized that this audit may under-represent emergency and out-of-hours transfusions.
Hospitals should use this audit tool or something similar to look at emergency and out-of-hours transfusions, transfusions at community hospitals or hospices supported by the HTC.

- Hospitals should also audit practice in non-standard settings such as ITU, PICU, theatre recovery and on day units to ensure that standards of bedside administration and patient care are consistent throughout all areas.
- Hospitals should report non-compliance with any key audit standards as an incident and investigate using Root Cause Analysis, with appropriate corrective and preventative action

Every effort should be made to make transfusion safe for patients. Patients themselves have an important role to play in good bedside practice.

- Patients should be encouraged, where possible, to take an active role in the bedside check by stating their full name and date of birth, helping ensure correct identification.
- Healthcare staff should ensure that post transfusion observations are carried out prior to the discharge of day case patients and should provide contact information for the patient to use in the event of them feeling unwell aster the transfusion.
- Campaigns such as the 'Do you know who I am?' initiative, patient information on what to expect and adverse effects to look out for are useful ways to promote involvement.

Electronic systems support many aspects of blood transfusion. Systems to support compatibility checking at the bedside are available but this audit showed they were used in only 4% of audited cases. Patient administration systems to print wristbands and laboratory information systems to print tags attached to blood units are more widely used, but this audit showed that problems can occur with these systems which can compromise the bedside check.

- Where wristbands are printed from the patient administration system, there should be 24/7 access to this facility for the staff responsible for printing wristbands and a contingency for providing an alternative in the event of a system failure. All staff should be trained in the use of the alternative system.
- All IT systems that are used to support blood transfusion should use the same core set of patient identifiers.

Introduction and background

The importance of giving the right blood to the right patient and the care of the patient during a transfusion has been highlighted by reports to SHOT, a confidential reporting scheme set up to identify adverse outcomes from transfusion in the UK since 1996. Annual reports from SHOT [4] have repeatedly shown that failure of the bedside check is the single most important error in the transfusion process leading to the wrong blood being given to the wrong patient.

Guidelines covering the correct procedures supporting safe administration of blood were updated in 2009 by the Transfusion Taskforce of the British Committee for Standards in Haematology (BCSH)[5]. The Health Service Circulars 'Better Blood Transfusion' [6] have provided a framework outlining the responsibilities within hospitals in delivering safe and effective blood transfusion. Hospital Transfusion Committees and Hospital Transfusion Teams are tasked with ensuring that all staff involved in the process of blood transfusion are adequately trained and that robust policies are in place to cover all aspects of transfusion care. These policies must specifically include the bedside administration checks and the care of the patient during a transfusion as well as the management and reporting of any adverse events.

External oversight of the quality of patient care by the Care Quality Commission (CQC)[1] and of risk management arrangements by the NHS Litigation Authority (NHSLA) [7] contains standards that cover correct patient identification and blood transfusion. In addition to implementing the policies mentioned above, audit of compliance is required as is evidence of appropriate corrective and preventative action where compliance is poor or adverse events have occurred.

A series of national audits of bedside transfusion practice have been carried out since the mid 1990s with the last performed in 2008[8]. Those audits have highlighted that a small proportion of patients receiving blood were extremely vulnerable to errors due to lack of adequate identification and observations. Such incidents could result in avoidable harm occurring to transfused patients either because they could be given blood intended for someone else or because acute transfusion reactions could be missed.

A series of Safer Practice Notices (SPNs) from the National Patient Safety Agency (NPSA) directly and indirectly cover aspects of blood transfusion safety. This started in 2005 with guidance on the safety of inpatient identification using patient ID wristbands [9]. In 2006 the SPN "Right Patient, Right Blood" provided a competency framework for healthcare staff involved with sampling, collecting, checking, administering and observing patients having a transfusion [9]. More recently, in 2011, ABO incompatible transfusions have, quite rightly, been designated a 'never event' [10]. NPSA reiterates that their guidance continues to represent best practice.

The 2010 SHOT report demonstrates that all of these initiatives appear to have had a beneficial effect on the safety of blood transfusion. Wrong blood errors due to failure of bedside administration checks continue to reduce and have now reached an all-time low. At the same time, the number of acute transfusion reactions being recognised and reported has risen dramatically and is presumed to be as a result of the improved awareness by all healthcare staff about the benefits and risk of transfusion.

This audit provides the opportunity to see if this improvement in outcomes is reflected in good bedside practice and to target any further improvements to problem areas where practice fails to meet standards. In addition to educating and competency testing healthcare staff's skills related to transfusion, various tools have been developed to support this process. Documentation such as

transfusion care pathways, transfusion prescriptions and observation charts have been designed to promote good practice. Technological solutions have been developed to improve blood transfusion safety. For example, electronic bedside tracking systems using barcodes and handheld barcode scanners facilitate the bedside check. The scope of this audit has been widened to record their use.

Aims of the audit

The key aim of this re-audit was to determine whether the 2009 BCSH guidelines for the administration of blood components are being followed at the bedside and to determine if there has been any further improvement compared to previous audits.

Audited aspects of bedside transfusion practice include: Wearing of identification such as wristbands, completeness and accuracy of information on the wristband, the reason for not wearing a wristband during a transfusion, the presence of alternative forms of identification, that the date and time of transfusion have been recorded and that observations have been recorded before, during and after the transfusion. There is also an attempt to see whether any specially developed documentation or technology used to support bedside transfusion practice has a beneficial effect.

Audit standards

The following standards are taken from the 2009 BCSH guidelines [5] and the NPSA safer practice notice [9]. Please see the links to references and resources section for these and other key documents.

Standard One - A patient having a blood transfusion is wearing a wristband.

Standard Two - The patient's wristband contains the patient's first name, last name, date of birth and NHS or local identification number.

Standard Three – The patient's identity is checked prior to transfusion by asking the patient to state their full name and date of birth wherever possible and checking these against the wristband worn. If the patient cannot respond, the identity details on the wristband are checked with the tag attached to the unit of blood and the prescription.

Standard Four – Pulse, blood pressure, temperature and respiratory rate are measured before a unit of blood is transfused.

Standard Five – Pulse, blood pressure and temperature are measured at 15 minutes after the transfusion starts.

Standard Six – Pulse, blood pressure and temperature are measured at the end of each transfused unit.

Methods

Transfusions were audited during a three-month period between April 4th and July 1st 2011.

SITE SELECTION AND RESPONSE

All hospitals in England, Scotland, Wales and Northern Ireland where clinical transfusions are undertaken were invited to take part. Although some participants elected to take part as a Trust (or Hospital Board) hospitals were intended to be the unit of involvement, since practice may vary from hospital to hospital within a Trust. However, data were submitted by Trusts as a whole and by individual hospitals. Therefore, the term 'sites' is used throughout this report to refer to either Trust or hospital.

Invitations were extended, on this occasion, to community hospitals and hospices but uptake was poor. Because of the importance of auditing bedside transfusion practice in all locations, the project group is considering repeating this audit specifically for transfusions that take place outside the acute hospital setting.

Sites who did not register were asked to give a reason for non-participation. Some had recently undertaken local audits of bedside transfusion practice or stated that the audit topic was not considered a local priority. It is recognised that resources to undertake audit are limited. A common reason given was lack of staff to perform this audit or that staff were engaged in other competing local or national audits.

CASE SELECTION AND QUOTAS

Sites were asked to audit 40, 50, 60 or 70 transfusions, according to their annual red blood cell usage based on the Blood Stocks Management Scheme classification [11]. Hospitals with very low blood usage (fewer than 800 units per year) were still encouraged to participate and, in this group, it was acceptable to audit as many transfusions as possible within the three-month period. This does not give a very representative sample, but is acceptable for the purposes of an audit snapshot.

Sites were asked to provide details of the clinical areas in which red cells had been transfused during the three-month period October to December 2010. These figures, where provided, were used to calculate a suggested number of cases that should be audited within certain clinical areas and was to facilitate representative sampling.

Hospitals were reminded that this was an audit of the work of healthcare professionals, and therefore were requested not to audit the same patient more than once and the same healthcare professional more than twice.

The time at which cases should be audited was not specified but, as noted in previous audits of bedside transfusion practice, 85% of audited transfusions were started between 8 a.m. and 6 p.m. It is generally advised that transfusions should not take place out of normal working hours unless the transfusion is deemed urgent because of the increased risk of adverse events being undetected by virtue of the reduced availability of staff to monitor the patient and the reduced level of medical and laboratory support available overnight. Urgent and emergency transfusions are likely to be under-represented in this audit sample.

USE OF THE TOOL AND GUIDANCE NOTES

The audit tool was designed to audit compliance with the recommendations of the 2009 BCSH guidelines for blood administration [5]. This updated guidance should have been implemented by hospitals since the last national audit of bedside transfusion practice in 2008.

Transfusion episodes were identified prospectively through the transfusion laboratory and the first part of the audit was conducted by the auditor visiting the clinical area. The audit therefore took place during the transfusion and by direct observation but not necessarily at the time that the bedside checks were being carried out. The second part of the audit was then completed sometime after the transfusion had finished, by reference to the documentation of the transfusion episode.

DATA ENTRY, CLEANING AND VALIDATION

The audit data from the transfusion episode was entered via a web-based audit tool specifically designed for the purpose although data could be collected on a paper proforma that was available to download.

Submitted audit data was collated by the audit project manager after the closing date for data entry and prior to issuing an interim report to participating hospitals. Because no patient identifiable data is recorded on the website, auditors were recommended to keep an audit linkage record to assist in review of cases and validation of data.

Hospitals were asked to validate the audit results and were given the opportunity to contact the audit project manager with details of any data entry/data transmission errors or any missing data so that the database could be corrected prior to statistical analysis for the final report. The database was amended accordingly, mainly to rectify instances of missing data.

RATIONALE AND RISK STATEMENT

The 2011 Re-audit of Bedside Transfusion Practice specifically addresses two serious risks which could occur if correct procedures are not followed by healthcare staff involved in administering blood to patients. These are the risk of misidentifying the patient to be transfused and the risk of the patient experiencing an undetected transfusion reaction.

MISIDENTIFYING THE PATIENT

Being given blood intended for another patient is a 'never event' [10]. Guidelines state that a patient has a form of identification physically attached to their person [5] [9] and this identification must contain sufficient information to ensure that the right patient is being given the right blood.

Healthcare practitioners and professional groups universally endorse the view that correct identification is essential prior to any therapeutic intervention such as drug administration, surgery and, of course, transfusion. Verbal identification in outpatients is used to positively identify patients in the absence of wristbands. For inpatients and day-patients, wristbands must be attached to the patient as an additional step to ensure positive patient identification and used in parallel with verbal identification wherever possible. Patients are not always able to communicate their identity either because of language barriers or if they are unconscious or confused.

All of the following four demographic identifiers should be available on the wristband; date of birth, first name, last name and NHS (or equivalent) or local hospital number.

Three of these identifiers are susceptible to duplication, whereas the NHS (or local hospital) number is unique. Having the unique identifier alone, however, is not sufficient, because it is also necessary to ask the patient to confirm identity before transfusion starts, and the patient would not be expected to know their NHS (or local hospital) number.

UNDETECTED TRANSFUSION REACTION

A transfusion reaction is detected by looking for a change in the patient's observations after the transfusion has started. This requires a baseline set of observations, a set of observation 15 minutes after the transfusion has started and another set within 60 minutes of the end of the transfusion. If pre-transfusion observations are omitted it may be more difficult to evaluate the significance of a rise in pulse or temperature and the risk of not performing observations after the transfusion has started is that a potential transfusion reaction will go undetected.

The 2010 SHOT report[3] relates 1 case of a sudden, unexpected death during a red cell transfusion. The death was attributed to an anaphylactic reaction, and SHOT goes on to say "This adverse reaction presents a challenge since although it occurs most frequently during the first 15 minutes of transfusion (mean time to onset of 26 minutes in the cases reported in 2010), there is a risk throughout the transfusion episode. This emphasizes the requirement for regular visual observation of patients during the transfusion episode and that patients must only be transfused where there are facilities to recognise and treat this reaction".

PATIENT IDENTIFICATION AND PATIENT ID NUMBER

In this audit we acknowledged that there may be different forms of patient identification in use, but the Department of Health, the British Committee for Standards in Haematology and the National Patient Safety Agency all make reference to "wristbands". Throughout this report we will use the term 'wristband' to mean any other form of identification used.

Similarly, where we use the term 'NHS number' it should be taken to mean the HSC number in Northern Ireland and the CHI number in Scotland, where we have not specifically said this.

Section One – Principal findings

This section contains the results from the audit, showing national data to compare with the results from your hospital or Trust site, where such a comparison is informative.

We present the data as they relate to the six standards that were set for the audit.

PARTICIPATION AND SAMPLE SIZE

167 NHS Trusts and 165 Independent hospitals in England, Scotland, Wales and Northern Ireland were identified using the NCABT database and NHSBT Customer service database. Those organizations were emailed an invitation to register.

Table 1 – Participation given by country

Country	Status	Number of sites	Median (IQR), range of the number of cases per site	Total cases
England	NHS	182	41 (31-60), 1-100	7936
	Independent	34	8 (5-12), 1-34	312
	Total	216	40 (19-51), 1-100	8248
Scotland	NHS	9	24 (20-40), 8-43	246
	Independent	1	2 cases	2
	Total	10	23 (17-40), 2-43	248
Wales	NHS	12	32 (18-50), 5-70	402
	Independent	1	6 cases	6
	Total	13	26 (15-49), 5-70	408
N Ireland	NHS	8	40 (18-50), 11-120	346
	Independent	0		
	Total	8	40 (18-50), 11-120	346
Total	**NHS**	**211**	**40 (27-56), 1-120**	**8930**
	Independent	**36**	**8 (5-12), 1-34**	**320**
	Total	**247**	**40 (19-50), 1-120**	**9250**

See regional/country slideshows for further breakdown of these data

Of these, 211 NHS sites (96.4% of NHS Trusts) and 36 (21.8%) Independent hospitals contributed data on 9250 transfusion episodes with a median of 40 cases per site (inter-quartile range 19-50 cases, range 1-120 cases).

Your site audited **40** cases and is a **Very High** user of blood according to BSMS criteria[11].

COMMENT

Where hospitals audited fewer than 10 transfusion episodes, the audit data is still considered to reflect practice providing this was proportional to their blood usage. Large users of blood auditing small numbers of transfusion episodes should consider whether their findings truly reflect the practice of healthcare practitioners in their hospital or Trust and should consider using the audit tool to undertake local audit to provide a more representative sample. This is just as important when your hospital results are good because you may not have good practice in all clinical areas.

Standard One - A patient having a blood transfusion is wearing a wristband

The BCSH guideline strongly recommends that all patients receiving a transfusion are positively identified using an accessible wristband (or risk assessed equivalent) securely attached to the patient (for example, to the upper or lower limb) and that this is used for the final administration check which must be conducted next to the patient by a trained and competent healthcare professional.

The National Patient Safety Agency recommends that all hospital inpatients and day cases, regardless of age, should wear a patient wristband as soon as they are admitted.

Table 2 – number and % of patients wearing a wristband

	National (9250)		Your site (40)	
	%	N	%	N
Is a wristband worn?	97.7	9034	**100**	**40**

Whilst 97.7% of transfusions complied with this standard, a small proportion (2.3%) of patients were not wearing wristbands at the time of the audit despite the fact that a blood transfusion was in progress.

When analysed by the country of origin, a significantly higher proportion in Scotland (5.2%, 13/248 cases) and Wales (4.2%, 17/408 cases) were not wearing a wristband, in contrast to England (2.2%, 182/8248) and Northern Ireland (1.2%, 4/346). Practice was better in the Independent sector with 0.3% (1/320) not wearing a wristband compared to 2.4% (215/8930) in NHS hospitals.

Practice was better for inpatients (1.8%, 132/7219) than for day cases (4.1%, 84/2029), and was better for adults (1.8%, 161/8721) than for children (9.5%, 36/380) or neonates (12.9%, 19/147).

Results were more similar for cases with transfusions starting between 8 a.m. and 6 p.m. (2.5%, 190/7609), for those starting outside of these hours (1.2%, 16/1332) and those where starting times were unknown (3.2%, 10/309).

The 216 audit cases not wearing a wristband were from 96 sites (median 2 cases, range 1-11 cases per site). Thus, in terms of this being a potential 'Never Event', 39% (96/247) of sites failed to meet this standard because at least one of their submitted audit cases was not wearing a wristband.

'OUTLYING' PRACTICE

The Healthcare Quality Improvement Partnership (HQIP) and the Department of Health recently issued guidance on the detection and management of outliers in national audits[2]. Because receiving an ABO incompatible transfusion is a 'Never Event' and it is unacceptable for any patient not to be wearing a wristband at the time of a transfusion, the expected compliance with Standard One was 100%. The overall rate of non compliance with this key standard at 2.3%, though unacceptable, is low statistically. In this section we attempt to identify sites with particular 'outlying practice' in relation to this standard relative to the size of the audit sample.

In Table 3 overleaf we present the number of patients in the audit who were being transfused without wearing a wristband in relation to the number of cases audited. You can use 'your site' results from Table 2 to locate 'your site' results within Table 3. The shaded area in Table 3 indicates those sites with audit results that are inconsistent ($p<0.05$) with the overall rate (2.3%) in relation to their sample size; in particular it suggests they may have more of a problem in relation to this standard than sites not covered by the shading. As such we would regard these sites as 'statistical' outliers.

Those sites submitting small numbers of cases to the audit and who did not report any non-compliance should not necessarily assume all is well with their practice. There will be, to some extent, an increased chance of finding an instance of non-compliance the greater the number of cases that are audited.

For example, using the table overleaf, there were 28 sites who submitted exactly 40 cases; for 13 sites all audit patients were wearing a wristband, 8 sites found just one audit patient not wearing a wristband, 4 sites found two such patients, 2 sites found three and 1 site found 5 patients. The shaded area highlights just the one site finding 5 or more patients as a statistical outlier.

Number of audit cases	Number of cases not wearing a Wristband												Total
	0	1	2	3	4	5	6	7	8	9	10	11	
1	3												3
2	3												3
3	3												3
4	1												1
5	5												5
6	4												4
7	3												3
8	5	1											6
9	2												2
10	7												7
11	3												3
12	2												2
13	1												1
14	4												4
15	2												2
16	5												5
17	2												2
18	5												5
19	1	1											2
20	7	2	1										10
21	4	1											5
22		1											1
23	1												1
24	1	1	1										3
26	1	2											3
27	1	1											2
29	1												1
30	2	1	1										4
31	4		1										5
32			1										1
33	1	1											2
34	2	1											3
35	1	1	1										3
36	3				**1**								4
37							**1**						1
38	2			1									3
39	1	1											2
40	13	8	4	2		**1**							28
41	2						**1**						3
42	1												1
43	2	3			**1**								6
44			1										1
45	1	1											2
48	4												4
49	1		1										2
50	15	7	2	1						**1**			26
51			1										1
54			1										1
55	1	1											2
56	1	1											2
57			1										1
58	1												1
59		1											1
60	5	2	1	1	1	**1**							11
61	1												1
62			1										1
63	1												1
64	1			1									2
65		1											1
66			1	1									2
69		1											1
70	3	2	4	2		**1**		**1**					13
71	1		1	1	1	**1**	**1**						6
72												**1**	1
73	2				1								3
76			1										1
77	1												1
80				1									1
100	1												1
120				1									1
Total	151	43	26	12	5	4	3	1	0	1	0	1	247

Table 3.

Results in relation to Standard One for the 247 sites

Table 4 shows the reasons given for patients not wearing a wristband. The standard requires the wristband to be worn by the patient or attached to their person. The responses below were offered as an explanation for patients who were not wearing wristbands. Auditors were given the opportunity to explain the circumstances in more detail if the situation they encountered did not fit one of the standard responses and these are denoted 'other'.

Table 4 – Reasons given for patients not wearing a wristband

	National (216)		Site variation	Your site (0)
	%	N		
Not put on by healthcare staff	42	91	61 sites	
Taken off by patient and not replaced	6	13	12 sites	
Taken off by healthcare staff and not replaced	13	27	24 sites	
Carried by patient but not worn for transfusion	2	4	4 sites	
Other*	25	54	34 sites	
Not known	13	27	15 sites	

In 27/216 (13%) cases no explanation was given. In 63% (135/216) cases the wristband had either not been put on in the first place or had been taken off and not replaced. This is 135/9250 (1.5%) of all audited cases.

Some important trends were noted in the category of patients deemed to be wearing a wristband and in the other* category (comprising 25% of those not wearing wristbands) including:

- Neonates receiving transfusion where the wristband was applied to the incubator or cot (21 cases).
- Children receiving transfusion where either the child or the parent had refused a wristband (6 cases).
- Wristbands that could not be printed because of a failure of the printer, the IT system or lack of access to the system (no password or lack of training) (8 cases).
- Clinical conditions such as oedema, a skin condition or limb amputation where a wristband could not be applied (7 cases).
- Regularly transfused patients who were well known to the staff - some who had alternative forms of identification but in the notes, not on the patient - and others who verbally identified themselves (14 cases).
- Emergencies where there was insufficient time to apply a wristband (1 case).

The following comments are reproduced to exemplify some of these situations.

"All patients in this renal day unit have a photograph in their notes with their first name, surname, date of birth and NHS number which staff use to check with the patient. They say some patients even know their NHS number."

"The child is very small and has equipment attached to all four limbs. She has several tubes attached and the ID bands could have been attached there instead but weren't. There are posters on the wall advocating positive patient identification and that two ID bands should be on the patient. Two ID bands have been printed off containing all relevant information as asked above and have been stuck to the cot cover".

"Child being transfused every other day. Parents unhappy about ID band being kept on as concerns over child's skin. ID band now attached to child's folder with prescription chart. Not placed on during transfusions".

"Patient attends on a regular basis hence only verbal identification is obtained".

"The ID band was not put on by staff as she could not print it out. There were problems with her logon which do not appear to have been sorted. Along with many other members of the Trust her logon was migrated to another domain last night which has caused many problems for many staff to whom this happened and which she is attempting to sort. However another member of staff could have printed an ID band out for the patient. In addition to having no ID band on the patient gave me a different spelling to his surname which did not match the surname on the bag of blood he was receiving".

COMMENT

Hospitals are required to have a policy for patient identification because failure of patient identification has much wider implications than receiving the wrong blood. Failure to correctly identify a patient could, for example, result in wrong medication being administered or patients being investigated in error. Some groups of patients are more vulnerable because they are unable to identify themselves but even in clinical areas where regular attenders are familiar to the staff, identification errors can and do arise when wristbands are not worn. The National Patient Safety Agency is very clear that their guidance on wearing wristbands covers all hospital patients. Some patients may refuse to wear a wristband even when the rationale is explained to them.

The Department of Health's list of 25 'never events'[10] includes misidentification of patients (never event 23) because of failure to use patient wristbands that meet NPSA's design requirements, failure to include four core identifiers, and failure to follow procedures for checking, but notes that "..this never event excludes where the patient refuses to wear a wristband despite a clear explanation of the risks of not doing so . . . or where it has been documented that a patient cannot wear a wristband due to their clinical condition or treatment".

The BCSH guideline states that it is unacceptable to receive a transfusion without wearing a wristband. If an alternative method is used to identify the patient prior to transfusion, a risk assessment should be carried out. This may apply to a group of patients (such as those attending a day treatment unit) or to an individual where wearing a wristband is unacceptable for physical or personal reasons.

This audit provides some understanding of the reasons why patients are not wearing a wristband for their transfusion. Hospitals should have already used their interim report to investigate any cases where this standard was 'not met' and taken appropriate action to improve practice.

Hospitals should establish whether this non-compliance was in line with the hospital policy. Policy exceptions to the 'no wristband, no transfusion' are very difficult to justify unless a safe alternative is in place. Another possibility is that a wristband was not being worn because of an individual decision or omission. The rule, 'no wristband, no transfusion' should apply and the healthcare professional responsible for administering the blood should delay the transfusion to rectify the situation.

In particular, this audit showed that there were proportionally more neonates and children not wearing wristbands than adults. Whilst standard wristbands may slip off small limbs, cause local irritation and skin damage or make cannulation or venipuncture difficult, this group should be wearing more suitable wristbands rather than not wearing them at all. Wristbands attached to cots or beds, to soft toys or to the notes are not safe alternatives. Appendix H gives a useful report on how this problem was tackled in one major children's hospital.

Recommendation:

The Hospital Transfusion Team should work with the hospital group responsible for the patient identification policy to ensure that the policy specifically covers blood transfusion.

Recommendation:

The blood administration policy should state 'no wristband, no transfusion' and it should be the responsibility of the person administering the blood to ensure a wristband is applied if it is found to be missing.

Recommendation:

Hospitals should consider that any patient transfused without wearing a wristband has been placed at serious risk and should investigate the circumstances, taking corrective action where necessary.

Recommendation:

Where wristbands are printed from the patient administration system, there should be 24/7 access to this facility for the staff responsible for printing wristbands and a contingency for providing an alternative in the event of a system failure. All staff should be trained in the use of the alternative system.

Recommendation:

If a form of identification other than a wristband is used it should be able to be physically attached to the patient not to the cot, incubator, bed, chair or other item of equipment that could result in the identification being transposed.

Recommendation

A risk assessed alternative should be in place if the patient either cannot or refuses to wear a wristband. For each individual case there should be a clearly documented rationale why an alternative has been used.

Standard Two - The patient's wristband contains the patient's first name, last name, date of birth and NHS or local identification number

The BCSH guideline states that there should be four core identifiers on the wristband and this is in agreement with the NPSA guidance on standardising wristbands. If all identifiers are not available, as in the case of unknown patients, then the unique patient number and the gender must be present alongside any other locally agreed terminology for unknown patients.

The BCSH also recommends that a unique national identification number (such as the National Health Service (NHS) number in England and Wales, Community Health Index (CHI) number in Scotland, or Health and Social Care (HSC) number in Northern Ireland) is used as a core identifier on the patient wristband, blood samples, request forms and transfusion 'prescriptions'.

In 2009 the use of the NHS number was mandated by the Department of Health in England as the unique number of choice for all patient transactions within the NHS. It was stated that, where a local hospital number is used, it should be used *alongside* the NHS number, not *instead of* the NHS number [12].

Table 5 – Demographic data present on wristband

	National (9034)			Your site (40)	
Wristband contains:	%	N	**Site variation**	**%**	**N**
First name	99.8	9008/9022	N=14 not present from 13 sites	**100**	**40/ 40**
Last name	99.9	9019/9026	N=7 not present from 7 sites	**100**	**40/ 40**
Date of birth	99.8	9003/9021	N=18 not present from 16 sites	**100**	**40/ 40**
NHS number*	59	5309/9031		**3**	**1/ 40**
If no NHS number* was used:		3722			**39**
Hospital number	98.4	3664		**100**	**39/ 39**
Other emergency number	0.4	15	9 sites	**0**	**0/ 39**
No number used	0.6	22	14 sites	**0**	**0/ 39**
Not stated	0.6	21	15 sites	**0**	**0/ 39**
First name, last name, date of birth, and any ID number	**99.4**	**8938/8992**	**N=54 not all present from 37 sites**	**100**	**40/ 40**

The denominator for this table is the patients who were wearing wristbands. Where the individual denominator is less than the total there were 'blanks' that could not be resolved.
** This includes CHI or HSC number for Scotland and Northern Ireland respectively*

Where wristbands were being worn 99.4% contained the four core identifiers. 210/247 (85%) of participating sites met this audit standard.

There is increased use of the NHS (or equivalent) number as the unique identifier on 59% of audited wristbands compared to 21% in the 2008 audit. 61% (4881/8066) of wristbands in England had the NHS number and 66% (258/388) in Wales. In Scotland the CHI number was used in 53% (124/235) of patients and the HSC number in 13% (46/342) of wristbands in Northern Ireland. Only 2% (6/319) of Independent sector transfusions were given to patients with wristbands containing the NHS number.

In all countries, where patients are 'unidentifiable' on admission, gender must be present on the wristband as an additional identifier whereas in Scotland, guidance [13] dictates that the gender is a core identifier. Overall, 39% (3326/8617) of wristbands stated the gender of the patient and in Scotland 69% (160/232) of transfusions were given to patients where the wristband stated the gender.

In Wales the first line of the address was noted to be present in 87% (355/408) of wristbands, as recommended by guidance from the Welsh Government [14].

In seven patients a comment was made that the wristband was present but illegible. This occurred where wristbands were either hand written or printed. In some cases data was reported to have worn-off partially or completely and in other data had been distorted by moisture.

COMMENT

Patients can positively identify themselves by stating their first and last name and date of birth but these identifiers may not be unique or accurate. It is recognised that a national unique identification number, such as the NHS number or equivalent, as a primary core identifier should reduce the confusion caused by multiple hospital numbers and case records for the same patient. Barriers to using the NHS number include the inability of some laboratory computer systems to recognise and handle the number, hence it is either used alongside a hospital ID number, or not used at all.

The NPSA has issued standards for wristbands and this includes the specification of the wristbands as well as the data and format of the data it contains. It is not acceptable to use an addressograph label intended for blood samples or to have a design that is easily damaged by friction or moisture. Wristbands printed directly from the patient administration system are not subject to transcription errors and should be easier to read. Wristbands where a barcode is provided in addition to eye-readable data can be used with electronic systems for bedside identification (see Section 2 Table 22a).

The BCSH guideline clearly states that 'the information on the wristband must be legible and accurate.' Any damaged and illegible wristbands should be removed and immediately replaced.

If your site has one or more of the patients who are being put at risk because the details which could positively identify them, and prevent their being misidentified as another patient with similar details, are missing, you should investigate how the audited transfusions proceeded. This would suggest that staff are unaware of, or ignoring, the potential risk to the patient.

In Scotland the fact that only 68% of wristbands bore the gender could be due to the type of wristband in place. Boards are implementing bar-coded wristbands which include the minimum data set (and gender). It could be that the participating sites have not fully implemented bar-coded wristbands and there may be some participating Boards which have dropped gender from the minimum data set.

Recommendation

Wristbands should conform to NPSA specifications and it is the responsibility of the hospital to include this in their patient identification policy.

Recommendation:

NHS hospitals in which a unique national identification number is not currently being used should make every effort to use the unique national numbers as soon as their technology allows.

Standard Three – The patient's identity is checked prior to transfusion by asking the patient to state their full name and date of birth wherever possible and checking these against the wristband worn. If the patient cannot respond, the identity details on the wristband are checked with tag attached to the unit of blood and the prescription.

Failure to correctly undertake the formal identity check between the patient and the blood prior to administration puts patients at risk of receiving the wrong blood. BCSH guidelines state that the healthcare professional administering the blood must perform the final administration check at the patient's bedside, immediately before starting the blood transfusion, by matching the patient details attached to the blood with the details on the patient's wristband.

All patients receiving a transfusion must be positively identified by stating their full name (first and last name) and date of birth. This must match exactly the information on the patient's wristband. The second step, or the first step for patients who are unable to identify themselves, is to exactly match the patient wristband with the tag attached to the unit of blood and with the prescription as well as any other associated paperwork required at that stage of the transfusion process.

Denominators for Tables 5 -7 comprise those patients with the details present on their wristband and for Tables 6 and 7 with the details also present on the tag attached to the unit of blood (Table 6) or the prescription (Table 7).

83% (7522/9034) of those wearing a wristband were able to give their details at the time of audit.

Table 6 –Patient's details on the wristband match with patient statement

	National		Site variation	Your site (matches)	
	%	N	(if not matching)	%	N
First name matches	99.8	7493/7511	18 cases from 16 sites	100	30/ 30
Last name matches	99.8	7495/7512	17 cases from 13 sites	100	30/ 30
Date of birth matches	99.9	7491/7500	9 cases from 9 sites	100	30/ 30
First name, last name, date of birth all match	**99.5**	**7457/7493**	**36 cases from 27 sites**	100	30/ 30

Denominators include patients able to state their details verbally and where the item of identification was present on the wristband

In addition, patients in Wales, where the first line of the address is considered a core identifier, in 306/311 (98.4%) cases the address details on the wristband matched the patient statement. Positive patient ID was therefore possible in 7493 cases who were wearing a wristband and able to state the three core identifiers to the auditor. 99.5% of these matched with the details on the wristband.

Auditors were not able to confirm the identity of 19% (1728/9250) of patients either because they were not wearing a wristband or because verbal identification was not possible. This group includes

children who were unable to respond competently, unconscious or confused patients or where there was a language barrier.

Table 7 – Patient's details on the wristband match with tag attached to the unit of blood

	National		Site variation (if not matching or not present on unit)	Yours site (matches)	
	%	N		%	N
First name matches	99.6	8967/9004	37 cases from 26 sites	100	40/ 40
Last name matches	99.7	8987/9015	28 cases from 20 sites	100	40/ 40
Date of birth matches	99.7	8975/9000	25 cases from 19 sites	100	40/ 40
ID number matches*	99.3	8921/8985	65 cases from 39 sites	100	40/ 40
First name, last name, date of birth and ID number all match	**98.9**	**8840/8939**	**99 cases from 60 sites**	100	40/ 40

Denominator is where item was present on the wristband and on the unit of blood.
** In some cases both NHS and another number were used and a 'match' for such cases is where any one of these numbers provided a match.*

In addition, for patients in Wales, where the first line of the address was a core identifier, 307/308 (99.7%) cases matched for the first line of the address on the tag attached to the unit of blood and the wristband

98.9% of checks were satisfactory and therefore could lead to safe blood administration. Of the 99 cases where there was a discrepancy, some stated that blood was transfused after additional identity checks but there were a worrying number of discrepancies of the unique patient number. A small number had a single digit difference or a missing prefix/suffix letter. Common discrepancies were the use of the NHS number on one form of ID but a hospital number on another; the use of two different hospital numbers associated with different hospital sites ; and the use of an emergency admission number.

Table 8 – Patient's details on the wristband match with the prescription

	National		Site variation	Your site (matches)	
	%	N	(if not matching or not present on prescription)	%	N
First name matches	99.6	8966/9003	37 cases from 27 sites	100	40/ 40
Last name matches	99.6	8978/9014	36 cases from 29 sites	100	40/ 40
Date of birth matches	98.6	8869/8998	129 cases from 49 sites**	100	40/ 40
ID number matches*	98.5	8846/8984	138 cases from 53 sites***	100	40/ 40
First name, last name, date of birth and ID number all match*	**97.3**	**8701/8938**	**237 cases from 92 sites****	100	40/ 40

Denominator is where item was present on the wristband and on the prescription.
** In some cases both NHS and another number were used and a 'match' for such cases is where any one of these numbers provided a match.*
*** includes 1 site with 30 and 1 site with 21.*
**** includes 1 site with 30 and 1 site with 12 and 1 site with 10.*
***** includes 1 site with 31 and 1 site with 29 and 1 site with 10.*

In addition, patients in Wales, where the first line of the address was a core identifier, 350/353 (99.2%) cases matched for the first line of the address on the prescription and the wristband.

There were 237 cases where the details on the prescription were inaccurate and did not match the wristband. There were further cases where the check could not be carried out because there was no date of birth and/or no unique patient number on the prescription.

The following are some of the comments given to exemplify the discrepancies.

"First name on blood tag is Baby. The baby was given a name after the blood order. Prescription chart and ID bands changed to reflect new name".

"Whole tag, instead of just tear off section, removed and sent back to Blood Bank as proof of transfusion. Information on it matched at time of issue and administration but was missing during transfusion and audit".

"Blood prescription is page 16 of 16 page booklet. Correct patient ID on the 1st page only. The ID label on page 16 at time of audit was for a different patient. On discussion with the nurse at time of administration there was no ID label on page 16 following the administration. This was attached post start of unit".

"A/E number on wristband, case note number and NHS number on blood and prescription".

"No prescription at all. Transfused in theatre and the consultant anaesthetist said they don't need to prescribe it. Only evidence of transfusion is the traceability stickers in the patient notes".

"Addressograph label on prescription record is from another hospital within the Trust but is a different hospital number from that on the patient identification wristband and unit of blood".

COMMENT

The bedside check is the final chance to identify errors which may have occurred earlier in the transfusion process. If this check is not carried out correctly it increases the possibility that wrong blood could be transfused. If any part of the bedside check fails because the four core identifiers do not match, the transfusion should be delayed until the discrepancy has been investigated and rectified. Non-compliance with Standard Three shows lack of understanding as to the purpose of this check, and perhaps actively involving the patient in the checking process, where possible, might be a way forward.

There is some evidence in the audit of multiple patient numbers being in use which results in the documentation printed from one system (the wristband from the patient administration system, for example) producing a different set of core identifiers from another system (the tag attached to the unit of blood from the laboratory information management system, for example).

The prescription of blood is usually the responsibility of the doctor although there is now a framework available for nurses who wish to extend their role to prescribe blood. The prescriber is responsible for the correct completion of the prescription chart, and is also responsible for the decision to transfuse, for discussing risks and benefits with the patient, obtaining consent to transfusion and documenting the reason in the notes.

Although this audit did not cover this aspect of care, lack of attention to the quality of the prescription could be an indicator of lack of care in these other important areas.

Recommendation

Patients should be encouraged, where possible, to take an active role in the bedside check by stating their full name and date of birth, helping to ensure correct identification.

Recommendation:

Blood should not be transfused if any discrepancy is noted by the healthcare practitioner carrying out the bedside check. The discrepancy should be corrected and, if necessary, the blood reissued with repeat blood sampling.

Recommendation

All IT systems that are used to support blood transfusion should use the same core set of patient identifiers.

Standard Four – Pulse, blood pressure, temperature and respiratory rate are measured before a unit of blood is transfused

BCSH recommendations for *minimum* patient observations during transfusion episodes now include baseline measurement of respiratory rate.

Table 9 – Pre-transfusion observations

	National (9250)		Your site (40)	
Monitoring within 60 minutes before the transfusion started	%	N	**%**	**N**
Pre-transfusion **pulse** recorded	93	8631/9246	**85**	**34/ 40**
Pre-transfusion **BP** recorded	93	8610/9246	**83**	**33/ 40**
Pre-transfusion **temperature** recorded	93	8585/9247	**85**	**34/ 40**
Pre-transfusion **respiratory rate** recorded	85	7904/9247	**83**	**33/ 40**
Pulse, BP , temperature and respiratory rate	**85**	**7846/9246**	**80**	**32/ 40**

Don't knows (BLANKS) have been excluded from denominators

Overall, 85% of patients had all four observations measured pre-transfusion. For England this was 85% (7049/8246), in Wales 67% (272/408), in Scotland 81% (202/248) and in Northern Ireland 94% (323/344). Independent hospitals measured all four observations in 91% (291/320).

For inpatients there was an 87% (6255/7215) compliance with all four observations and for day cases 78% (1589/2029). For adults the compliance was 85% (7371/8717), for children 88% (335/380) and for neonates 94% (138/147).

Standard Five – Pulse, blood pressure and temperature are measured at 15 minutes after the transfusion starts

The BCSH guideline highlights the importance of an early (15 minute) check on pulse rate, blood pressure and temperature with each component administered and regular visual observation throughout the transfusion is re-emphasized in the SHOT Annual Report 2010 [3].

For each category, the auditors were able to record timing of observations as 1-14 minutes, 15 minutes, 16-30 minutes or more than 30 minutes. Previous audits have not included the 'at 15 minutes' category.

Table 10 – Pulse, BP and temperature taken

		National(9250)		Your site (40)	
		%	N	%	N
Pulse *was recorded:*					
√	**1 – 14 minutes after**	**14**	**1272**	**28**	**11**
√√√	**At 15 minutes**	**48**	**4395**	**38**	**15**
√	**16 – 30 minutes after**	**26**	**2418**	**23**	**9**
XXX	**More than 30 minutes after**	**9**	**798**	**10**	**4**
	Don't Know	**4**	**367**	**3**	**1**
Blood Pressure *was recorded*					
√	**1 – 14 minutes after**	**14**	**1256**	**28**	**11**
√√√	**At 15 minutes**	**47**	**4355**	**38**	**15**
√	**16 – 30 minutes after**	**26**	**2409**	**25**	**10**
XXX	**More than 30 minutes after**	**9**	**836**	**8**	**3**
	Don't Know	**4**	**394**	**3**	**1**
Temperature *was recorded*					
√	**1 – 14 minutes after**	**14**	**1251**	**25**	**10**
√√√	**At 15 minutes**	**47**	**4381**	**38**	**15**
√	**16 – 30 minutes after**	**26**	**2422**	**25**	**10**
XXX	**More than 30 minutes after**	**9**	**808**	**8**	**3**
	Don't Know	**4**	**388**	**5**	**2**

The rows show standard met (√√√=Green), observations within acceptable time (√=Amber) and observations delayed (XXX= RED ALERT).

47% had pulse, blood pressure and temperature recorded at 15 minutes and therefore met this standard. Overall 87% had these observations within 30 minutes. 4% had no observations and 9% had delayed observations.

Standard Six – Pulse, blood pressure and temperature are measured at the end of each transfused unit

The BCSH guideline requires observations to be repeated not more than 60 minutes after the transfusion is completed. It is now recognised that adverse reactions may manifest many hours after the transfusion is completed.

Table 11 – Post-transfusion observations

	National (9250)		Your site (40)	
Monitoring no more than 60 minutes after the transfusion finished	%	N	%	N
Post-transfusion **pulse**	85	7599/8941	**53**	**21/ 40**
Post-transfusion **blood pressure**	85	7582/8938	**53**	**21/ 40**
Post-transfusion **temperature**	85	7594/8963	**50**	**20/ 40**
Pulse, blood pressure and temperature	84	7496/8909	**50**	**20/ 40**

Don't knows (Blanks) have been excluded from denominators

COMMENT

Pre-transfusion baseline observations are essential to be able to detect a change during or after the transfusion and it is good practice for routine transfusions that blood should not be collected until the observations have been performed. In this audit 85% of patients had all 4 pre-transfusion checks, with respiratory rate now included in the baseline checks since the publication of the 2009 BCSH guidelines.

The audit standards were based on the BCSH guideline that the first set of observations after the start of the unit being transfused should be carried out at 15 minutes and only 47% exactly met this standard. However, although early observations are important to detect any acute transfusion reactions, clinical practice is such that neither the timing of nor the recording of the timing of the observations can be that precise. For that reason we consider that observations taken up to 30 minutes, while outside this guideline, are acceptable. This was achieved in 87% of cases. 13% of patients were at risk of undetected acute transfusion reactions because they were not known to have had observations or the observations were delayed beyond 30 minutes.

Since the purpose of taking these observations is to monitor for changes which might indicate a transfusion reaction, hospitals whose policy and practice allow recording these observations before the 15 minute guideline should assure themselves that they are practicing a risk-assessed alternative.

Post transfusion observations were not carried out for 1413 (16%) patients although the reasons for this are unclear. Of these 1413 patients, 209 (14.8%) were day cases.

Recommendation:

Healthcare staff should ensure that post transfusion observations are carried out prior to the discharge of day patients and should provide contact information for the patient to use in the event of them feeling unwell following the transfusion.

Worse-Case Scenario

We consider that a transfusion "Worse-Case Scenario" is one where the patient is not wearing a wristband and has not had any observations taken before, during or after the transfusion.

Table 12 – Worse-Case Scenario

Worse Case Scenario	National (9250) %	National (9250) N	Site variation	Your site (40)
No wristband and no pre-transfusion observations	0.3	24/9249	From 17 sites	**0**
No wristband and no observations before, during or after transfusion	0.03	3*/9249	From 3 sites	**0**

**These 3 cases did not have observations before or after transfusion whilst status during transfusion was unknown.*

All 24 cases without a wristband and pre-transfusion observations were NHS cases.

For England the rate was 0.2% (19/8247), for Wales 0.5% (2/408), for Scotland 0.8% (2/248), and for Northern Ireland 0.3% (1/346).

For inpatients it was 0.2% (14/7219) and for day cases 0.5% (10/2028). For adults it was 0.2% (17/8720), children 1.8% (7/380) and neonates 0% (0/147).

All 3 with no wristband and no observations before, during or after transfusion were adult NHS day cases in England.

COMMENT

Whilst this is a very small number of patients put at risk, it represents very poor patient care and should be considered a 'never event' which is defined as a "serious largely preventable patient safety incidents that should not occur if the available preventative measures have been implemented".

Section Two - Supplementary findings

This section contains additional data that does not directly reflect the key audit standards but may be helpful in concentrating on areas for improvement and to better understand variation in practice.

Table 13 – Description of sample

	National (9250)		Your site (40)	
	%	N	%	N
Location of transfusion				
Inpatient	78	7219	**83**	**33**
Day case	22	2029	**18**	**7**
Unknown		2		
Age of patient				
Adult	94	8721	**90**	**36**
Child	4	380	**10**	**4**
Neonate	2	147	**0**	
Unknown		2		

COMMENT

The audit data for the six key standards have been further analysed to see if there is any variation in compliance. If there is over- or under-representation of these groups in 'your site' sample compared to your local transfusion practice you should ensure that this is taken into account. For example, children, neonates and day cases were more likely to be non-compliant with wearing a wristband.

Also, we recommended that you audited across all clinical areas based on your blood usage in the period before the audit started. If you are aware of any areas that were not included but where transfusion takes place, we suggest using the audit proforma to look at practice in these areas.

Table 14 - Form of identity

	National(9034)		Site/ location variation	Your site (40)	
	%	N		%	N
Wristband	97.6	8817		**100**	**40**
Photo ID	0.1	11	8 sites	**0**	
ID badges	0.2	15	10 sites	**0**	
Other	0.4	40	16 sites	**0**	
Unknown	1.7	151	77 sites	**0**	

Of the 40 cases designated as 'other', 31 had the ID attached to the patient in some way. These may be conventional ID bands according to the site's patient ID policy or addressograph labels directly applied to the skin or to a line or wire attached to the patient. Several sites mentioned that they

used a clear silicone dressing suitable for fragile or sensitive skin in neonates and children, and details of this are given at Appendix H.

COMMENT

Details on the use of photo ID, or ID badges, for regularly transfused patients were included in the NPSA Safer Practice Notice 'Right Patient, Right Blood'. This audit has shown relatively few patients being transfused with this form of ID. It would be interesting if hospitals that have either rejected or implemented this system could share their experience with others. A suitable forum for sharing this and other ID systems this would be the regional transfusion committee or via national transfusion networks.

Table 15 - Nature of wristband details

	National (9034)		Your site (40)	
	%	N	%	N
Handwritten information	21	1905	3	1
Printed information	23	2116	0	
Printed information & bar code	49	4468	98	39
Printed addressograph label	5	477	0	
Other	0.3	27	0	
Unknown	0.5	41	0	

COMMENT

This information has been compared with that given in the 2008 audit where the majority (73%) of wristbands were handwritten and 13% were printed. In 2011, 72% of wristbands are printed of which two thirds contain bar codes (a question about bar codes was not asked in 2008).

Table 16 - Additional identification band used

	National (9034)		Your site (40)	
	%	N	%	N
Additional identification band used?	1.5	136	0	0

94 cases were wearing a 'red label' wristband that contained an ID number, 12 were wearing two wristbands and a further 8 had wristbands with different information. 1 patient was wearing a wristband from a different hospital. A small number of patients were wearing an allergy or surgical implant warning band, but these contained no identification details so were not a risk.

COMMENT

NPSA recommends the use of a single identification wristband that incorporates all essential information [9].

Table 17- Date of transfusion documented

	National (9250)		Your site (40)	
	%	N	%	N
Is the date of transfusion documented?	98	9031/9249	100	40/ 40

The BCSH guideline requires that the date of transfusion should be recorded and it was in most cases. This is of the same order as in the 2008 audit.

Table 18 – Start and stop times

	National (9250)		Your site (40)	
	%	N	%	N
Is the start time documented?	98	9062/9249	100	40/ 40
Is the stop time documented?	71	6531/9227	50	20/ 40

The BCSH guideline requires that the start and stop time of transfusion should be recorded. A start time was usually recorded but the end of the transfusion was less frequently documented. In 2008, only 67% of cases had a stop-time recorded.

Table 19 - Signature of person undertaking pre-transfusion checks

	National (9250)		Your site (40)	
	%	N	%	N
Is there a signature of the person undertaking the bedside checks prior to the start of the transfusion?	97	8986/9245	100	40/ 40

The BCSH guideline requires a signature of the person undertaking the bedside check. This was recorded in the majority of cases.

Table 20 - Transfusion Care Pathway, or similar, in use

	National (9250)		Your site (40)	
	%	N	%	N
Was a Transfusion Care Pathway, Integrated Care Pathway, or similar used for this transfusion?	43	3940/9241	0	0/40

This is compared to 3536/8245 (43%) in England, 160/248 (65%) in Scotland, 90/406 (22%) in Wales and 154/342 (45%) in Northern Ireland. In Independent hospitals in England, 255/320 (80%) of transfusions were given using a Transfusion Care Pathway (TCP). Scotland has developed a national TCP (see Appendix G).

The use of a TCP was compared for its effect on compliance with wearing a wristband. Where a TCP was used, 79/3940 (2.0%) patients were not wearing a wristband. However, a similar percentage, 136/5301 (2.6%), was seen in sites where patients were not wearing a wristband but where no TCP had been used. This suggests that the use of a TCP had little effect on compliance.

Table 21 – Transfusion training

	National (9250)		Your site (40)	
	%	N	%	N
When did you (healthcare professional caring for patient at time of audit) last receive training in blood transfusion?				
Within last year	67	6214	55	22
Within last 3 years	27	2455	43	17
Never had training	1	138	0	
Don't know	5	443	3	1

Those staff caring for the patient at the time of the transfusion were asked when they had last received transfusion training. One of the limitations of our audit method was that it may not be the case that the healthcare professional who was asked this question at the time of audit was the person who performed the identification process on the patient and started the transfusion. Another was that "training" was not defined. In 2008, 52% had had training within the last year.

Table 22 – Bedside electronic systems

	National (9250)	
	%	N
System not used in the hospital	88	8126
System used in the hospital but not with audited patients	8	740
System used with audited patients	4	378

Hospitals were asked if they have in use an electronic system for matching the patient's identification with the unit of blood and, if so, whether that system was used for the transfusions they audited.

An electronic bedside system was available in 12%(1118/9250) of transfusions, but was only used on 4% (378/9250) of those being transfused . This compares with the 2008 audit, in which an electronic bedside system was available in 12% (1047/8707) of cases and it was used in 68% (710/1047)of those cases.

Table 22a - Name of system used

Hospitals using electronic systems were asked to provide the name of the system

System used	Cases
Haemonetics	347
Fordman Systems Blood Audit and Release System	152
MSoft Bloodhound	83
Telepath	37
TrakLOGIK® Blood Management Demonstrator	29
TERVIA system by Avery Dennison	20
NOT KNOWN	72
TOTAL	740

Table 23 – Special requirements

	National		Your site (40)	
	%	N	%	N
If prescription indicates special requirements, does the unit match those requirements?	77	1491/1946	100	12/12

As a further measure of patient safety the auditor was asked to check that if a patient had been prescribed "special requirements" (e.g. irradiated or CMV negative blood), then that component specification was given. It is acknowledged that this question was not designed to discover which patients needed special requirements.

During the pilot, the wording of this question was thought to be ambiguous and was reworded. Comments received during the audit suggested that auditors often misinterpreted this question and therefore the data may not be accurate.

Section Three – National trends (2003 to 2011)

Table 24 – Comparison of bedside transfusion practice between 2003 and 2011 for English* NHS sites

AUDIT YEAR		2003	2005	2008	2011
Participating Sites		160	211	180	182
Cases audited		5014	6764	6943	7936
% (n) with wristband		90	94	98 (6771)	98 (7755)
% (n) of wristbands with complete first name, last name, DOB, ID #		86	91	98 (6574/6715)	99.5 (7684/7722)
% (n) with pre transfusion observations recorded	Temp	74	90	89 (6183)	93 (7381)
	Pulse	76	91	90 (6236)	94 (7421)
	BP	75	91	90 (6234)	92 (7305)
% (n) with temp <=30 mins**		58	64	73 (5075)	87 (6900)
% (n) with pulse <=30 mins**		59	65	74 (5152)	87(6924)
% (n) with no observations recorded during transfusion		12	13	12 (847)	4 (297)

**Previous audits covered mainly England only so other UK sites have been excluded from this comparison.*
***<30 minutes was reported in previous audits given for comparison although at 15 minutes is recommended by the BCSH guideline.*

Links to references and resources

REFERENCES

(1). Care Quality Commission. http://www.cqc.org.uk/

(2) Detection and management of outliers. Department of Health/Healthcare Quality Improvement Partnership. 31 Jan 2011. http://www.dh.gov.uk/publications

(3) SHOT Annual Report,2010. http://www.shotuk.org/wp-content/uploads/2011/07/SHOT-2010-Report1.pdf

(4) Serious Hazards of Transfusion. http://www.shotuk.org/

(5) BCSH Guidelines. http://www.bcshguidelines.com/

BCSH guidelines for the administration of blood components. 2009http://www.bcshguidelines.com/documents/Admin_blood_components_bcsh_05012010.pdf

ARCHIVED Guidelines for the administration of blood and blood components and the management of transfused patients 1999. http://www.bcshguidelines.com/documents/blood_administration_1999.pdf

(6) Better Blood Transfusion – *Safe and appropriate use of blood.* Health Service Circular HSC2007/001. http://www.dh.gov.uk/en/Publicationsandstatistics/Lettersandcirculars/Healthservicecirculars/DH_4004264

(7) NHS Litigation Authority Risk Management standards; Standard 4 Criterion 6 Transfusion - includes patient identification and care of the patient during a transfusion. http://www.nhsla.com/riskmanagement

(8) National Comparative Audit of Blood Transfusion. http://hospital.blood.co.uk/safe_use/clinical_audit/National_Comparative/index.asp

(9) National Patient safety Agency Patient Safety Resources. http://www.nrls.npsa.nhs.uk/resources/

Right patient, right blood: advice for safer blood transfusions including competency assessment framework, safer practice notice, posters and patient briefing document. http://www.nrls.npsa.nhs.uk/resources/collections/right-patient-right-blood/

Patient identification and documentation. http://www.nrls.npsa.nhs.uk/resources/patient-safety-topics/documentation/?entryid45=59799

Standardising wristbands improves patient safety.
http://www.nrls.npsa.nhs.uk/resources/?entryid45=59824

(10) Never events list 2011. Department of Health.
http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_124552

(11) Blood Stock Management Scheme Annual Report 2010 Glossary of terms: Hospital Red Cell Usage Categories p22. http://www.bloodstocks.co.uk/reports/annualreports/index.asp

(12) Connecting for Health. Implementation of the NHS number.
http://www.connectingforhealth.nhs.uk/systemsandservices/nhsnumber

FAQs for staff about the NHS number.
http://www.connectingforhealth.nhs.uk/systemsandservices/nhsnumber/staff/stafffaqs.pdf

(13) Clinical standards for blood transfusion (2006) NHS Healthcare Improvement Scotland.
http://www.healthcareimprovementscotland.org/home.aspx

(14) WHC (2007) 042 Blood Transfusion Procedures. 8 June 2007. Welsh Assembly Government.
http://www.wales.nhs.uk/documents/WHC(2007)0421.pdf

RESOURCES

Who do you think you are? A regional audit of wristband compliance in high dependency patients L.Sherliker, M.Durkin, T.Hawkins, D.Beckford-Smith, S.Morey, D.Agacy-Cowell, K.East, J.Hickey, E.Fraser. http://www.transfusionguidelines.org.uk/docs/pdfs/rtc-scent_audit_wristband.pdf

Root Cause Analysis – Seven Steps. National Patient Safety Agency.
http://www.nrls.npsa.nhs.uk/resources/?entryid45=59901

Risk Assessment Tool – National Patient Safety Agency: A risk matrix for risk managers

http://www.npsa.nhs.uk/nrls/improvingpatientsafety/patient-safety-tools-and-guidance/risk-assessment-guides/risk-matrix-for-risk-managers/

Handbook of Transfusion Medicine – Fourth edition , January 2007

http://www.transfusionguidelines.org.uk/index.asp?Publication=HTM&Section=9&pageid=1100

ABBREVIATIONS

BCSH	British Committee for Standards in Haematology
BSMS	Blood Stocks Management Scheme
CQC	Care Quality Commission
HSC	Health Service Circular
HTC	Hospital Transfusion Committee
HTT	Hospital Transfusion Team
HQIP	Healthcare Quality Improvement Partnership
NBTC	National Blood Transfusion Committee
NCABT	National Comparative Audit of Blood Transfusion
NHSBT	NHS Blood and Transplant
NHSLA	NHS Litigation Authority
NPSA	National Patient Safety Agency
RTC	Regional Transfusion Committee
SHOT	Serious Hazards of Transfusion

BSMS HOSPITAL RED CELL USAGE CATEGORIES (RED CELL UNITS PER ANNUM)

Very High	**> 10,001**
High	**6,501 -10,000**
Moderate	**4,001 – 6,500**
Low	**801 – 4,000**
Very Low	**0 – 800**

Appendix A – Audit tool

CLINICAL STANDARDS
Royal College of Physicians
Setting higher medical standards

National Comparative Audit of Blood Transfusion

NHS Blood and Transplant

Royal College of Nursing

E

Audited Patient No.

2011 Bedside Transfusion Re-Audit –Patient audit tool

PART A – to be completed whilst the unit of blood you are auditing is in progress

1. Is this patient: an in-patient? ☐ a day-case? ☐

2. Is this patient: An adult? ☐ A child? ☐ A neonate? ☐

3. Is the patient wearing a form of identification? Yes ☐ No ☐

If yes, tick one of options below that best describes the form of identification worn, or state details of other: If no, go to Q14.

4. Form of identity:

- Identification wristband ☐
- Photo ID badge ☐
- ID badge ☐
- Other ☐

Other *(please state)*

5. Does the patient's identification: *(Tick one option)*

Have handwritten information? ☐

Have printed information? ☐

Have printed information and a bar-code? ☐

Have a printed addressograph label on it? ☐

Other ☐

Other *(please state)*

Does this identification contain the patient's

6. Last name? Yes ☐ No ☐

7. First name? Yes ☐ No ☐

8. Date of birth? Yes ☐ No ☐

9. NHS Number? Yes ☐ No ☐

10. If NHS number is not on the identification, is another unique numbering system used to identify the patient? *(Tick as many as apply)*

Hospital number used ☐

Other emergency number used ☐

No number used ☐

11. If any additional identification band is used, please give details

12. If you ticked "No" to questions 6 and 7 and 8 is it because

The patient is ‘unknown’? ☐

Another reason (please state) ☐

Don’t know ☐

13. Does this identification contain the patient’s gender? Yes ☐ No ☐

Only complete Q14 if you answered no to Q3

14. If no form of identification is in place, identify, if possible, the reason why: *(Tick one option)*

Don’t know ☐

Not put on by staff ☐

Taken off by patient and not replaced ☐

Taken off by staff and not replaced ☐

Carried by patient but not worn for transfusion ☐

Other ☐

Other *(please state)*

Now go to question 27 since there is no identification to check

Accuracy of information on the patient’s identification

15. Is the patient able to state their full name and date of birth? Yes ☐ No ☐

If yes, use this information to complete questions 16 to 26. If no, use the information on the patient’s identification to answer questions 19 to 26. To assess the accuracy of the information on the patient’s identification auditors should ask the patient to state (and if necessary spell) first name, last name and date of birth. Then check to see that the information given exactly matches as follows:

16. Does the patient's first name as stated by the patient match what is shown on the identification? Yes ☐ No ☐

17. Does the patient's last name as stated by the patient match what is shown on the identification? Yes ☐ No ☐

18. Does the patient's date of birth as stated by the patient match what is shown on the identification? Yes ☐ No ☐

19. Does the patient's first name on the patient's identification match what is shown on the tag attached to the unit of blood? Yes ☐ No ☐

20. Does the patient's last name on the patient's identification match what is shown on the tag attached to the unit of blood? Yes ☐ No ☐

21. Does the patient's date of birth on the patient's identification match what is shown on the tag attached to the unit of blood? Yes ☐ No ☐

22. Does the identification number on the identification worn by the patient match what is shown on the tag attached to the unit of blood? Yes ☐ No ☐

23. Does the patient's first name on the patient's identification match what is shown on the prescription? Yes ☐ No ☐

24. Does the patient's last name on the patient's identification match what is shown on the prescription? Yes ☐ No ☐

25. Does the patient's date of birth on the patient's identification match what is shown on the prescription? Yes ☐ No ☐

26. Does the identification number on the identification worn by the patient match what is shown on the prescription? Yes ☐ No ☐

If there were any details that did not match, tell us here about the nature of the mismatch (wrong spelling, letter missing, wrong number and so on):

27. If the prescription indicates that the patient needs CMV Negative or irradiated blood, does the unit you are auditing match those requirements? Yes ☐ No ☐

About the unit you are auditing

28. What is the date on which this unit is being transfused?

29. Is that date documented? Yes ☐ No ☐

30. Is the start time documented? Yes ☐ No ☐

31. If yes, what is the unit start time? ☐

hh:mm (Please use 24 hour clock)

32. Is there a signature of the person undertaking the bedside checks prior to the start of the transfusion? Yes ☐ No ☐

Pre-transfusion observations

33. Was a pre-transfusion pulse recorded within the 60 minutes before the transfusion start time? Yes ☐ No ☐

34. Was a pre-transfusion BP recorded within the 60 minutes before the transfusion start time? Yes ☐ No ☐

35. Was a pre-transfusion temperature recorded within the 60 minutes before the transfusion start time? Yes ☐ No ☐

36. Was a pre-transfusion respiratory rate recorded within the 60 minutes before the transfusion start time? Yes ☐ No ☐

After the start of the current transfusion:

37. When was the first pulse reading recorded?
- 1 – 14 minutes after unit started
- At 15 minutes
- 16 to 30 minutes after unit started
- More than 30 minutes after unit started
- Don't know

38. When was the first BP reading recorded?
- 1 – 14 minutes after unit started
- At 15 minutes
- 16 to 30 minutes after unit started
- More than 30 minutes after unit started
- Don't know

39. When was the first temperature reading recorded?
- 1 – 14 minutes after unit started
- At 15 minutes
- 16 to 30 minutes after unit started
- More than 30 minutes after unit started
- Don't know

Questions for the auditor to ask healthcare professional caring for the patient at the time of audit

40. When did you last receive training in blood transfusion?
    - Within the last year
    - Within the last 3 years
    - Never had training
    - Don't know

41. If the hospital uses an electronic system to match patient's identification with the unit of blood at the bedside, was that system used for the unit you are auditing? **Yes** ☐ **No** ☐ **System not used** ☐

42. If yes, what is the name of the system used?

43. Was a Transfusion Care Pathway, Integrated Care Pathway, or similar used for this transfusion? Yes ☐ No ☐

Unit Donation No.	*Please write the donor unit number here. You will need it for the next part of the audit form*

Return to complete Part B after the unit you are auditing has finished transfusing

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PART B

44. Is the stop time documented? Yes ☐ No ☐

45. If yes, what is the stop time? *(hh:mm)* ☐

After the end of the current transfusion:

46. Was a post-transfusion pulse recorded no more than 60 minutes after the transfusion end time? Yes ☐ No ☐

47. Was a post-transfusion BP recorded no more than 60 minutes after the transfusion end time? Yes ☐ No ☐

48. Was a post-transfusion temperature recorded no more than 60 minutes after the transfusion end time? Yes ☐ No ☐

Appendix B – Interim report

CLINICAL STANDARDS
Royal College of Physicians
Setting higher medical standards

National Comparative Audit of Blood Transfusion

NHS Blood and Transplant

SAMPLE ONLY – THIS DOES NOT RELATE TO YOUR AUDIT RESULTS

2011 Re-audit of Bedside Transfusion Practice

Interim Clinical Audit Report

Introduction

This is an interim report on patient safety in transfusion which gives you the results of the 2011 National Comparative Audit of Blood Transfusion. It does not replace the full report or the regional slideshow, which will be issued in due course, but is intended to give you a critical snapshot of your audited transfusion practice.

How to use this report

You should use this interim report to identify the clinical areas in which transfusion care does not meet the guidelines, since this should aid in focusing your interventions. If you used the linkage record during the audit, then you will have the details of the patients, the clinical areas where they were transfused and the name of the healthcare professional responsible for managing their transfusion.

In this report, we use the terms "Standard MET", "Standard NOT met", "Criterion MET", and "Criterion NOT MET". There are 6 standards, some of which contain more than one criterion. To meet the standards, all patients must meet the relevant standard or criteria. If any standards are not met, this report gives details of which criteria were not met, and tells you the audited patient number(s), which allows you to use the linkage record to identify those patients and the healthcare professionals who were administering the blood. The report tells you how those healthcare professionals were at variance with expected practice, and you can devise a plan to improve their practice, thus targeting your feedback.

Audit standards

The audit standards are based on guidance issued by the British Committee for Standards in Haematology (BCSH) [(1)]. To meet a standard, we expect 100% compliance, since guidelines are unequivocal. The phrase "standard MET" therefore only applies where guidelines have been adhered to for all patients. This report sets out how Addenbrooke's Hospital compares against these standards.

Rationale and risk statement

There are two risks addressed by the scope of the 2011 Re-audit of Bedside Transfusion Practice: the risk of misidentifying the patient to be transfused and the risk of the patient experiencing an undetected transfusion reaction.

Misidentifying the patient

To avoid being given blood intended for another recipient, guidelines state that a patient has a form of identification physically attached to their person. The risk of not attaching a form of identification to a patient before transfusion is that, however familiar that patient may be to the healthcare practitioner, there is the possibility that the patient may be misidentified if adequate verbal checks are not carried. This is particularly the case if the patient is not able to communicate their identity, or in unconscious patients.

Guidelines insist that a patient's identification contains sufficient information to be able to ensure that the patient identified for transfusion is the correct one. To this end four demographic identifiers - date of birth, first name, last name and NHS or local identification number - are the minimum which should be available on the identification. Of the four demographic identifiers, three of them are susceptible to duplication, whereas the NHS or local identification number, being unique, is not. Having the unique identifier alone, however, is not sufficient, because it is also necessary to ask the patient to confirm identity before transfusion starts, and the patient would not be expected to know their NHS or local identification number.

Undetected transfusion reaction

A transfusion reaction is detected by observing the patient. It is necessary to take a set of observations before the transfusion starts, to form a baseline, and then to observe for a change after the transfusion has started. The risk of not performing pre-transfusion observations is that it may be more difficult to detect a rise in pulse or temperature without knowing what those parameters were before transfusion started. The risk of not performing observations after the transfusion has started is that a potential transfusion reaction may go undetected.

Audit results

You were able to audit **XX** patients.

Standard One - A patient having a blood transfusion is wearing a form of identification.
Standard NOT MET

Of the patients you audited, XX were wearing a form of identification. Patients 8, 20 & 22 were not, and these were all inpatients. You reported that for patients 8 & 20 the wristband was not put on by staff, and that for patient 46 it was carried by the patient but not put on for transfusion.

Standard Two - The patient's identification contains the patient's first name, last name, date of birth and NHS or local identification number.

Standard NOT MET

Criterion 2.1 - Identification contains patient's first name - ***Criterion MET***

All your patients met this criterion.

Criterion 2.2 - Identification contains patient's surname – ***Criterion MET***

All your patients met this criterion.

Criterion 2.3 - Identification contains patient's date of birth - ***Criterion NOT MET***

XX/XX (XX%) of your patients met this criterion, but patient number 16 did not.

Criterion 2.4 - Identification contains patient's NHS or local identification number – ***Criterion MET***

All your patients met this criterion.

Standard Three – The patient's identity is checked prior to transfusion by asking the patient to state full name and date of birth wherever possible and checking that the details exactly match what is on the identification worn, the prescription and the tag attached to the unit of blood.

Standard MET

For information, **xx** of the patients who were wearing a form of identification were able to state their full name and date of birth when asked by the auditor, but note that this is not one of the audit criteria.

Criterion 3.1 – Patients details match what is on the form of identification – ***Criterion MET***

Criterion 3.2 – Details on the patient's identification match what is on the tag attached to the unit of blood - ***Criterion MET***

Criterion 3.3 – Details on the patient's identification match what is on the prescription - ***Criterion MET***

Standard Four – Pulse, temperature, blood pressure and respiratory rate are measured no more than 60 minutes before the transfusion starts.

Standard NOT MET

XX/XX (XX%) patients had all four pre-transfusion observations recorded, but the following patients did not: 1,2,13,14,15,16,18,22,24,27,30 & 43. Please download your audit data if you wish to review which pre-transfusion observations were recorded*.

Standard Five – Pulse, blood pressure and temperature are measured at 15 minutes after the transfusion starts.

Standard NOT MET

Xx/xx (xx%) of patients has these observations taken at 15 minutes after the transfusion start time. Please download your audit data to review for which patients this standard was not met*.

Standard Six – Pulse, blood pressure and temperature are measured within 60 minutes after the end of each transfused unit.

Standard MET

All patients had these observations taken in accordance with the standard.

Conclusion

While there is much good practice, there are some patients who are not being transfused in accordance with BCSH 2009 guidelines [(1).] Some patients are potentially at risk, and you should review the practice of those healthcare practitioners not adhering to the guidelines to assure yourself that optimal transfusion practice is followed whenever possible.

(1). Guidelines on the Administration of Blood Components. BCSH, 2009

http://www.bcshguidelines.com/documents/Admin_blood_components_bcsh_05012010.pdf/

Appendix C – List of participating hospitals

Addenbrooke's Hospital

Airedale NHS Foundation Trust

Alder Hey Children's NHS Foundation Trust

Altnagelvin Area Hospital

Antrim Area Hospital

Arrowe Park Hospital Wirral

Barnsley Hospital NHS Foundation Trust

Barts and The London NHS Trust

Basildon and Thurrock University Hospitals NHS Foundation Trust

Basingstoke and North Hampshire Hospital

Bedford Hospital

Belfast Health and Social Care Trust

Betsi Cadwaladr University Health Board

Birmingham Children's Hospital NHS Foundation Trust

Birmingham City Hospital

Birmingham Heartlands Hospital

Birmingham Women's Hospital

Bishop Auckland Hospital

Blackpool Victoria Hospital

BMI Sarum Road Hospital

BMI The Manor Hospital

BMI The Saxon Clinic

Borders General Hospital

Bradford Royal Infirmary

Bristol Royal Infirmary

Broomfield Hospital

Buckinghamshire Healthcare NHS Trust

BUPA Cromwell Hospital

Calderdale and Huddersfield NHS Foundation Trust

Cardiff and Vale UHB

Causeway Hospital

Central Manchester University Hospitals NHS Foundation Trust

Central Middlesex Hospital

Charing Cross Hospital

Chesterfield Royal Hospital

City Hospital Campus Nottingham

Clatterbridge Centre for Oncology NHS Foundation Trust

Colchester Hospital University NHS Foundation Trust

Conquest Hospital

Countess of Chester Hospital NHS Foundation Trust

Craigavon Area Hospital

Croydon University Hospital

Cumberland Infirmary Carlisle

Daisy Hill Hospital

Darlington Memorial Hospital

Dartford and Gravesham NHS Trust

Doncaster and Bassetlaw Hospitals NHS Foundation Trust

Dorset County Hospital NHS Foundation Trust

Dumfries and Galloway Royal Infirmary

Ealing Hospital NHS Trust

East Cheshire NHS Trust

East Lancashire Hospitals NHS Trust

Emersons Green NHS Treatment Centre Bristol (UKSH)

Epsom and St. Helier University Hospitals NHS Trust

Erne Hospital

Fairfield General Hospital
Fairfield Independent Hospital
Frimley Park Hospital
Gartnavel General Hospital
George Eliot Hospital
Glasgow Royal Infirmary
Gloucestershire Hospitals NHS Foundation Trust
Good Hope Hospital
Great Ormond Street Hospital For Children NHS Trust
Great Western Hospitals NHS Foundation Trust
Guys and St Thomas' NHS Foundation Trust
Hammersmith Hospital
Harefield Hospital
Harrogate and District NHS Foundation Trust
Heatherwood & Wexham Park Hospitals NHS Foundation Trust
Hereford Hospitals NHS Trust
Hexham General Hospital
Hinchingbrooke Health Care NHS Trust
HMT Claremont Hospital
Homerton University Hospital
Hull and East Yorkshire Hospitals NHS Trust
James Paget University Hospital
Kent and Canterbury Hospital
Kettering General Hospital NHS Foundation Trust
King Edward VIIs Hospital Sister Agnes
King's College Hospital NHS Foundation Trust
Kingston Hospital
Lancashire Teaching Hospitals NHS Foundation Trust
Leighton Hospital
Nuffield Orthopaedic Centre NHS Trust
Lewisham Healthcare NHS Trust
Lincoln County Hospital
Lister Hospital Stevenage
Liverpool Heart and Chest NHS Foundation Trust
Liverpool Women's NHS Foundation Trust
London Bridge Hospital HCA Group
Luton and Dunstable Hospital NHS Foundation Trust
Maidstone and Tunbridge Wells NHS Trust
Marie Curie Hospice Penarth
Medway NHS Foundation Trust
Mid Staffordshire NHS Foundation Trust
Milton Keynes Hospital
Morriston Hospital
Neath Port Talbot Hospital
Nevill Hall Hospital
NHS Lothian
Noble's Hospital Isle of Man
Norfolk and Norwich University Hospital
North Bristol NHS Trust
North Manchester General Hospital
North Middlesex University Hospital NHS Trust
North Tees and Hartlepool NHS Foundation Trust
North Tyneside General Hospital
Northampton General Hospital NHS Trust
Northern Devon Healthcare NHS Trust
Northern General Hospital
Northern Lincolnshire and Goole Hospitals NHS Foundation Trust
Northwick Park Hospital
Nuffield Health Woking
Royal United Hospital

Oxford Radcliffe Hospitals NHS Trust
Papworth Hospital NHS Foundation Trust
Peterborough City Hospital
Pilgrim Hospital
Plymouth Hospitals NHS Trust
Poole Hospital NHS Foundation Trust
Portsmouth Hospitals NHS Trust
Prince Charles Hospital
Princess of Wales Hospital
Princess Royal University Hospital Farnboro'
Queen Elizabeth Hospital Gateshead
Queen Elizabeth Hospital Woolwich
Queen Elizabeth The Queen Mother Hospital Margate
Queen's Medical Centre Campus Nottingham
Ramsay Yorkshire Clinic
Rochdale Infirmary
Rotherham Hospital
Royal Berkshire NHS Foundation Trust
Royal Bolton Hospital NHS Foundation Trust
Royal Brompton Hospital
Royal Cornwall Hospitals NHS Trust
Royal Derby Hospital
Royal Devon and Exeter Hospital (Wonford)
Royal Free Hospital
Royal Glamorgan Hospital
Royal Gwent Hospital
Royal Hospital for Sick Children (Yorkhill)
Royal Marsden Hospital Chelsea
Royal Marsden Hospital Sutton
Royal National Orthopaedic Hospital NHS Trust
Royal Oldham Hospital
Royal Surrey County Hospital NHS Foundation Trust
Royal Sussex County Hospital
Salford Royal Hospital
Salisbury NHS Foundation Trust
Sandwell General Hospital
Scarborough and North East Yorkshire Healthcare NHS Trust
Sheffield Children's Hospital
Singleton Hospital
Solihull Hospital
South Devon Healthcare NHS Foundation Trust
South Tees Hospitals NHS Foundation Trust
South Tyneside NHS Foundation Trust
South Warwickshire NHS Foundation Trust
Southampton General Hospital
Southend University Hospital
Southern General Hospital
Southport and Ormskirk Hospital NHS Trust
Spire Bristol Hospital
Spire Cambridge Lea Hospital
Spire Cheshire Hospital
Spire Clare Park Hospital
Spire Dunedin Hospital
Spire Fylde Coast Hospital
Spire Gatwick Park Hospital
Spire Harpenden Hospital
Spire Hull & East Riding
Spire Leicester Hospital
Spire Methley Park Hospital
Spire Murrayfield Hospital Edinburgh
Spire Norwich Hospital
Spire Parkway Hospital
Spire Portsmouth Hospital
Spire Regency Hospital
Spire Roding Hospital
Spire St Saviours Hospital

Spire Sussex Hospital

Spire Tunbridge Wells Hospital

Spire Washington Hospital

St Charles Centre for Health and Wellbeing

St. George's Hospital

St. Helens and Knowsley Teaching Hospitals NHS Trust

St. Mary's Hospital Isle of Wight

St. Mary's Hospital Paddington

St. Peter's Hospital

St. Richard's Hospital

Stockport NHS Foundation Trust

Sunderland Royal Hospital

Surrey and Sussex Healthcare NHS Trust

Tameside Hospital NHS Foundation Trust

Taunton and Somerset NHS Foundation Trust

The Christie NHS Foundation Trust

The Dudley Group of Hospitals NHS Foundation Trust

The Harley Street Clinic HCA Group

The Hillingdon Hospital

The Ipswich Hospital NHS Trust

The Leeds Teaching Hospitals NHS Trust

The London Clinic

The Mid Yorkshire Hospitals NHS Trust

The Princess Grace Hospital HCA Group

The Princess Alexandra Hospital NHS Trust

The Princess Royal Hospital Haywards Heath

The Queen Elizabeth II Hospital

The Robert Jones and Agnes Hunt Orthopaedic and District Hospital NHS Trust

The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust

The Royal Hallamshire Hospital

The Royal Liverpool University Hospital

The Royal Orthopaedic Hospital NHS Foundation Trust

The Royal Wolverhampton Hospitals NHS Trust

The Shrewsbury and Telford Hospital NHS Trust

The Ulster Hospital

The Walton Centre

The Wellington Hospital HCA Group

The Whittington Hospital

Trafford General Hospital

University College London Hospitals NHS Foundation Trust

University Hospital Aintree

University Hospital of North Durham

University Hospital of North Staffordshire

University Hospital of South Manchester NHS Foundation Trust

University Hospitals Birmingham NHS Foundation Trust

University Hospitals Coventry and Warwickshire NHS Trust

University Hospitals of Leicester NHS Trust

University Hospitals of Morecambe Bay NHS Foundation Trust

Velindre Hospital

Victoria Infirmary

Walsall Healthcare NHS Trust

Wansbeck General Hospital

Warrington and Halton Hospitals NHS Foundation Trust

West Hertfordshire Hospitals NHS Trust

West Middlesex University Hospital

West Suffolk Hospital

Western Infirmary

Weston Area Health NHS Trust
Whipps Cross University Hospital
William Harvey Hospital

Winchester and Eastleigh Healthcare NHS Trust
Withybush General Hospital

Worcestershire Acute Hospitals NHS Trust
Wrightington, Wigan and Leigh NHS Foundation Trust
Yeovil District Hospital NHS Foundation Trust
York Hospital

Appendix D– Quality Account statement

We have prepared this section in case you would like to use it your Quality Account for 2011/12.

Quality Account statement

In 2011, **St. Elsewhere's NHS Trust** took part in the National Comparative Audit of Blood Transfusion 2011 Re-audit of Bedside Transfusion Practice.

We submitted **40** cases, which was 100% of cases required for the audit sample.

Resources

Department of Health. Quality Accounts aim to enhance accountability to the public and engage the leaders of an organization in their quality improvement agenda. http://www.dh.gov.uk/en/Healthcare/Qualityandproductivity/Makingqualityhappen/qualityaccounts/index.htm

Healthcare Quality Improvement Partnership. National audits for inclusion in quality accounts and guidance for preparation of quality accounts statement. http://www.hqip.org.uk/national-clinical-audits-for-inclusion-in-quality-accounts-portal-goes-live

Appendix E – Implementation guidance

We suggest that the following groups should be involved with implementing change as a result of the audit findings:

PATIENTS RECEIVING BLOOD TRANSFUSIONS

Patients (or the parents of children) receiving a blood transfusion should be able to determine that they are receiving optimal care during transfusion by being given adequate information about blood transfusion and by being involved with ensuring they are correctly identified before, and observed during, a transfusion.

HEALTHCARE STAFF

This was an audit of clinical staff who should be made aware of good practice as well as being involved in the investigation of poor practice.

- Feedback audit results to clinical staff - Examples of how this can be done include a transfusion newsletter, hospital intranet, ward team meetings or senior nurse meetings, grand rounds, and postgraduate educational meetings.

- All staff should be made aware of the need for transfusion training and competency assessment.

HOSPITAL TRANSFUSION TEAMS AND TRANSFUSION COMMITTEES

These groups are ideally placed to take forward any recommendations from the audit and should be recognised and resourced by the hospital or Trust. Bedside transfusion practice is at the forefront of the transfusion practitioner's role.

- Present and discuss the audit findings at the HTC and HTT.

- Develop action plans which adopt the SMART* objectives and add to the HTT work plan.

**Specific, Measurable, Achievable, Relevant and Timely*

TRUST CLINICAL GOVERNANCE TEAMS

Blood transfusion takes place in most areas of an acute hospital and the Trust should be aware of good practice as well as potential areas for improvement. There should be clinical governance representation on the HTC.

- Support changes to practice or the requirement for risk assessments.

- Consider the policies for patient identification in relation to all patients, not just those receiving a blood transfusion.

- Involve Trust IT leads or clinical practice committees in developing appropriate solutions to patient identification or development of new documentation to support transfusion.

REGIONAL TRANSFUSION COMMITTEES

RTC chairs and members should encourage participation in national audits and support HTTs in sites where resources are not available or where there are other barriers to participation.

- The regional slideshow should be reviewed and used to highlight problems and possible solutions through sharing practice events.

NATIONAL BLOOD TRANSFUSION COMMITTEE (OR EQUIVALENT)

The audit report and the participation of sites in England and North Wales will be shared with the NBTC and in Scotland will be presented to the Scottish Clinical Transfusion Advisory Committee (SCTAC) and equivalent bodies in Wales and Northern Ireland.

- An action plan against the relevant recommendations should be reviewed by these national committees

PROFESSIONAL ORGANIZATIONS

Wider engagement is essential and, via the project group and the NCABT steering group, professional organizations should disseminate the findings of the audit and key messages to members.

Whilst nurses are the group of healthcare professionals most likely to be involved in blood administration, doctors, operating department practitioners and healthcare assistants play a role in blood transfusion safety.

Appendix F – Best practice notes

Danny McGee, ODP
Blood Conservation Practitioner
Better Blood Transfusion
Scottish National Blood Transfusion Service

CODP
College of Operating Department Practitioners

www.codp.org.uk

Be familiar with your local transfusion policy

- **All patients should be wearing identification at the time of a transfusion.**
- **The patient's identification should contain the patient's first name, last name, date of birth and NHS or local identification number in line with hospital policy.**
- **In the perioperative setting it will rarely be possible to ask the patient to verbally state their full name and date of birth immediately prior to each transfusion. It is therefore imperative that the identification band details are confirmed as correct at the preoperative check as this is the only identification that can be checked against the blood bag details.**
- **It is recognised that occasionally a patient's identification band is removed to allow for access for surgical or anaesthetic procedures. You should ensure that you know the correct procedure for replacing this band or, if this is not possible, be aware of an acceptable alternative form of identifying the patient in compliance with your local policy. This is of particular relevance when a patient is sedated or anaesthetised.**
- **Easy access to the patient's identification band should be considered when positioning the patient for surgery.**
- **Ensure that you are up to date with any mandatory safe transfusion training.**

- **Whilst monitoring of the patient is usually a standard of care within the perioperative setting, you should be aware of that the patient's heart rate, temperature, respiration rate and blood pressure should be recorded and monitored**
    i. before a unit of blood is transfused,
    ii. fifteen minutes after the start of a transfusion.
    iii. at the end of each unit transfused.

- **Remember transfusion reactions can occur during the first few minutes, and after only small volumes of blood have been transfused.**

- **Remember that even during massive transfusions each unit of blood should be individually checked against the patient's identification immediately before it is transfused.**

- **Be aware of the correct procedure for reporting a suspected transfusion reaction.**

Dr. Andrew Mortimer
Consultant Anaesthetist
Wythenshawe Hospital

- Transfusion in the operating theatre does not take place without the patient's full name and hospital/NHS number being checked on arrival in the theatre reception/anaesthetic room.
- It is very common for patients to arrive in theatre with two wristbands, so even when one is removed to facilitate venous or radial artery cannulation, it is very unlikely that the patient is not identified correctly.
- The wristband is used during the World Health Organization [WHO] preoperative check on patients undergoing surgery. *
- The six standards used in this National Comparative Audit should readily be met in the unconscious, anaesthetised patient, where continuous cardiovascular and respiratory monitoring is carried out.

*http://www.who.int/patientsafety/safesurgery/tools_resources/SSL_Checklist_finalJun08.pdf

Appendix G – Transfusion Care Pathway example

This example of a Transfusion Care Pathway was kindly provided by **Susan Cottrell** of the Scottish Better Blood Transfusion Programme, and is available from the Healthcare Improvement Scotland website:

http://www.healthcareimprovementscotland.org/default.aspx?page=12514

Appendix H – Alternative to wristbands for neonatal and paediatric patients

This report on the use of Mepitac as an alternative to a wristband was kindly provided by Tracey Hall, Transfusion Practitioner at Alder Hey Children's NHS Foundation Trust

Alder Hey Children's NHS
NHS Foundation Trust

Having done wristband audits over a number of years, it was clear that a number of patients were unable to wear wristbands. This included some burns, dermatology, ICU patients and patients in theatre. Although most of these patients could comply with wrist banding after discussion in the relevant areas, it also became clear that there would always be a small minority of patients where a wristband was not a feasible option. For this reason, it was felt that, rather than leaving this group of patients unidentified, an alternative method of identification should be sourced.

Method

In 2005, a number of types of tape were sourced and evaluated with the outcome being that a product, usually used as a dressing, was found to be a suitable candidate. The product, Mepitac, is a silicone based tape which that is approximately 2cm wide and comes on rolls of varying sizes. However, this product needed to be trialled for use in a paediatric setting as a patient identification system. The initial part of the trial relied on a comprehensive questionnaire being put together to look at all aspects of the tape's use. Once this was formulated the trial was able to take place, initially on ICU.

For a period of one month, every patient admitted to ICU was identified using Mepitac as well as the normal wristband being placed on the patient. The instruction for use including placement of the tape and how the patients details were to be put on the tape were included in the audit proforma. At various stages over the days that followed the patient's admission to ICU the staff were asked to record information about ease for application, wearability, skin reactions, ease of removal, moveability, parental opinion and many other aspects of its use. After the one month period, analysis of the data showed that the tape had proved very popular on ICU as it was able to be moved to different areas of the body if required, it did not come off, it was easy to apply, and the skin appeared unaffected, even after 7 days in place.

On reviewing the feedback from the nursing staff, however, it was felt that as their patients were mainly unconscious and lacked mobility that it would be more appropriate if the tape was trialled on patients who were more active and on patients who would have an opinion on the product. For this reason, the use of the tape was next trialled on Oncology, Burns, Dermatology and Orthopaedics.

There were obvious concerns that patients who were more active would be tempted to peel the product off and it was felt that this could be a risk to the patient if this was put in the mouth.

The proforma had included several choices for siting the product as it was felt that the Mepitac was so comfortable that if it was placed out of sight, then the patient was unlikely to know they had the

Mepitac in place. It was hoped that this would greatly reduce the chances of it being removed. The same time period was given to run the trial and again the audit sheet data was collated.

Results

The outcome from the majority of trials was very positive. The nursing staff provided information that was, on the whole, favourable, although a number of nursing staff reported that the Mepitac was a little difficult to write on. There were a number of patients who had this product on for over a week and one patient actually had the product in place after a 1 month admission. Nurses reported that patients were able to be washed with the Mepitac in place and that nobody removed the tape themselves. There were no skin reactions and no problems reported with regard to tissue breakdown.

Conclusion

The Positive Patient Identification Working Group agreed that the Mepitac identification system should be included in the patient identification policy as an alternative to the wristband. *It was felt* that an option of photographing the patient should be left in the policy but only as a final option if the wristband or the Mepitac method could not be used.

MEPITAC TRIAL

FOR USE IN POSITIVELY IDENTIFYING PATIENTS

Remove one strip from the pack and label using black ballpoint pen. Details to be placed on strip are:

Surname (CAPITALS)

First name (Upper and lower case)

Date of Birth

NHS or Hospital ID number

Gender

Site application preference

Where patient is supine:

1. Upper thigh
2. Lower shin
3. Upper arm

If none of the above is suitable, choose a site appropriate to the patient's position/condition.

Documentation of site

Document position of strip on patients white board. i.e. patient I.D. on left upper thigh

(ensure this is updated if the site is changed for any reason)

Document position of strip on patient assessment sheet (pressure area/manual handling)

Assessment

Each day assess general state of Mepitac and the surrounding skin and document findings.

At day 3, lift Mepitac and assess skin below where Mepitac was placed and document findings.

Replace Mepitac onto same area. Document date on assessment sheet

At day 7, lift Mepitac and assess skin below where Mepitac was placed and document findings. Document date on assessment sheet.

After assessment on day 7, remove tape and replace the tape with a fresh piece and change the site. Change site details on white board and on nursing documents accordingly.

The assessment chart no longer needs to be completed after the initial 7 days but replacement of the tape should be repeated EVERY 7 days and any problems documented.

If at any point there appears to be a problem with the skin remove the Mepitac completely and document changes to the skin site.

Patient case sheet number _____ **Date:** _____

	Very poor	**Poor**	**Average**	**Good**	**Very Good**
DAY 1					
1. How easy was it to write details on?					
2. How easy was it to apply to patient?					
3. How good was the product at staying on the skin?					

DAY 2					
4. How good was the product at staying on the skin?					
5. How legible was the writing on the product?					
6. surrounding skin condition					
DAY 3					
7. How good was the product at staying on the skin?					
8. How legible was the writing on the product?					
9. surrounding skin condition					
10. After lifting what was the state of the skin underneath?					
11. After lifting how easy was the product at re-sticking to the skin?					
DAY 4					
12. How good was the product at staying on the skin?					
13. How legible was the writing on the product?					
14. surrounding skin condition					
DAY 5					
15. How good was the product at staying on the skin?					
16. How legible was the writing on the product?					
17. surrounding skin condition					
DAY 6					
18. How good was the product at staying on the skin?					
19. How legible was the writing on the product?					
20. surrounding skin condition					

DAY 7					
21. How good was the product at staying on the skin?					
22. How legible was the writing on the product?					
23. Ease of removal?					
24. After lifting what was the state of the skin underneath?					
25. Patient comfort whilst wearing?					
26. Patient comfort upon removal?					

Any further comments/problems with Mepitac that you feel would not make it a good product to identify patients with.

If anybody has a patient for more than 7 days please feel free to write further comments about its suitability after this period.