Choosing Wisely Canada DIY

WHY GIVE TWO WHEN ONE WILL DO?

A toolkit for reducing unnecessary red blood cell transfusions in hospitals

version 1.0

Don’t transfuse more than one red cell unit at a time when transfusion is required in stable, non-bleeding patients.

Canadian Society for Transfusion Medicine,
Choosing Wisely Canada recommendation #2.

Don’t transfuse patients based solely on an arbitrary hemoglobin threshold.

Canadian Hematology Society,
Choosing Wisely Canada recommendation #5.

Don’t transfuse red blood cells for arbitrary hemoglobin or hematocrit thresholds in the absence of symptoms, active coronary disease, heart failure or stroke.

Canadian Society of Internal Medicine,
Choosing Wisely Canada recommendation #3.

Introduction

This toolkit was created jointly by the Ontario Transfusion Quality Improvement Plan (OTQIP) Committee, Ontario Regional Blood Coordinating Network (ORBCoN), Ontario Transfusion Coordinators (ONTraC) and Choosing Wisely Canada. Additional information and details can be found at http://transfusionontario.org/en/cmdownloads/categories/quality_improvement_plan/

This toolkit was created to support the implementation of interventions designed to reduce unnecessary red blood cell (RBC) transfusions in your institution or hospital. It can be used by Transfusion Medicine departments, physician groups, clinical services or organizations to help achieve significant reductions in inappropriate RBC transfusions. Different institutions will be at different stages of transfusion quality improvement. To achieve the desired results, it is important to understand the current transfusion practice and the existing processes in place at your institution to support appropriate RBC transfusion.

To ensure that you select a module that is best suited to meet your needs, select the statement which best reflects the current state at your institution:

A) We suspect but do not know whether we have a problem related to inappropriate RBC transfusions. Select **Module #1** on how to measure inappropriate RBC transfusions; OR

B) We have confirmed that inappropriate RBC transfusions occur but these practices vary based on the individual provider. Select **Module #2** on how to implement transfusion guidelines; OR

C) We already have transfusion guidelines but these are inconsistently followed leading to some inappropriate transfusions. Select **Module #3** on how to implement prospective transfusion order screening; OR

D) I am not sure where to start and would like access to **all 3 modules**.

MODULE 1

Confirming unnecessary red blood cell transfusions

Make sure this module is right for you

You have selected the module to confirm unnecessary RBC transfusions at your institution.

This toolkit is well suited for your institution, if you suspect, but have not yet confirmed, that unnecessary RBC transfusions are occurring at your hospital. Sometimes problems are reported anecdotally and, without a quick audit, it is not possible to confirm whether a systemic problem truly exists. This module will assist you in quickly determining whether you have excessive RBC transfusion ordering practices that are worth addressing to improve the value of care provided.

Key ingredients of this module

At this point, it is too early to implement an intervention but this module will help you confirm whether a problem exists before proceeding to other modules. The key ingredients for confirming how much unnecessary RBC transfusions occur at your institution include:

- Performing a quick audit at your institution
- Choosing the right measures to evaluate appropriateness of RBC transfusions

How to perform a quick audit at your institution

Determining whether you have unnecessary RBC transfusions at your institution does not require a large investment in effort. A quick audit can be undertaken by contacting your transfusion medicine laboratory or blood bank to get a list of the last 75-100 RBC transfusions

issued. Even though the measures described below will be based on 50 transfusions, repeat patients will be excluded requiring a larger list of transfusions. Then use the lab system at the hospital to look up the pre-transfusion hemoglobin for each RBC transfusion. Collecting these simple data will allow you to get a rough idea of the transfusion practice at your hospital. If you have the time and resources, a chart audit can also be done retrospectively to determine the patient's comorbidities (e.g. cardiac disease) and whether the patient had symptoms related to anemia or active bleeding at the time of transfusion.

Choosing measures

The following are the most common measures used to evaluate appropriate RBC transfusions:

- **Percent of transfusions with a pre-transfusion hemoglobin less than 80 g/L.** This measurement looks at the most recent hemoglobin level within 48 hours prior to the start of the transfusion. It can be collected for all transfusions (including inpatients and outpatients) over a certain time period. Typically we recommend collecting data for 50 RBC transfusions at baseline, selecting only the first RBC transfusion for each patient during the audit period. For example, the best performing site in the 2013 Ontario RBC transfusion audit for adult inpatients was 84% of transfusions with a pre-transfusion hemoglobin less than 80 g/L. Another parameter that could be measured with these data would be the average pre-transfusion hemoglobin.
- **Percent single unit red blood cell transfusions.** A single unit RBC transfusion is the practice of prescribing only one unit at a time, with clinical reassessment of the patient prior to prescribing a subsequent unit. Clinical reassessment should include a post-transfusion hemoglobin. This can be collected for all transfusion orders (including inpatients and outpatients) over a certain time period. Typically we recommend collecting data for 50 transfusion orders at baseline, selecting only the first transfusion order for each patient during the audit period. A transfusion order is defined as transfusions occurring within the same 24 hour period prior to a hemoglobin reassessment. The best performing site in the 2013 Ontario RBC audit for adult inpatients was 78% single unit transfusions.
- **Manual chart audit.** Manual chart audits for RBC transfusion appropriateness can be done and are more accurate in determining appropriateness. However, these require interpretation of information in the chart, consideration of the patient's comorbidities and whether the patient was symptomatic or bleeding at the time of the transfusion. In addition once you have gathered all this information, you have to adjudicate the appropriateness of the transfusion based on criteria. An example of an electronic RBC audit tool and sample adjudication criteria can be found on the ORBCoN website http://transfusionontario.org/en/wp-content/uploads/sites/4/2016/04/Quality-Improvement-Plan-Tools-Appendix.pdf

The advantages and disadvantages of each measure are compared in the following table:

Measures	Advantages	Disadvantages
Percent of RBC transfusions with a pre-transfusion hemoglobin less than 80 g/L	• Easy to obtain on a regular basis • May identify a specific message for quality improvement • Recommended by OTQIP • Allows comparison with peers	• May not always identify inappropriate transfusion
Percent single unit RBC transfusions	• Easy to obtain on a regular basis • May identify a specific message for quality improvement • Recommended by OTQIP • Allows comparison with peers	• May not always identify inappropriate transfusion
Manual chart audit	• Gold standard • Takes into consideration comorbidities, symptoms, and bleeding at time of transfusion	• Requires adjudication for appropriateness • Labour and time intensive • Difficult to do on a regular basis

The OTQIP recommends using percent of transfusions with a pre-transfusion hemoglobin less than 80 g/L and percent single unit RBC transfusions as these two measures are more feasible to collect over time. An electronic tool will be available to facilitate data collection for both baseline and ongoing data collection. A simple method to capture the data is available in the link below.

Ontario Transfusion Quality Improvement Plan Tracker Tool, found at http://transfusionontario.org/en/wp-content/uploads/sites/4/2016/04/Quality-Improvement-Plan-Tools-Appendix.pdf

One additional measure to consider is the monthly number of RBC transfusions per 100 acute inpatient bed days (RBC/100 AIPD). This is an easy metric to track one's progress over time and adjusts for hospital inpatient activity. This value cannot be as easily compared between hospitals as hospitals may have very different patient populations with different transfusion requirements. The monthly number of RBCs can be obtained from your local transfusion service as it is reported monthly to Canadian Blood Services. The number of acute inpatient bed days per month can be obtained from your hospital's decision support department. The following link shows how you can enter your own data and chart out your monthly RBC per 100 acute inpatient days over time.

RBC/100 AIPD excel graph template, found at http://transfusionontario.org/en/wp-content/uploads/sites/4/2016/04/Quality-Improvement-Plan-Tools-Appendix.pdf

Selecting an intervention

If an issue with inappropriate RBC transfusions has been determined at your facility, then the next question is why do these occur? Although there are many reasons for inappropriate RBC transfusions, important considerations are whether there are any institutional transfusion guidelines in place to set the transfusion expectations for the hospital and if there are guidelines, whether providers follow those guidelines.

Based on the experience in your hospital, the problem is:

A) We have confirmed that inappropriate RBC transfusions occur but these practices vary based on the individual provider. Select **Module #2** on how to implement transfusion guidelines; OR

B) We already have transfusion guidelines but these are inconsistently followed leading to some inappropriate transfusions. Select **Module #3** on how to implement prospective blood bank order screening.

MODULE 2

Implementing transfusion guidelines

Make sure this toolkit is right for you

You have selected the module to implement transfusion guidelines at your institution.

This toolkit is well suited for your institution if, during your audit, you noted that practices vary among ordering providers and no transfusion guidelines are in place. This module may also be helpful to update institution transfusion guidelines as the evidence base for transfusion is always changing.

Key ingredients of this intervention

If this description accurately reflects the current state at your institution, this module may help establish your institution's expectations for transfusion practice with the following changes:

- Introduction or update of transfusion guidelines
- Introduction of preprinted transfusion order sets

Achieving physician consensus regarding appropriate indications for transfusion

Achieving consensus among physicians regarding the appropriate indications for transfusion is a crucial step in development of all interventions to reduce inappropriate transfusion. This process starts from initial discussions at the Transfusion Committee, then to stakeholder consultation, and finally to approval at the Medical or Interprofessional Advisory Committee (MAC).

As a starting point, the Ontario Transfusion Quality Improvement Committee has compiled examples of transfusion guidelines from various institutions along with evidence based guidelines to create a document entitled: Clinical practice recommendations for blood component use in adult inpatients, found at http://transfusionontario.org/en/wp-content/up-

loads/sites/4/2016/04/Quality-Improvement-Plan-Tools-Appendix.pdf. This document can be used as an initial template for setting your hospital's transfusion guidelines or updating your current transfusion guidelines. The RBC section of the guidelines is shown below.

Clinical Setting	Recommendation and Dose
Hb less than 60 g/L	Transfusion likely appropriate*. Transfuse 1 unit and re-check patient symptoms and Hb before giving second unit.
Hb less than 70 g/L	Consider transfusion. Transfuse 1 unit and recheck patient symptoms and Hb before giving second unit.
Hb less than 80 g/L	Consider transfusion in patients with pre-existing cardiovascular disease or evidence of impaired tissue oxygenation. Transfuse 1 unit and recheck patient symptoms and Hb before giving second unit.
Hb 80 to 90 g/L	Likely inappropriate unless evidence of impaired tissue oxygenation.
Hb greater than 90 g/L	Likely inappropriate. If transfusion is ordered clearly document indication in patient's chart and discuss reason with patient.
Bleeding patient	Maintain Hb greater than 70 g/L If pre-existing cardiovascular disease – maintain Hb greater than 80g/L

Hb = hemoglobin
*Depending on etiology of anemia, alternative therapies (e.g. iron) may be more appropriate than transfusion.

- One unit usually raises the Hb by approximately 10 g/L
- Do not transfuse based on Hb value alone. Transfusion of RBC is indicated in the treatment of symptomatic anemia
- For non-bleeding patients: usual adult dose is 1 unit: transfuse 1 unit then check Hb and patient symptoms (dyspnea, chest pain, syncope) before transfusing a second unit
- Premedication for allergic and febrile reactions is usually indicated only in patients with previous transfusion reactions
- Consider premedication with furosemide in patients at risk for transfusion-associated circulatory overload. It is preferable to give furosemide before the transfusion if the patient is not hypovolemic and is hemodynamically stable
- Whenever possible, all non-urgent transfusions should be completed during the day shift, for optimum patient safety

Since transfusion affects almost every department in the hospital, it is crucial to ensure that the rationale for implementing hospital transfusion guidelines is clear and involves potential key stakeholders. Here are some steps to consider in the implementation process.

- Prepare a brief statement with the baseline audit results showing the need for improvement, the lack of transfusion guidelines and the Clinical practice recommendations for blood component use in adult inpatients found at http://transfusionontario.org/en/wp-content/uploads/sites/4/2016/04/Quality-Improvement-Plan-Tools-Appendix.pdf
- Present the recommendations at the hospital's Transfusion Committee to determine if any modifications are required
- Disseminate the brief statement to Medical Departments, Nursing Professional Practice Committee (or equivalent) and Transfusion Medicine Laboratory staff. This step is key to ensuring that clinicians and nurses know about the guidelines, are invited to provide feedback and receive education on the guidelines at the same time. This may also provide an opportunity to discover if department-specific guidelines already exist in the hospital, of which the Transfusion Committee was unaware
- Incorporate any feedback received and then present the revised guidelines to the hospital's Transfusion Committee for approval
- A member of the Transfusion Committee should then present the audit results and guidelines to the MAC for approval

Prepare	Baseline audit results showing need for improvement Clinical practice recommendations for blood component use
Engage Transfusion Committee	Committee reviews and modify recommendations, if needed
Disseminate	Disseminate widely to medical and surgical departments, professional practice committees, transfusion medicine laboratory staff, etc. Educate staff
Incorporate Feedback	Transfusion committee reviews and approves final recommendations
Final Approval	Present to MAC for final approval

Once MAC approval has been obtained regarding the criteria for appropriate transfusion, you are now ready to communicate the information. Here are some suggestions that may be helpful.

- Screensaver using the Choosing Wisely Canada slogan "Why give two when one will do?" found at http://transfusionontario.org/en/wp-content/uploads/sites/4/2016/04/Quality-Improvement-Plan-Tools-Appendix.pdf
- Transfusion order set template found at http://transfusionontario.org/en/wp-content/uploads/sites/4/2016/03/Quality-Improvement-Plan-Tools-Appendix.pdf
- Building guidelines into computerized provider order entry

The transfusion order set

The purpose of the transfusion order set is to help guide clinicians to order blood appropriately at the time of the transfusion order. The transfusion order set typically includes the quantity, the infusion rate and the indication for a blood component. Other additional features that might be helpful include having the guidelines on the back of the form.

It is very important to determine the appetite for transfusion order sets in your institution for this intervention to be successful. Things to consider when implementing transfusion order sets include:

- Ensuring that transfusion order sets are used most of the time. Some acceptable exceptions include orders for transfusion in emergency situations and from the operating room where often these orders are verbal.
- Ensuring that the information on the transfusion order sets is delivered to the Transfusion Medicine Laboratory (Blood Bank) whether in paper form or electronically. This will help set up a process for implementing transfusion order screening (see next Module #3 for details).

The following is an example of a transfusion order set developed by the Ontario Transfusion QIP, which can be adapted for your institution:

For the full version of the Transfusion order set template, go to http://transfusionontario.org/en/wp-content/uploads/sites/4/2016/04/Quality-Improvement-Plan-Tools-Appendix.pdf

BLOOD PRODUCT ORDER SET TEMPLATE: RED BLOOD CELLS - ADULT

Allergies/Sensitivies

☐ none known ☐ yes (specify) _____

Admitting Diagnosis _____

☐ informed consent completed as per institutional guidelines

Date of transfusion: ☐ today ☐ other (DD/MM/YYYY)_____ ☐ STAT (call blood bank at _____)

Pre-transfusion laboratory tests: ☐ group and screen

Previous transfusion within 3 months: ☐ yes ☐ no

Previous pregnancy within 3 months: ☐ yes ☐ no

Previous transplant: ☐ yes ☐ no

☐ if no existing IV initiate IV 0.9% NaCl to keep vein open
☐ discontinue peripheral IV after transfusion complete

Pre-transfusion medications

☐ furosemide_____mg po prior to transfusion or _____mg IV prior to transfusion

☐ _____

☐ irradiated product required as per hospital guidelines, specify reason:_____

☐ specially matched product required as per hospital guidelines, specify reason: _____

Red Blood Cells

Pre-transfusion Hb:_____g/L

Indication: ☐ low Hb ☐ significant bleeding ☐ symptomatic ☐ other

☐ Transfuse 1 unit, over _____hours (e.g. 1 unit over 2-3 hours, maximum 4 hours)

☐ Transfuse _____units, each over _____hours

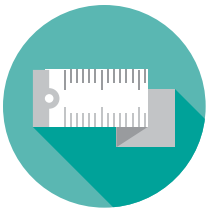
Note: consider IV iron instead of red blood cells for patients with stable iron deficiency anemia

Post-transfusion laboratory tests, if indicated

☐ _____(specify)

Prescriber name (print): _____ **Date:** _____ **Time:** _____

Prescriber signature: _____ **Pager #:** _____



Measuring your performance

After implementation of guidelines and/or transfusion order sets, it is important to measure the impact of the change. Ideally, the outcome measures should be the same as the baseline measures described in Module #1. We recommend collecting data once every 6 months. The following are examples of common measures to be collected when evaluating your intervention:

Outcome measures

- Percent of transfusions with a pre-transfusion hemoglobin less than 80 g/L.
- Percent of single unit RBC transfusions
- Monthly number of RBC transfusions per 100 acute inpatient bed days (RBC/100 AIPD)

Process measures

Process measures may be collected to detail the uptake of the intervention. Examples include:

- Percentage of physicians who know where to find the transfusion guidelines
- Percentage of nurses who know where to find the transfusion guidelines
- Number or percentage of transfusion orders for which the transfusion order set is used

Balancing measures

Balancing measures should be collected to ensure that no harm occurs as a result of introducing the quality improvement intervention. Examples include:

- Under-transfusion is defined as patients with a hemoglobin less than 60 g/L who are not transfused. This can be determined by contacting the Laboratory Information System team and asking for hemoglobin values less than 60 g/L in a period of time in a particular area. Patients with hemoglobin less than 60 g/L who were not transfused can be reviewed to determine the reason for not transfusing to ensure that these patients were not under transfused. Remember that there may be reasons for not transfusing, including patients who decline transfusion (including for religious reasons) or patients who can be safely treated with alternatives to transfusion such as iron supplementation

Sustaining early successes

Once the transfusion guidelines and/or a transfusion order set has been implemented to reduce inappropriate RBC transfusion, there are several important ways to help sustain this performance:

1) Transfusion guidelines should be provided to all new nurses and physicians joining the institution. Guidelines should be widely available on the institution's intranet or in poster format on wards where transfusion occurs frequently

2) Periodic audit and feedback to nurses and physicians is important in confirming sustainability. The results should be presented at the institution's Transfusion Committee which plays an important role in ensuring ongoing education and training, as well as ensuring the transfusion guidelines are updated as new evidence emerges.

MODULE 3

Implementing prospective transfusion order screening by the Transfusion Medicine Laboratory (Blood Bank)

Make sure this toolkit is right for you

You have selected the module to implement prospective transfusion order screening by the Transfusion Medicine Laboratory (Blood Bank).

This toolkit is well suited for your institution, if during your audit, you noted that transfusion guidelines are in place at your institution but that these are inconsistently followed, leading to some inappropriate transfusions. Your transfusion medicine laboratory or blood bank is interested in playing an important role in ensuring that patients at your institution receive appropriate transfusion care.

Key ingredients of this intervention

If this description accurately reflects your current situation, this module may help establish a forcing function to check the transfusion order prior to blood transfusion release. For the intervention to be successful, it is key that transfusion guidelines have been accepted and approved by the Medical Advisory Committee or Professional Advisory Committee (MAC/PAC) to establish the hospital's expectation of transfusion practice. An audit of transfusion practice after transfusion guideline implementation should be conducted to determine whether there is still need for improvement. If there is, then ensuring that the majority of transfusions are ordered according to the guidelines can be beneficial in reducing inappropriate RBC transfusions. The second key ingredient is the engagement of the Transfusion Medicine Laboratory leadership and staff.

This module on transfusion order screening includes

- A standard operating procedure template for prospective transfusion order screening by the Transfusion Medicine Laboratory / Blood Bank Medical Laboratory Technologists (MLT)
- A technologist education module on how to screen orders
- A communication plan to increase awareness among the clinical staff

What is prospective transfusion order screening?

Prospective transfusion order screening is the act of screening transfusion orders as they arrive in the Transfusion Medicine Laboratory or Blood Bank. It should be noted that transfusion order screening should be performed only in non-urgent situations. Typically, transfusion orders that are EXEMPT from screening are transfusion orders from the operating room, and for bleeding patients where the clinical situation is dynamic and the need for blood is urgent. Some institutions may also consider outpatient transfusions to be EXEMPT from screening. These situations have not been well studied in clinical studies, and so specific guidelines for outpatients, patients in the operating room or who are actively bleeding have not been established. Most clinical trials and guidelines refer to hemodynamically stable inpatients and this is the group of patients that is the focus of this intervention.

Engaging the Transfusion Medicine Laboratory / Blood Bank Medical Laboratory Technologist (MLT)

MLT input is extremely valuable to ensure that transfusion guidelines are followed. To engage the transfusion medicine laboratory, this intervention (prospective transfusion order screening) should be promoted as empowering MLTs to play a more active role in appropriate RBC transfusion, rather than creating additional work. In fact, the transfusion laboratory can be viewed as having not only a testing role but also a therapeutic role. Not only is it important to ensure that testing is accurate, but it is crucial to ensure that the right product, goes to the right patient for the right reason. It will be important to highlight the extra time that the MLT spends checking with nurses and physicians to ensure that transfusions are ordered according to the hospital transfusion guidelines, in the effort to improve outcomes for patients in terms of decreased transfusion reactions and appropriate transfusion care. Over time, reports have shown that these interventions can lead to fewer transfusions and subsequent reductions to inventory which lead to improved efficiency and time-savings for MLTs.

Engaging nurses

Nursing input is also extremely valuable to ensure that transfusion guidelines are followed. To engage the nurses, this intervention should be promoted as empowering the transfusion team (MLT, nurse, and ordering clinician) to play a more active role in ensuring appropriate RBC transfusion for patients. Often, the nurse may be the individual who follows up on abnormal hemoglobin results and is also aware of whether the patient is symptomatic or bleeding. The nurse will also be the first point of contact for the MLT calling the floor to inquire about the patient's status, and the first to notice most of the acute adverse events related to transfusion.

How to get started with prospective transfusion order screening

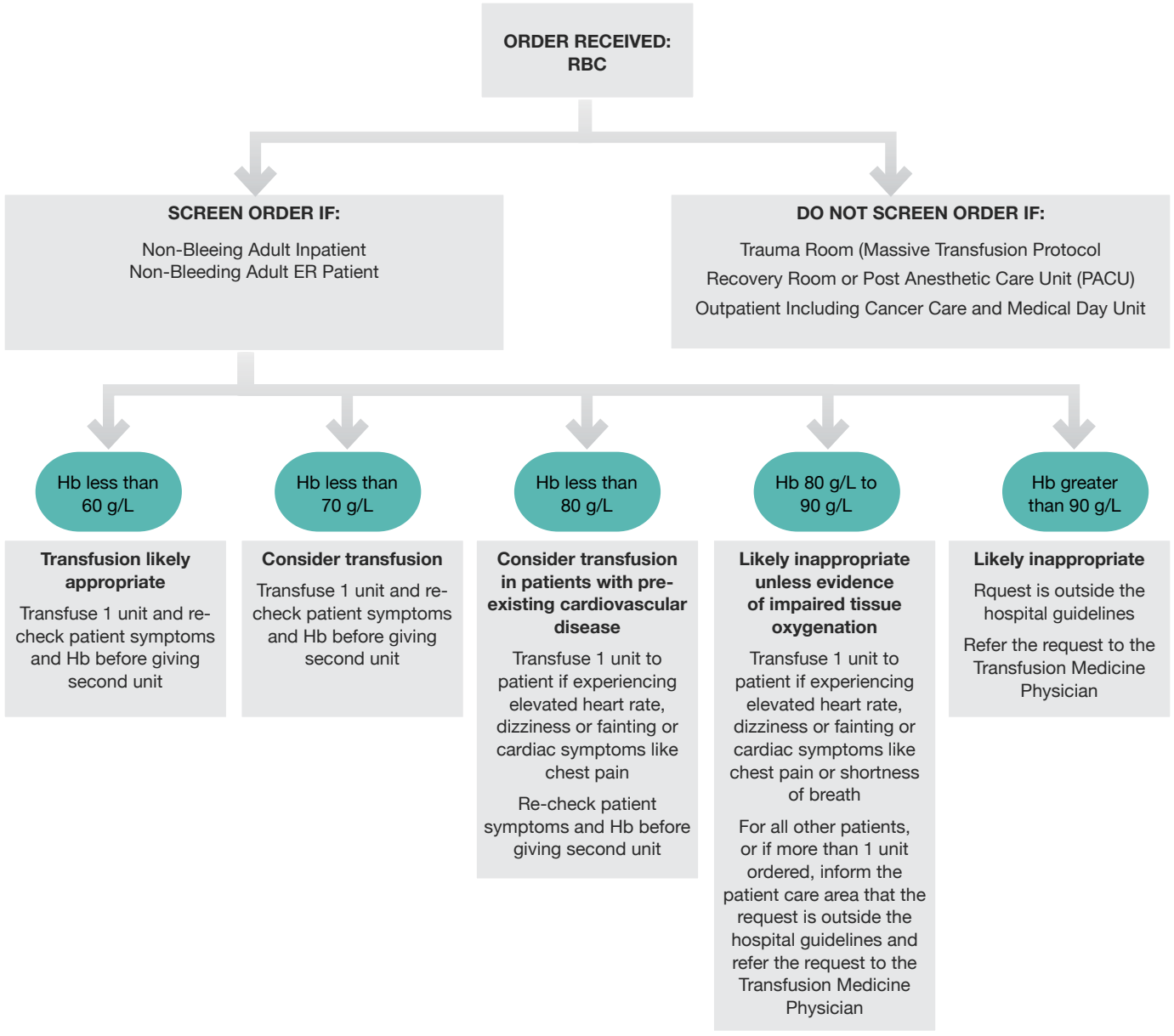
The next step is to contact the Transfusion Medicine Laboratory / Blood Bank Manager or Senior Technologist and Transfusion Medicine Medical Director to introduce the concept of prospective transfusion order screening. For some labs, this may be a new skill and does require training. It should be noted that this action is supported by the College of Medical Laboratory Technologists of Ontario.

(Practice Guidelines for MLTs Practising in Transfusion Science http://www.cmlto.com/images/stories/Members/practice_guidelines_for_medical_laboratory_technologists_practising_in_transfusion_science.pdf)

To help establish prospective transfusion order screening, the following templates and tools have been developed:

- For full version of prospective transfusion orders screening standard operating procedure, job aid and algorithm go to http://transfusionontario.org/en/wp-content/uploads/sites/4/2016/04/Quality-Improvement-Plan-Tools-Appendix.pdf
- For technologist education module on how to screen transfusion orders, go to http://transfusionontario.org/en/wp-content/uploads/sites/4/2016/04/Quality-Improvement-Plan-Tools-Appendix.pdf

ALGORITHM FOR REVIEWING APPROPRIATE RBC TRANSFUSION INDICATION AND DOSING



It is essential to ensure that prior to implementation, the standard operating procedure (SOP) is consistent with the hospital transfusion guidelines, has been reviewed by the technologists, and that proper training of the technologists has been conducted. Ideally, the medical laboratory technologists should be able to direct any questions to the Transfusion Medicine Medical Director who should followup with any unresolved inappropriate orders identified in the screening process.

One option to consider in this intervention, is to start with small, incremental changes. For example, the Transfusion Medicine Laboratory may consider starting with reducing 2 unit transfusion orders to 1 unit at a time for non-bleeding, hemodynamically stable inpatients as a first initial measure. This may help reduce the number of calls to the clinicians and help initiate the change at a more acceptable pace. The change can then be re-evaluated and the next step of introducing hemoglobin thresholds for prospective transfusion order screening can be started. Or, the intervention may be in effect during the day shift only at the start.

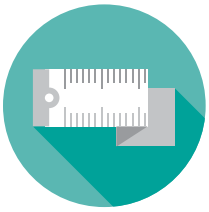
Inventory management considerations during the implementation of a prospective screening process

- Evaluate your RBC inventory numbers prior to the implementation of a prospective screening process. (For more details on inventory management, go to http://transfusionontario.org/en/cmdownloads/categories/inventory-management-toolkits/)
- Monitor your RBC inventory levels during the implementation of the prospective screening process for any increase in outdated units. Adjust RBC inventory levels to account for reductions in transfusion demand where appropriate. This is extremely important if you are an institution that receives short-dated RBC units from other sites
- Ensure there is a plan in place to redistribute RBC units should you experience increased amounts of short-dating units

Communication of prospective transfusion order screening

It is essential that there has been clinical stakeholder awareness that prospective transfusion order screening will occur. Similar to Module #2, here are some steps to consider in the implementation process.

Prepare	Baseline audit results showing need for improvement Proposal for prospective transfusion order screening
Engage Transfusion Committee	Committee reviews and modifies screening process, if needed
Disseminate	Disseminate widely to medical and surgical departments, professional practice committees, transfusion medicine laboratory staff Educate staff
Pilot	Conduct an initial 2-3 week pilot of screening during day time hours 9am-5pm and Monday to Friday
Incorporate Feedback	Transfusion committee reviews and approves proceeding with prospective screening 24/7
Final Approval	Present to MAC for final approval



Measuring your performance

After implementation of prospective transfusion order screening, it is important to measure the impact of the change. Ideally, the outcome measures should be the same as the baseline measures described in Module #1. We recommend collecting data once every 6 months. The following are examples of common measures to be collected when evaluating your intervention.

Outcomes measures

- Percent of transfusions with a pre-transfusion hemoglobin less than 80 g/L.
- Percent single unit RBC transfusions
- Monthly number of RBC transfusions per 100 acute inpatient bed days (RBC/100 AIPD).

Process measures

Process measures may be collected to detail the uptake of the intervention. Examples include:

- Percentage of transfusion orders in non-OR, non-bleeding patients that are screened
- Percentage of inappropriate orders detected by MLT screening that have been followed up by medical director
- Percentage of transfusion orders that are changed

Balancing measures

Balancing measures should be collected to ensure that no harm occurs as a result of introducing the quality improvement intervention. Examples include:

- Delays in transfusion as reported by clinical wards
- Under-transfusion is defined as patients with a hemoglobin less than 60 g/L who are not transfused. This can be determined by contacting the Laboratory Information System team and asking for hemoglobin values less than 60 g/L in a period of time in a particular area. Patients with hemoglobin less than 60 g/L who were not transfused can be reviewed to determine the reason for not transfusing to ensure that these patients were not under transfused. Remember that there may be reasons for not transfusing, including patients who decline transfusion (including for religious reasons) or patients who can be safely treated with alternatives to transfusion such as iron supplementation
- Misapplication of screening criteria. Determine if screening criteria were inadvertently applied to patients EXEMPT from screening process, such as those in the operating room and bleeding patients

Sustaining early successes

Once prospective transfusion order screening has been implemented to reduce inappropriate RBC transfusion, there are several important ways to help sustain this performance:

1) Transfusion guidelines should be provided to all new nurses and physicians joining the institution. Guidelines should be widely available on the institution's intranet or in poster format on wards where transfusion occurs frequently. New nurses and physicians should also be made aware of prospective transfusion order screening

2) Prospective transfusion order screening training should be provided to all new medical laboratory technologists joining the transfusion medicine laboratory

3) Periodic audit and feedback to nurses, physicians and transfusion medicine laboratory staff is important in confirming sustainability. The results should be presented at the institution's Transfusion Committee which plays an important role in ensuring ongoing education and training, as well as ensuring the transfusion guidelines are updated as new evidence emerges

Additional Resources

Ontario Transfusion Quality Improvement Plan, Health Quality Ontario.
http://www.hqontario.ca/Quality-Improvement/Quality-Improvement-Plans

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Ontario Regional Blood Coordinating Network

Ontario Transfusion Coordinators Network

Please see link for full acknowledgments:
http://transfusionontario.org/en/wp-content/uploads/sites/4/2016/03/Acknowledgements.pdf

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