Copies of this document can be obtained from:
www.transfusionontario.org

Note: This document is for information purposes only and is not intended to provide either legal or medical advice. If you have a legal question, you should consult a lawyer. If you have a medical question, you should consult a qualified medical professional.
# Table of Contents

Acknowledgements .......................................................................................................................... 2  
Executive Summary .......................................................................................................................... 3  
Abbreviations ................................................................................................................................. 5  
Definitions ....................................................................................................................................... 6  
Background ....................................................................................................................................... 8  
Purpose and Scope ............................................................................................................................ 9  
Assumptions ..................................................................................................................................... 10  
Hospital Emergency Blood Management Plan ............................................................................. 11  
Key Stakeholders ............................................................................................................................ 14  
Communications ............................................................................................................................ 16  
Role and Responsibilities During Phases (Green, Amber, Red, Recovery) .................................. 18  
Conclusion ....................................................................................................................................... 24  
Contingency Planning Working Group .......................................................................................... 25  
References ....................................................................................................................................... 26  
Appendix A – Ontario Emergency Blood Management Committee Terms of Reference .......... 27  
Appendix B – National Emergency Blood Management Committee Terms of Reference .......... 29  
Appendix C – Example of Hospital Notification from Canadian Blood Services ....................... 31  
Appendix D – Synopsis for Triage Team ....................................................................................... 32  
Appendix E – Revision Table ......................................................................................................... 47
Acknowledgements

The Ministry of Health and Long-Term Care acknowledges the contributions of the Ontario Contingency Planning Working Group (a subgroup of the Ontario Blood Advisory Committee) and the Ontario Regional Blood Coordinating Network for their participation in the development, maintenance and dissemination of the Ontario Contingency Plan for the Management of Blood Shortages.
Executive Summary

Blood shortages may result from various situations. Although the occurrence of such a situation is rare, good healthcare policy dictates that contingency planning for the event of a blood shortage is prudent. In January 2008, the Ministry of Health and Long-Term Care (MOHLTC), in collaboration with the Ontario Contingency Planning Working Group (CPWG), released a plan to address the provincial response to a blood shortage. Over the next two years, several other provinces released plans and in February 2010, a National Plan for the Management of Shortages of Labile Blood Products\(^1\) (National Plan) was published. These plans were developed collaboratively to ensure that a consistent approach is taken across Canada.

The National Plan outlines the overarching principles behind management of the blood inventory by the national blood supplier (outside of the province of Quebec), Canadian Blood Services (CBS). A colour scheme is used to define the severity of a blood shortage with Green indicating optimal levels, Amber indicating a short term blood shortage and Red indicating a severe and possibly prolonged blood shortage.

CBS is responsible for determining when a blood shortage exists. Once the determination is made that a blood shortage exists, the National Emergency Blood Management Committee (NEBMC) is responsible for triggering implementation of the National Plan and for notifying provincial ministries of health through their respective provincial emergency blood management committees (PEBMCs). In Ontario, the Ontario Emergency Blood Management Committee (OEBMC) acts as the PEBMC and coordinates actions to be taken across the province in collaboration with the MOHLTC.

When there is a risk of a blood shortage, CBS attempts to equalize inventory across Canada through the redistribution of blood components among CBS production/distribution sites (primary triage). In the event that primary triage is not sufficient to mitigate against the risk of a blood shortage, CBS production/distribution sites may reduce order/fill rates in an attempt to conserve the supply and ensure distribution of the affected blood component is fair, equitable and transparent. This is referred to as secondary triage.\(^2\) Secondary triage may also include redistribution among hospitals.

CBS production/distribution sites perform the initial notification of a blood shortage and any subsequent notifications of a change in phase to hospital transfusion services and ensure that regular and ongoing communication occurs to keep stakeholders informed of inventory status throughout the blood shortage. CBS is also responsible for all public service announcements and communications regarding recruitment of donors to correct the blood shortage.

The MOHLTC is responsible for communications to healthcare providers and the public regarding any impact to patient care in the province (e.g. need to cancel elective surgeries) and to hospitals regarding actions to reduce blood use.

Hospital emergency blood management committees (HEBMCs) notify relevant hospital personnel and initiate their hospital emergency blood management plan (HEBMP). HEBMCs are responsible for developing a plan that reduces inventory needs at their hospital in response to a blood shortage notification from CBS.
This plan includes a range of actions such as reducing the stock inventory levels for the affected blood component, cancelling elective surgeries that require blood, and triaging blood order requests (tertiary triage). Actions required are dependent on the severity and duration of the blood shortage. All decisions regarding cancellation or deferral of patient treatment must be transparent and well documented. Patients and their families must be kept informed of any impact the blood shortage may have on their treatment. CBS notifies hospitals as well as the OEBMC once the inventory has recovered to optimal levels. Hospital blood use must be increased gradually to ensure potentially fragile inventory levels can fully recover to a stable point.

Finally, once there has been a return to Green Phase, evaluations of the event are held – nationally (by NEBMC), provincially (by OEBMC) and at the hospital level (by HEBMCs) – in order to review the response to the blood shortage and assess how well plans provided decision makers with guidance. Plans should be revised as necessary to improve their functionality.

During the Green Phase, blood shortage simulation exercises should be held regularly in order to maintain familiarity with plans as well as to test and identify opportunities to improve them. By having coordinated plans in place to respond and manage a blood shortage, patients across Ontario can be assured they will continue to receive equitable access to this resource.
## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLC</td>
<td>Blood Liaison Committee</td>
</tr>
<tr>
<td>BPCO</td>
<td>Blood Programs Coordinating Office, MOHLTC</td>
</tr>
<tr>
<td>CBS</td>
<td>Canadian Blood Services</td>
</tr>
<tr>
<td>COO</td>
<td>Chief Operating Officer</td>
</tr>
<tr>
<td>CPWG</td>
<td>Contingency Planning Working Group</td>
</tr>
<tr>
<td>EMB</td>
<td>Emergency Management Branch, MOHLTC</td>
</tr>
<tr>
<td>HEBMC</td>
<td>Hospital Emergency Blood Management Committee</td>
</tr>
<tr>
<td>HEBMP</td>
<td>Hospital Emergency Blood Management Plan</td>
</tr>
<tr>
<td>MEOC</td>
<td>Ministry Emergency Operations Centre</td>
</tr>
<tr>
<td>MERP</td>
<td>Ministry Emergency Response Plan</td>
</tr>
<tr>
<td>MOHLTC</td>
<td>Ministry of Health and Long-Term Care (Ontario)</td>
</tr>
<tr>
<td>NAC</td>
<td>National Advisory Committee on Blood and Blood Products</td>
</tr>
<tr>
<td>NEBMC</td>
<td>National Emergency Blood Management Committee</td>
</tr>
<tr>
<td>OBAC</td>
<td>Ontario Blood Advisory Committee</td>
</tr>
<tr>
<td>OEBMC</td>
<td>Ontario Emergency Blood Management Committee</td>
</tr>
<tr>
<td>PEBMC</td>
<td>Provincial Emergency Blood Management Committee</td>
</tr>
<tr>
<td>P/T</td>
<td>Provincial/Territorial</td>
</tr>
</tbody>
</table>
Amber Phase
Amber Phase implies that blood inventory levels are insufficient to continue with routine practice and is declared by CBS when there is a short-term blood shortage and may apply to a single blood group or blood component. An Amber Phase is defined when national inventory is:
• two to three days (48-72 hours) of average daily red blood cell issues
• 25-50% of daily national requirement for platelets with recovery anticipated within twelve hours
• three to ten days on hand of frozen plasma and six to 20 days of cryoprecipitate

Blood component
Whole blood, donated at CBS, is processed into different components including red blood cells, platelets, plasma and cryoprecipitate.

Blood product
Blood products are manufactured from plasma (i.e., albumin, factor concentrates, immune globulins), also known as plasma protein products.

Elective surgical procedures
Elective surgical procedures are those that are not emergency or urgent procedures. Emergency procedures need to be performed within 24 hours in order to prevent the patient’s death (or major morbidity such as paralysis). Urgent procedures are those for which a patient is likely to have major morbidity if surgery is not performed within the next one to 28 days.

Emergency Framework
Emergency Framework refers to the Emergency Framework for Rationing of Blood for Massively Bleeding Patients during a Red Phase of a Blood Shortage, which was developed by the National Advisory Committee on Blood and Blood Products as a supplement to the National Plan. It is an ethical decision-making framework to provide guidance to hospital triage officers so that decisions made on blood allocation (tertiary triage) during a blood shortage are as consistent and equitable as possible for patients across Canada.

Green Phase
Green Phase implies normal blood component inventory levels exist and supply generally meets demand. This phase can include a range of inventory availability from ideal to periodic temporary blood shortages. A Green Phase is defined by CBS when national inventory is:
• 100% optimal inventory or greater than three days (72 hours) of average daily red blood cell issues
• 50-100% of the daily national requirement for platelets
• greater than ten days on hand of frozen plasma and greater than 20 days of cryoprecipitate

National Plan
National Plan refers to the National Plan for the Management of Shortages of Labile Blood Components which was developed by the National Advisory Committee on Blood and Blood Products (NAC) and CBS. The National
Definitions

Plan provides preparedness guidance to provincial and hospital decision makers on how to manage and allocate resources during a blood shortage.

Recovery Phase
Recovery Phase implies that blood inventory levels have begun to increase and are expected to be maintained at a level that would facilitate gradual resumption of normal transfusion activities. Recovery Phases are declared by CBS based on national inventory.¹

Red Phase
Red Phase implies that blood inventory levels are insufficient to ensure that patients with even non-elective indications for transfusion will receive the required transfusion(s). The Red Phase is declared by CBS when nationally there is:¹

1. less than two days (48 hours) of average daily red blood cell issues
2. less than 25% of national requirement for platelets with no recovery anticipated within 12 hours
3. less than three days on hand frozen of plasma or less than six days of cryoprecipitate

Ontario Plan
Ontario Plan refers to the Ontario Contingency Plan for the Management of Blood Shortages, which was developed by the MOHLTC in collaboration with the Ontario Contingency Planning Working Group (a subgroup of the Ontario Blood Advisory Committee (OBAC)) to outline the provincial response to a blood shortage.

Toolkit
The Toolkit refers to the Ontario Hospital Toolkit for Emergency Blood Management, a resource to support HEBMCs to develop an HEBMP and respond to a blood shortage. The Toolkit includes:

1. preparedness checklists
2. sample HEBMC Terms of Reference and template for a HEBMP
3. checklist and supporting resources to train staff on the HEBMP
4. memo templates to support internal communication during a blood shortage
5. tertiary triage log sheets to document cancelled/deferred surgeries and other procedures

Triage
Triage is an action taken to reduce the impact of the blood shortage.²

1. Primary triage refers to redistribution of blood among CBS production/distribution sites to equalize inventory levels across Canada and lessen the impact on any one region.
2. Secondary triage refers to the distribution of blood to hospitals by CBS production/distribution sites to conserve supply and to balance inventory levels across a region. This may include CBS reducing the fill rate of hospital requests by a percentage and/or requesting hospitals to redistribute to another hospital.
3. Tertiary triage refers to actions taken and decisions made by triage officers/teams to prioritize and allocate blood components within a hospital.
The MOHLTC’s Blood Programs Coordinating Office (BPCO) ensures the safe supply and appropriate use of blood as part of the provincial blood utilization strategy. Based on stakeholder feedback and advice from the OBAC, planning for a blood shortage was identified as a key priority for the BPCO.

As a result, the Ontario CPWG was formed in February 2007 to develop a contingency plan for the management of blood during a blood shortage. The first version of the Ontario Contingency Plan for Management of Blood Product Shortages (the Ontario Plan) was released in January 2008.

Version 1 of the Ontario Plan borrowed from the draft plan developed in Nova Scotia and plans published in the United Kingdom, which are based on a colour-coded system for alerting stakeholders to blood shortages and actions to be taken. Other provinces and territories (P/Ts) have since released contingency plans based on the same colour-coded system. This allows CBS to respond to a blood shortage in a uniform manner, independent of P/T borders.

The NAC, in collaboration with CBS, released the National Plan for the Management of Shortages of Labile Blood Components (the National Plan) in February 2010. An updated version was released in January 2012. The objective of the National Plan is to maximize the effectiveness of a national response to any crisis that impacts the adequacy of the blood supply in Canada.¹

The National Plan also uses the same colour-coded system and recommends actions to be taken during the various phases relating to activation of provincial blood shortage plans and patient triage. It establishes a process to facilitate communication at the national, provincial and hospital levels in order to achieve a coordinated and consistent response throughout the country. This is imperative because blood inventory is managed at the national level, by one supplier, CBS (outside of Quebec), irrespective of P/T health systems.

As recommended in the National Plan, the OEBMC was formed in 2009 (see Appendix A for OEBMC Terms of Reference). In 2010, the OEBMC held a provincial exercise to test the Ontario Plan. A Final Report³ was released that documented lessons learned from the exercise and recommendations to improve the Ontario Plan. These recommendations have been incorporated into Version 2 of the Ontario Plan.
Purpose and Scope

The purpose of the Ontario Plan and the Ontario Hospital Toolkit for Emergency Blood Management (the Toolkit) is to:

- ensure a standard and equitable approach to managing low blood inventory throughout the province, consistent with the National Plan
- outline the provincial response to a blood shortage
- describe communication processes, including how national recommendations are communicated and monitored during a blood shortage
- assist HEBMCs to develop HEBMPs
- provide tools that HEBMCs can use during a blood shortage
- educate hospitals to assist them in meeting certain standards of practice and regulatory requirements (e.g., CSA Z902-10 Standard on Blood and Blood Components⁴, Canadian Society for Transfusion Medicine Standards for Hospital Transfusion Services v3 2011⁵, Public Hospitals Act⁶)

Although the Ontario Plan was developed with labile blood components in mind (red blood cells, platelets, plasma), a similar approach can be taken to address shortages of blood products (e.g., intravenous immune globulin, albumin).
Assumptions

The Ontario Plan is based on the following assumptions:

• The blood shortage is national in scope.
• CBS makes every effort to address the blood shortage and put actions into place to correct the blood shortage as soon as possible.
• The Ontario Plan is revised as needed and reviewed following each simulation exercise or actual event.
• Hospitals comply with recommendations and guidance provided by the MOHLTC.
• A blood shortage may be caused by a variety of events, such as labour disruptions, information system and transportation chain failures, communicable disease outbreaks, shortage of donors or a mass trauma event.
• A blood shortage may be short-term, or it could be a prolonged event.
In accordance with the Public Hospitals Act, Regulation 965, it is a hospital’s legal requirement to plan for emergency situations that could place a greater than normal demand on the services provided by the hospital or disrupt the hospital routine.

This plan should be developed during the Green Phase so that it is available to guide the hospital’s response to a blood shortage. Usually, transfusion service personnel and the medical director respond to minor shortages in the supply of one or more blood groups or blood components by triaging blood order requests as they are received. Often, there is no coordinated approach taken outside of the transfusion service. Should a larger scale or prolonged blood shortage occur, this response would fail to reduce blood usage to the degree required.

Severe blood shortages (current or imminent) must be communicated to professional staff outside of the transfusion service to ensure that a multidisciplinary and coordinated reduction of blood use is achieved. The formation of a HEBMC, with representation from clinical areas where blood is used, aids in the development of a HEBMP to monitor and reduce the demand for blood during a blood shortage (see Toolkit for an example of HEBMC Terms of Reference).

The plan should define the notification of personnel required for various phases of blood shortages. Amber Phase may initially include the transfusion service medical director, Hematology/Oncology and Chief of Intensive Care and Emergency, but may expand to Chief of Medicine and surgical, nursing and senior administrative personnel should the need arise to delay or cancel elective procedures that might require blood transfusion. Red Phase would need to include all of those mentioned above, in addition to the Chief Executive Officer and all senior medical and nursing staff.

The HEBMP should:

- define inventory levels at the hospital by Phase (Green, Amber, Red) and how they are monitored and communicated (see the Toolkit for guidance on determining inventory levels by blood shortage phase)
- include a list and contact information for personnel within the hospital who must be notified of a blood shortage and also a defined personnel communication fan out plan
- have defined notifications and actions for Amber, Red and Recovery Phases
- define how blood conservation and transfusion alternatives may be safely and appropriately implemented to avoid anemia and reduce demand for blood
- define how tertiary triage of blood order requests will be performed (pre-defined guidelines, use of patient categories, direct medical approval, use of a triage officer/team) and monitored in Amber and Red Phases, including:
  - strict adherence to widely accepted transfusion triggers
  - reduction in number of components given per treatment (e.g., number of platelet units)
  - delay or cancellation of non-urgent elective surgeries that historically involve transfusion of blood components
  - categorization of patients for prioritizing transfusion needs (emergency, urgent, elective)
Hospital Emergency Blood Management Plan

- establish how decisions regarding cancellation or deferral of blood transfusions (tertiary triage) are documented and these records archived
- define prioritization of the recall of patients for delayed or cancelled procedures during the Recovery Phase to ensure inventory recovery can be sustained
- include a communication strategy to notify patients and their families who may be affected by the blood shortage
- be incorporated into the overall facility emergency or disaster plan
- define responsibilities and actions required by key individuals
- include a training plan to ensure staff are familiar with the plan, roles and responsibilities

More information on the components of a HEBMP can be found in the Toolkit.

Tertiary Triage

To assist with tertiary triage, most likely to occur during a Red Phase, the NAC has developed the Emergency Framework for Rationing of Blood for Massively Bleeding Patients during a Red Phase of a Blood Shortage (Emergency Framework), which will be included as a supplement to the National Plan. The Emergency Framework is intended to:

- guide healthcare professionals in triaging patients in need of a massive transfusion during a Red Phase, where demand for blood greatly exceeds supply, and where all other measures to increase the supply of blood have been exhausted
- assist with standardizing care across all jurisdictions to allow for fair and just distribution of blood during a Red Phase

For detailed guidance on triage for rationing blood for massively bleeding patients during a red phase of a blood shortage, refer to the NAC developed Emergency Framework Triage Team Synopsis document which appears as Appendix D or refer to the full document on www.nacblood.ca.

The Emergency Framework is based on the ethical framework Accountability for Reasonableness and includes input from transfusion experts from across Canada. It is recommended that:

- hospitals use the Emergency Framework to ensure fair and equitable access to blood across the country
- hospitals include the Emergency Framework – Synopsis for Triage Team to all hospital blood shortages plans
- hospitals assign triage officers/teams to execute the protocol
- hospitals ensure transparency and documentation of all triage decisions

The triage officer/team should:

- be appointed by the HEBMC
- be/include physician(s) experienced in triaging critically ill patients
- be supported by a multi-disciplinary team which is available to provide consultation as required (if one individual is assigned the duty)
- not be responsible for direct patient care
- include a sufficient number of physicians to provide 24 hour coverage and to account for the volume of
Hospital Emergency Blood Management Plan

- transfusions in the hospital
  - include support personnel for completing documentation (registered nurse, medical laboratory technologist)
  - include personnel with background in patient support (palliative care, social worker)
  - have access to a medical ethicist
  - have access to psychological support
  - have training and education on the Emergency Framework and documentation requirements

It is critical that the triage officer/team has the endorsement of all those involved in patient care and hospital senior administration. This allows for decisions to be made with confidence if they follow the Emergency Framework.

Documentation and reporting

Patient tracking forms are copied and distributed as follows:
  - copy kept on patient chart
  - copy to HEMBC daily
  - copy to triage officer/team for next shift (if applicable)

After a blood shortage, the HEBMC is required to report on the use of the Emergency Framework during the blood shortage to the OEBMC, who then is required to provide a summary report to the NEBMC. The NEBMC provides a report to the NAC with recommendations on any required adjustments or revisions to the Emergency Framework and allocation algorithm or documentation/tracking tools. Review of the triage protocol application from all hospitals in each P/T helps to validate its use and identify any gaps/need for revisions.
Key Stakeholders

Canadian Blood Services (CBS)
CBS is a not-for-profit, charitable organization whose sole mission is to manage the supply of blood and blood products for Canadians (excluding Quebec, which is served by Héma-Québec). Core functions include donor recruitment and management; whole blood and plasma collection, testing, processing, storage/distribution and inventory management. CBS has a key role in notifying and communicating with hospital transfusion services in the event of a blood shortage regarding change in inventory phase and ongoing inventory status.

CBS production/distribution site
A CBS production/distribution site prepares blood components from whole blood donations and distributes both blood components and blood products to hospitals. In Ontario, there are two CBS production/distribution sites: Brampton and Ottawa. The Brampton site provides service to 104 hospital sites in Central and Southwest Ontario. The Ottawa site provides service to 48 hospital sites in Northeast Ontario and one hospital in Nunavut. Twelve hospitals in Northwest Ontario receive blood components from CBS Winnipeg due to distances for shipping.

P/T Blood Liaison Committee (BLC)
The P/T BLC facilitates the work among the participating governments and CBS to support CBS in the provision of a safe, secure and affordable national blood system and other programs. Each P/T has one representative on the BLC. Ontario’s P/T Blood Representative is the Manager of the BPCO, MOHLTC, who also acts as the Chair for the OEBMC.

National Advisory Committee on Blood and Blood Products (NAC)
The NAC provides medical and technical advice on the utilization management of blood and blood products to the P/T ministries of health and CBS. Each P/T is represented by up to two members from their respective jurisdictions.

National Emergency Blood Management Committee (NEBMC)
The NEBMC develops recommendations and provides advice to CBS and PEBMCs to support a consistent and coordinated response to critical blood shortages in Canada. The NEBMC is made up of all NAC members and all P/T BLC members to address the need for all regions to share information and have input into decision-making. Membership also includes CBS officials, ex-officio members from Quebec’s Ministry of Health, Héma-Québec, Health Canada and two blood recipients. The Chair of the NEBMC is the current chair of the NAC (see Appendix B for NEBMC Terms of Reference).

Ministry of Health and Long-Term Care (MOHLTC)
P/T ministries of health are responsible for funding CBS. Ministers of Health are also corporate members of CBS and are responsible for approval of CBS’ annual budget, oversight of the expenditure of public funds by CBS in delivering the blood program, selection of the Board of Directors, ensuring the effectiveness of the blood system and providing recommendations to the Minister of Health (Canada) on proposed regulatory changes. MOHLTC is responsible for activating the Ministry Emergency Operations Centre (MEOC), which is dedicated
space within the Emergency Management Branch (EMB) that serves as the central command centre from which emergency situations facing the health care system and requiring MOHLTC support are coordinated. The MOHLTC may activate the MEOC to coordinate the ministry’s response (e.g. through activities of the BPCO, LHIN Liaison Branch, Office of the Chief Medical Officer of Health, Communications and Information Branch, EMB and any other affected ministry areas) depending on the severity of the blood shortage. This coordination is particularly important if the blood shortage is related to a concomitant emergency. The Ministry Emergency Response Plan (MERP) outlines processes and procedures for MEOC activation.

The MOHLTC is responsible for communications to Ontario stakeholders (e.g., hospital senior management, the public) outside of those carried out by CBS to recruit donations and provide inventory status updates.

**Ontario Emergency Blood Management Committee (OEBMC)**

The National Plan recommends that each P/T establish a PEBMC to plan for and respond to blood shortages. In Ontario, this committee is known as the OEBMC. Ontario’s P/T Blood Representative (Manager, BPCO, MOHLTC) chairs the OEBMC and communicates national common messages, which may include information/advice regarding inventory status, mitigation strategies and impact to clinical practice and transfusion protocol (tertiary triage), from the NEBMC to the OEBMC. The OEBMC provides medical and technical advice to the MOHLTC.

**Hospital Emergency Blood Management Committee (HEBMC)**

Hospitals establish HEBMCs to develop HEBMPs and to ensure adherence to the HEBMP in times of blood shortages. All key stakeholders tasked with the development and implementation of the HEBMP should be represented on the committee. This ensures joint input and decision making on the determined strategies required to reduce blood use at the hospital and a collaborative response should it be necessary (see Toolkit for a sample HEBMC Terms of Reference).

**Triage Officer/Team**

A triage officer/team is the person or group of persons within a hospital tasked with the responsibility of performing tertiary triage. The triage officer/team follows guidelines approved by their HEBMC. To ensure consistency with other jurisdictions, these guidelines should adhere with the direction provided in the Ontario Plan and the National Plan. All decisions made must be documented to ensure transparency.
As indicated in the National Plan, a blood shortage is most likely to be first identified by CBS. In the event that critical inventory levels exist or are imminent, CBS contacts the Chair of the NAC to convene a meeting of the NEBMC. This meeting typically occurs within 24 hours depending on the severity of the situation. The NEBMC is tasked with providing input into the decision to declare a blood shortage. The final determination of the phase (Amber, Red) is made by the CBS Chief Operating Officer (COO), based on input from the NEBMC. The NEBMC also develops common messages and advice (i.e., mitigation strategies, impact on clinical practice) to support a consistent and coordinated response to critical blood shortages across the country.

In Ontario, notification of a blood shortage to the MOHLTC occurs through Ontario’s P/T Blood Representative (Manager, BPCO), who is a member of the NEBMC, by calling the MOHLTC’s Emergency Management Branch (EMB) through its 24/7 Healthcare Provider Hotline.

Ontario’s P/T blood representative then convenes the OEBMC to communicate details of the shortage and any NEBMC recommendations and common key messages. The OEBMC provides medical and technical advice to the MOHLTC which may include recommendations for filling hospital orders (based on data from CBS); tertiary triage; handling of blood components such as splitting units and/or extending the expiry date; or the need to communicate with hospitals/the public, including identifying any key messages.

The MOHLTC may use the MEOC to facilitate coordination of the provincial response, including communications to hospital senior management and the public. If needed, MOHLTC may use the Ontario Regional Blood Coordinating Network (ORBCoN) to communicate with hospital transfusion services directly given ORBCoN’s established relationship and communication mechanisms. Any communications from the MOHLTC (e.g. Important Health Notices) should be consistent with recommendations and messaging from the NEBMC.

MOHLTC communications to senior hospital administration reinforce their obligation to ensure that physicians within their hospital adhere to the need to reduce their blood orders and blood use (tertiary triage). Senior hospital administration are responsible for communicating MOHLTC recommendations to reduce blood use to ordering physicians and transfusion services within their hospital and ensuring those recommendations are followed. This may be done through the HEBMC.

MOHLTC communications to the public (e.g., MOHLTC website, media briefings) provide guidance on the potential impact to patient care (e.g., need to cancel elective surgeries).

CBS has developed a communication plan (included in the National Plan) in which CBS notifies hospital transfusion services of any change to inventory phases (i.e., when inventory levels reach Amber or Red Phase, when they begin to recover, and when levels return to Green Phase). It also describes how CBS manages communications to the public regarding recruitment of donors.

Ontario hospital transfusion services are notified of the blood shortage directly by their regional CBS production/distribution site via fax and/or phone depending on the severity of the shortage (see Appendix C).
Communications

For a sample fax notification to hospitals. CBS production/distribution sites coordinate teleconferences, as required, with the hospitals in each region to communicate the status of the shortage; any actions to be taken for secondary triage (e.g., how orders will be reduced, if hospitals are requested to redistribute to another hospital) and to obtain hospital inventory levels. Members of the OEBMC participate on these teleconferences.

Data on hospital ordering practices are communicated by CBS to the MOHLTC via the P/T Blood Representative to inform the MOHLTC on Ontario hospital compliance to reduce inventory. Based on advice of the OEBMC, the MOHLTC communicates any recommendations for filling hospital orders back to CBS.

Effective communication of key messages among stakeholders at all levels is essential to the effective implementation of this plan. Figure 1 provides an overview of the two-way flow of information from the national and provincial levels to the hospital during a blood shortage.

Figure 1. Communication Flow
Role and Responsibilities During Phases

Green Phase: Prepare

Definition: Green Phase implies that normal blood component inventory levels exist and supply generally meets demand. Inventory requests are filled as per routine practice by CBS. Hospitals can maintain inventory at optimum level. In this phase, key stakeholders should develop plans to prepare to respond should a blood shortage be declared.

NEBMC/NAC
- Develop, maintain and distribute the National Plan.
- Exercise the National Plan and incorporate lessons learned into the Plan.
- Develop guidance on tertiary triage to aid clinicians in planning for allocation of blood resources during a blood shortage.

CBS & CBS production/distribution sites
- Fill hospital orders as requested.
- Collaborate with the NEBMC to review and revise the National Plan as needed.
- Participate on the OEBMC and CPWG.

MOHLTC
- Develop, maintain and distribute the Ontario Plan.
- Ensure OEBMC meets as per Terms of Reference.
- Ensure linkage between the Ontario Plan with the National Plan and the MERP.
- Exercise the Ontario Plan and incorporate lessons learned into the Ontario Plan.

Hospitals (Hospital Transfusion Services, HEBMC)
- Report inventory levels to CBS when submitting requests for blood using the CBS blood component order form.
- Establish good blood utilization and inventory management practices to minimize wastage of blood components:
  - Regularly review inventory stocking to assess appropriate levels. Inventory levels should be determined based on hospital needs for Green, Amber and Red Phases (see the Toolkit for more information on determining inventory levels by Phase).
  - Use blood ordering guidelines, blood conservation strategies, blood alternatives and regular auditing of blood ordering practices.
  - Understand current blood usage according to surgical procedure.
  - Adopt a massive blood transfusion policy/algorithm.
- Establish redistribution linkages.
  - Develop agreements among hospitals located in proximity to one another to support the redistribution of blood components if/when necessary (secondary triage).
  - Outline the policies and procedures for the redistribution of blood components including the requirement for appropriate storage conditions and appropriate documentation.
Role and Responsibilities During Phases

- Establish a HEBMC or make use of an existing committee, such as a transfusion committee.
  - Develop HEBMP to respond to a MOHLTC request to reduce blood use during a shortage.
  - Communicate HEBMP so hospital staff are aware of and familiar with their roles and responsibilities. Staff should be trained on actions required during a shortage according to the HEBMP.
  - Identify triage officer/team and provide training on their role and responsibilities in a blood shortage.

Note: If hospitals place their blood order requests to CBS based on their defined Amber and Red Phase levels, CBS attempts to fill orders as they are placed. However, if hospitals do not comply with reducing their orders, CBS needs to use alternate strategies, secondary triage, to conserve the supply and ensure all hospitals receive blood in a fair and equitable manner (e.g. reducing order fill rate). Decisions regarding distribution of blood from CBS to hospitals during a blood shortage (either Amber or Red Phase) are made in consultation with the MOHLTC on advice from OEBMC.

Amber Phase: Response Required

Definition: Amber Phase implies that blood inventory levels are insufficient to continue with routine transfusion practice and hospitals are required to implement specific measures to reduce blood usage. This phase is declared by the CBS.

NEBMC
- Provide input on the declaration of Amber Phase.
- Upon declaration of a blood shortage, convene to develop national common messages and response strategies (e.g., tertiary triage) to ensure a standardized approach across Canada.
- Notify P/T ministries of health through the respective P/T Blood Representatives.

CBS & CBS production/distribution sites
- Notify hospital transfusion services of Amber Phase.
- Conduct primary/secondary triage to ensure fair, equitable and transparent distribution to hospitals.
- Communicate regularly with hospital transfusion services and the MOHLTC (via Ontario’s P/T Blood Representative) to provide status reports of inventory levels and the anticipated recovery time.
- Report on hospital compliance with inventory stocking/ordering to MOHLTC (via Ontario’s P/T Blood Representative).
- Coordinate and oversee media announcements on the blood inventory status and any call for donations.

MOHLTC
- P/T Blood Representative notifies EMB via 24/7 Hotline: 416-212-0822 or 1-866-212-2272.
- P/T Blood Representative convenes the OEBMC upon declaration of blood shortage.
- Coordinate steps that need to be taken within the province. Activate the MEOC as required. This coordination is particularly important if the blood shortage is related to a concomitant emergency.
- Monitor hospital compliance with inventory stocking/ordering through information received from CBS via P/T Blood Representative.
Role and Responsibilities During Phases

- If hospitals comply with the requirement to reduce inventory expectations as defined in the Ontario Plan and Toolkit, request CBS to fill orders to hospitals, as placed, as long as inventory levels support this strategy. If inventory levels at CBS cannot support hospital requests, or hospitals are not complying with reductions to inventory requests, ask CBS to reduce order fill rates as required.
- Coordinate communications to hospital senior administration regarding patient care during the blood shortage and provide recommendations received from NEBMC/OEBMC through Important Health Notices, the Health Care Provider Hotline, media briefings, teleconferences and other mechanisms.
- Communicate to public on impact to patient care via MOHLTC website, media briefings, etc.

OEBMC
- Receive and review recommendations, common messages and response strategies from the NEBMC.
- Receive regular updates from CBS on inventory status and from hospital representatives the status of the hospital response in Ontario.
- Provide medical and technical advice to MOHLTC.
- Collaborate with the MOHLTC to develop recommendations and guidance for health system partners based on common messages and response strategies from the NEBMC.

Hospitals (Hospital Transfusion Services, HEBMC)
- Upon notification of the blood shortage, initiate HEBMP and launch internal communication plan.
- Report blood component inventory on the blood component order form to CBS production/distribution site and participate in CBS production/distribution site coordinated teleconferences.
- Convene HEBMC to support decisions required to reduce demand for affected blood component. Follow MOHLTC recommendations and guidance.
  a. Reduce inventory levels of affected blood component for Amber Phase as defined in the HEBMP.
  b. Consider deferral/cancellation of elective surgical/medical procedures and non-urgent transfusions requiring the affected blood components. Activate triage officer/team as per HEBMP.
  c. Conduct tertiary triage to prioritize and allocate blood components. Document decisions for deferral/cancellation of surgical/medical procedures.
  d. Increase use of blood conservation strategies and blood alternatives to decrease demand for blood.
  e. Consult with the regional CBS Medical Director/Consultant to facilitate redistribution of blood components between facilities to best serve the needs of patient in a region (secondary triage).
  f. Notify patients and their families if treatment is to be deferred, and the reason for the deferral.

Red Phase: Response Required

Definition: Red Phase implies that blood inventory levels are insufficient to ensure that even patients with non-elective indications for transfusion receive the required transfusion(s).

The decision to call a Red Phase shortage is made by CBS. If inventory levels cannot recover in the short term, CBS may notify NEBMC that a move from the Amber Phase to the Red Phase is being initiated. If an imminent
threat to or precipitous drop in the blood supply is identified, a move directly to the Red Phase from Green may be called.

Note: Hospitals are advised to use the Emergency Framework for Rationing of Blood for Massively Bleeding Patients during a Red Phase of Blood Shortage (Emergency Framework), which includes an algorithm and guidance document to triage blood for massively bleeding patients in a Red Phase blood shortage.\(^2\)

The roles and responsibilities required by key stakeholders in a Red Phase blood shortage mimic those required in the Amber Phase although frequency of meetings and communication may be escalated. The major difference is to the response required at hospitals.

**NEMBC**
- Refer to Amber Phase.

**CBS & CBS production/distribution sites**
- Refer to Amber Phase.

**MOHLTC**
- Refer to Amber Phase.

**OEBMC**
- Refer to Amber Phase.

**Hospitals (Hospital Transfusion Services, HEBMC)**
- Launch internal communication plan to notify move to Red Phase.
- Continue to report blood component inventory on the blood component order form to CBS production/distribution sites and participate in CBS production/distribution sites’ coordinated teleconferences.
- Convene HEBMC to support decision-making required to further reduce demand for the affected blood component(s). Follow MOHLTC recommendations and guidance.
- Activate HEBMP for Red Phase. This may include the following additional actions:
  a. Reduce to minimum inventory levels of affected blood group or blood component according to Red Phase inventory needs as defined in HEBMP.
  b. Continue to defer/cancel elective procedures with historical use of blood and any non-urgent transfusions.
  c. Activate triage officer/team and triage all blood order requests.
     - Determine which patients are to be allocated to receive the blood components(s) and which are not, in accordance with the Emergency Framework.\(^2\) Decisions must be transparent.
     - Document all decisions carefully using a log sheet and individual patient tracking form (may be completed by support staff) (See Toolkit).
     - Report all decisions to the HEBMC.
     - Communicate decisions to the patient, the patient’s family and the patient care team.
Role and Responsibilities During Phases

- Reassess those patients who were denied blood daily (minimum) or sooner if their clinical situation changes (deteriorates or improves). If a patient is not to receive blood, it is important that they continue to receive supportive care which may include application of blood conservation techniques, supportive care for pain and management of clinical symptoms, and/or palliative care support.
- Consideration may need to be given to stopping transfusion in those who have very low probability of survival. Note that the emergency framework provides guidance for patients who are massively bleeding but not necessarily to those who require smaller volumes of blood.
  d. Consider that other strategies may be needed such as deferral of chemotherapy and hematopoietic stem cell transplants, extension of component shelf life or splitting of available components.\(^1\)
  e. Increase focus on use of blood conservation strategies and blood alternatives to reduce blood use as much as possible.
- Consult with the regional CBS Medical Director/Consultant for secondary triage to facilitate transfer of blood components between facilities to best serve the needs of patients in a region.

Recovery Phase: Actions Required

Definition: Blood inventories have begun to increase and are expected to be maintained at a level that enables hospitals to resume regular service levels. The Recovery Phase is declared by CBS. Recovery of hospital blood inventory and return to normal activities (transfusions) should be gradual to ensure the overall blood inventory level does not return to shortage levels.

NEBMC
- Develop common messages and response strategies to ensure a standardized approach across Canada.

CBS & CBS production/distribution sites
- Notify hospital transfusion services of move to Recovery Phase.
- Coordinate and oversee media announcements regarding the recovery of the blood supply, manage donor response and return to normal operations as they deem appropriate.
- Communicate regularly with hospital transfusion services and MOHLTC to provide status reports of inventory levels.

MOHLTC
- If required, notify hospital senior administration and the public of move to Recovery Phase.
- Once CBS has declared a Green Phase, convene OEBMC to debrief to recommend improvements to the Ontario Plan and ensure continual improvement of the response to a blood shortage.

Hospitals
- When the hospital receives notification that Recovery Phase has been declared, implement communication fan-out to notify internal hospital personnel.
- Continue to report blood component inventory on the blood component order form to CBS.
Role and Responsibilities During Phases

• Convene HEBMC to support decisions required to return slowly to normal operations.
• Initiate Recovery Phase of HEBMP. This may include the following actions:
  a. Gradually return to Green Phase inventory levels of affected blood component according to HEBMP.
  b. Secondary triage, the transfer of blood components among hospitals, may still be required for a short period to ensure the equitable distribution of product within a region until inventory levels at all hospitals can return to optimal levels.
  c. Careful management of recalling and rescheduling patients for elective surgeries and non-urgent transfusions to ensure there is no surge of blood demand that could result in a return to a shortage.
  d. Encourage continued use of blood conservation strategies and blood alternatives to support good blood management.
• Once CBS has declared a return to Green Phase, convene HEBMC to debrief and recommend changes to the HEBMP and Ontario Plan for continual improvement of the response to a blood shortage.
**Conclusion**

In the event that a blood shortage occurs, CBS determines if the shortage is severe enough to alert stakeholders in the blood system. In consultation with the NEBMC, a decision is made to declare a blood shortage and its severity as defined using a colour coded system.

Hospital transfusion services are notified by their CBS production/distribution site. Once this notification occurs, actions are required within the hospital based on the severity and anticipated time frame of the blood shortage. Reduction in hospital inventory and, if necessary, reduction in the use of the affected blood components may be required. Guidance on this will be communicated by MOHLTC.

Any reduction to the provision of blood components within a hospital must follow a HEBMP developed internally by key stakeholders. This helps ensure that any strategies taken to reduce service or triage patients regarding use of a critically low blood supply will be accepted and followed within each hospital. This, in turn, helps optimize utilization of the limited available inventory across the province in an equitable manner. It is strongly recommended that decisions and rationale used for canceling or deferring blood transfusion (tertiary triage) be documented.

Recommendations from the NEBMC may be provided and communicated to PEBMCs through the P/T Blood Representative to support a collaborative, ethical and equitable response to the situation. In Ontario, the OEBMC provides medical and technical advice to the MOHLTC.

MOHLTC may activate the MEOC to coordinate the provincial response to a blood shortage. MOHLTC is responsible for any communications to hospital senior management to adhere to the request to reduce blood use, and communications to the public on any impact to patient care.

A more consistent approach taken by all hospitals across the country helps the national blood suppliers – CBS and Héma-Québec, manage and recover from a blood shortage. To help ensure that a consistent approach is developed by all hospitals in Ontario, the Ontario Hospital Toolkit for Emergency Blood Management has been developed. Efforts are made to ensure the Ontario Plan is reviewed following each exercise or actual blood shortage event in order to continuously make improvements.
Contingency Planning Working Group

The following were involved in the review and revision to Version 2 of the Ontario Plan. The CPWG is a subcommittee of the OEBMC and was originally formed under the direction of the OBAC to develop a provincial contingency plan in the event of a blood shortage.

Dr. Jeannie Callum, Sunnybrook Health Sciences Centre
Dr. Mike Christian, Mt. Sinai Hospital/Canadian Armed Forces/ORNGE
Mr. Ahmed Coovadia, Canadian Blood Services
Dr. Laura Hawryluck, Toronto General Hospital-UHN
Ms. Debbie Lauzon, Ontario Blood Regional Coordinating Network
Ms. Kathy Luke/Ms. Alanna Howell, Ontario Nurse Transfusion Coordinator Program
Ms. Kathleen McShane, Hospital for Sick Children
Ms. Wendy Owens, Ontario Regional Blood Coordinating Network
Dr. Katerina Pavenski, St. Michael's Hospital
Dr. Fiona Ralley, London Health Sciences Centre, University

MOHLTC

Mr. Thomas Appleyard, Emergency Management Branch
Ms. Ramona Muneswar, Blood Programs Coordinating Office
Ms. Caitriona O’Sullivan, Emergency Management Branch
Ms. Sophie Yang, Blood Programs Coordinating Office
References


4. CAN/CSA-Z902-10 Blood and Blood Components; February 2010 Canadian Standards Association; Mississauga, Ontario.

5. CSTM Standards for Hospital Transfusion Services v.3; February 2011 Canadian Society for Transfusion Medicine; Ottawa, Ontario.


Appendix A

Ontario Emergency Blood Management Committee (OEBMC)

Terms of Reference

Mandate

- To advise the Ministry of Health and Long-Term Care (MOHLTC) on the development and maintenance of the Ontario Contingency Plan for the Management of Blood Shortage and the Ontario Hospital Toolkit for Emergency Blood Management which address shortages of blood in the province of Ontario.
- To work in accordance with the guidelines outlined in the National Plan for the Management of Shortages of Labile Blood Components (National Plan).
- To ensure that the national messages and response strategies developed by the National Emergency Blood Management Committee (NEBMC) are appropriately communicated within Ontario during the response to a blood component shortage.
- To solicit feedback and ongoing collaboration on implementation of the National Plan from key stakeholders (i.e., transfusion medicine specialists, organ transplant, sickle cell and other specialty groups); and Hospital Emergency Blood Management Committees (HEBMCs).
- To act as a conduit for communications/feedback between the NEBMC, MOHLTC, and CBS sites serving hospitals in Ontario during a blood shortage.
- To establish a process to monitor adherence to the Ontario Plan in times of blood shortages.
- To establish recommendations to manage non-adherence to the Plan in times of blood shortages.
- To facilitate the development of HEBMPs in preparation for the event of a blood shortage.

The OEBMC works collaboratively with the NEBMC and HEBMCs.

Meetings

- Meetings will be scheduled as necessary or at the call of the Chair. Meetings will take place by teleconference.
- Efforts will be made by all members or their delegate, to attend meetings.
- All members are invited to all the meetings and receive meeting materials and minutes.
- The quorum is the number of members that are present.

Membership

Multidisciplinary representation will include the following:

- Blood Programs Coordinating Office (BPCO)*, MOHLTC
- Canadian Blood Services, Regional Medical Director
- Canadian Blood Services, Regional Director of Product and Hospital Services
- Canadian Blood Services, Regional Hospital Liaison Specialist
- Emergency Management Branch, MOHLTC
- Hospital Clinical Consultant (Critical Care/Triage)
- Hospital Transfusion Service Manager
- Hospital Senior Administrator
- National Advisory Committee on Blood & Blood Products (NAC), Ontario Representative
- Ontario Blood Advisory Committee (OBAC)
Appendix A

- Ontario Regional Blood Coordinating Network (ORBCoN)
- Ontario Hospital Association (OHA)
- Ontario Nurse Transfusion Coordinator (ONTraC) Program
- Patient group/consumer representative
- Risk management expert
- Transfusion safety officer

*The Chair of the OEBMC will be the Manager, BPCO; who is also the Ontario Provincial/Territorial Blood Representative and a member of the NEBMC.

Remuneration
Members will not receive remuneration for participation on this committee.
Members are reimbursed for travel expenses (i.e., transportation, accommodation and meals) incurred due to their participation in this group. An expenses claim form (available from MOHLTC) and original receipts must be submitted to the BPCO. Expenses are subject to the Government of Ontario’s Travel, Meal and Hospitality Expenses Directive.

Secretariat
The BPCO provides secretariat support for the OEBMC, including:
- Scheduling meetings
- Developing the agenda in conjunction with the Chair
- Circulating the agenda, meeting materials and any other relevant information
- Following up on action items resulting from the meetings
- Facilitating the revision and approval of the Ontario Plan
Appendix B

National Emergency Blood Management Committee Terms of Reference

Mandate
The National Emergency Blood Management Committee (NEBMC) will develop recommendations and provide advice to the Provincial/Territorial (P/T) Ministries of Health, hospitals/regional health authorities (RHA) and Canadian Blood Services (CBS) to support a consistent and coordinated response to critical blood shortages in Canada. To this end, the NEBMC will:

- provide advice to CBS with respect to determining the appropriateness of declaring an Amber or Red Phase situation, and recovery from these situations;
- provide recommendations on the distribution of blood components in Amber and Red Phases;
- provide recommendations on previously unforeseen circumstances related to critical blood shortages;
- provide recommendations concerning the communication of the shortages to key stakeholders;
- ensure the necessary communication between the NEBMC and the Provincial/Territorial Emergency Blood Management Committee(s) (PEBMC)

Membership
The Chair of the NEBMC will be the current chair of the National Advisory Committee for Blood and Blood Products (NAC). The Vice-Chair of NAC shall act as chair in the absence of the NEBMC/NAC Chair.

The membership of the NEBMC will include the following:

- CBS officials as determined by CBS and including the following:
  - Chief Operating Officer
  - Executive Director, Product & Hospital Services
  - Director, Product & Hospital Services
  - Director, Operations Support
  - Executive Medical Director, Transfusion Medicine
  - Director, Internal Communications
  - Director, Government Relations
  - Director, Media Relations & External Communications
- all NAC members
- all P/T Blood Representatives
- Québec Ministry Representative (to be determined)
- Héma-Québec Representative (to be determined)
- Health Canada BGTD (Ex-Officio)
- two blood transfusion recipient representatives, chosen jointly by CBS and NAC; one should be an actual blood transfusion recipient (present or past) and the other should be a representative of an appropriate patient society.

Every member of the NEBMC is responsible for naming a designate in the event that he/she is unavailable. The term of any member will be determined by the body that appointed them.

The NEBMC may invite additional experts to meetings on an ad hoc basis to provide expertise on the subject matter being discussed (e.g. Public Health Agency of Canada in the event of a blood shortage secondary to an infectious risk).
Meetings/Quorum
NEBMC will hold regular meetings, emergency simulation meetings and meetings convened at the time of shortages. Regular meetings and emergency simulation meetings will be extremely important to ensure that the committee can effectively function in times of shortages. Regular meetings will consist, at a minimum, of two teleconferences per year. Regular meetings and simulation meetings will be convened at the call of the Chair. Meetings in times of shortages will be convened at the request of CBS, the Lead Province and/or the Chair.

There is no requirement for quorum and decisions of the NEBMC will be made by consensus. Consensus is defined as 80% (or greater) agreement of the NEBMC members present. In the event consensus is reached, the CBS Chief Operating Officer will take the NEBMC recommendation as his or her primary consideration in rendering decisions related to matters identified by the NEBMC mandate. In the event that consensus cannot be reached, the CBS Chief Operating Officer will make the decisions using knowledge of current and future CBS inventories and considering the advice received from the NEBMC.

Communications and Support
Secretariat
A Secretariat, provided by CBS, shall support the work of the NEBMC. The Secretariat shall be responsible for:

• maintaining an up-to-date contact list of members and their designates;
• arranging meetings/teleconferences at the direction of the Chair, including planned and unplanned simulation meetings;
• reporting all proceedings and recommendations of the NEBMC to all members of the NEBMC and their designates and to all P/TEBMC;
• distribution of relevant information and reports from P/TEBMC, CBS or other relevant sources to all NEBMC members and their designates

NAC Members
In their NEBMC role, NAC medical members will serve as medical/technical advisory representatives for their respective provinces to the NEBMC. In conjunction with their P/T Blood Representative, they will facilitate dissemination and implementation of NEBMC recommendations to their P/TEBMC and Hospital/Regional Health Authority Emergency Blood Management Committee(s) (H/REBMC).

P/T Representatives
In their NEBMC role, P/T representatives will facilitate the dissemination and implementation of NEBMC recommendations to their respective Ministries of Health and their P/TEBMC.

Evaluations
The NAC’s Blood Shortage Working Group will review the implementation and outcomes of the Plan after each simulation exercise and live activation for ongoing refinement and modification of the Plan, and shall report these findings to all members of the NEBMC.
## Example of Hospital Notification from Canadian Blood Services

### National Inventory SHORTAGE Alert

<table>
<thead>
<tr>
<th>Date and time of issue</th>
<th>2010-Feb-15 09:00 EST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inventory Availability Phase</strong></td>
<td>RED</td>
</tr>
<tr>
<td><strong>Product(s)</strong></td>
<td>Platelets (all groups)</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Following a massive recall of platelet collection bags from Company X, the availability of platelets has been seriously compromised. The National Emergency Blood Management Committee has escalated the severity of the shortage to the Red Phase of the National Blood Shortages plan. Attempts to secure bags from another source have not been successful. There is no indication when recovery from this shortage is likely to begin.</td>
</tr>
<tr>
<td><strong>Impact on hospitals</strong></td>
<td>• Follow directives in the “Red Phase” section of your National / Provincial / RHA or Hospital blood shortage plan</td>
</tr>
<tr>
<td><strong>For more information</strong></td>
<td>Key messages enclosed with this Shortage Alert. For additional info, contact: John Smith Hospital Liaison Specialist – CBS Region X Canadian Blood Services (416) 123-4567</td>
</tr>
</tbody>
</table>
Appendix D

Synopsis for Triage Team

- 1 - Emergency framework for rationing of blood for massively bleeding patients during a red phase of a blood shortage – Synopsis for Triage Team – October 11, 2012

Emergency framework for rationing of blood for massively bleeding patients during a red phase of a blood shortage - Synopsis for Triage Team

Purpose and Scope
The National Advisory Committee on Blood and Blood Products (NAC—an advisory committee, composed of hospital-based transfusion medicine experts chosen by their respective Provincial Ministries of Health and Canadian Blood Services representatives that report to a joint Canadian Blood Services/Provincial and Territorial Ministries of Health committee) developed the National Plan for the Management of Shortages of Labile Blood Components (The National Shortages Plan). The National Shortages Plan required further expansion for dealing with patients who require massive blood transfusion during a red phase blood shortage. This document has been developed as an adjunct to the National Shortages Plan (available at www.nacblood.ca) to address these massively hemorrhaging patients as they can consume up to 25% of the national blood supply and urgent decisions are needed to ration blood to these patients during a red phase blood shortage.

The document for the rationing of blood for massive hemorrhage (defined as expected blood loss of one blood volume over less than a 24 hour period; 0.5 blood volume in 3 hours; or four or more units of red blood cells in one hour) is a guide for the management of patients in need of massive transfusion (trauma patients, patients undergoing liver/lung/heart transplantation, patients requiring ventricular assist devices or extracorporeal membrane oxygenation, patients with ruptured aortic aneurysms or gastrointestinal bleeding and obstetrical patients) during a red phase blood shortage. A red phase blood shortage is defined as the availability of less than 48 hours of red blood cell units in Canada where it is not foreseeable that a shortage will be averted by increasing the collection of blood or by reducing elective surgical procedures. In other words, the blood inventory levels are insufficient to ensure that patients with non-elective indications for transfusion will receive the required transfusion.

This document has been developed to ensure that blood transfusions are provided to Canadians during a red phase blood shortage in an ethical, fair, and transparent way to ensure that the greatest numbers of lives are saved and to minimize the suffering and maximize the use of alternatives for those who may not survive due to insufficient availability of blood.

Target Audience
This emergency framework is intended to be used by key blood system participants who are defined to be Canadian Blood Services, hospitals and regional health authorities, the Provincial and Territorial Ministries of Health and the National Emergency Blood Management Committee (NEBMC) as per the National Shortages Plan.

Summary of the Development Process
In 2009, a working group of experts was convened to develop an emergency framework. The working group members were from large tertiary care centres in Canada and had expertise in transfusion medicine, trauma, anesthesiology, gastroenterology heart/lung/liver transplantation, obstetrics, cardiovascular surgery, allied health, medical ethics, law and
Appendix D

Synopsis for Triage Team

methodology. The working group also included members of the National Advisory Committee on Blood and Blood Products. The working group did not include patient representatives, although widespread lay consultation was sought during the development process.

A systematic search was conducted of the literature to identify predictors of massive blood loss and mortality to guide the working group members in determining which patients would be the most likely to benefit from blood transfusion.

An extensive literature search was also conducted for ethical frameworks and allocation protocols dealing with the allocation of scarce resources as the allocation of any scarce resource is one of the most challenging ethical issues faced in health care. This emergency framework was developed to ensure a fair, transparent and just distribution of blood when the demand for transfusion will exceed the available resources. This framework may transcend the needs of a single patient, health care professional or institution but represents a focus on the ‘greater good’.

The working group through an iterative process developed recommendations that were assigned a level of evidence and grade of recommendation according to the Canadian Task Force (www.canadiantaskforce.ca). In addition to the recommendations, the working group also adapted a previously published Canadian critical care triage protocol developed for pandemic influenza planning. Recommendations for the patients who are massively hemorrhaging do not address comorbidities that may impact on the survival of patients.

National experts including professional societies, the blood provider and lay groups reviewed the final recommendations to provide input on the recommendations. Their agreement to all recommendations and the overall document review was elicited and all comments were subsequently addressed in the final document.

The Triage Team

It is recommended that triage teams be established in advance of a shortage. The role of the triage team is to provide a structure that formally oversees the triage process be it provincial/regional or at the hospital level during a crisis. The triage team should receive comprehensive information on the triage framework in advance of a blood shortage being declared. The triage team must be a multidisciplinary team with adequate background knowledge in terms of patient triage and managing patients under a ‘crisis standard of care’.

Membership

The triage team should be comprised of any of the following and be appointed by the regional/hospital transfusion committee or regional/hospital emergency blood management committee (the number of team members should be proportional to the transfusion volume of the institution or region):
Synopsis for Triage Team

1. Triage Team Leader. The triage team leader should be an experienced physician with familiarity in triaging critically ill patients, broad based knowledge of resources and capabilities of healthcare organizations. Will have final responsibility and authority over clinical decisions.

2. A Management Representative. A management representative is required to provide guidance on the capability of the organization regarding resources, personnel, external support, and internal and external communications.

3. An ethicist.

4. A nursing supervisor to provide direction on alternate care.

5. Representative from the emergency room, trauma, transplantation, cardiovascular surgery, gastroenterology, and obstetrics to provide updates on demand, impact and assist in decision making.

6. Palliative care nurse or physician for patients not triaged to receive blood.

7. Social worker

8. Chaplain

9. Medical laboratory technologist

In addition, the triage team leader should have another triage physician available to them for assistance with decision making for difficult cases. The regional/hospital transfusion committee or Regional/Hospital Emergency Blood Management Committee should appoint members of the triage teams with the number of individuals proportional to the transfusion volume of the institution or region. It will be the responsibility of the triage teams to report back to the transfusion committee or emergency blood management committee all triage decisions made.

The triage teams must be educated on the background information and how to apply the triage tool in advance of a blood shortage. The responsibility for education of physicians and triage teams rests with the Regional Emergency Blood Management Committee in collaboration with the Hospital/Regional/District Health Authority. Specific training at dedicated intervals is difficult to achieve as there is varying frequency with which simulation exercises occur, the level of involvement of various medical services during a simulation and a large turnover of physicians throughout the system. However, through simulation exercises, continuous education, and dissemination of the National Blood Shortages Plan and this emergency framework, physicians would be more inclined to align with the National Blood Shortages Plan to ensure all patients receive quality levels of care during a shortage. Post simulation reporting may provide the best training opportunities in that lessons learned can be addressed at the Medical Advisory Committee level. Training and development modules should occur in collaboration with Canadian Blood Services as they will be instrumental in invoking the National Blood Shortages Plan. A core part of this pre-shortage education should clearly focus the triage team on their
Synopsis for Triage Team

Responsibilities

The responsibilities of the triage team are to ensure

- documentation of the state of emergency (i.e., that an emergency has been activated, that all existing resources are exhausted, the rationale for withholding transfusion, and that all supportive care and blood conservation strategies will be instituted);

- documentation of inclusion/exclusion criteria;

- adherence to decisions and alternate levels of care;

- efficient and regular re-evaluation of patients;

- reevaluation of triaged patients daily and every 10th red blood cell transfusion;

- physicians receive the required assistance; and,

- the public receive information about the status of the emergency and where to obtain further information.

Implications

The triage team should not be directly involved in the care of the patient. The triage team assigned to allocate blood components needs to be clearly cognizant that their duty is to the population, not just to the individual patient. The triage teams should be blinded to identifying patient information when presented with clinical information in determining if a patient is eligible to receive transfusion as per the triage criteria. It is suggested that the triage team convene in an area not within the immediate vicinity of the patient bedside. Typically given the acute and emergent nature of the presenting cases, it is anticipated that there will be no ability to manage an appeals process in the middle of the mass casualty situation or other disaster. In addition, decisions during a massive hemorrhage must be made within minutes and therefore a formal appeals process is not clinically feasible as such the triage decisions must be final with no appeal process. The triage teams should be offered adequate administrative and psychological support.

There must be sufficient coverage of the triage team to allow for 24 hour coverage. The triage team decisions need to be reported daily to the Regional/Hospital Emergency Blood Management Committee to ensure ‘over triage’ and ‘under triage’ errors are minimized. Consideration needs to be given by the hospital of having a joint intensive care and transfusion triage teams, where possible, to maximize the use of resources. The triage decisions need to be transparently communicated to the patient, the patient’s family, the clinical team caring for the patient and recorded clearly in the patient’s chart. Patients should be re-assessed at a minimum
Appendix D

Synopsis for Triage Team

- Emergency framework for rationing of blood for massively bleeding patients during a red phase of a blood shortage – Synopsis for Triage Team – October 11, 2012

of daily, every 10th unit of red blood cells, or sooner if their clinical status improves or deteriorates substantially prior to 24 hours.

In the setting of a scarcity of multiple hospital resources, the blood triage tool should be utilized sequentially with the other rationing tools. It is possible that a blood shortage may occur as an isolated event or in the setting of multiple resource scarcity (e.g., ventilators or critical care beds). In the setting of an isolated blood shortage, all other available therapies, including blood conservation strategies, should be offered to all patients. In addition, ensuring pain and symptom management should be a core part of the triage team’s oversight responsibility so that patients and their families do not feel abandoned.

Documentation

Clear and complete documentation will be essential for a complete patient record and for evaluation after the red phase. In the patient chart, the triage team shall document the following: phase of blood shortage, triage decision, reason for exclusion if applicable, date/time of next planned re-evaluation, a copy of the triage documentation tool, and the number to page if the clinical status of the patient substantially improves or deteriorates before the next planned re-assessment. Extensive clinical notes will not be possible, or appropriate, as the triage team will be required to triage multiple patients. Documentation can be delegated to any member of the triage team and need not be done by the triage physician. Documentation on the triage documents should include a triage tracking log of all cases and a triage sheet for each patient. Efforts should be made to be as complete as possible to allow for the best possible review of triage decisions after the resolution of the red phase. At the end of each shift, a copy of the documents should be given to the chair of the Regional/Hospital Emergency Blood Management Committee, or their designate, and the original documents given to the next triage team with appropriate verbal handover. At the completion of the red phase, copies of all triage tools should be forwarded to the Provincial Emergency Blood Management Committee for review and analysis.

The Framework

Patient Population: This framework applies only to patients experiencing massive hemorrhage (defined as expected blood loss of one blood volume over less than 24 hours; 0.5 blood volume in three hours; or four or more units of red blood cells in 1 hour) during a red phase blood shortage.

In general all patients should receive access to all available blood conservation strategies including but not limited to: erythropoiesis-stimulating agents, intravenous iron, oral iron, antifibrinolytics, intraoperative cell salvage, interventional radiologic procedures, rapid access to endoscopy, and non-invasive surgeries.
Appendix D

Synopsis for Triage Team

Figure 1 – Algorithm for the Triage Team (page 1)
Synopsis for Triage Team

- Emergency framework for rationing of blood for massively bleeding patients during a red phase of a blood shortage – Synopsis for Triage Team – October 11, 2012

**Figure 1 – page 2**

- Does patient meet one of the above specific exclusions? YES → Do not transfuse, Re-assess as per page 11
- NO
  - Is there sufficient inventory to meet current demand at hospital level? NO → Do not transfuse, Re-assess as per page 11
  - YES
    - Proceed with transfusion

- Is inventory concern related to competing patients eligible for transfusion? NO → Do not transfuse, Re-assess as per page 11
- YES
  - Supplemental Inclusion Criteria (in order presented):
    1. Youngest first
    2. Highest likelihood of hemostasis control
    3. First-come, first-served
  - Is a patient meeting these inclusions? YES → Re-evaluate at specified intervals for eligibility for ongoing transfusion:
    1. Every 24 hours
    2. Every 10 units of RBC (to be adjusted by the NEBMC as determined by blood availability)
    3. Re-assess according to the reassessment criteria for triaged patients (page 11)
Appendix D

Synopsis for Triage Team

Specific Exclusion Criteria for Massively Bleeding Patients:

Trauma

1. During a red phase, do not administer transfusions to children or adults with non survivable brain injury.
   Level of evidence: III
   Grade of recommendation: A
   Clinical Consideration: CT scanning should be done as soon as possible to confirm the diagnosis of a non survivable brain injury.

2. During a red phase, do not administer transfusions to children or adults with a Glasgow Coma Scale =3 who have hypotension not attributable to reversible factors and who have fixed and dilated pupils.
   Level of evidence: III
   Grade of recommendation: A

3. During a red phase, do not transfuse patients after the declaration of brain death for the purpose of deceased organ donation.
   Level of evidence: III
   Grade of recommendation: A

4. During a red phase, do not administer transfusions to adults or children with penetrating cranial trauma and a Glasgow coma scale =3 that is not attributable to reversible factors.
   Level of evidence: III
   Grade of recommendation: B

5. During a red phase, do not administer transfusions to adults or children with penetrating cranial trauma, a Glasgow coma scale <8 that is not attributable to reversible factors, hypotension and severe thoracoabdominal trauma.
   Level of evidence: III
   Grade of recommendation: B

6. During a red phase, do not administer transfusions to adults or children with blunt trauma, and a Glasgow Coma Scale =3 that is not attributable to reversible factors.
   Level of evidence: III
   Grade of recommendation: B

7. During a red phase, do not administer transfusions to adults or children with blunt trauma who have lost vital signs pre-hospitalization.
   Level of evidence: III
   Grade of recommendation: A

8. During a red phase, do not administer transfusions to patients with transcranial gunshot injuries.
   Level of evidence: III
   Grade of recommendation: A
Synopsis for Triage Team

9. During a red phase, do not administer transfusions to patients >65 years with severe brain injury and profound shock and severe thoracic or abdominal trauma.
   Level of evidence: III
   Grade of recommendation: B

10. During a red phase, do not administer transfusions to patients >75 years with moderate brain injury, a Glasgow Coma scale of <12, who are in profound shock and who have thoracoabdominal injury.
    Level of evidence: III
    Grade of recommendation: B

Ruptured Abdominal Aortic Aneurysm

1. During a critical blood shortage, do not transfuse patients who have a cardiac arrest preoperatively.
   Level of evidence: III
   Grade of recommendation: B

2. During a critical blood shortage, do not transfuse patients with a systolic blood pressure less than 70mmHg who are unresponsive to fluid resuscitation and have lost consciousness.
   Level of evidence: III
   Grade of recommendation: B

3. During a critical blood shortage, do not transfuse patients with RAAA that do not meet criteria for emergent vascular repair.
   Level of evidence: III
   Grade of recommendation: I

ECMO/VAD

1. During a red phase, do not transfuse patients who require ECMO/VAD and who have multi-organ (> 1 organ) failure.
   Level of evidence: III
   Grade of recommendation: B

2. During a red phase, inform patients/families that patients receiving ECMO/VAD support who have multi-organ failure may not receive transfusion support if massively bleeding.
   Level of evidence: III
   Grade of recommendation: B

Heart, Lung, Liver Transplantation

1. Deceased Donor Organ Recovery - During a red phase, deceased donor organ recovery for transplantation should proceed, with the understanding that the deceased donor will not be transfused in the process of deceased donor stabilization.
   Level of evidence: III
Synopsis for Triage Team

- 10 - Emergency framework for rationing of blood for massively bleeding patients during a red phase of a blood shortage – Synopsis for Triage Team – October 11, 2012

Grade of recommendation: B

2. Deceased Donor Transplantation - During a red phase, deceased donor solid organ transplants may proceed with informed consent regarding increased risk from restriction of blood transfusion, and with the understanding (among patient and all involved physicians) that blood may not be available for transfusion.
   Level of evidence: III
   Grade of recommendation: B

3. Living Donor Transplantation – During a red phase, living donor transplantation should be deferred.
   Level of evidence: III
   Grade of recommendation: B

Gastroenterology (refer to Section 8 of the expanded emergency framework for further information)

1. During a red phase do not administer transfusions to patients with gastrointestinal bleeding and a Rockall score >8.
   Level of evidence: III
   Grade of recommendation: B

2. During a red phase do not administer transfusion to patients with liver cirrhosis and gastrointestinal (i.e. variceal) bleeding who have a Child Pugh score more than 10 (MELD score of more than 18) and who are not on the list for transplantation.
   Level of evidence: III
   Grade of recommendation: B

3. During a red phase, triage patients with gastrointestinal bleeding to centers with endoscopy to minimize the use of blood products.
   Level of evidence: III
   Grade of recommendation: B

Obstetrics

1. In a red phase, red cell transfusion should not be withheld from the bleeding obstetrical patient.
   Level of evidence: II-2-III
   Grade of recommendation: B

Other massively bleeding situations not listed above

1. In a red phase, for patients massively bleeding for reasons not listed above, do not transfuse patients for whom the triage team believes the mortality rate exceeds 80%
Reassessment for Triaged Patients

1. Patients triaged to no blood components:

Patients triaged to no transfusion care will be re-assessed at a minimum of every 24 hours. The triage team will review requests from the most responsible physician if an improvement in a patient’s status would now qualify them to be triaged to active transfusion management. In addition, the triage team will assure that the patient and their family are given adequate access to psychological support and that adequate symptom management is given to minimize pain and distress.

2. Patients triaged to blood components:

For patients triaged to active transfusion care, they will be re-assessed at a minimum of every 10 units of red blood cells (including pediatrics) or every 24 hours for patients receiving less than 10 units of blood or until cessation of hemorrhage (or more frequently – e.g. every 5 units - if deemed necessary by the NEBMC). At each assessment, the triage team will utilize the following variables to guide their decisions regarding the value of continued transfusions: SOFA score, total blood products used, need for ongoing transfusion support and ability to control bleeding with either surgery or other procedure (e.g. interventional radiology, endoscopy). Patients with a SOFA score >11, continued need for large amounts of blood components, and with no foreseeable ability to control blood loss will be triaged to palliative care.

Documentation for Transfusion Decisions

Transfusion decisions should be documented on a patient tracking tool. An example of a patient tracking tool is available in the appendix of this document.

Competing Patients Triaged to Active Transfusion Care

In the event of two or more patients requiring blood components at the same hospital for whom both qualify for active transfusion management by the triage team, the following principles (in order) are suggested to prioritize transfusion resources:

1. Administer blood to the youngest patients first i.e. pediatric patients first
2. Administer blood to patients who have the highest likelihood of hemostasis control
3. Administer blood according to the first-come, first-served principle.

In the event that two or more patients are competing for blood components at different hospitals and the blood still resides at the local blood centre, the same aforementioned principles will be applied jointly by the blood centre physician and the triage team leader from the hospitals involved.
Synopsis for Triage Team

- 12 - Emergency framework for rationing of blood for massively bleeding patients during a red phase of a blood shortage – Synopsis for Triage Team – October 11, 2012

Appendix A – Documentation Tools and Clinical Scoring

Triage Tracking Log – Emergency Disposition of Blood during Red Phase Blood Shortage

<table>
<thead>
<tr>
<th>Tracking Number</th>
<th>Medical Record Number</th>
<th>Last Name</th>
<th>First Name</th>
<th>Location</th>
<th>Blood Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Synopsis for Triage Team

- Emergency framework for rationing of blood for massively bleeding patients during a red phase of a blood shortage – Synopsis for Triage Team – October 11, 2012

**Patient Triage Record** – Emergency Disposition of Blood during Red Phase Blood Shortage

<table>
<thead>
<tr>
<th>Patient Tracking Number</th>
<th>Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reason for Massive hemorrhage</td>
<td>Date of Triage</td>
</tr>
<tr>
<td>Predicted to need &gt;10 units in the next 24 hours</td>
<td>Age</td>
</tr>
<tr>
<td>☐ Yes ☐ No (if no refer to standard tracking tool)</td>
<td>Hemoglobin</td>
</tr>
<tr>
<td>Has patient received product in the previous 24 h?</td>
<td>Platelet</td>
</tr>
<tr>
<td>☐ Yes ☐ No</td>
<td>INR</td>
</tr>
<tr>
<td>If yes, list products:</td>
<td>PTT</td>
</tr>
<tr>
<td>Meets any exclusion criteria</td>
<td>Fibrinogen</td>
</tr>
<tr>
<td>☐ Yes ☐ No</td>
<td>PTT</td>
</tr>
<tr>
<td>If yes, which one(s)?</td>
<td>INR</td>
</tr>
<tr>
<td>Meets any specific exclusion criteria</td>
<td>pH</td>
</tr>
<tr>
<td>☐ Yes ☐ No</td>
<td>Lactate</td>
</tr>
<tr>
<td>If yes, which one(s)?</td>
<td>Temp</td>
</tr>
<tr>
<td>Decision made to administer blood?</td>
<td>Date/Time</td>
</tr>
<tr>
<td>☐ Yes ☐ No</td>
<td></td>
</tr>
<tr>
<td>Patient outcome at 24 hours</td>
<td>Date/Time</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments by Triage Team</td>
<td>Comments regarding patient and family concerns</td>
</tr>
<tr>
<td>Triage Documentation completed by</td>
<td>Signature</td>
</tr>
<tr>
<td>Triage Officer Name</td>
<td>Signature</td>
</tr>
<tr>
<td>Follow-up</td>
<td></td>
</tr>
<tr>
<td>Patient Outcome at Discharge</td>
<td>Patient Outcome at 6 months</td>
</tr>
</tbody>
</table>
### Appendix D

**Synopsis for Triage Team**

- **Emergency framework for rationing of blood for massively bleeding patients during a red phase of a blood shortage – Synopsis for Triage Team – October 11, 2012**

#### Glasgow Coma Scale


The chart from the above reference has been modified to reflect a more recent version of the scale:

<table>
<thead>
<tr>
<th>Eye opening</th>
<th>Spontaneous</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>To speech</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>To pain</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Best verbal response</th>
<th>Orientated</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Confused</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Inappropriate</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Incomprehensible</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Best motor response</th>
<th>Obeying</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Localising</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Withdraws</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Flexing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Extending</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Rockall Score


<table>
<thead>
<tr>
<th>Rockall Score</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>&lt; 60 years</td>
<td>60 – 79 years</td>
<td>≥ 80 years</td>
<td></td>
</tr>
<tr>
<td>Shock</td>
<td>‘No shock’, systolic BP &gt; 100, pulse &lt; 100</td>
<td>‘Tachycardia’, systolic BP &gt; 100, pulse &gt; 100</td>
<td>‘Hypotension’, Systolic BP &lt; 100</td>
<td></td>
</tr>
<tr>
<td>Comorbidity</td>
<td>No major comorbidity</td>
<td>Cardiac failure, ischaemic heart disease, any major comorbidity</td>
<td>Renal failure, liver failure, disseminated malignancy</td>
<td></td>
</tr>
<tr>
<td>Diagnosis</td>
<td>Mallory-Weiss tear, no lesion identified and no SRH</td>
<td>All other diagnoses</td>
<td>Malignancy of upper GI tract</td>
<td></td>
</tr>
<tr>
<td>Major SRH</td>
<td>None of dark spot only</td>
<td>Blood in upper GI tract, adherent clot</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Synopsis for Triage Team

- 15 - Emergency framework for rationing of blood for massively bleeding patients during a red phase of a blood shortage – Synopsis for Triage Team – October 11, 2012

Child Pugh Score

<table>
<thead>
<tr>
<th>Clinical and Biochemical Measurements</th>
<th>Points Scored for Increasing Abnormality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encephalopathy (grade)</td>
<td>none</td>
</tr>
<tr>
<td>Ascites</td>
<td>Absent</td>
</tr>
<tr>
<td>Bilirubin (mg per 100 ml)</td>
<td>1 - 2</td>
</tr>
<tr>
<td>Albumin (g per 100 ml)</td>
<td>3.5</td>
</tr>
<tr>
<td>Prothrombin time (sec. prolonged)</td>
<td>1 - 4</td>
</tr>
<tr>
<td>For primary biliary cirrhosis – Bilirubin (mg per 100 ml)</td>
<td>1 - 4</td>
</tr>
</tbody>
</table>

MELD Score

Formula: 3.8*\log_{10}(\text{bilirubin [mg/dL]}) + 11.2*\log_{10}(\text{INR}) + 9.6*\log_{10}(\text{creatinine [mg/dL]}) + 6.4*\text{etiology: 0 if cholestatic or alcoholic, 1 otherwise}.

An online calculator is available: [http://www.mayoclinic.org/meld/mayomodel6.html](http://www.mayoclinic.org/meld/mayomodel6.html)

SOFA Score

<table>
<thead>
<tr>
<th>SOFA Score</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>PaO2/FIO2</td>
<td>&gt;400</td>
<td>&lt;400</td>
<td>&gt;300</td>
<td>&lt;200 and mechanically ventilated</td>
<td>&lt;100 and mechanically ventilated</td>
</tr>
<tr>
<td>Platelet Count</td>
<td>&gt;150</td>
<td>&lt;150</td>
<td>&lt;100</td>
<td>&lt;50</td>
<td>&lt;20</td>
</tr>
<tr>
<td>Bilirubin umol/L</td>
<td>&lt;20</td>
<td>20-32</td>
<td>33-101</td>
<td>102-204</td>
<td>&gt;204</td>
</tr>
<tr>
<td>Hypotension (ug/kg/min)</td>
<td>None</td>
<td>MAP&lt;70</td>
<td>Dopamine ≤5 or dobutamine (any dose)</td>
<td>Dopamine &gt;5 or epinephrine ≤0.1 or norepinephrine &lt;0.1</td>
<td>Dopamine &gt;15 or epinephrine &gt;0.1 or norepinephrine &gt;0.1</td>
</tr>
<tr>
<td>Glasgow Coma Scale</td>
<td>15</td>
<td>13-14</td>
<td>10-12</td>
<td>6-9</td>
<td>&lt;6</td>
</tr>
<tr>
<td>Creatinine (umol/L)</td>
<td>&lt;110</td>
<td>110-170</td>
<td>171-299</td>
<td>300-440 or &lt;500 mL/day</td>
<td>&gt;440 or &lt;200 mL/day</td>
</tr>
</tbody>
</table>
## Appendix E

### Revision Table


<table>
<thead>
<tr>
<th>Section</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Global changes</strong></td>
<td>Formatting as required to be compliant with Ontario Ministry of Health and Long-Term Care (MOHLTC) for creating accessible Word documents (Sep 15, 2010)</td>
</tr>
<tr>
<td><strong>Title Change</strong></td>
<td>The word ‘product’ was removed from the title to clarify that this plan is intended to provide guidance primarily during blood component shortages. However the same principles in this plan can also be applied to blood product shortages.</td>
</tr>
</tbody>
</table>
| **New Sections** | Executive Summary - summarizes sequence of events triggered by a declaration and origins of blood shortage plan development as well as roles of various stakeholders  
List of Abbreviations  
Definitions  
Background - Replaces introduction section. Describes the origin of the Ontario plan for management of blood shortages  
Purpose and Scope - describes purpose and contents of Ontario blood shortage plan and accompanying Toolkit for hospitals  
Assumptions - assumptions made in the development of the Ontario plan  
Key Stakeholders – describes the key stakeholders involved in planning and responding to a shortage situation  
Communication Process  
Tertiary Triage – added to the Hospital Emergency Blood Management Plan section |
| **Phases**       | Actions in each phase are broken down by role and responsibilities of Key Stakeholders  
Green Phase – added hospitals should ensure good blood utilization and inventory management; removed definition of inventory levels by phase  
Amber Phase – added hospitals should reduce stock inventory and optimize blood utilization; added role of MOHLTC to clarify provincial response  
Red Phase – added hospitals should reduce stock inventory; importance of documenting decisions; and recommendation to implement triage office/team |
| **Appendices added** | Ontario Emergency Blood Management Committee Terms of Reference  
National Emergency Blood Management Committee Terms of Reference  
Example of Canadian Blood Services’ blood shortage notification to hospitals  
Table listing major revisions to Version 1 of Ontario plan  
Emergency Framework – Synopsis for Triage Teams |