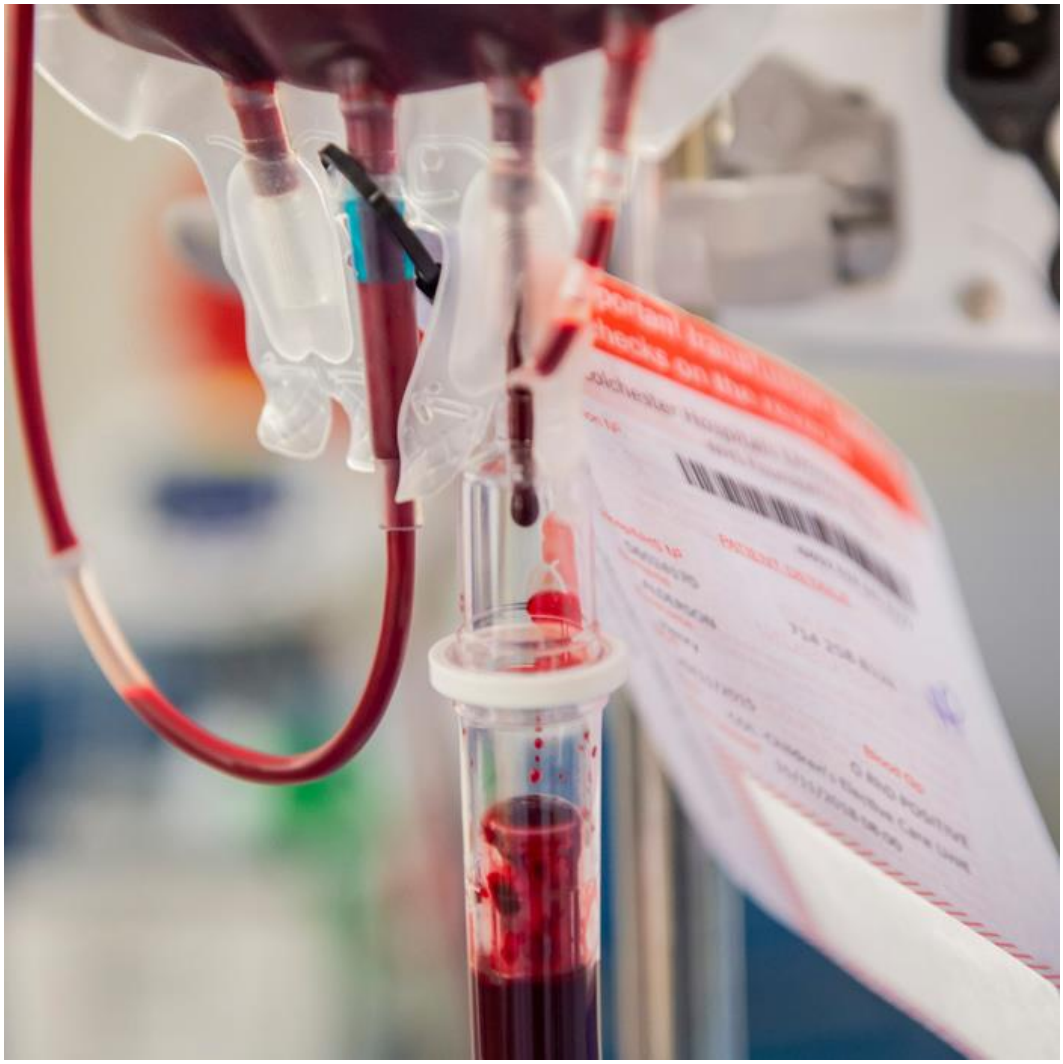
NHS
Blood and Transplant



2019 Re-audit of the Medical Use of Red Cells

National Comparative Audit of Blood Transfusion

February 2022

Acknowledgements

We wish to thank all those who have participated in the 2019 Re-Audit of the Medical Use of Red Cells. 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.

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Key Findings and Recommendations

Key Finding: 96% (4930/5129) of audited patients had a pre-transfusion haemoglobin (Hb) taken within 3 days of transfusion **(Standard 1)**.

Key Finding: Significant numbers of asymptomatic or only mildly symptomatic patients are being transfused when their Hb levels are above the recommended thresholds **(Standard 2).**

30% (816/2745) of patients transfused with an Hb greater than 70g/L did not have an apparent adequate clinical reason for their transfusion

61% (325/534) of patients with acute coronary syndrome or cardio-respiratory disease were transfused above a threshold of 80g/L without an apparent adequate clinical reason

Recommendation*:* Trusts should ensure that there is an appropriate reason for selecting red cell transfusion as the treatment of choice.

Key finding: 90% (4221/4715) of audited patients had a post-transfusion haemoglobin (Hb) taken within 3 days of transfusion **(Standard 3).**

Key Finding: 21% of non-bleeding, multi-unit transfused patients had their haemoglobin level checked between units, and 27% had a documented clinical review **(Standard 4).**

Recommendation*:* Trusts should assure themselves that the NICE and British Society of Haematology recommendations, amongst others, are supported within their medical settings, and that patients are not put at increased risk of unnecessary transfusion.

Key Finding: One in five (1034/5155) patients were transfused because of iron-deficiency anaemia. Only one-third of these (333/1034) presented with a bleeding phenotype which may have explained the use of transfusion. 68% of transfused iron-deficient patients were not bleeding.

Recommendation*:* Trusts should ensure that iron supplementation is utilised as the primary intervention unless it is clinically urgent to transfuse.

Key Finding: Nearly 5% (231/5155) of transfusions were documented as given because of B12 or folate deficiency or both. Deficiency severe enough to require red cell support is unusual.

Recommendation*:* Trusts should carefully examine their individual reports to look at these cases and consider deep-dive analysis of any that they contributed, to ensure that these transfusions were necessary.

Key finding: Only 50% (2581/5155) of transfusions had documentation that risks, benefits and alternatives had been explained (for this or a previous transfusion) **(Standard 5)**

Recommendation: Trusts should assure themselves that there is a robust system in place to help transfusion authorisers to have access to patient information sources, in keeping with NICE guidelines and quality standards.

Introduction

Approximately two thirds of all red cell transfusions are administered for a 'medical' indication [(1)], around 900,000 units in England every year. As with all blood, medical transfusions are mainly given to older people, but with a range that is skewed towards the 'older' part of the overall distribution. As a result of this and other factors, the dramatic fall in the use of red cells seen in the last 20 years has impacted less on medical transfusion than other specialties such as surgery.

Randomised controlled trials examining transfusion thresholds in 'medical' settings are fewer than in surgery and critical care, but important evidence is available and national guidelines and NICE Quality Standards have been available for several years. In addition, Patient Blood Management is now a well-established initiative, generating international consensus guidelines to ensure that transfusion practice in all clinical areas is evidence-based, carefully risk-assessed and prioritises alternatives to transfusion where appropriate, with a clear emphasis on patient involvement in transfusion decisions whenever possible.

Hopefully, most NHS Trusts will have audited their practice against the available standards, analysed any sub-optimal results and put in place improvement measures to try to reduce any gaps. One of the aims of this audit is to allow Trusts to benchmark their performance against the national 'average'.

Much transfusion practice in medical settings happens under pressured circumstances, both on an individual patient clinical level, and a service level. The last two years have increased the service pressures to unprecedented levels, but this audit captures practice just prior to the COVID-19 pandemic, and hopefully will still provide a useful reflection for departments and Trusts on their practice in less unusual times.

Aims of the audit

- To reduce the variation in the medical use of blood so that quality becomes more consistent, reducing the risk to patients
- Audit a representative sample of physician decisions to prescribe red blood cells
- Gather information from a sample of patients under the care of a physician, such as reason for transfusion, clinical picture, co-morbidity and testing
- Identify which areas of physician transfusion practice are amenable to change
- Provide a national picture of process performance for comparative and benchmarking purposes

Audit standards

Standard 1 **A pre-transfusion haemoglobin (Hb) is taken in 100% of cases within 3 days of transfusion (and preferably the same day)**

Grade 1 C – consensus opinion

The pre-transfusion Hb informs the accurate planning of transfusion requirements, but it is recognised that this is not the only factor required when making the decision to transfuse.

Standard 2a **No patient (without acute coronary syndrome or cardio-respiratory disease) is transfused with a pre-transfusion Hb > 70g/L without adequate clinical reason**

Grade 2 A

Based on the NICE Clinical Guideline on Blood Transfusion [NG24] [(2)], this standard allows for the fact that 'symptomatic' patients with a Hb>70g/L, where the symptoms are judged to be secondary to the anaemia and are at least moderate or severe, are likely to be transfused above this threshold.

Standard 2b **No patient with acute coronary syndrome or cardiorespiratory disease is transfused with a pre-transfusion Hb > 80g/L without adequate clinical reason**

Grade 2 A

As standard 2a and based on the NG24 standard.

Standard 3 **A post-transfusion Hb is taken in 100% of cases within 3 days following transfusion (and preferably the same day) to assess the effectiveness of the red cell transfusion**

Grade 1 C consensus opinion

NICE Guideline NG24 recommends a 'target range' Hb, which can only be assessed by re-checking Hb. It is acknowledged that there are a variety of reasons why a post-transfusion Hb may not be checked, in different clinical contexts.

Standard 4 **Patients receiving multiple units are clinically reassessed and have their haemoglobin levels checked after each unit of red blood cells they receive, unless they are bleeding or are on a chronic transfusion programme.**

NICE Quality Standard 138 – statement 3

A variety of initiatives and Patient Blood Management (PBM) guidelines have recommended that only single units are transfused, when possible, to avoid over-transfusion and the associated complications.

Standard 5 **People who may need or who have had a blood transfusion have the risks, benefits and alternatives to transfusion explained to them.**
NICE Quality Standard 138 – statement 4

Guidelines from The Advisory Committee on the Safety of Blood, Tissues and Organs (SaBTO) in 2011, revised in 2021,[3] define clearly the requirement to consent patients for blood transfusion.

Methodology

Data collection
During the period 1st October 2019 to 31st December 2019, Hospitals and Trusts in the UK were invited to take part in a repeat of an audit first performed in 2011. The audit looked at how physicians use red blood cells in a variety of clinical presentations and settings. We accepted late data from some sites, extending the audit period to include patients audited during part of January 2020. A sample questionnaire can be found at Appendix One.

Sites were asked to audit consecutive transfusions of red blood cells (RBC) into adult patients during the audit period. They were asked to report one transfusion episode per patient and to focus on the first transfusion episode in the admission, where possible. All transfusions had to be ordered or prescribed by a physician, or under the guidance of a physician.

Patients with a haematological malignancy were excluded, and sites were asked not to audit patients transfused with more than four units of blood in one transfusion episode (likely to represent major haemorrhage), since these classes of transfusion have been addressed in other National Comparative Audits. However, some audited patients did receive four units of blood or more, but the site auditors did not consider these to be instances of major haemorrhage.

Data analysis
Data provided by hospitals in the questionnaire were analysed separately using descriptive statistics to summarize the data. Several factors were cleaned in the analysis; any questions that involved free text were categorized by a clinician into groups.

CLINICAL AUDIT: TABULATED SUMMARIES OF MAIN RESULTS

132 eligible English NHS Trusts were invited to participate, and 110 (83%) enrolled in the audit. A further 22 sites enrolled from Northern Ireland (2), Scotland (4) and Wales (16). Some Trusts included more than one hospital, so the total number of sites analysed was 161. Altogether, there were 5155 patients analysed in this audit.

Table 1 shows patient demographics and comorbidities as well as the severity of symptomatic anaemia. Overall, 51% were female, the median age was 75 (IQR:61-84), 61% had comorbidities and the majority of those with symptomatic anaemia experienced it moderately.

Table 1. Patient Demographics and Comorbidities

	National	
Total	**N = 5155**	**100%**
Median age[1] (years; IQR)	75	61-84
Median weight (kg; IQR)	70(n=3456)	59.0-82.6
	N	**%**
Male	2523	48.9
Female	2632	51.1
Comorbidities[2]	**3123**	**60.6**
Cardiac	2412	46.8
Respiratory	938	18.2
Vascular disease	748	14.5
Symptomatic Anaemia	**3390**	**65.8**
Mild	999	19.4
Moderate	1697	32.9
Severe	513	10.0
Unspecified	181	3.5

[1] Patient age is calculated as the age of the patient at the end of 2019.
[2] Note that cardiac, respiratory and vascular disease do not add up to total “comorbidities” as patients could have a combination of these.

Commentary

The basic demographics demonstrate that this cohort resembled those in previous medical transfusion audits. The sex and age distribution were similar; the median age was 75 compared with 73 in the previous medical NCA in 2011.(4) The median age of transfused patients in a survey of the use of red cells in patients under all specialties(1) was 69, reflecting the fact that medically transfused patients are skewed towards the older part of that distribution.

Cardiovascular and respiratory systems were of interest because they are more likely to influence the decision to transfuse a medical patient outside of guideline-based laboratory and clinical parameters, hence standards 2a and 2b are broader than the NICE recommendation of ‘acute coronary syndrome’. If other co-morbidities influenced a decision in an audited patient, this information was also specifically requested.

Table 2 shows the clinical presentation of patients resulting in transfusion. The main reasons for transfusion were for general anaemia (N=1596, 31%) and for gastro-intestinal causes (N=1563, 30%). Overall, 34% of transfusions were in patients with some form of bleeding, not defined as major haemorrhage. 1% were used as prophylaxis to raise Hb prior to a procedure, and the remaining 65% were given for anaemia due to a variety of non-bleeding causes.

Table 2. Clinical presentation

	National (N = 5155)	
	N	**%**
General		
Anaemia under investigation - cause not yet known	1596	31.0
Gastro-intestinal	1563	30.3
Upper - Haematemesis or melaena	861	16.7
Lower - Bleeding per rectum	451	8.7
Liver failure	209	4.1
Acute GI[1]	143	2.8
Pancreatitis	26	0.5
GI other[1]	11	0.2
Nephrology	713	13.8
Chronic renal failure	570	11.1
Acute renal failure as primary diagnosis	156	3.0
Nephrology other[1]	4	0.1
Cardiac	396	7.7
Acute coronary syndrome	116	2.3
Cardiac other	291	5.6
Oncology (solid organ only - not haematological malignancy	865	16.8
Chemotherapy	216	4.2
Anaemia of malignancy	706	13.7
Cancer unspecified[1]	53	1.0
Bleeding	457	8.9
Menorrhagia	121	2.3
Epistaxis	68	1.3
Haemoptysis	42	0.8
Retroperitoneal bleeding	20	0.4
Other bleeding[1]	209	4.1
Other reason	802	15.6
Prophylactic prior to a procedure	49	1.0
Other[2]	764	14.8

1 Additional categories were grouped from 'other' free text
2 Other consists of examples such as post-op, iron deficiency, dialysis, palliation
3 Note that groups may not total sub-categories as patients may have more than one clinical presentation

Commentary

Even with major haemorrhage cases excluded, 'minor' or less severe or rapid bleeding still accounted for a significant proportion of medical transfusions. Some 9% of physician-supervised transfusion was for bleeding not categorised as GI, demonstrating the breadth of clinical presentations and problems physicians care for. The 2011 audit [(4)] included a significant proportion of haematological patients (roughly one-third), but even with these excluded from this audit, oncology-based transfusion still accounted for 17% of all medical red cell units transfused, compared with 19% in 2011. Many oncology patients have emergency or supportive care delivered outside of specialist units.

Table 3 shows the final documented cause of anaemia, 20% of cases were for iron deficiency followed by an unknown cause of anaemia (18%), anaemia of chronic disease (18%) and renal anaemia (9%). Other causes of anaemia were categorised into groups by an NCA clinician.

Table 3 Documented cause of anaemia

	National	
Total	**N = 5155**	**100%**
Iron deficiency	1034	20.1
Cause of anaemia unknown	951	18.4
Anaemia of chronic disease	938	18.2
Renal anaemia	486	9.4
Not diagnosed because not investigated	309	6.0
B12 and/or folate deficiency	231	4.5
Not diagnosed because investigations were inconclusive	102	2.0
Not diagnosed because results of investigations were not reviewed	34	0.7
Other cause of anaemia	1811	35.1
Acute bleeding	719	13.9
Cancer unspecified	251	4.9
Post-op	53	1.0
GI	31	0.6
Palliation	21	0.4
Pre-op	4	0.1
Other	732	14.2

Commentary

Iron deficiency now appears to be the cause of the anaemia in 20% of medically transfused patients, compared with 4% in 2011,[4] a marked change. It is difficult to know whether some of this group might contain chronically bleeding patients re-categorised from the 'bleeding' clinical presentations in Table 2, since acute bleeding represents only 14% of anaemia here, but overall bleeding as a clinical presentation constituted 34% of cases. In a basic analysis, 68% (698/1034) of patients categorised as having iron deficiency anaemia by the end of the admission did not present with a bleeding phenotype. There may have been other reasons to transfuse them, but these cases are worthy of attention and further individual analysis by the Trusts that submitted them.

This demonstrates the inherent challenges in analysing national audit data where categorisation by the auditor is required. Of course, any significant level of chronic bleeding will eventually lead to iron deficiency, but the mechanism of anaemia in acute bleeding is different, stemming from haemodilution and inability of the bone marrow compartment to replace red cells at the necessary pace, although iron may be plentiful.

Even with the removal of haematological patients from this audit, iron deficiency is still a much larger proportion of the whole compared to a decade ago. That said, 'potentially' iron deficient patients (as defined by a variety of surrogate blood result markers) were thought to comprise 13% of the cases in 2011,[4] and so the increase in 2019 may represent more extensive use of iron studies, particularly serum ferritin, to investigate medical anaemia and more conclusively identify iron deficiency.

Alternatively, it may represent a real increase in the chance that an iron deficient patient is now chosen for red cell transfusion in a medical setting.

Nearly 20% of medically transfused patients did not have a documented identified cause of their anaemia by the time their audited hospital episode ended. On admission, 30% of clinical presentations were for investigation of anaemia and so for patients presenting with anaemia of unclear cause requiring red cell transfusion, it appears that one in three receive a diagnosis during that hospital episode. These may be patients who are under ongoing outpatient investigation and have been brought in to be 'topped-up' during this process.

9% of patients had an unclear cause of anaemia either because a decision had been made not to investigate further, or because investigations had been inconclusive or were awaiting review at the time of the audit.

B12 and folate deficiency rarely presents with such dramatic anaemia that it requires transfusion rather than simple supplementation. In this audit, 4.5% of transfusions (231 audited patients) were documented as given because of B12 and folate deficiency. Hospitals should carefully examine their individual reports to look at these cases and consider deep-dive analysis of any that they contributed, to ensure that these transfusions were necessary.

Just under 17% of clinical presentations were 'oncological', but only 5% of the transfusions were classified as being due to 'cancer NOS', presumably again pointing towards re-classification of a large number of these cases into 'bleeding', 'iron deficiency' or even 'anaemia of chronic disease' categories, all of which may be accurate.

For 951 patients the reason for transfusion was recorded as " Cause of anaemia unknown". The ages of these patients ranged from 17 to 103 years, but the patients were predominantly older: the median age was 77 (IQR 65-85). The chance of being given a 'cause of anaemia unknown' label increased slightly with increasing age bands, reflecting that elderly and very elderly patients may be less likely to be extensively investigated for cause of anaemia.

Table 4 shows the location and details of transfusion. Transfusions occurred on all days of the week at all hours from 12 April 2019 to 20 January 2020. Some sites elected to collect data on a retrospective basis so looked back to April 2019 for data. Just over half of all transfusions were administered in a ward, followed by 19% in an AMU/admissions unit, 10% in A&E, 6% in an ambulatory care unit and 5% in ITU. Most patients were transfused with two units of RBCs. Of those that received more than one unit of RBC, 80% didn't have a recheck of haemoglobin level between units and 73% didn't have a clinical review before the next unit of RBC was transfused. These percentages exclude 1227 patients who were bleeding at the time of transfusion.

Table 4 Details of transfusion

	National	
	N	**%**
Location of transfusion	**N = 5155**	**100%**
Ward	2780	53.9
AMU/Admissions Unit	982	19.0
Accident & Emergency	497	9.6
Ambulatory Care Unit	332	6.4
ITU	233	4.5
Medical Day Care Unit (or similar)	212	4.1
Home	1	0.0
Hospice	0	0.0
Other	107	2.1
Not stated	11	0.2
Yes	2373	46.0
No	2481	48.1
Discussed for a previous transfusion; not this one	208	4.0
Missing	93	1.8
1	2037	39.5
2	2540	49.3
3	414	8.0
4 or more	164	3.2
Yes	383	20.2
No	1483	78.4
Missing	25	1.3
Yes	507	26.8
No	1343	71.0
Missing	41	2.1

Commentary

As in 2011,[4] most transfusions are of two units of red cells. However, there has been a significant move towards smaller transfusion volumes, with one-unit transfusions now accounting for around 40% rather than 11% of episodes, and three units or greater only being given in 11% rather than 22% of anaemic episodes. Comparisons with the 2011 audit must be made with caution given the very significant proportion of haematology cases included then and not now (and likely to have comprised a great majority of one or even two-unit cases). However, it seems likely that this represents a true change given the proportionately very large difference.

Patient blood management initiatives regarding the use of single-unit transfusions have been widely publicised and promoted within the UK, with a number of published examples of single-unit policies

resulting in significant cost and resource savings without apparent negative clinical consequences, although these may not always be detected.

These results would suggest that there is much more active engagement with the concept of single-unit red cell transfusion within medical settings, compared to 2011. However, with half of all patients still being given two units, and only a third presenting with any form of bleeding, Trusts should assure themselves that the NICE and British Society of Haematology recommendations, amongst others, are supported within their medical settings, and practice audited as required.

Further results in this table are discussed within the audit standards sections.

CLINICAL AUDIT : RESULTS AGAINST AUDIT STANDARDS

Standard 1: A pre-transfusion haemoglobin (Hb) is taken in 100% of cases within 3 days of transfusion (and preferably the same day)

Grade 1 C – consensus opinion
The pre-transfusion Hb informs the accurate planning of transfusion requirements, but it is recognised that this is not the only factor required when making the decision to transfuse

National: 4930/5129 (96%) patients had a pre-transfusion Hb taken within 0-3 days

Commentary

A small number of patients were transfused based on Hb levels from more than 3 days prior. These may have been outpatients where the transfusion was not able to be arranged within 3 days of the test. In a stable patient this may of course be a perfectly reasonable timescale.

The equivalent figure for Hb level within 3 days or less in 2011 was 93%.

Standard 2a: No patient (without acute coronary syndrome or cardio-respiratory disease) is transfused with a pre-transfusion Hb > 70g/L without adequate clinical reason

Based on the NICE Clinical Guideline on Blood Transfusion [NG24] [(3)], this standard allows for the fact that 'symptomatic' patients with an Hb>70g/L, where the symptoms are judged to be secondary to the anaemia and are at least moderate or severe, are likely to be transfused above this threshold. "Adequate clinical reason" was defined as acute coronary syndrome (ACS), cardiac or respiratory disease and moderate or severe symptoms. See Appendix 1 Q4 for more details.

National: 816/2745 (29.7%) patients with a pre-transfusion Hb >70g/L did not have an adequate clinical reason for their transfusion

Commentary

It is difficult to explain why nearly 30% of non-haemorrhagic, non-high-risk comorbidity cases were transfused with a Hb>70g/L and minimal or no symptoms. Clinical trials have demonstrated that restrictive transfusion thresholds in comparable settings are non-inferior to liberal strategies. This suggests that there were opportunities to avoid unnecessary red cell transfusion, and Trusts should look carefully at any episodes they identify in this category. While there may be circumstances rendering the transfusion necessary, Trusts should satisfy themselves that evidence-based thresholds are in use when transfusing in medical settings. Oncology or palliative patients might be one group appropriately represented in these data.

We did not collect comparator data on the number of patients who were appropriately *not* transfused because their Hb was above the recommended threshold, and it is important to recognise that the number of cases identified by this standard could be small compared to the total that *could have been* transfused unnecessarily.

Standard 2b: No patient with Acute Coronary Syndrome or Cardiorespiratory Disease is transfused with a pre-transfusion Hb > 80g/L without adequate clinical reason

As for standard 2a, “adequate clinical reason” is defined as the patient having moderate or severe symptoms of anaemia.

National: 209/534 (39%) patients with ACS or cardiorespiratory disease and pre-transfusion Hb>80 had an adequate clinical reason for their transfusion

Commentary

A significant majority (61%) of ACS or cardiorespiratory disease patients were transfused with a Hb level greater than 80g/L when they did not display symptoms of moderate or severe anaemia. It is recognised that this is a particularly vulnerable group of patients about whom there may be a great deal of clinical concern. The concession within this standard that patients with moderate or severe symptoms of anaemia are likely to be transfused means that cases within this group are even more worthy of examination by reporting hospitals. The recently published, international, multi-centre randomised controlled trial REALITY [5] reinforces the NICE recommendation that these patients should be considered for a restrictive Hb threshold of 80g/L.

Standard 3: A post-transfusion Hb is taken in 100% of cases within 3 days following transfusion (and preferably the same day) to assess the effectiveness of the red cell transfusion
Grade 1C consensus opinion

National: 4221/4715 (90%) patients had a post-transfusion Hb taken within 0-3 days

Commentary

90% of patients had a post-transfusion Hb checked within three days of transfusion. This allows either under- or over-transfusion to be detected, although there may be valid reasons why it is not done in some patients, for example in patients who are chronically transfused, when symptoms may be of more clinical relevance than Hb results.

Standard 4: Patients receiving multiple units are clinically reassessed and have their haemoglobin levels checked after each unit of red blood cells they receive, unless they are bleeding or are on a chronic transfusion programme.

NICE Quality Standard 138 – statement 3

3118/5155 (60%) patients had more than one unit transfused, and of those, 1227/3118 (39%) had active bleeding and were therefore excluded. None were identified as being on a chronic transfusion programme. This leaves 1891 patients whose Hb could be checked and who could have been re-assessed.

National: 383/1891 (21%) had their Hb checked between units

National: 507/1891 (27%) were clinically assessed between units

Commentary

The NICE quality standards (QS) for blood transfusion [2] were published in 2016, one year after the transfusion guidelines (NG24). Standard 4 of this audit aligns exactly with QS3 and Trusts may already have audited their practice against this standard, or should consider doing so if not. Only 21% of stable patients were documented to have had their Hb re-checked between units, and 27% to have been clinically re-evaluated. This compares to a level of 50% in the post-operative setting in the 2016 NCA of PBM in adults undergoing elective surgery, to provide some comparison.

Although the proportion of one-unit red cell transfusions has risen in this audit compared to 2011, there may still be a significant number of multiple-unit transfusions that are either unnecessary or unsafe, if patients are neither reviewed nor have their Hb rechecked between units.

The annual SHOT reports demonstrate that each year, cases of over-transfusion occur due to unexpectedly large rises in Hb, particularly but not exclusively in patients falling outside of the 'normal' 70kg adult weight category. These can be prevented by following the re-checking recommendation.

Compared to a recommended red cell transfusion volume of 4ml/kg for an adult, patients in this audit received on average twice this volume, which is in keeping with the majority of patients being given two units. In bleeding patients this may well be appropriate, but in stable patients there should be a repeat Hb check and review of the patient's symptoms before a second unit is administered.

Notably, the very low body weight patients (<50kg), who are known to be at particular risk of transfusion-associated circulatory overload (TACO), had a median transfusion volume three times the recommended level in this audit. This may be putting patients at significant risk of TACO and its complications. Trusts should ensure that they have a TACO risk-assessment in place before all patients are transfused, with particular focus on those at high risk of TACO. This recommendation from the Serious Hazards of Transfusion (SHOT) organisation has been in place since 2016. It is acknowledged that reviewing and rechecking every stable patient having a multi-unit transfusion can be a significant resource burden in medical settings. Building this step into a standardised transfusion process / pathway can reduce this burden and embed the practice into the transfusion culture of a hospital / department. For further resources, refer to the SHOT reports [6] and NHSBT Patient Blood Management resources [7].

Standard 5: People who may need or who have had a blood transfusion have the risks, benefits and alternatives to transfusion explained to them.

NICE Quality Standard 138 – statement 4

This states: “People who may need or who have had a blood transfusion are given verbal and written information about blood transfusion.” This is part of a wider set of recommendations around patient information on transfusion in the nG24 guideline.

National : 2581/5155 (50%) patients had the risks, benefits and alternatives to transfusion explained to them either for the transfusion being audited or for a previous transfusion

Commentary

The expert advisory committee on the Safety of Blood, Tissues and Organs (SaBTO) published updated guidelines [(3)] in 2020 on consent for blood transfusion. These re-emphasised the need for informed consent from all patients “who will likely, or definitely, receive a transfusion”, or “where transfusion might occur during a procedure where the patient is incapacitated, for example, where blood is routinely requested prior to surgery or where a ‘group and save’ or ‘cross-match’ sample is taken pre-procedure”. As with all consent discussions, “such shared decision-making discussions should be documented in the patient’s clinical record.”

SaBTO defined transfusion consent in this guideline as “the process by which a patient leans about and understands the purpose, benefits and potential risks of the transfusion”, thus highlighting that central to the consent process is the provision of information on the risks, benefits and alternatives to transfusion.

This update was published in the context of increased focus on consent following the landmark Montgomery v Lanarkshire ruling of 2015, along with other relevant events such as the ongoing Infected Blood Inquiry.

The finding in this audit that only 50% of transfusions had documentation of risks, benefits and alternatives being explained (for this or a previous transfusion) is disappointing, although it is accepted that this may well have taken place but not been documented.

Trusts and departments should assure themselves that there is a robust system in place to help transfusion authorisers to explain the risks, benefits and alternatives as part of the consent process and to have access to patient information sources.

Summary and Conclusion

Most patients transfused in medical settings have pre- and post-Hb levels checked, and the great majority that are transfused when the Hb is above nationally recognised thresholds, receive it because of clinical concern about symptoms. Nevertheless, there are a significant minority in whom this does not seem to be the case, and individual hospitals and Trusts should look at their own cases to analyse why this is so.

Although the use of single-unit transfusion has increased in medical settings, there are still a large number of multiple-unit transfusions in non-emergency cases, and most of these do not record that the patient is either reviewed, or the Hb rechecked, between units. This standard may be difficult to accomplish in all cases in pressured clinical settings but is widely recognised as best practice and reduces the risk to patients of over-transfusion and TACO.

Severely anaemic, comorbid or symptomatic patients with iron deficiency may require red cell transfusion while waiting for iron supplementation to take effect, and this is more likely when presenting with active bleeding. However, a significant majority of iron-deficient transfused patients were not bleeding, and Trusts should examine these to ensure there was a good clinical reason for this.

Finally, only half of the audited transfusions had associated documentation of patient consent, either for the index or a previous transfusion episode. Clinicians and red cell authorisers should satisfy themselves that each transfusion they authorise is necessary, that alternatives have been considered, and that the patient has had the opportunity to consider these factors before giving consent. Trusts and directorates should consider whether they have put in place robust systems for the provision of both verbal and written information to patients that will support authorisers in these goals.

Medical patients are often cared for in pressured and fast-moving environments, where decisions must be taken quickly, and management plans implemented with minimal delay. Nevertheless, there is increasing recognition that red cell transfusion decisions should be informed by the growing evidence-base, and audited against clear national guidelines and standards. Clinicians and Trusts should use this audit's results to benchmark their own practice and improve performance.

References

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Appendix One – Clinical Audit Tool

2019 National Comparative Re- Audit of the Medical Use of Red Cells

DEMOGRAPHICS

1. Patient's year of birth ☐☐☐☐

2. What is the patient's gender? ☐ Female ☐ Male

MEDICAL HISTORY

3. Please indicate which diseases the patient had on admission *(Tick as many as apply)*

Cardiac ☐

Respiratory ☐

Vascular disease ☐

Cardiac is defined as Previous MI; Angina; Hypertension; Heart Failure; Pulmonary oedema. **Respiratory** is defined as Respiratory failure / significant chronic respiratory disease. **Vascular** is defined as Previous CVA (stroke); TIA; Peripheral vascular

4. Did the patient have symptomatic anaemia? ☐ Yes ☐ No ☐ Don't know

If yes, please indicate severity grade

☐ **Mild** *(Chronic fatigue, loss of energy)*

☐ **Moderate** *(Palpitations; Shortness of breath on exertion, Dizziness, etc.)*

☐ **Severe** *(Shortness of breath at rest; symptoms of ischaemic heart disease, such as chest pain; hypotension or tachycardia unresponsive to fluid resuscitation; cardiac failure)*

☐ **Unspecified**

5. Clinical presentation ***(NB Patients with a haematological diagnosis are excluded from this audit***

Please tick one or more options

a) General

☐ Anaemia under investigation – cause not yet known

b) Gastro-intestinal – ***NB patients who require 4 or more units are excluded from this audit***

☐ Upper GI Bleed – Haematemesis or melaena

☐ Lower GI Bleed – Bleeding per rectum

☐ Liver failure

☐ Pancreatitis

c) Nephrology

☐ Chronic renal failure

☐ Acute renal failure as primary diagnosis

d) Cardiac : Acute coronary syndrome ☐

Cardiac : Other *(please state)*

e) Oncology (solid organ only – not haematological malignancy)

☐ Chemotherapy

☐ Anaemia of malignancy

f) Other bleeding

☐ Menorrhagia

☐ Epistaxis

☐ Haemoptysis

☐ Retroperitoneal bleeding

g) Other reason

☐ Prophylactic prior to a procedure

☐ Other *(please state)*

About the transfusion

6. Place of transfusion

- ☐ Accident & Emergency
- ☐ Ambulatory Care Unit
- ☐ AMU/Admissions Unit
- ☐ Medical Day Care Unit *(or similar)*
- ☐ Hospice
- ☐ Home
- ☐ ITU
- ☐ Ward
- ☐ Other

6a. Other details

7. Date of transfusion ☐☐ D ☐☐ M M ☐☐☐☐ Y Y Y Y

8. Start time of transfusion *(24 hour clock)* ☐☐ H H : ☐☐ m m

9. Nearest to the time of transfusion, what was the weight of the patient?

Kg

☐ Weight not recorded

10. What was the documented cause of anaemia? *(Tick as many as apply)*

- ☐ Cause of anaemia unknown *Please also complete 12c*
- ☐ Not diagnosed because not investigated *Please also complete 12c*
- ☐ Not diagnosed because results of investigations were not reviewed *Please also complete 12c*
- ☐ Not diagnosed because investigations were inconclusive *Please also complete 12c*
- ☐ Iron deficiency *Please also complete 11a, 12a & 12c*
- ☐ B12 and/or folate deficiency *Please also complete 11 b/c, 12b & 12c*
- ☐ Renal anaemia *Please also complete 11d, 12c & 12d*
- ☐ Anaemia of chronic disease *Please also complete 12c*
- ☐ Other cause of anaemia *(Please provide details)*

10a Other details

11. If anaemia was diagnosed, what treatment was prescribed?
(If anaemia was not diagnosed, go to Q13)

11a. For iron deficiency:

Iron Therapy ☐ Yes ☐ No

If yes, was it: ☐ Oral ☐ IV ☐ Before Transfusion ☐ After transfusion

If IV, was the patient intolerant or non-compliant with treatment? ☐ Yes ☐ No

11b. For B12 deficiency

Was B12 prescribed? ☐ Yes ☐ No ☐ Not deficient

If yes, was it: ☐ Before Transfusion ☐ After transfusion

11c. For folate deficiency

Was folic acid prescribed? ☐ Yes ☐ No ☐ Not deficient

If yes, was it: ☐ Before Transfusion ☐ After transfusion

11d. For renal anaemia

Was IV iron prescribed? ☐ Yes ☐ No

If yes, was it: ☐ Before Transfusion ☐ After transfusion

Was EPO prescribed? ☐ Yes ☐ No

If yes, was it: ☐ Before Transfusion ☐ After transfusion

12. What treatment was given for the underlying cause of the anaemia?

12a. For iron deficiency

Dietary advice given? ☐ Yes ☐ No

Treatment of GI disorder? ☐ Yes ☐ No

If yes, please give details:
Treatment of menorrhagia? ☐ Yes ☐ No

If yes, please give details:

Other treatment, please state:

12b. For B12 / Folate deficiency

Dietary advice given? ☐ Yes ☐ No

Treatment of GI disorder? ☐ Yes ☐ No

If yes, please give details:

12c. Was the patient given an initial transfusion to raise the Hb because of clinical concern, and then continued on haematinic therapy? ☐ Yes ☐ No

12d. For renal anaemia

Was the patient referred to a nephrologist for further management of the anaemia and chronic kidney disease?

☐ Yes ☐ No ☐ Already under the care of a nephrologist

13. Is there evidence that the risks, benefits and alternatives to transfusion were discussed with the patient? ☐ Yes ☐ No

14. Date of pre-transfusion Hb ☐☐ ☐☐ ☐☐☐☐
D D M M Y Y Y Y

15. Pre-transfusion Hb ☐☐☐.☐ **g/L**

16. Laboratory Results

Please provide the following information, if available. *(Use results **nearest** to before the date/time of transfusion, but no earlier than 3 months before the date of transfusion). If the test results are not available, please indicate with a tick if the test was not done or was not available)*

Ferritin ☐ High ☐ Normal ☐ Low ☐ Not done

B12 ☐ High ☐ Normal ☐ Low ☐ Not done

Folate ☐ High ☐ Normal ☐ Low ☐ Not done

eGFR if known (nearest before the start time of the 1st unit transfused) ☐

Creatinine *(nearest to but before the date of the transfusion of the first unit of red cells)*

☐ µmol ☐ Not done

17. Number of units transfused ☐☐

If more than 1 unit was transfused, go to Q18. If only 1 unit transfused, go to Q19

18. If more than one unit was transfused, is there evidence that

a) The Hb was re-checked in between units given? ☐ Yes ☐ No

b) A clinical review was carried out before giving the next unit? ☐ Yes ☐ No

19. Date of Post-transfusion Hb ☐☐ D D ☐☐ M M ☐☐☐☐ Y Y Y Y ☐ Not done

20. Post-Transfusion Hb ☐☐☐.☐ **g/L**

END OF QUESTIONNAIRE

Appendix Two – List of participating sites

Aintree University Hospital NHS Foundation Trust
Airedale NHS Foundation Trust
Altnagelvin Area Hospital
Ashford and St Peters Hospitals NHS Foundation Trust
Barnet Hospital
Barnsley Hospital NHS Foundation Trust
Basildon and Thurrock University Hospitals NHS Foundation Trust
Birmingham City Hospital
Birmingham Heartlands Hospital
Blackpool Teaching Hospitals NHS Foundation Trust
Bolton NHS Foundation Trust
Borders General Hospital
Bradford Teaching Hospitals NHS Foundation Trust
Bronglais General Hospital
Buckinghamshire Healthcare NHS Trust
Charing Cross Hospital
Chelsea & Westminster Hospital
Chesterfield Royal Hospital NHS Foundation Trust
City Hospital Campus
City Hospitals Sunderland NHS Foundation Trust
Colchester Hospital University NHS Foundation Trust
Conquest Hospital
Countess of Chester Hospital NHS Foundation Trust
Croydon Health Services NHS Trust
Cumberland Infirmary Carlisle
Darlington Memorial Hospital
Dartford and Gravesham NHS Trust
Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust
Dorset County Hospital NHS Foundation Trust
East Cheshire NHS Trust
East Lancashire Hospitals NHS Trust
East and North Hertfordshire NHS Trust
Eastbourne Hospital
Epsom General Hospital
Forth Valley Royal Hospital
Frimley Park Hospital
Furness General Hospital
Gateshead Health NHS Foundation Trust
George Eliot Hospital NHS Trust
Glan Clwyd Hospital
Glangwili General Hospital

Glasgow Royal Infirmary
Good Hope Hospital
Great Western Hospitals NHS Foundation Trust
Hammersmith Hospital
Hampshire Hospitals NHS Foundation Trust
Hinchingbrooke Hospital
Homerton University Hospital NHS Foundation Trust
Huddersfield Royal Infirmary
Ipswich Hospital
Isle of Wight NHS Trust
James Paget University Hospitals NHS Foundation Trust
Kent & Canterbury Hospital
Kettering General Hospital NHS Foundation Trust
King's College Hospital
Lancashire Teaching Hospitals NHS Foundation Trust
Liverpool Heart & Chest Hospital
London North West University Healthcare NHS Trust
Luton and Dunstable University Hospital NHS Foundation Trust
Maidstone Hospital
Manchester University NHS Foundation Trust
Medway NHS Foundation Trust
Mid Cheshire Hospitals NHS Foundation Trust
Milton Keynes University Hospital NHS Foundation Trust
Morriston Hospital
National
Nevill Hall Hospital
Norfolk and Norwich University Hospitals NHS Foundation Trust
North Bristol NHS Trust
North Middlesex University Hospital NHS Trust
North Tees and Hartlepool NHS Foundation Trust
Northern Devon Healthcare NHS Trust
Northern General Hospital
Northern Lincolnshire and Goole NHS Foundation Trust
Northumbria Healthcare NHS Foundation Trust
Peterborough City Hospital
Pilgrim Hospital
Poole Hospital NHS Foundation Trust
Portsmouth Hospitals NHS Trust
Prince Charles Hospital
Prince Philip Hospital
Princess Royal University Hospital Farnborough
Queen Elizabeth Hospital Birmingham
Queen Elizabeth Hospital Greenwich

Queen Elizabeth The Queen Mother Hospital
Queen's Hospital Burton
Queen's Hospital Romford
Queen's Medical Centre
Royal Berkshire NHS Foundation Trust
Royal Brompton and Harefield NHS Foundation Trust
Royal Cornwall Hospitals NHS Trust
Royal Derby Hospital
Royal Devon and Exeter NHS Foundation Trust
Royal Free Hospital
Royal Glamorgan Hospital
Royal Gwent Hospital
Royal Hallamshire Hospital
Royal Lancaster Infirmary
Royal Liverpool University Hospital
Royal Marsden Hospital Chelsea
Royal Marsden Hospital Sutton
Royal Surrey County Hospital NHS Foundation Trust
Royal United Hospitals Bath NHS Foundation Trust
Salisbury NHS Foundation Trust
Sandwell General Hospital
Scarborough General Hospital
Sherwood Forest Hospitals NHS Foundation Trust
Singleton Hospital
Solihull Hospital
South Tees Hospitals NHS Foundation Trust
South Tyneside District Hospital
South Warwickshire NHS Foundation Trust
South West Acute Hospital Enniskillen
Southend University Hospital NHS Foundation Trust
Southport and Ormskirk Hospital NHS Trust
St George's University Hospitals NHS Foundation Trust
St Helier Hospital
St Mary's Hospital Paddington
St Thomas' Hospital
Surrey and Sussex Healthcare NHS Trust
Tameside and Glossop Integrated Care NHS Foundation Trust
The Christie NHS Foundation Trust
The Dudley Group NHS Foundation Trust
The Hillingdon Hospitals NHS Foundation Trust
The Leeds Teaching Hospitals NHS Trust
The Mid Yorkshire Hospitals NHS Trust
The Newcastle upon Tyne Hospitals NHS Foundation Trust

The Pennine Acute Hospitals NHS Trust
The Queen Elizabeth University Hospital Glasgow
The Rotherham NHS Foundation Trust
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust
The Royal Wolverhampton NHS Trust
The Shrewsbury and Telford Hospital NHS Trust
The York Hospital
Tunbridge Wells Hospital
University College London Hospitals NHS Foundation Trust
University Hospital Lewisham
University Hospital Llandough
University Hospital Monklands
University Hospital Southampton NHS Foundation Trust
University Hospital of North Durham
University Hospital of Wales
University Hospitals Bristol NHS Foundation Trust
University Hospitals Coventry and Warwickshire NHS Trust
University Hospitals of North Midlands NHS Trust
Walsall Healthcare NHS Trust
West Hertfordshire Hospitals NHS Trust
West Middlesex University Hospital
West Suffolk NHS Foundation Trust
Western Sussex Hospitals NHS Foundation Trust
Wexham Park Hospital
Whiston Hospital
Whittington Health NHS Trust
William Harvey Hospital
Wirral University Teaching Hospital NHS Foundation Trust
Withybush General Hospital
Worcestershire Acute Hospitals NHS Trust
Wrexham Maelor Hospital
Wye Valley NHS Trust
Wythenshawe Hospital
Yeovil District Hospital NHS Foundation Trust
Ysbyty Gwynedd