

The *Choosing Wisely* campaign to reduce harmful medical overuse: its close association with *Patient Blood Management* initiatives

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Eliminating unnecessary diagnostic procedure and treatments in medicine is a cornerstone of doing no harm, improving patient care and outcomes and allocating resources appropriately. A recent report by the Academy of Medical Royal Colleges argued that doctors have an ethical responsibility to reduce this wastage of clinical resource because, in a healthcare system with finite resources, one doctor's waste is another patient's delay (Academy of Royal Medical Colleges, 2014). It has always been difficult to engage clinicians in stopping familiar or ingrained practices and procedures as it requires a different approach to that for introducing new treatments. A new initiative developed in the United States and Canada called *Choosing Wisely* (www.choosingwisely.org) aims to change doctors' practice to align with best practice by getting them to stop using various interventions that are not supported by evidence, free from harm and truly necessary, including those that duplicate tests or procedures already received and it will soon be applied to transfusion medicine.

THE CHOOSING WISELY CAMPAIGN

The *Choosing Wisely* campaign was originally an initiative of the American Board of Internal Medicine (ABIM) Foundation designed to reduce overuse of tests and procedures because they are unnecessary and therefore wasteful and potentially harmful (Hurley, 2014; ABIM, 2015). The campaign engages with patients as well as doctors to help them choose care that is supported by evidence, not duplicative of other tests or procedures already received, free from harm and truly necessary (Box 1) (*Choosing Wisely*, 2015). In response to this challenge, national medical organisations in the United States have agreed lists of common interventions in their field whose necessity should be questioned and discussed when possible with patients. Over 70 specialist societies have created such lists.

Blood transfusion is described as the commonest procedure performed in the hospitalised patient in the United States (Pfunter & Stocks, 2010). Unnecessary use of blood transfusion

BOX 1

Choosing Wisely five questions to ask your doctor before you get any test, treatment or procedure (*Choosing Wisely*, 2015).

Do I really need this test or procedure? Medical tests help you and your doctor or other healthcare provider decide how to treat a problem. And medical procedures help to actually treat it.

What are the risks? Will there be side effects? What are the chances of getting results that are not accurate? Could that lead to more testing or another procedure?

Are there simpler, safer options? Sometimes all you need to do is make lifestyle changes, such as eating healthier foods or exercising more.

What happens if I do not do anything? Ask if your condition might get worse – or better – if you do not have the test or procedure right away.

How much does it cost? Ask if there are less expensive tests, treatments or procedures, what your insurance may cover, and about generic drugs instead of brand-name drugs.

is common worldwide; national audits of blood transfusion in England suggest that there is substantial inappropriate use of transfusions of all types of blood components (Murphy *et al.*, 2013; NHS Blood and Transplant, 2015). Overuse of blood transfusion has been listed as a *Choosing Wisely* recommendation by the American Society of Hematology, the Society of Hospital Medicine and the Critical Care Societies Collaborative in the United States. To support this initiative, the AABB, formerly the American Association of Blood Banks, developed a set of 10 recommendations with input from their committees and Board of Directors. The top five recommendations were selected, and all started with 'Don't' as required by the ABIM (Box 2) (AABB, 2015). They are intended to prompt clinicians to rethink their engrained culture of liberal transfusion practice and prompt patients to question why they are being prescribed blood. A recent commentary

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BOX 2**Recommendations on blood transfusion by the AABB for the *Choosing Wisely* campaign (AABB, 2015).**

- Do not transfuse more units of blood than absolutely necessary.
- Do not transfuse red blood cells for iron deficiency without hemodynamic instability.
- Do not routinely use blood products to reverse warfarin.
- Do not perform serial blood counts on clinically stable patients.
- Do not transfuse O negative blood except to O negative patients and in emergencies for women of child-bearing potential with unknown blood group.

provides background information and the evidence for each of the AABB's recommendations (Callum *et al.*, 2014).

The development of the AABB's recommendations and commentary were intended to assist with the promotion of better *Patient Blood Management*, which is an international initiative for an evidence-based, multidisciplinary approach to optimising

the care of patients who might need transfusion. It encompasses measures to avoid transfusion, such as anaemia management without transfusion, cell salvage and the use of anti-fibrinolytic drugs to reduce bleeding, as well as restrictive transfusion. It ensures that patients receive the optimal treatment, and that avoidable, inappropriate use of blood and blood components is reduced. On 18 June 2012, the *Patient Blood Management: The Future of Blood Transfusion* conference was held at the Royal College of Pathologists in London. The event was jointly hosted by the National Blood Transfusion Committee (NBTC), NHS Blood and Transplant and the Department of Health; Professor Sir Bruce Keogh, NHS Medical Director, gave the introductory presentation.

Initial recommendations from the NBTC about how the NHS should start implementing *Patient Blood Management* were published in July 2014 (Box 3) (NBTC, 2015). The NBTC is working with NHS England and NHS Blood & Transplant to draw the recommendations to the attention of clinicians throughout the NHS. Further work is in progress, including the development of:

- Standards for requesting blood and the documentation of transfusion.
- A central mechanism for benchmarking blood usage for specific clinical procedures and conditions.
- Key performance indicators for transfusion practice in hospitals.

BOX 3**NBTC recommendations for the implementation of Patient Blood Management (PBM) (NBTC, 2015).****A. GENERAL CONSIDERATIONS****Establishment of PBM programme and raising awareness among clinicians and patients**

- 1 All NHS Trusts should establish a multidisciplinary PBM programme through the Hospital Transfusion Committee (HTC) or as a subgroup of the HTC.
- 2 Education of all clinicians involved in the decision to transfuse blood components should be provided to enhance clinician awareness about good patient blood management including avoiding the use of blood wherever possible.
- 3 Education of patients, for whom transfusion may be a treatment option, about individualised blood management and blood avoidance should be an integral part of relevant care pathways.

Issues in patient testing

- 1 The volume and frequency of blood samples should be minimised to prevent iatrogenic anaemia.
- 2 Use of near patient haemostasis and haemoglobin (Hb) testing should be undertaken to guide blood component therapy in patients with haemorrhage in conjunction with the Trust Point of Care Testing (POCT) committee/Pathology laboratory.

Use of appropriate dose and thresholds for transfusion

- 1 Use locally agreed triggers for transfusion based on national guidelines and use National Blood Transfusion Committee (NBTC) indication codes when requesting blood from the transfusion laboratory and when prescribing blood components.
- 2 Develop systems and protocols that empower transfusion laboratory staff to question requests that do not conform with these triggers and where inadequate clinical explanation is given.
- 3 Regularly audit transfusion requests against these triggers.
- 4 Transfuse one dose of blood component at a time, e.g. one unit of red cells or platelets in non-bleeding patients and reassess the patient clinically and with a further blood count to determine if further transfusion is needed.

BOX 3 (Continued)**B. SPECIFIC ASPECTS OF SURGICAL PBM****Pre-operative management of anaemia and haemostasis**

- 1 Provide arrangements for the timely identification and correction of anaemia before elective surgery which is likely to involve significant blood loss using WHO definitions of anaemia, i.e. Hb in adult males $<130 \text{ g L}^{-1}$ and adult females $<120 \text{ g L}^{-1}$.
- 2 Develop and implement protocols for the management of patients taking anticoagulants and anti-platelet drugs that may increase the risk of bleeding.
- 3 Avoid transfusion for managing anaemia if alternatives are available, e.g. oral iron for iron deficiency anaemia and intravenous iron for functional iron deficiency.

Intraoperative management

- 1 Use intraoperative cell salvage for appropriate procedures.
- 2 Use pharmacologic agents to reduce blood loss, e.g. tranexamic acid.
- 3 Maintain physiologic homeostasis (normothermia, acid-base management, normocalcemia, avoid over-treatment with intravenous fluid).
- 4 Use controlled hypotension whenever indicated and safe.
- 5 Position patients to minimise central venous pressure and capillary oozing.
- 6 Minimise surgical blood loss through use of new technologies (argon beam coagulator, radiofrequency dissecting sealer, etc.).

Postoperative management

- 1 Use postoperative blood salvage (washed, unwashed) where indicated.
- 2 Consider alternatives to transfusion for postoperative anaemia management (volume expanders, intravenous iron).
- 3 Consider the effects of intraoperative fluid administration, e.g. haemodilution leading to false Hb estimation.

C. SPECIFIC ASPECTS OF MEDICAL PBM**Management of abnormal haemostasis**

- 1 Develop and implement a protocol for the management of reversal of warfarin, including the use of vitamin K and prothrombin complex concentrates.
- 2 Develop and implement a protocol for the management of abnormal haemostasis in patients with major haemorrhage, e.g. acute upper gastrointestinal haemorrhage.
- 3 Develop and implement a protocol for the management of bleeding in patients taking novel anticoagulants (e.g. dabigatran, rivaroxaban and apixaban) and potent anti-platelet agents (e.g. prasugrel and ticagrelor).
- 4 Use anti-fibrinolytics, e.g. tranexamic acid, for major bleeding.
- 5 Develop and implement a protocol for the management of severe thrombocytopenia in patients undergoing stem cell transplantation or intensive chemotherapy for malignant disease.

Management of anaemia

- 1 Identify and correct the underlying cause of the anaemia before considering transfusion, wherever possible.
- 2 Avoid transfusion for managing anaemia if alternatives are available, e.g. oral iron for iron deficiency anaemia, intravenous iron for functional iron deficiency.
- 3 Make individualised plans for patients needing regular transfusion and consider the potential for complications of transfusion such as red cell alloimmunisation and iron overload and their management.

D. IMPLEMENTATION OF PBM**Implementation of good practice for blood avoidance and the use of blood**

- 1 Analyse casemix and clinical services to determine the main targets for PBM.
- 2 Identify PBM champions to help educate staff and patients.
- 3 Establish a PBM committee (either stand-alone or within the Hospital Transfusion Committee) to oversee the PBM programme.
- 4 Obtain a mandate for PBM from hospital management.
- 5 Educate clinicians about PBM and evidence-based transfusion practice.
- 6 Adopt a PBM scorecard to share with senior NHS Trust members to monitor adherence to guidelines for blood avoidance and the use of blood, including the use of benchmarking to identify clinicians/clinical teams who are consistently well outside of average blood use for a specific procedure.

As with previous national recommendations promoting appropriate blood use, it will be a major task to disseminate them to the many staff prescribing blood in the NHS and implement them effectively. Their integration into general initiatives for reducing 'Too Much Medicine' and variation in clinical practice may increase the likelihood of success.

CHOOSING WISELY IN TRANSFUSION MEDICINE IN THE UK

In this respect, it is exciting to see that the Academy of Medical Royal Colleges is bringing the *Choosing Wisely* campaign to the UK (Malhotra *et al.*, 2015). This campaign has also been adopted in many other countries including Australia, Canada, Germany, Italy, Japan, the Netherlands and Switzerland. The Academy of Medical Royal Colleges has invited participating organisations in the UK to develop a list of five tests or interventions with questionable value. The Academy, Royal Colleges and other partners

will then promote dissemination of this information to encourage *Choosing Wisely* conversations between patients and clinicians (Malhotra *et al.*, 2015).

The selection of the five topics for transfusion medicine to be included in the UK *Choosing Wisely* campaign was led by the NBTC in England. Possible topics were selected by reviewing *Choosing Wisely* recommendations from other countries and developing new ones, and then put to a vote of the chairmen of the NBTC and the Regional Transfusion Committees in England, the membership of the NBTC PBM working group (which includes two patient representatives) and consultants in transfusion medicine. The five selected topics submitted to the Academy of Medical Royal Colleges for consideration are shown in Box 4. Additional credibility for the selection of the topics is that all five are included in recommendations of the forthcoming NICE guideline on blood transfusion which will be published in November 2015 (NICE, 2015).

BOX 4

Recommendations on blood transfusion for the UK *Choosing Wisely* campaign.

- Do not transfuse more units of blood than absolutely necessary. A restrictive threshold ($70-80 \text{ g L}^{-1}$) should be used for the vast majority of hospitalised, stable patients without evidence of inadequate tissue oxygenation (evidence supports a threshold of 80 g L^{-1} in patients with pre-existing cardiovascular disease). Transfusion decisions should be influenced by symptoms and haemoglobin concentration. Single unit red cell transfusions should be the standard for non-bleeding hospitalised patients. Additional units should only be prescribed after re-assessment of the patient and their haemoglobin value.
- Do not transfuse red blood cells for iron deficiency without haemodynamic instability. Blood transfusion has become a routine medical response despite cheaper and safer alternatives in some settings. Pre-operative patients with iron deficiency and patients with chronic iron deficiency without hemodynamic instability (even with low haemoglobin levels) should be treated with oral and/or intravenous iron.
- Do not transfuse O RhD negative blood except to O RhD negative patients and in emergencies for women of child bearing potential with unknown blood group. O RhD negative blood units are in chronic short supply due in part to overutilisation for patients who are not O RhD negative. O RhD negative red blood cells should be restricted to: (i) O RhD negative patients or (ii) women of childbearing potential with unknown blood group who require emergency transfusion before blood group testing can be performed.
- Do not routinely transfuse platelets for patients with chemotherapy-induced thrombocytopenia if the platelet count is $>10 \times 10^9 \text{ L}^{-1}$ in the absence of bleeding. A higher platelet count threshold should not be used except for patients undergoing a procedure which has a moderate or high risk of bleeding or a risk of bleeding in a critical site (e.g. brain or the posterior segment of the eye) or for patients thought to be at high risk of bleeding because of the presence of clinical and laboratory factors such as sepsis, haemostatic abnormalities and/or administration of anticoagulants or anti-platelet drugs.
- Do not transfuse a patient without informing the patient about the risks and benefits of transfusion. Information should be provided to patients who may have or who have had a transfusion, and their family members or carers (as appropriate), explaining the reason for the transfusion, its risks and benefits, the transfusion process, any transfusion needs specific to them, any alternatives that are available and how they might reduce their need for transfusion and that they are no longer eligible to donate blood. They should be encouraged to ask questions, and the discussions should be documented in the medical records. The patient and their General Practitioner should be provided with copies of the discharge summary or other written communication that explains the details of any transfusions they had, the reasons for the transfusion, any adverse events and that they are no longer eligible to donate blood.

WHAT ARE THE POTENTIAL CHALLENGES FOR THE CHOOSING WISELY CAMPAIGN?

First, there is a need to ensure that the topics are selected according to rigorous criteria, such as the practice is not evidence-based, is frequent, measurable and wasteful of resources. Second, the topics need to have the support of clinicians and patients to maximise the chance of their implementation. The process for the selection of topics could be designed to optimise the likelihood of support, e.g. by soliciting suggestions from clinicians based on knowledge of practices associated with harm and unnecessary costs followed by a voting process. This is the approach we took to develop the list of transfusion topics presented here in addition to using topics developed by *Choosing Wisely* campaigns in the United States and Canada. A different approach was taken by the Swiss Society of General Internal Medicine who used literature review and expert opinion followed by multiple rounds of an electronic Delphi process (Clement & Charlton, 2015). A more robust methodology could also be developed by using systematic reviews and health technology assessments.

LIMITATIONS OF THE CHOOSING WISELY CAMPAIGN

There is no evidence as yet that the top five lists have produced a positive impact on reducing low-value healthcare in either the United States or elsewhere (Clement & Charlton, 2015). Indeed, a telephone survey of 600 physicians in the United States found that only 21% had even heard of the *Choosing Wisely* campaign (PerryUndem Research/Communication, 2014). Public awareness, which is an essential component of the campaign, has not yet been assessed (Malhotra *et al.*, 2015). There is also a need to ensure that there are appropriate parameters to measure the effectiveness of each *Choosing Wisely* topic, and that a pre-implementation baseline measurement has been made.

Greater consideration also needs to be given to implementation of the top five lists and how to support clinicians and their teams in doing so. Benchmarking, feedback of data including the use of dashboards are examples of tools needed to drive change and monitor progress. Formal implementation plans should be part of each *Choosing Wisely* list and their inclusion is very much a part of the campaign in the UK.

Returning specifically to blood transfusion, how can the evidence supporting the UK *Choosing Wisely* recommendations for blood transfusion and *Patient Blood Management* be accelerated into routine transfusion practice, apart from continuing efforts to educate clinicians prescribing blood? Prospective monitoring of blood orders provides the opportunity for intervention

to avoid unnecessary transfusion in addition to collecting data for audit of transfusion practice. However, it is labour intensive and risks delaying patient care. Retrospective review is easier to do, but the possibility of intervention to prevent inappropriate transfusion is missed. Both methods for review are hugely facilitated by the use of information technology, and particularly so through blood ordering using a computerised physician order entry (CPOE) process. In addition, warning screen 'alerts' can be triggered if the prescriber attempts to order a transfusion where the most recent laboratory tests are outside those recommended as triggers for transfusion, and the prescriber given the option of cancelling the order ('decision support') (Murphy & Yazer, 2013).

A recent systematic review of relevant studies of this topic found that there was significant variation in study population, the type of CPOE/decision support used and outcome reporting (Hibbs *et al.*, 2015). All but one study used a before-after design without any element of randomisation. Overall, there was good evidence that implementation of CPOE/decision support improved red cell usage, but the effect on plasma, platelets and cryoprecipitate usage was less clear probably because fewer studies have been conducted focusing on these products. In addition, the introduction of this process resulted in cost savings in the studies that reported financial outcomes. Patient outcomes were generally not studied in detail, and there were few data on the sustainability of the effect. The review concluded that further data are needed to assess the effect of CPOE/decision support on blood usage other than red cell transfusion and future studies should standardise reporting of the process itself, any ancillary efforts to influence transfusion practice such as education and training, and outcome measures.

The current introduction of electronic patient record systems into many hospitals in the UK provides the opportunity to implement CPOE/decision support for blood ordering to reduce inappropriate transfusion with the dual benefit of improved patient outcomes and reduced hospital costs, and our own group in Oxford has demonstrated that this is feasible in routine practice in the NHS (Butler *et al.*, 2015).

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