An Audit of Potential Transfusion Prevention in Medical Patients in the Ulster Hospital

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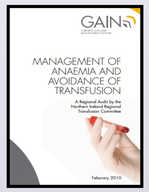
Aims and Objectives

Recent UK National audits indicate that two thirds of all blood transfusion is administered to medical patients. The aim of this audit was to examine a sample of transfused medical patients and determine if their blood transfusion could have been avoided or reduced.

Standards

Regional standards and guidance exist for both the management of anaemia and thresholds of transfusion from the NI Chief Medical Officer (CMO) and Guidelines and Audit Implementation Network (GAIN).



The CMO guidance outlined a 4 step approach in the investigation and management of the adult patient with anaemia:

STEP 1
Perform FBP test for Hb, MCV and MCH

If patient anaemic as per * WHO Classification of anaemia follow steps below

STEP 2
MCV or MCH low: perform iron studies (including serum ferritin)

MCV & MCH normal range: perform iron studies & renal function tests, serum folate & vitamin B12 levels

MCV or MCH high: perform LFTs, thyroid function, serum folate and vitamin B12 levels

STEP 3
1. Start appropriate corrective therapy for anaemia without delay (e.g. oral iron therapy)

AND

2. Investigate cause of anaemia unless already known or further investigation is not in the patient's best interests (e.g. palliative care only)

STEP 4
1. Monitor response to corrective therapy for anaemia, including rise in Hb

AND

2. Treat the cause of anaemia (e.g. surgery for carcinoma of bowel)

Based on these guidance documents, our standards were:

1. Anaemia should be investigated appropriately by blood tests *(and other investigations)* to determine the cause.
2. If an underlying deficiency is identified, appropriate replacement therapy should be given.
3. Patients should only be transfused as per regional guidelines.
4. Patients should not be transfused more than 20 g/L above their transfusion threshold.

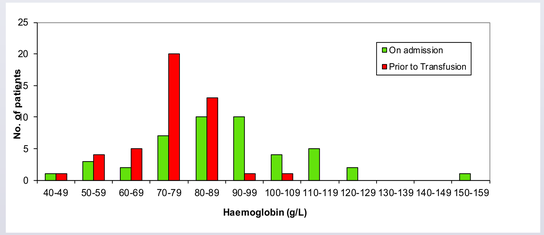
Methodology

The sample population consisted of all transfused patients during January 2015 on the medical wards in the Ulster Hospital. All surgical and haematology patients were excluded. Data was collected retrospectively. A data proforma based on the above standards was developed, piloted and adapted to collect data from a variety of sources including medical records, the blood bank ledger and laboratory systems.

Note: In this audit, we concentrated on the performance of iron studies, if applicable as iron deficiency anaemia (IDA) is the most common and treatable cause of anaemia.

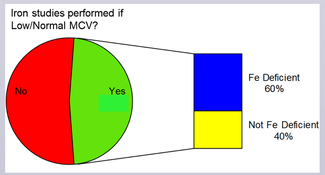
Results

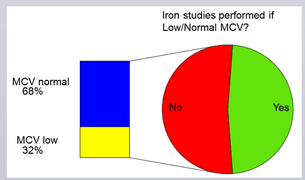
45 patients were identified. Demographics indicated that 67% of the group were male. The mean age was 73 and over two-thirds of the sample was aged above 65 years. 87% of patients had 2 or more co-morbidities. Most transfusions took place on the gastroenterology wards correlating with the finding that the most common reason for admission was a GI problem. The haemoglobin distribution on admission and prior to transfusion was as follows:



98% of patients requiring transfusion were anaemic on admission.

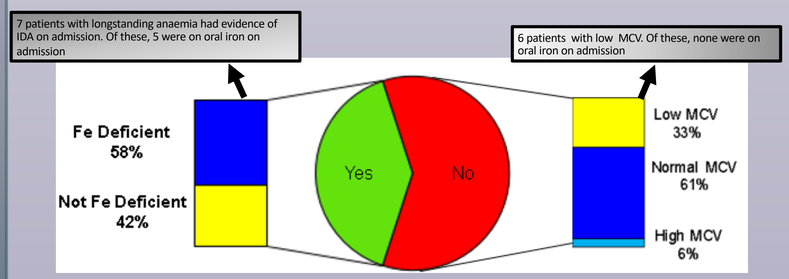
42 patients had a low or normal Mean Corpuscular Volume (MCV) and as such should have had iron studies performed to rule out iron deficiency. The audit identified that only 48% (20) of these patients had these performed. Of these, 60% (12) had IDA. Of those who did not have iron studies performed, 32% (7) had low MCV which was highly suspicious of IDA.





30 patients had anaemia for more than 3 months preceding admission. 40% (12) of these patients had iron studies performed and 7 were consequently found to be iron-deficient on studies; of these, 5 were on oral iron pre-admission.

Iron studies in longstanding anaemia



However, 56.7% (17) of these did not have iron studies performed in the period leading up to or during admission despite low or normal MCV. It is likely that many of these patients had IDA. 6 had a low MCV and none of these patients were on iron therapy.

13.3% (6) of cases were transfused inappropriately, based on regional thresholds and at least 20% (9) of patients were overtransfused.

Discussion and Conclusions

This audit indicates that the majority of medical patients (98%) requiring transfusion were anaemic upon admission. In fact, the majority had longstanding anaemia prior to the hospital admission.

Failure of investigation: 42 anaemic patients had a low or normal MCV but only 48% (20) had iron studies performed to identify IDA which was found in 12 cases. The other 52% (22) of cases did not have iron studies performed despite clear regional guidance to do so. Hence, opportunities were missed to identify and treat underlying haematinic deficiencies in many patients. If the deficiencies had been identified and addressed, it may have potentially avoided the need for a human blood transfusion.

Failure of investigation and management in longstanding anaemia: Two thirds of patients had a long-standing anaemia known to healthcare professionals. Despite this, 56.7% (17) patients did not have iron studies performed even with a low or normal MCV. In the 12 patients who were investigated, 7 were found to be iron deficient and of these 5 were on oral iron preadmission.

Failure to treat: 19 (42%) patients either had confirmed IDA on studies or had a low MCV that was not investigated but was again highly suggestive of IDA. 13 (29%) of these patients had a known anaemia for over 3 months but only 5 were on iron upon admission.

In addition, 15 (33.5%) patients with low MCV had no investigations carried out who could potentially have had IDA and were not treated.

Inappropriate Transfusion: Once admitted, 6 (13.3%) cases were administered blood transfusion at a clinical point that it was not indicated.

Overtransfusion: At least 9 (20%) of cases were administered too much blood at the transfusion episode

Recommendations

1. Anaemia with low or normal MCV must have iron studies
2. Iron deficiency anaemia should be treated with iron supplementation
3. Transfusion should be in accordance with regional thresholds
4. Overtransfusion should be avoided

Action plan

This audit has contributed to the development and publication of posters designed to influence both general practitioners and hospital medical staff to identify, investigate and treat anaemia more aggressively in order to reduce blood transfusion. Moreover, an ongoing quality improvement project is promoting the practice of a haemoglobin check following single unit transfusion to help avoid overtansfusion.

References

National Survey Red Cell Use, NHS Blood and Transplant (NHSBT) 2014

Northern Ireland Department of Health, Social Services and Public Safety (DHSSPS) Circular "Detection, investigation and management of anaemia" HSS(MD) 22/2012

Guidelines and Audit Implementation Network (GAIN): Management of anaemia and avoidance of overtransfusion, Audit report 2010

Guidelines and Audit Implementation Network (GAIN): Better Use of Blood in Northern Ireland – Guidelines for Blood Transfusion Practice, 2009