

# **Ontario Hospital Toolkit for Emergency Blood Management**

**Version Date: October 31, 2016**



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## Description of Ontario Hospital Toolkit for Emergency Blood Management

Note: The items contained in this toolkit are designed for information purposes only, and are intended to aid hospitals in preparing their own Hospital Emergency Blood Management Plan (HEBMP). Each tool must be customized for your hospital to ensure the necessary details are incorporated. Nothing in this toolkit is intended to provide legal or medical advice. If you have a legal question regarding emergency blood management, you should consult a lawyer. If you have a medical question regarding emergency blood management, you should consult a medical professional.

Abbreviations: For a list of abbreviations refer to the Ontario Contingency Plan for the Management of Blood Shortages.

### 1. Summary Table: Actions to be Taken during Phases of Blood Shortage

This table provides a quick summary of the various actions key stakeholders are required to take during Green, Amber, Red and Recovery Phases according to the Ontario Contingency Plan for the Management of Blood Shortages (referred to hereafter as the Ontario Plan).

### 2. Checklist for Hospitals

This tool provides a step-by-step guide for hospitals to consider when they are developing their HEBMP to ensure they have incorporated all necessary key tasks/activities required according to the Ontario Plan. The checklist activities are laid out by phase – Green, Amber, Red and Recovery.

### 3. Generic Hospital Emergency Blood Management Plan

This tool provides a template that can be used by hospitals to develop their HEBMP. This tool was provided in the previous version of the Toolkit. A revision log has been provided to indicate the key changes made in this next version.

### 4. Blood Shortage Training Checklist

One of the recommendations made following a provincial blood shortage exercise held in 2010 was that staff should be trained on their HEBMP to ensure they are familiar with required roles and responsibilities during a blood shortage. This training checklist provides a template for hospitals to set up a training package to train staff and document the training.

### 5. Blood Shortage Competency Training Quiz

This brief quiz provides examples of some questions that could be used to confirm whether or not staff were able to achieve the understanding and knowledge around blood shortage management following training.

### 6. Planning a Blood Shortage Exercise – Checklist

This brief checklist provides a step-by-step guide for hospitals to plan a blood shortage exercise. A key recommendation from both the National Plan and the Ontario Plan is that blood shortage exercises be held occasionally to test the HEBMP and identify any areas of weakness. If any gaps are identified, plans can be updated and improved.

## 7. Memo Templates

To aid in notification of internal hospital staff as well as patients who might be affected by a blood shortage, these memo templates are provided to hospitals to incorporate into their HEBMP. Each memo template can be revised as needed at the time of a blood shortage but will greatly reduce the time needed to develop communications. These memo templates were originally provided in Version 1 of the toolkit. Templates are provided for Amber Phase, Red Phase and Recovery Phase. The addition of a patient memo template was provided in Version 2.

## 8. Documentation Logs: Deferred/Cancelled Surgeries or Treatments during Blood Shortage

These tools are provided as a template for hospitals to use and incorporate into their HEBMP to ensure documentation of decisions regarding any deferral or cancellation of surgical procedures or transfusion orders as a result of a blood shortage. The templates can be adjusted to suit the needs of each hospital but should capture the key data elements listed.

## 9. Notification Table – Contact List (Example)

Having a prepared list of contact names and information prepared before the event occurs will facilitate and shorten response time for notification of internal hospital personnel. This template is intended to be a guide and must be customized and kept updated at each hospital as required.

## 10. Checklist to Record Action Taken in Response to a Blood Shortage Notification

This checklist is intended to guide hospital personnel through the necessary actions required upon receiving notification from Canadian Blood Services that a blood shortage exists. Checklists are often useful memory aids for staff facing an unusual and urgent situation to ensure that the necessary tasks are completed and documented.

## 11. Sample Terms of Reference Hospital Emergency Blood Management Committee

An example of a Hospital Emergency Blood Management Committee Terms of Reference

## 12. PowerPoint presentation on Emergency Blood Management

This updated presentation template can support hospital personnel in training and educating staff on emergency blood management and the impact within the hospital. It can be revised as needed to suit the needs of each facility.

## 13. Calculating on hand inventory related to phases of a blood shortage

This tool will assist hospitals in determining the level of on hand inventory for different blood components for each phase of inventory level (Green, Amber, Red).

## 14. Physician, Nurse and Medical Laboratory Technologists Job aids – responsibilities in a blood shortage

These information sheets are provided as one-page summaries listing role and responsibilities of health care professionals during a blood shortage.

## Summary Table: Actions to be Taken during Phases of Blood Shortage

Phase	Canadian Blood Services (CBS)	Ministry of Health and Long-Term Care (MOHLTC)	Hospital
<b>Green</b> (includes Green Phase Advisory)	<ul style="list-style-type: none"> <li>• Fill hospital orders as requested</li> <li>• Practice effective management of national blood component inventories</li> <li>• Review and revise plans to be used during blood shortages</li> <li>• Collaborate in planning and participate in national/provincial blood shortage exercises</li> </ul>	<ul style="list-style-type: none"> <li>• Chair the Ontario Emergency Blood Management Committee (OEBMC)</li> <li>• Through OEBMC: <ul style="list-style-type: none"> <li>• Review, revise and disseminate the Ontario Plan and Toolkit to support development of hospital emergency blood management plans</li> <li>• Plan and hold blood shortage exercises</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Report hospital inventory to CBS (blood.ca web-based reporting)</li> <li>• Practice effective blood utilization</li> <li>• Define inventory levels for all phases</li> <li>• Establish and maintain Hospital Emergency Blood Management Committee (HEBMC)</li> <li>• Maintain and train staff to Hospital Emergency Blood Management Plan (HEBMP)</li> <li>• Participate in blood shortage exercises</li> </ul>
<b>Amber</b>	<ul style="list-style-type: none"> <li>• Notify hospital Transfusion Services by fax/email/text of Amber Phase</li> <li>• Communicate regularly with hospital transfusion services regarding inventory status, using defined protocols (conference calls, fax)</li> <li>• Coordinate and oversee media announcements regarding the blood supply and any call for donations as required</li> </ul>	<ul style="list-style-type: none"> <li>• Notify OEBMC/Convene if needed</li> <li>• Monitor and review key messages and updates from CBS/National Emergency Blood Management Committee (NEBMC) with OEBMC – communicate to hospitals</li> <li>• Monitor hospital inventory and compliance with reducing demand affected blood component(s) through data provided by CBS</li> <li>• Lead communication to hospitals and the public about potential impact to patient care if advised by OEBMC or NEBMC.</li> <li>• Provide recommendations to hospitals regarding management of shortage based on OEBMC input</li> </ul>	<ul style="list-style-type: none"> <li>• Activate HEBMP for Amber Phase</li> <li>• Notify internal hospital staff/ HEBMC</li> <li>• Report hospital inventory levels to CBS</li> <li>• Participate in CBS conference calls</li> <li>• Reduce target for reordering inventory to Amber level</li> <li>• Consider deferral/cancellation of elective procedures requiring blood (document decisions) if shortage is prolonged</li> <li>• Follow recommendations received from MOHLTC/OEBMC</li> </ul>
<b>Red</b>	<ul style="list-style-type: none"> <li>• Notify hospital Transfusion Services by fax/email/text of Red Phase</li> <li>• Communicate regularly with hospital transfusion services regarding inventory status, using defined protocols (conference calls, fax)</li> <li>• Coordinate and oversee media announcements regarding the blood supply and any call for donations as required</li> </ul>	<ul style="list-style-type: none"> <li>• Convene OEBMC</li> <li>• Monitor and review key messages and updates from CBS/NEBMC</li> <li>• Monitor hospital compliance with reduction of demand for affected blood component(s) through data provided by CBS and follow up with any non-compliant sites</li> <li>• Activate the Ministry Emergency Operations Centre (MEOC)</li> <li>• Lead communication to hospitals and the public through MEOC regarding impact to patient care.</li> <li>• Provide recommendations to hospitals regarding management of shortage based on OEBMC and NEBMC input</li> </ul>	<ul style="list-style-type: none"> <li>• Activate HEBMP for Red Phase</li> <li>• Notify internal hospital personnel</li> <li>• Convene HEBMC</li> <li>• Report hospital inventory levels to CBS</li> <li>• Participate in CBS conference calls</li> <li>• Reduce target for reordering inventory to Red level</li> <li>• Implement triage team and triage all requests for blood according to HEBMP</li> <li>• Document decisions regarding deferral, or cancellation of blood requests</li> <li>• Transfer blood between hospitals if needed</li> <li>• Follow recommendations received from MOHLTC/OEBMC</li> </ul>
<b>Recovery</b>	<ul style="list-style-type: none"> <li>• Notify hospital Transfusion Services via fax/email/text of Recovery Phase</li> <li>• Slowly increase order fill rate to allow hospital inventories to return to optimal levels</li> <li>• Review event and report to NEBMC</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor and review key messages and updates from CBS/NEBMC</li> <li>• Assist CBS as needed in monitoring hospital recovery</li> <li>• Review event with OEBMC and report to NEBMC</li> </ul>	<ul style="list-style-type: none"> <li>• Notify internal hospital personnel</li> <li>• Increase blood usage/activity slowly and increase inventory levels gradually</li> <li>• Reschedule elective procedures gradually as blood inventory levels may be vulnerable to returning to shortage during recovery period</li> <li>• Review event and report to OEBMC as directed.</li> </ul>

## Preparedness Checklist for Hospitals Responding to Blood Shortages - Green

### Green Phase:

- Establish Hospital Emergency Blood Management Committee (HEBMC)
- Develop Hospital Emergency Blood Management Plan (HEBMP) for managing blood shortages
  - Define blood conservation methods/available blood alternatives
  - Identify surgeries associated with high blood loss (greater than 10% probability of blood use based on historical data for your hospital)
  - Identify target inventory levels for blood components by phase of shortage (Green, Amber, Red)
  - Outline stepwise reduction of blood use to occur upon activation of plan
  - Identify triage officer/team members to implement reduction of blood use
  - Identify key stakeholders to be notified upon activation of plan
  - Develop communication templates to be used for notification of staff and patients
  - Ensure HEBMP is integrated into overall hospital emergency plan
  - Train staff on the contents of the plan and the communication strategy related to blood shortages
  - Consider holding an exercise to test the plan
  - Develop and maintain documentation templates to be used to record changes to blood requests (cancellations or deferral) as a result of the shortage

### Practice good blood utilization and inventory management practices

- Report hospital inventory to CBS (blood.ca web based reporting system)
- Ensure that best practices in inventory management of blood components are in place
- Define the required inventory to be held on site to ensure normal blood demand will be filled
- Practice strategies to minimize blood component/product outdating (e.g. participate in redistribution)
- Establish redistribution linkages
  - Develop agreements between hospitals located in proximity to one another to support redistribution of blood if/when necessary
  - Outline policies and procedures for the transfer of blood including requirement for appropriate storage conditions and appropriate documentation
- Adopt guidelines for the use of blood components and products to ensure effective utilization (through Transfusion Medicine Committee or Medical Advisory Committee). See Quality Improvement Plan at [www.transfusionontario.org](http://www.transfusionontario.org).
- Perform periodic audits to review appropriateness of blood ordering (compliance with adopted guidelines)
- Develop and maintain protocol/algorithm for massive hemorrhage

## Preparedness Checklist for Hospitals Responding to Blood Shortages - Amber

### Amber Phase of HEBMP should:

- Ensure that local Canadian Blood Services (CBS) production/distribution site will be notified of a local situation that could affect blood supply (e.g. equipment failure resulting in large loss of blood components or multiple traumas anticipated to require a large volume of blood component support)
- When you receive notification of an Amber Phase shortage from CBS:
  - Include notification of the hospital transfusion service Medical Director/Consultant on call, transfusion service Manager/Supervisor and Chairperson of HEBMC to determine if additional communication and/or actions are required to conserve use of existing blood inventory
  - Ensure a pre-approved contact list and communication template is available
  - Prioritize a list of strategies for reduction of blood use
  - Include direction to convene the HEBMC to assess the situation and impact to patients as determined by Chairperson
  - Ensure triage of blood order requests and documentation of decisions made will be based on recommendations agreed to by the HEBMC
- Provide a communication template for the notification of patients and their families to explain the need for possible deferral/cancellation of their treatment should it become necessary
- Give direction to reduce target for reordering stock of the affected blood component to Amber level (50% to 70% of Green level)
- Ensure blood is returned from and not issued to 'stock refrigerators' in satellite locations such as the operating room or trauma unit
- Ensure affected product will not be stockpiled for local needs (stockpiling can result in increasing risk to patients in other hospitals/jurisdictions)
- Identify one person to act as a main contact with CBS to communicate any inventory needs, report inventory to CBS as directed and to attend regular conference calls held by CBS providing updates on the inventory status

## Preparedness Checklist for Hospitals Responding to Blood Shortages - Red

### Red Phase of HEBMP should:

- Include the fact that notification of shortage will be received from CBS
- Ensure that internal hospital notification is issued (in writing) to CEO and Division Chiefs of Surgery, Anesthesia, Critical Care, Trauma/Emergency, Hematology and Medicine, Directors of Laboratory Services, Diagnostic Services and Nursing, Chair of the Transfusion Medicine Committee (or its equivalent) and HEBMC members.
  - Ensure a pre-approved contact list and communication template is available
  - Include a contact list for HEBMC members
- Include direction to convene HEBMC to assess and monitor the situation and the impact to patients
- Give direction to reduce target for reordering stock of the affected blood component to Red level (25% to 50% of Green level)
- Ensure the triage officer/team will be activated and be provided with the required guidance to follow regarding decisions to reduce, defer or cancel blood order requests
- Ensure decisions to reduce, defer or cancel blood order requests are documented and reviewed by the HEBMC on a daily basis (or more frequently if needed)
- Include use of the NAC Emergency Framework for rationing blood for massively bleeding patients as directed by the NEBMC
- Ensure blood is not issued to stock fridges such as operating room or trauma room
- Ensure affected product will not be stockpiled for local needs (stockpiling can result in increasing risk to patients in other hospitals/jurisdictions)
- Ensure that one person is identified to act as a main contact with CBS to communicate any inventory needs, report hospital inventory to CBS as directed and to attend regular conference calls held by CBS providing updates on the inventory status
- Include direction to respond to priority inventory needs in region and ensure product is transferred to another facility if needed



## Preparedness Checklist for Hospitals Responding to Blood Shortages - Recovery

### Recovery Phase of HEBMP should:

- Include a communication template, approved distribution list and contact information to ensure notification to stakeholders that Recovery Phase has been declared
- Ensure that requests for blood components continue to be monitored and screened until CBS has notified the hospital of a return to the Green Phase
- Ensure gradual return to normal blood use activity once Green Phase has been declared
- Ensure a review is completed post event to identify any area/process that could be improved

Following notification from the blood supplier (CBS) that inventory levels are on the rise, it is vital that hospital blood usage remains restricted to critical needs or increases at a cautious pace in order to ensure levels do not return to a shortage in the Recovery Phase.

### References

1. Ontario Contingency Plan for the Management of Blood Shortages (ver 3; 2016). Ontario Provincial Blood Programs Coordinating Office, Contingency Planning Working Group.
2. The National Plan for Management of Shortages of Labile Blood Components (2015-10-07). National Advisory Committee on Blood and Blood Products and Canadian Blood Services.
3. Emergency Framework for rationing of blood for massively bleeding patients during a red phase blood shortage (2012-04-14). National Advisory Committee on Blood and Blood Products; [nacblood.ca](http://nacblood.ca)
4. Blood Inventory Management Best Practices for Hospital Transfusion Services (Sept 2014). Ontario Regional Blood Coordinating Network;  
<http://transfusionontario.org/en/download/inventory-management-toolkit/>;

## Generic Hospital Emergency Blood Management Plan

<b>Review Record</b>	
Author:	
Issued by:	
Date:	
Manager's Signature:	
Date:	
Medical Director's Signature:	
Date:	
Removed from Active Use (yes or no):	
Date Removed:	
Removed by:	
Final Archive Location:	

<b>Revision Date</b>	<b>Revision/Description</b>
July 31, 2012	Change header for approval; add Nationally to 1.2 Red Phase; 6.5 added; 8.5.2 added – document decisions; 8.8.3 added – document decisions; 8.9.1 added document decisions; 8.11.2 added consider splitting components; 8.13.2 added – continue until fully back to Green Phase; 8.15.1 added document decisions; References – updated.
July 31, 2016	1.2 added Green Phase Advisory 8.1 added Green Phase Advisory 8.3.3 and 8.7.3 add reference to CBS web based inventory reporting 8.5.3, 8.9.2 and 8.15.2 change blood conservation to patient blood management 8.11 remove extending shelf life of blood components as an option 8.12 add reference to NAC Emergency Framework for rationing References – updated

## Generic Hospital Emergency Blood Management Plan

<b>XXXXX Manual</b>	
Document No.:	
Page xx of xx	
Issued by:	
Approved by:	
Effective date:	
Revision date:	
Filename:	
Related Documents:	
Distribution:	

### 1.0. Principle

- 1.1. Blood components and products are supplied directly to hospitals from Canadian Blood Services (CBS). In the event that CBS is unable to fill inventory requests for blood components or blood products at requested levels, hospitals shall have a policy and procedure in place to adjust their usage in response. The degree of reduction to blood use required will be dependent on the severity and expected length of the shortage. It is critical that stockpiling of the component/product in shortage does not occur. Note: a reduction in inventory may be limited to one blood group, one blood component, all blood components or a specific blood product supplied by CBS.
- 1.2. Blood shortages will be categorized into four phases to help define the required level of response/reduction at the hospital level:
- a. Green Phase: No blood shortage exists. CBS is able to fill the majority of hospital requests to optimal inventory levels. Hospitals practice routine strategies to minimize product wastage.  
Green Phase Advisory: CBS inventory is low for a particular blood component. Hospitals will be directed to report their available inventory to aid in the assessment of the need to cross into an Amber or Red Phase.
  - b. Amber Phase: CBS is unable to fill hospital requests as submitted to maintain an optimal inventory level. The shortage may result from a short term imbalance between the supply and demand. Hospital action will be required to reduce inventory levels on hand and may be required to reduce usage of blood component(s)/product(s) affected by the shortage in order to ensure conservation for use in urgent treatments.
  - c. Red Phase: CBS will declare a Red Phase when blood component/product inventory is at a critically low level nationally and is not expected to improve for a prolonged period of time. In this situation, hospital demand will continue to outpace available inventory. Hospital action is required to reduce inventory levels on hand to minimum levels and will be required to reduce usage of the blood component(s)/product(s) affected by the shortage in order to conserve blood for use in critical and life threatening treatments only.

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- d. Recovery Phase: When inventory begins to rise again in relation to demand, CBS will communicate to hospitals. It is critical that hospital use does not resume at normal operating rates immediately. Blood use reductions should remain in place until CBS indicates that inventory has reached a stable level to allow for increased usage. Following this notification, hospitals must gradually increase usage in a controlled manner to ensure the improved inventory level can be maintained and a return to a shortage is avoided.

### 2.0 Scope/Related Policies

- 2.1. Stock inventory levels defined (by blood component/blood product including optimal as well as emergency/critical levels)
- 2.2. Redistribution/transfer of blood to/from another facility
- 2.3. Maximum Surgical Blood Order Schedule (MSBOS)
- 2.4. Existing practice guidelines for use of blood components in use at facility

### 3.0 Specimen

Not applicable

### 4.0 Materials

Not applicable

### 5.0 Safety

Not applicable

### 6.0 Records/Forms/Documents

- 6.1 Communication memo templates for internal notification of medical, nursing and laboratory personnel and patients
  - 6.1.1 Amber Phase memo
  - 6.1.2 Red Phase memo
  - 6.1.3 Patient notification memo
  - 6.1.4 Recovery Phase memo
- 6.2 Communication forms relating to CBS
  - 6.2.1 Blood component/product order forms
  - 6.2.2 Form to record CBS conference calls on inventory status
- 6.3 Practice guidelines for blood component / blood product use (adopted by facility)

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6.4 Contact list of personnel to send notification memo

6.5 Documentation logs for recording decisions relating to reduction of blood use (reduction, deferral or cancellation)

## **7.0 Quality Control**

Not applicable

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### 8.0 Procedure

Phase	Action
8.1 Green Phase: Normal operations, preparation phase	8.1.1 Follow standard operating procedures under normal blood inventory (optimal) levels 8.1.2 Prepare facility to ensure ability to respond to a notification of blood shortage <ul style="list-style-type: none"> <li>• Train staff on contents of the blood shortage plan and communication strategy</li> <li>• Consider holding exercise to test plan and staff competency</li> </ul> 8.1.3 Green Phase Advisory – Report available inventory to CBS, monitor CBS communication for further direction, notify TM Manager and Medical Director, reduce target inventory levels for re-order as requested by CBS
8.2 Amber Phase: Initiate internal communication	8.2.1 Upon notification of Amber Phase of blood shortage from CBS, notify internal personnel as follows via phone call or page as well as in writing (refer to Amber memo template): <ul style="list-style-type: none"> <li>_ manager/supervisor responsible for transfusion service</li> <li>_ medical director responsible for transfusion service</li> <li>_ chairperson of transfusion committee</li> <li>_ chairperson of Hospital Emergency Blood Management Committee (HEBMC)</li> </ul> 8.2.2 Assign key point person to liaise with CBS regarding inventory status 8.2.3 Document communication between hospital and CBS relating to inventory status/levels
8.3 Amber Phase: Implement reduction of inventory levels targeted to hold on site	8.3.1 Reduce desired inventory target (on hand inventory levels) to defined Amber level 8.3.2 Reduce or recall inventory held in satellite storage locations (trauma room, operating room) 8.3.3 Report hospital inventory levels to CBS as requested (using blood.ca web based disposition reporting system)
8.4 Amber Phase: Implement review of orders for the blood component(s)/ product(s) that the shortage applies to	8.4.1 Transfusion service technologist(s) review all blood orders against facility adopted guidelines (for relevant component(s)/product(s)) 8.4.2 Transfusion service physician or designate reviews each request that does not comply with guidelines and makes a decision on approval and document the decision 8.4.3 Ensure all orders for blood requested for surgical use comply with the facility MSBOS as applicable 8.4.4 Reduce holding period post operatively for any blood not required during surgery
8.5 Amber Phase: If shortage continues, review elective transfusions scheduled	8.5.1 Designated medical personnel (HEBMC or transfusion committee) reviews all impending elective surgery for potential blood use and consider deferral if it can be safely deferred. (NOTE: if surgeries will be deferred, patients must be notified - refer to patient notification memo template) 8.5.2 Document decisions on approved log sheet 8.5.3 Encourage use of patient blood management practices where feasible including: autologous donation, use of erythropoietin, oral and/or intravenous iron, use of medication to reduce blood loss, and peri-operative blood salvage where applicable
8.6 Red Phase: Initiate internal notification	8.6.1 Upon notification of Red Phase of blood shortage from CBS, notify internal personnel as follows via phone call or page as well as in writing (refer to Red memo template): <ul style="list-style-type: none"> <li>_ manager/supervisor responsible for transfusion service</li> <li>_ medical director responsible for transfusion service</li> <li>_ chairperson of transfusion committee</li> <li>_ chairperson of HEBMC</li> <li>_ medical chief of staff, Chief Executive Officer</li> <li>_ directors of Nursing, Laboratory, Anesthesia, Surgery, Hematology, Oncology, Emergency, Intensive Care Unit (ICU)</li> <li>_ risk manager</li> <li>_ public relations</li> <li>_ patient relations officer</li> </ul> 8.6.2 Assign a key point person to liaise with CBS regarding inventory status 8.6.3 Document communications between hospital and CBS relating to inventory status/levels

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Phase	Action
8.7 Red Phase: Implement reduction of inventory levels targeted to hold on site	8.7.1 Reduce desired inventory target (on hand inventory levels) to defined Red level 8.7.2 Refrain from holding any inventory in satellite storage locations (trauma room, operating room) 8.7.3 Report hospital inventory levels to CBS as requested using blood.ca web based disposition reporting system
8.8 Red Phase: Implement review of all orders for the blood component(s) / product(s) that the shortage applies to	8.8.1 Designated triage physician will review all blood orders received 8.8.2 Base approval on individual clinical evaluation and whether the need is deemed to be life threatening (refer to NAC Emergency Framework for additional guidance) <sup>5</sup> 8.8.3 Document decisions to release or not on approved log sheets 8.8.4 The blood component(s) in short supply should not be held or reserved for any patient
8.9 Red Phase: If shortage continues, review elective transfusions scheduled	8.9.1 HEBMC will review all elective transfusion deferrals (surgical* or non-surgical) NOTE: if transfusions are deferred, patients must be notified (refer to patient notification memo template) and decisions must be documented *Note: deferral of elective surgery will be completed in consultation with Chief of Surgery following existing hospital policy/procedure 8.9.2 Increase patient blood management practices where feasible including: use of erythropoietin, oral and/or intravenous iron, and medication to reduce blood loss and peri-operative blood salvage, where applicable
8.10 Red Phase: Communicate with other nearby facilities	8.10.1 The designated medical person will communicate with other nearby hospital facilities (local CBS Medical Director may be involved) to determine if inter- hospital transfer of product is required to support patients in critical need of blood component(s)/product(s) that are at critical levels
8.11 Red Phase: Consider options of splitting blood component(s)/ product(s) that is in critical supply	8.11.1 Consider splitting components to increase available options for treatment if feasible
8.12 Red Phase: Implement NAC Emergency Framework	8.12.1 Implement the NAC Emergency Framework for rationing blood in massively bleeding patients in a Red Phase if directed by NEBMC
8.13 Recovery Phase: Initiate internal communication	8.13.1 Upon notification of Recovery Phase from blood shortage by CBS, notify internal personnel as follows via phone call or page as well as in writing (refer to Recovery Phase memo template): <ul style="list-style-type: none"> <li>_ manager/supervisor responsible for transfusion service</li> <li>_ medical director responsible for transfusion service</li> <li>_ chairperson of Transfusion Committee</li> <li>_ chairperson of HEBMC</li> <li>_ medical chief of staff, CEO</li> <li>_ directors of Nursing, Laboratory, Anesthesia, Surgery, Hematology, Oncology, Emergency, ICU</li> <li>_ risk manager</li> </ul>
8.14 Recovery Phase: Maintain inventory levels targeted to hold on site at reduced levels	8.14.1 Maintain inventory at Amber level until notified by CBS that national inventory has reached stability 8.14.2 Refrain from holding inventory in satellite storage locations (trauma room, operating room) until fully back to Green Phase 8.14.3 Continue to report inventory to CBS as requested

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Phase	Action
8.15 Recovery Phase: Review of orders for the blood component(s) / product(s) that the shortage applies to	8.15.1 Transfusion service technologist(s) continue to prospectively screen all blood orders against facility adopted guidelines (for relevant component(s)) 8.15.2 Transfusion service physician or designate will review each request from that does not comply with facility adopted guidelines and make approval decisions or discuss request with ordering physician 8.15.3 Ensure all orders for blood requested for any urgent surgical use comply with the facility MSBOS where applicable 8.15.4 Continue to minimize holding period post operatively for any blood not required during surgery
8.16 Recovery Phase: Review elective transfusions scheduled	8.16.1 HEBMC or transfusion committee will continue to review all elective transfusion deferral decisions. NOTE: if transfusions will be deferred, patients must continue to be notified (refer to patient notification memo template) and decisions must be documented 8.16.2 Continue to encourage patient blood management where feasible including: use of erythropoietin, oral/intravenous iron, and use of medication to reduce blood loss 8.16.3 As inventory improves, gradually resume elective transfusion, beginning with non-surgical patients or based on prioritization of need as determined by the HEBMC or designated triage officer/ team
8.17 Recovery Phase: Return to green phase	8.17.1 Once communication from CBS is received that blood inventory for the component(s)/product(s) that was in short supply has recovered, gradually increase the inventory held on site to optimal levels 8.17.2 Return to normal operations 8.17.3 Hold meeting to review the event and assess adequacy of hospital response

## 9.0 References

1. Canadian Standards Association Standards for Blood and Blood Components CSA Z902-15. Canadian Standards Association. December 2015.
2. Institute for Quality Management in Healthcare (IQMH) Centre for Accreditation. Accreditation Requirements Version 6.0. December 2013.
3. Ontario Contingency Plan for the Management of Blood Shortages Version 3. Ministry of Health and Long-Term Care. October 31, 2016.
4. The National Plan for the Management of Shortages of Labile Blood Components. National Advisory Committee on Blood and Blood Products & Canadian Blood Services. October 7, 2015.
5. Emergency Framework for Rationing of Blood for Massively Bleeding Patients during a Red Phase of a Blood Shortage. Working Group on Emergency Disposition of Blood during a Red Phase Blood Shortage: National Advisory Committee on Blood and Blood Products. April 14, 2012.



## Blood Shortage Training Checklist

### Objective:

The learner or participant will be able to explain the required steps defined in the Hospital Emergency Blood Management Plan (HEBMP) and demonstrate the required steps to respond to and manage a blood shortage in their hospital.

Employee Name:			
Employee Job Title:			
Type of Training:	<input type="checkbox"/> Initial	<input type="checkbox"/> Annual Assessment	<input type="checkbox"/> Retraining
Document Review:			
<input type="checkbox"/> Hospital Emergency Blood Management Plan/Policy (current version)			
<input type="checkbox"/> Laboratory procedure for Emergency Blood Management (current version)			

### Direct Observation Check:

Skill	Key Areas of Assessment	Trainer's Initials	Date
1. Explain how blood shortage phases relate to the HEBMP	Differentiates the different blood shortage phases including Green, Green Phase Advisory, Amber, Red and Recovery		
	Summarizes the mandate of the Hospital Emergency Blood Management Committee (HEBMC) and purpose of HEBMP		
2. Describe the communication and notification requirements as defined by HEBMP	Recognizes the specific communication from the blood supplier notifying Amber, Red and Recovery Phase of a blood shortage		
	Demonstrates the appropriate procedure for notifying transfusion medicine manager and others (includes documentation of notification)		
3. Manage inventory during a blood shortage	Explains why hospital target inventory levels require adjustment in response to blood shortage notification		
	Defines inventory adjustment required for: <ul style="list-style-type: none"> <li>- Amber, Red and Recovery Phase</li> </ul> *including recall of units in satellite storage/cancel on-hold		
	Demonstrates use of CBS web based inventory reporting to report blood component inventory		
4. Manage blood order requests during a blood shortage	Locates the facility guidelines would be used during a blood shortage		
	Describes how facility guidelines would be used during a blood shortage		
	Identifies the correct forms to document blood order requests during a blood shortage and decisions taken		
5. Evaluate the Blood Shortage/ Mock Blood Shortage Event	Explains the purpose of a post blood shortage/blood shortage exercise evaluation		

## Blood Shortage Training Checklist

### Practical Assessment:

Perform	Expected Outcome	Trainer's Initials	Date
Demonstrates required contingency plan activities in an exercise	Completes acceptable documentation of required activities		
Completes competency quiz	Passes (100%)		

Training Completed: Trainee Signature and Date	
Name of Trainer: Name and Signature of Trainer	
Laboratory Manager Review:	
Date:	

## Blood Shortage Plan Competency Training Quiz (pg1)

Review the questions and complete after you have:

- Read the Operating Procedure for Hospital Emergency Blood Management Plan (HEBMP)
- Attended a demonstration or presentation on HEBMP

Submit your answers to the site appointed trainer, or your quality specialist. 100% competency must be demonstrated before the employee can be considered to be competent to respond to a blood shortage notification from the Canadian Blood Services.

### Competency Questions:

1. What blood components/products may be affected in a blood shortage?
  - a) Red blood cells
  - b) Platelets
  - c) IVIG
  - d) All of the above
  
2. Which of the following could cause a national blood shortage?
  - a) A new infectious agent
  - b) Decrease in demand from hospitals
  - c) A snow storm affecting one blood centre
  - d) A multi-person vehicle accident
  
3. Which organization will initiate hospital notification of a blood supply shortage?
  - a) Ministry of Health and Long-Term Care
  - b) Canadian Blood Services
  - c) Hospital CEO
  - d) Local Health Integrated Network (LHIN) CEO
  
4. The NAC Emergency Framework for rationing blood:
  - a) Is intended for use for Red Phase shortages only
  - b) Is massively bleeding patients only
  - c) Is only used if NEBMC recommends
  - d) All of the above
  
5. What inventory management action needs to be taken upon receiving notification of an Amber Phase blood shortage?
  - a) No action is required - this is routine
  - b) Notify the operating room that all surgery is on hold until further notice
  - c) Reduce inventory levels for affected component according to hospital policy
  - d) Notify medical day care unit that all transfusions are on hold until further notice

## Blood Shortage Plan Competency Training Quiz (pg2)

6. What inventory management action needs to be taken upon receiving notification of a Red Phase blood shortage?
- Reduce inventory target levels according to hospital procedure
  - Recall inventory from satellite locations
  - Notify blood supplier of inventory levels on hand
  - All of the above
7. What is the role of the Hospital Emergency Blood Management Committee (HEBMC)?
- To liaise with CBS during a blood shortage
  - To keep clinical staff informed of the blood shortage
  - To liaise with the provincial Minister of Health and Long-Term Care during a blood shortage
  - To inform CBS of a blood shortage
8. Documentation of decisions regarding deferral or cancellation of transfusion during a blood shortage is critical.
- True
  - False
9. What action should hospitals take if notification of a Green Phase Advisory is received?
- No action is required
  - Return inventory to CBS as defined by hospital policy
  - Report hospital inventory to CBS
  - Notify hospital CEO immediately
10. What is the primary purpose of a review of a blood shortage event?
- Pinpoint personnel who did not follow the correct procedure
  - Identify opportunities to improve the hospital plan
  - Ensure 100% of contacts were notified of the blood shortage
  - Ensure recovery to Green Phase is complete

Employee Name:	
Date Complete:	
Trainer Name:	
Date Reviewed	
Score:	

*Retain in the employee's training file.*

## Planning a Blood Shortage Exercise - Checklist

- Introduce concept at hospital transfusion committee meeting (or other similar committee) for approval
- Initiate a working group to develop the exercise
- Ensure you have a Hospital Emergency Blood Management Plan (HEBMP) in place
- Create a scenario for the blood shortage exercise (i.e. red cells/platelets; Amber vs Red Phase)
- Determine scope of exercise (hospital wide, laboratory only)
- Draft mock notification from Canadian Blood Services (CBS) to initiate exercise
- Determine how the exercise response will be monitored/documentated
- Determine criteria for success (time notifications completed, response of committee attendance, compliance with documentation procedures)
- Ensure your HEBMP has the necessary contact lists and documentation logs in place
- Indicate clearly on any documentation “Simulation Exercise Only” to ensure there is no adverse effect on patient care
- Incorporate patient case scenarios to test triage capabilities if desired
- Plan for Recovery Phase communication – allow the exercise to stand down
- Analyze the results (compare how well the procedure was followed, how complete the notification was, and how quickly the necessary personnel were notified)
- Hold a debriefing session on the exercise to review results and solicit feedback from those involved
- Make any revisions to your HEBMP to improve it based on lessons learned in the exercise
- Train everyone on revisions to ensure necessary personnel are aware of the most current version of the plan

Notification of Blood Shortage

Hospital Name Here

# Memo

To: [Enter name of Chiefs of Surgery, Anaesthesia, Critical Care, Trauma, Emergency, Hematology, Medicine, Directors of Laboratories, Nursing and Risk Management, Chairpersons of Transfusion Committee, Emergency Blood Management Committee]

From: [Enter name of Medical Director of Transfusion Service]

Cc: [Enter name of Transfusion Service Manager / supervisor]

Date: [Enter date]

Re: **Notification of Blood Shortage:  
\*Amber Phase\***

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We have received recent notification from the Canadian Blood Services (CBS) that they are currently experiencing a shortage of **[Enter name of blood component/product here]**.

The shortage is the result of **[Enter the reason for the shortage here]**. Therefore, blood inventory levels may be reduced in order to conserve product for critical cases.

**The following modifications to blood ordering will be implemented:**

- ordering of the product in short supply will comply to ordering guidelines as defined in the attachment provided with this communication
- it may be necessary to defer elective transfusions and/or elective surgical procedures associated with probable blood use

Note: this shortage is expected to remain for **[Enter the expected time frame for shortage]**. Until you receive further notification, you will be asked to follow the hospital procedure for **Emergency Management of Blood – Amber Phase**.

Once inventory levels have stabilized, you will receive further notification of entry into Recovery Phase.

Should you experience a need for support in managing patients requiring blood during this period, please contact the Transfusion Service at **[Enter the contact number desired]**.

**Urgent Notification of Blood Shortage\*\***

Hospital Name Here

## Memo

To: [Enter name of Chiefs of Surgery, Anaesthesia, Critical Care, Trauma, Emergency, Hematology, Medicine, Directors of Laboratories, Nursing and Risk Management, Chairpersons of Transfusion Committee, Emergency Blood Management Committee, CEO, Public affairs/Communications]

From: [Enter name of Medical Director of Transfusion Service]

Cc: [Enter name of Transfusion Service Manager/Supervisor]

Date: [Enter date]

Re: **Notification of Blood Shortage:  
\*\* Red Phase \*\***

---

We have received recent notification from Canadian Blood Services (CBS) that they are currently experiencing a severe shortage of [Enter name of blood component/product here]. The shortage is the result of [Enter the reason for the shortage here].

This shortage is anticipated to last for a prolonged period of time. As a result, blood inventory levels will be reduced in order to conserve product for critical and life-threatening cases only.

**The following modifications to blood ordering will be implemented:**

- ordering of the product in short supply will comply to ordering guidelines as defined in the attachment provided with this communication
- it will be necessary to defer elective transfusion procedures and/or elective surgical procedures associated with probable blood use where patient safety will not be adversely affected

Note: this shortage is being experienced across the country and it could possibly continue for a prolonged period of time. You will be asked to strictly follow the hospital procedure for **Emergency Management of Blood – Red Phase**.

Communication will be ongoing with Canadian Blood Services. Once CBS inventories regain stability, you will receive further notification indicating when normal blood ordering practice may be resumed. Should you experience need for support in managing patients requiring blood during this period, please contact the Transfusion Service at [Enter the contact number desired].

Notification of Blood Shortage

Hospital Name Here

# Memo

To: [Enter name of patient]

From: [Enter name of medical director of transfusion service]

Cc: [Enter name of transfusion service manager/supervisor and name of patient's physician / surgeon and relevant ward/department manager/patient relations department]

Date: [Enter date]

Re: **Patient Notification of Blood Shortage**

---

We have received recent notification from the Canadian Blood Services (supplier of blood to Ontario hospitals) that they are currently experiencing a shortage of **[Enter name of blood component / product here]**.

The shortage is the result of **[Enter the reason for the shortage here]**.

We assure you that Canadian Blood Services (CBS), as well as our blood transfusion service, are taking all possible actions to improve/conservate the blood inventory. In the interest of patient safety, it is necessary to defer non-urgent transfusions and reschedule non-urgent surgical procedures associated with probable blood use at this time. This shortage is expected to last **[Enter the expected time frame for shortage]**.

We sincerely apologize for any inconvenience this may cause and we appreciate your patience and understanding. Once inventory levels have stabilized at CBS and your physician's office will contact you in order to re-schedule your procedure.

Should you have any questions regarding this notice, please contact your physician's office. **[Enter the contact number desired]**.



Notification Regarding Blood Shortage

Hospital Name Here

# Memo

To: [Enter name of Chiefs of Surgery, Anaesthesia, Critical Care, Trauma, Emergency, Hematology, Medicine, Directors of Laboratories, Nursing and Risk Management, Chairpersons of Transfusion Committee, Emergency Blood Management Committee]

From: [Enter name of medical director of transfusion service]

Cc: [Enter name of transfusion service manager / supervisor]

Date: [Enter date]

Re: **Notification of Blood Shortage:  
\*Recovery Phase\***

---

We have received recent notification from Canadian Blood Services that inventory levels for **[Enter name of blood component / product here]** have steadily improved and have now reached a stable level.

As a result, critical blood product conservation strategies may be lessened. Inventory levels on site will improve over the next few days back up to optimal levels.

- Elective transfusions and elective surgical procedures deferred as a result of the blood inventory shortage may begin to be recalled in a controlled and gradual way in order to reduce the possibility of de-stabilizing the recovery of blood inventory levels.

Note: We would like to take this opportunity to thank you for your support and collaboration during this difficult period. By working together, it was possible to use available blood inventory effectively to ensure the patients in most critical need received required products.

Should you experience the need for support in managing patients requiring blood during this recovery period or if you have any questions/comments regarding this recent shortage and how it was managed, please contact **[Enter title here]** at **[Enter the contact number desired]**.

**Documentation Log: Deferred/Cancelled Surgeries During Blood Shortage**

(Use this form if no facility specific form is available)

**Instructions for completion:** Use this log sheet to record any surgeries deferred or cancelled as a result of blood shortage.

CBS Notification Phase: \_ Amber \_ Red \_ Recovery

Blood Component: \_\_\_\_\_

Date of notification of blood shortage received: \_\_\_\_\_

Date/time	Patient name/ID & location	Procedure	Elective or emergency	Component & estimated # units/dose	Rescheduled	Comments

Name / Signature of Documenter (if not Triage Officer):

**Documentation Log: Platelet Orders During Blood Shortage**

(Use this form if no facility specific form is available)

**Instructions for completion:** Use this log sheet to record any platelet use or deferral due to a blood shortage

 CBS Notification Phase:     Amber     Red     Recovery

 Blood Component: PLATELETS

Date of notification of blood shortage/advisory received: \_\_\_\_\_

Date/time	Patient name/ID & location	Location	Ordering MD Specialty	Plt Count	Indication for use	No. of doses ordered/transfused	Comments

Name / Signature of Documenter (if not Triage Officer):

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**Documentation of Blood Orders (non-surgery) During a Blood Shortage**

**Instructions for completion:** Record all orders, indicate if order was filled, reduced or deferred. Use the comment field to note any remarkable events including blood group substitutions if ABO/Rh type specific blood is not available. Use new page each day.

CBS Notification Phase:     Green Advisory       Amber       Red       Recovery

Blood Component: \_\_\_\_\_

Date of notification of blood shortage received: \_\_\_\_\_

Patient name/ID & location	Products ordered	Time	Products issued	Relevant laboratory results (e.g. hgb, plt)	Comments - alternative therapy or adverse events

Triage MD Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name / Signature of Documenter (if not Triage Officer):

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**Notification Table – Contact List (example)**

 CBS Notification Phase:     Amber     Red     Recovery

Blood Component: \_\_\_\_\_ Date notification of blood shortage received from CBS: \_\_\_\_\_

Position	Name	Phone	Pager/alternate	Date/time notified	Responsible person to complete notification	Initial
Laboratory manager designate					Receiver of initial fax / call	
TM MD or designate					Receiver of initial fax / call	
Chief Medical Affairs					TM Med Director	
Chair HTC					TM Med Director	
Chair HEBMC					TM Med Director	
Triage officer(s)					Chair HEBMC	
HEBMC members					Chair HEBMC	
Emergency Officer					Chief Medical Affairs	
TM Staff					Lab Manager	
Chief Nursing Officer					Lab Manager	
CEO					Chief Medical Affairs	
Medical staff					Chief Medical Affairs	
Nursing staff					Chief Nursing Officer	

 TM MD Transfusion Medicine Medical Director  
 HEBMC Hospital Emergency Blood Management Committee

 HTC Hospital Transfusion Committee  
 CEO Chief Executive Officer

## Checklist to Record Action Taken in Response to a Blood Shortage Notification Received from Canadian Blood Services

- Staff member receiving fax/phone call: \_\_\_\_\_  
Date/Time: \_\_\_\_\_      \_ Amber Phase    \_ Red Phase    \_ Recovery Phase  
Blood Component affected:  
\_ Red cells    \_ Platelets    \_ Other \_\_\_\_\_
  
- Notification of key personnel completed
  
- Internal hospital fax memos or email prepared
  
- Fax memos or email issued Date/time: \_\_\_\_\_
  
- Hospital inventory reported to CBS Date/time: \_\_\_\_\_

## Sample Terms of Reference: Hospital Emergency Blood Management Committee

### Overview

Approximately 900,000 volunteer blood donations must be made each year to provide the millions of blood components and products that support medical therapies for Canadians. Ontario has over 160 hospitals that receive and use these products. This amounts to approximately 50% of the blood transfused within Canada, excluding Québec. In a province with such a high utilization percentage, there is a need to standardize use of blood components between institutions.

In the event of a critical shortage of the blood supply, efforts will need to be made at the hospital/facility level to reduce the use of blood components/blood products affected by the shortage. Shortages can result from:

- Events adversely affecting donor population (e.g. pandemic influenza, low donor attendance)
- Events adversely affecting CBS or other manufacturer ability to collect, test and/or process and deliver blood to hospitals (regulatory failure or catastrophic equipment or building failure, labour disruption, severe weather conditions)
- Unexpected increase in demand for specific blood component/product

In order to ensure blood components and products are available for those patients whose need is life threatening, it will be paramount that hospitals reduce routine use of blood in order to preserve it for these individuals.

### Mandate

The Hospital Emergency Blood Management Committee (HEBMC) will take a collaborative approach to the development of a Hospital Contingency Plan to address how to manage the use of blood components/products in the event of a critical shortage in supply: Development of tools regarding:

- adjustment of inventory held on site;
- triage of blood orders;
- deferral of elective surgical and medical procedures requiring blood;
- communication throughout the hospital;
- sharing of blood with other regional hospitals.

The development of the HEBMC is not intended to replace or duplicate existing structures, but to support and enhance the planning, coordination and integration already being undertaken within the hospital, with respect to blood transfusion service delivery.

### Authority

The HEBMC is an advisory body with the authority to dictate standard operating practices.

Activities will be consistent with the Provincial and National plans to manage shortages in the blood supply with some flexibility to tailor these procedures to address local needs and issues.

## Sample Terms of Reference: Hospital Emergency Blood Management Committee

During a blood shortage event (Red Phase), the HEBMC will serve as reviewers of the triage decision log sheets to monitor for over triage or under triage of patients. In addition, the HEBMC will serve as liaison for communication with the Ontario Emergency Blood Management Committee.

### Membership

The HEBMC will have representation from the following Medical/Surgical areas where blood is used:

- Surgery (including Cardiac, Thoracic, Orthopedic, Urology)
- Intensive Care/Trauma/Emergency
- Oncology
- Medical/Hematological (including Hematopoietic Stem Cell Transplant)
- Pediatric/Neonate

In addition, there will be representation from the Hospital Transfusion Service as well as the Department of Nursing.

### Key Deliverables

Key deliverables of the HEBMC include:

- Hospital Emergency Blood Management Plan (HEBMP) and training package
- Guidelines for transfusion to aid in screening of blood orders
- Communication plan for fan-out of notification including communication templates to ensure notification in the event of a blood shortage
- Documentation log sheets for recording triage decisions



## PowerPoint Presentation on Hospital Emergency Blood Management

This presentation can be found at

<http://transfusionontario.org/en/download/what-do-you-need-to-know-about-management-of-blood-shortages/>

This is a template presentation that can be revised as needed to suit the needs of the facility and be used for education/awareness and/or training. Notes are provided to aid the teacher in using the slides.

# What You Need to Know About Management of Blood Shortages

Helping Hospitals Prepare...

## Calculating Your Target Inventory Levels by Phases of a Blood Shortage

Hospitals should define the required on-site inventory to ensure that normal blood requirements can be met, allowing for some unexpected emergency needs.

A **target** inventory level should be set to ensure overstocking does not occur. Overstocking can lead to increased product outdating which should be avoided. Inventory levels should be checked regularly (daily) and orders submitted to Canadian Blood Services (CBS) to bring inventory levels up to the target. A **reorder** inventory level signals that an order for restocking should be submitted to CBS. This will ensure that the transfusion service will be able to meet any unexpected orders without delay.

In order to determine target inventory stocking levels, it helps to have an understanding of what average daily demand for your transfusion service is. In general, for red blood cells, keeping a maximum stock of between six and nine days of average daily issues\* will ensure you can meet both expected and unexpected orders for blood – minimizing the need to order stock frequently or urgently as well as the number of components that must be discarded due to outdating.

Minimum stock levels are usually based on two days of average daily use. Consideration must also be given to opportunity (frequency and mode of transportation delivery options) to order from your local CBS site as well as the distance your hospital is from the CBS site and the length of time it takes for delivery of components to occur.

\* Average daily red cell demand can be estimated by dividing your annual red cell use by 365 days or, more accurately from CBS, based on your blood component disposition reports you submit each month. Minimum target inventory levels are usually based on two to three days of average daily use. Consideration must also be given to the opportunity (frequency and mode of transportation delivery options) to order from your local CBS site as well as the distance your hospital is from the CBS site and the length of time it takes for delivery to occur. When counting your inventory, you should include all available inventory such as phenotyped units and irradiated units.

In relation to a blood shortage, inventory levels should be defined by the severity of the blood shortage. By reducing your target inventory level, the demand for the affected blood component will be lower which could help to ease the imbalance between supply and demand. This will be the first step hospitals should take in response to lowering demand for the affected blood component.

### Determining Inventory Levels by Phase of a Blood Shortage\*:

Phase	Red blood cells	Platelets**	Frozen plasma**	Cryoprecipitate**
Green (100%)	8-10 days	2 days	10 days	20 days
Amber	4-6 days	1 day	3-10 days	6-20 days
Red	2-4 days	< 1 day	1-3 days	1-6 days

\*based on average daily use

\*\*stock these components only if use on a regular basis or as directed by your transfusion medicine Medical Director or Consultant

These numbers are based on definitions of target and trigger inventory levels at CBS nationally and can be used by hospitals to define their inventory levels. More information on how to calculate appropriate hospital inventory levels can be found in the Inventory Management Toolkit Best Practices for Hospital Transfusion Services Toolkit on [www.transfusionontario.org](http://www.transfusionontario.org). Also available are inventory calculator tools for determining target red cell and platelet levels. These are also found in the Inventory Management Toolkit section on the above website.

**Note: very small hospitals will stock a minimum number of red cells in order to provide support for unexpected requests. In general, this will mean that no reduction or very small reduction in inventory target levels will occur even in response to a blood shortage.**

## How to Respond in a Blood Shortage – Information for Physicians

In the event of a blood shortage, hospitals will be notified by Canadian Blood Services (CBS). If the shortage is severe, it will impact patient care. Depending upon the etiology of the shortage, it could affect one or more components and products. Each hospital in Ontario should have a comprehensive plan for the management of blood shortages. This information is intended as a quick reference. Please refer to your hospital-specific plan for more details, including the way in which physicians are involved in decision-making at your institution.

### Some of the implications for physicians are listed below:

Situation	Impact(s) *
<b>1. Amber Phase Notification</b> – First indication of a blood shortage. It could be provincial or national in scope.	<ul style="list-style-type: none"> <li>You will receive a message according to your hospital’s policy informing you about the shortage and what product is affected.</li> </ul>
<b>2. First Response</b> – your transfusion lab will reduce the target inventory of product held on-site	<ul style="list-style-type: none"> <li>No immediate significant impact.</li> <li>Continue to order blood product according to institutional guidelines.</li> </ul>
<b>3. Deferral of Elective Transfusions/Procedures</b> – if the first response is not sufficient to correct the shortage, hospitals may be directed to defer or cancel elective use of the affected blood component(s)/product(s) to preserve the supply for life-threatening situations.	<ul style="list-style-type: none"> <li>Assess patients who <u>may</u> require a blood transfusion and defer it where possible.</li> <li><u>Elective</u> surgeries or invasive procedures associated with blood transfusion will be deferred or canceled until further direction is received.</li> <li><u>Document these decisions</u> – a tracking log/form will be provided – contact your blood transfusion laboratory.</li> </ul>
<b>4. All orders for the affected blood component or product will be reviewed to determine urgency of need.</b>	<ul style="list-style-type: none"> <li>All orders for the affected blood component or product will be reviewed before being approved for issue.</li> <li>Your hospital will have criteria for approving orders.</li> </ul>
<b>5. Platelet shortage</b>	<ul style="list-style-type: none"> <li>Use restrictive platelet count thresholds for transfusion</li> <li>Platelet doses may be split at sites with this ability</li> <li>Extension of shelf life may occur at sites with this ability.</li> <li>Use pharmacologic options e.g. tranexamic acid</li> </ul>
<b>6. Red Blood Cell shortage</b>	<ul style="list-style-type: none"> <li>Use restrictive hemoglobin thresholds for transfusion</li> <li>Order only one unit at a time</li> <li>Switching ABO or Rh Groups: The transfusion laboratory may need to provide red cells of a compatible but different Rh and/or ABO group for your patient.</li> </ul>
<b>7. Plasma Protein Products</b> these shortages are rare and may include factor concentrates, IVIg, albumin, or others. Manufacturing problems may necessitate a very large recall of product.	<ul style="list-style-type: none"> <li>These types of shortage are usually national in scope</li> <li>Direction for action would be communicated through the National Advisory Committee on Blood and Blood Products (<a href="http://www.nacblood.ca">www.nacblood.ca</a>).</li> </ul>
<b>8. Red Phase Notification</b> This level of shortage indicates a critical supply shortage.	<ul style="list-style-type: none"> <li>Your hospital will be notified through CBS, and the Ministry of Health and Long-Term Care will be involved.</li> <li>You will receive a message according to your hospital’s policy informing you about the shortage and what blood component or product is affected.</li> <li><u>All blood transfusions will be for life-threatening conditions only</u></li> <li>A <b>triage team</b> at your hospital will review any use of blood and follow a National Guidance document to aid in decision making</li> </ul>
<b>9. Recovery Notification</b> <ul style="list-style-type: none"> <li>Your hospital will be notified once the supply shortage has been corrected</li> <li>Measures to minimize blood use may continue for a period of time to avoid falling back into shortage</li> <li>Elective use of the affected blood component/product will normalize slowly</li> <li>You may be asked to participate in a review of the blood shortage experience to assess how well your hospital responded.</li> </ul>	

## How to Respond in a Blood Shortage – Information for Nurses

In the event of a blood shortage, hospitals will be notified by Canadian Blood Services (CBS). If the shortage is severe, it will impact patient care. Depending upon the etiology of the shortage, it could affect one or more components and products. Each hospital in Ontario should have a comprehensive plan for the management of blood shortages. This information is intended as a quick reference. Please refer to your hospital-specific plan for more details, including the way in which nurses are involved in decision-making at your institution.

### Some of the implications for nurses are listed below:

Situation	Impact(s) *
<b>1. Amber Phase Notification</b> – First indication of a blood shortage. It could be provincial or national in scope.	<ul style="list-style-type: none"> <li>You will receive a message according to your hospital’s policy informing you about the shortage and what product is affected.</li> </ul>
<b>2. First Response</b> – your transfusion lab will reduce the target inventory of product held on-site	<ul style="list-style-type: none"> <li>No immediate significant impact.</li> <li>Orders for blood products will be filled according to institutional guidelines.</li> </ul>
<b>3. Deferral of Elective Transfusions/Procedures</b> – if the first response is not sufficient to correct the shortage, hospitals may be directed to defer or cancel elective use of the affected blood component(s)/product(s) to preserve the supply for life-threatening situations.	<ul style="list-style-type: none"> <li>Patients who <u>may</u> require a blood transfusion will be assessed and orders deferred where possible.</li> <li><u>Elective</u> surgeries or invasive procedures associated with blood transfusion will be deferred or canceled until further direction is received in order to conserve inventory affected by the shortage.</li> <li><u>You may be asked to document these decisions</u> – a tracking log/form will be provided in your hospital plan.</li> </ul>
<b>4. All orders for the affected blood component or product will be reviewed to determine urgency of need.</b>	<ul style="list-style-type: none"> <li>All orders for the affected blood component or product will be reviewed before being approved for issue.</li> <li>Your hospital will have criteria for approving orders.</li> </ul>
<b>5. Platelet shortage</b>	<ul style="list-style-type: none"> <li>Restrictive platelet count thresholds for transfusion will be used.</li> <li>Platelet doses may be split at sites with this ability.</li> <li>Extension of shelf life may occur at sites with this ability.</li> <li>Use of pharmacologic options e.g. tranexamic acid may increase.</li> </ul>
<b>6. Red Blood Cell shortage</b>	<ul style="list-style-type: none"> <li>Restrictive hemoglobin thresholds for transfusion will be used.</li> <li>Switching ABO or Rh Groups: The transfusion laboratory may need to provide red cells of a compatible but different Rh and/or ABO group for your patient.</li> </ul>
<b>7. Plasma Protein Products</b> these shortages are rare and may include factor concentrates, IVIg, albumin, or others. Manufacturing problems may necessitate a very large recall of product.	<ul style="list-style-type: none"> <li>These types of shortage are usually national in scope</li> <li>Direction for action would be communicated through the National Advisory Committee on Blood and Blood Products (<a href="http://www.nacblood.ca">www.nacblood.ca</a>).</li> </ul>
<b>8. Red Phase Notification</b> This level of shortage indicates a critical supply shortage.	<ul style="list-style-type: none"> <li>Your hospital will be notified through CBS, and the Ministry of Health and Long-Term Care will be involved.</li> <li>You will receive a message according to your hospital’s policy informing you about the shortage and what product is affected.</li> <li><u>All blood transfusions will be for life-threatening conditions only.</u></li> <li>A <b>triage team</b> at your hospital will review any use of blood and follow a National Guidance document to aid in decision making.</li> </ul>
<b>9. Recovery Notification</b> <ul style="list-style-type: none"> <li>Your hospital will be notified once the supply shortage has been corrected.</li> <li>Measures to continue to minimize blood use may continue for a period of time to avoid falling back into shortage.</li> <li>Elective use of the affected blood component/product will normalize slowly.</li> <li>You may be asked to participate in a review of the blood shortage experience to assess how your hospital responded.</li> </ul>	

## How to Respond in a Blood Shortage – Information for Medical Laboratory Technologists (MLT)

In the event of a blood shortage, hospitals will be notified by Canadian Blood Services (CBS). If the shortage is severe, it will impact patient care. Depending upon the cause of the shortage, it could affect one or more components and products. Each hospital in Ontario should have a comprehensive plan for the management of blood shortages. This information is intended as a quick reference. Please refer to your hospital-specific plan for more details, including the way in which technologists are involved in documentation and communication at your institution.

### Some of the implications for MLT are listed below:

Situation	Impact(s) *
1. <b>Amber Phase Notification</b> – First indication of a blood shortage. It could be provincial or national in scope.	<ul style="list-style-type: none"> <li>Once CBS has sent notification to your Transfusion Medicine Laboratory, you will receive a message according to your hospital's policy informing you about the shortage and what product is affected.</li> <li>You may be asked to forward notification to others at your hospital.</li> </ul>
2. <b>First Response</b> – your transfusion lab will reduce the target inventory of product held on-site	<ul style="list-style-type: none"> <li>No immediate significant impact.</li> <li>Inventory orders will be sent to CBS to maintain stock at your defined Amber Phase levels.</li> <li>You may be asked to report your inventory levels to CBS and/or participate on teleconferences with CBS.</li> </ul>
3. <b>Deferral of Elective Transfusions/Procedures</b> – if the first response is not sufficient to correct the shortage, hospitals may be directed to defer or cancel elective use of the affected blood component(s)/product(s) to preserve the supply for life-threatening situations.	<ul style="list-style-type: none"> <li>Patients who <u>may</u> require a blood transfusion will be assessed and procedures deferred where possible.</li> <li><u>Document these decisions</u> – a tracking log/form will be provided within your hospital plan.</li> </ul>
4. <b>All orders for the affected blood component or product will be reviewed to determine urgency of need.</b>	<ul style="list-style-type: none"> <li>All orders for the affected blood component or product will be reviewed by your transfusion service (TS) medical director before being approved for issue following your hospital criteria.</li> </ul>
5. <b>Platelet shortage</b>	<p>Platelet doses may be split at sites with this ability</p> <ul style="list-style-type: none"> <li>Extension of shelf life may occur at sites with this ability.</li> <li>Note: the actions above must be approved by your hospital TS medical director.</li> </ul>
6. <b>Red Blood Cell shortage</b>	<ul style="list-style-type: none"> <li>Restrictive hemoglobin thresholds for transfusion will be used. If orders outside of your hospital's Amber Phase criteria are received, forward to your TS Medical Director.</li> <li>You may need to provide red cells of a compatible but different Rh and/or ABO group for patients.</li> </ul>
7. <b>Plasma Protein Products</b> these shortages are rare and may include factor concentrates, IVIG, albumin, or others. Manufacturing problems may necessitate a very large recall of product.	<p>These types of shortage are usually national in scope. Direction for action would be communicated through the National Advisory Committee on Blood and Blood Products (<a href="http://www.nacblood.ca">www.nacblood.ca</a>).</p>
8. <b>Red Phase Notification</b> This level of shortage indicates a critical supply shortage.	<ul style="list-style-type: none"> <li>Your hospital will be notified through CBS, and the Ministry of Health and Long-Term Care will be involved.</li> <li>Your TS will receive a message from CBS informing you about the shortage and what product is affected.</li> <li><u>All blood transfusions will be for life-threatening conditions only</u></li> <li>A <b>triage team</b> at your hospital will review any use of blood and follow a National Guidance document to aid in decision making.</li> </ul>