This purpose of this Plan is to maximize the effectiveness of a Provincial response to any crisis that affects the adequacy of the blood supply in New Brunswick.

New Brunswick Blood Shortage Management Plan Version 3.1

New Brunswick Department of Health

Revised: June 2017

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1.0 DEFINITIONS /ACRONYMS

ADRD	Average daily red cell demand
BEMP	Blood Emergency Management Plan
BSAG	Blood System Advisory Group
Blood Component	A therapeutic component of blood intended for transfusion (e.g. red cells, cryoprecipitate, platelets, plasma) that can be prepared using the equipment and techniques available in a blood centre. **Note:** Such equipment and techniques can include centrifugation, filtration, or freezing as per CSA Z902
Blood product	Any therapeutic product derived from human blood or plasma and produced by a manufacturing process that pools multiple units (usually more than 12). **Note:** Examples of blood products are human serum albumin, immunoglobulin preparations, and coagulation products (factors VIII and IX, fibrinogen, Anti-thrombin III, etc.) as per CSA Z902
TMC	Transfusion Medicine Committee
TM	Transfusion Medicine
CBS	Canadian Blood Services
DoH	Department of Health
Emergent	An occurrence coming into view, existence or notice, often unexpectedly, with the potential to impact blood component inventories thus demands prompt action. E.g. pandemic flu, labour disruption
AFFP	Apheresed Fresh Frozen Plasma
FP	Frozen Plasma
HTC	Hospital Transfusion Committee
MOH	Ministry of Health
NAC	National Advisory Committee on Blood and Blood Products
NEBMC	National Emergency Blood Management Committee
PLTs	Platelets, includes apheresis platelets and Buffy coat platelets
P/T	Provincial/ Territorial
P/T EBMC	Provincial/ Territorial Emergency Blood Management Committee
PEBMC	Provincial Emergency Blood Management Committee
RHA	Regional Health Authority
RHA EBMC	Regional Health Authority Emergency Blood Management Committee
Urgent	Needing immediate action to contain the impact on blood component /blood product inventories

ACKNOWLEDGEMENTS

The following New Brunswick Blood Shortage Management Plan (hereafter called the NB Blood Shortage Plan) was prepared in collaboration with the New Brunswick Blood System Advisory Group. The New Brunswick Department of Health would like to acknowledge the Nova Scotia Provincial Blood Coordinating Program for granting permission to use The Nova Scotia Provincial Blood Contingency Plan as a reference document for New Brunswick. The New Brunswick Department of Health would also like to acknowledge the Newfoundland/Labrador Provincial Emergency Blood Management Plan and the Ontario Regional Blood Coordinating Network, which also shared information and planning tools with New Brunswick. The development of the NB Blood Shortage Plan is based on the principles as put forward in the National Plan for the Management of Shortages of Labile Blood Components (hereafter called *The Plan*) which was developed by the National Advisory Committee (NAC) on Blood and Blood Products and Canadian Blood Services (CBS).

EXECUTIVE SUMMARY

Blood components and blood products are a vital resource supporting health care in Canada. In a system of voluntary donation, these resources are often limited in quantity, and are susceptible to external threats such as labour disruptions, public health threats, disasters/emergency measures and extremes of weather. The NB Blood Shortage Plan has been developed by the New Brunswick Department of Health in collaboration with the New Brunswick Blood System Advisory Group (BSAG).

The NB Blood Shortage Plan is an evolving document, and will be amended as necessary. The NB Blood Shortage Plan will be modified based on ongoing recommendations by the New Brunswick Department of Health and the BSAG. In addition, the NB Blood Shortage Plan will require endorsement by the Regional Health Authorities.

The purpose of the NB Blood Shortage Plan is to maximize the effectiveness of a provincial response to a crisis that impacts the blood supply in New Brunswick. The NB Blood Shortage Plan will do so by providing a framework to ensure a consistent, coordinated response within the province. The NB Blood Shortage Plan is provincial in scope, and is intended to provide guidance to New Brunswick's Regional Health Authorities (RHAs) to enable the respective facilities to develop their Blood Emergency Management Plan. The NB Blood Shortage Plan delineates roles and responsibilities for all the relevant blood-system stakeholders and induces the activation of national and provincial networks that will respond to a crisis based on blood product/blood component inventory levels.

The NB Blood Shortage Plan has been developed as a stand-alone plan and has also been developed to be operationally congruent with The National Plan for the Management of Shortages of Labile Blood Components (hereafter known as *The Plan)*. In addition to a number of planning assumptions, the ethical aspects of the NB Blood Shortage Plan have been developed based on *The Plan*.

Executive Summary – *continued*

The NB Blood Shortage Plan addresses four phases of inventory management, which are Green, Amber, Red and Recovery, defined according to *The Plan*. The NB Blood Shortage Plan may be invoked by the New Brunswick Provincial Emergency Blood Management Committee (PEBMC) based on anticipated, real, or perceived threats to the provincial blood component/blood product supply. Fundamental activities during each of the four Phases include optimal utilization and inventory management.

Green Phase implies that normal blood component inventory levels exist and supply generally meets demand. This phase includes a broad range of inventory levels ranging from an ideal inventory to shortages that occur periodically and can be managed with existing CBS and hospital/RHA actions.

- **Green Phase Advisory** implies that CBS inventory levels are low with respect to a particular blood component and that all hospitals need to determine their inventories and the likelihood of crossing into Amber or Red Phase.

Amber Phase implies that the national blood inventory is insufficient to continue with routine transfusion practices and hospitals/RHAs will be required to implement specific measures, as outlined in this document, in order to reduce blood usage.

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

Recovery Phase implies that blood component inventories have begun to increase and are expected to be maintained at a level which would enable the return from Red to Amber and subsequently to Green Phase.

Upon full recovery, the PEBMC will conduct a retrospective review to assess lessons learned and revise the NB Blood Shortage Plan as necessary. In addition the RHAs will conduct their own retrospective review to assess and revise their Blood Emergency Management Plans as necessary.

2.0 INTRODUCTION

2.1 Authority

The Plan requested that the Department of Health develop a provincial blood component shortage contingency to provide a standardized framework to be followed by all facilities. Department of Health (DoH) in collaboration with the Blood System Advisory Group (BSAG) have developed the NB Blood Shortage Plan which is an evolving document, and which will be amended as necessary to ensure it is congruence to *The Plan* , with other related governmental planning documents, and with blood component standards and technology.

The NB Blood Shortage Plan will be modified based on ongoing recommendations by the New Brunswick DoH and the BSAG and endorsed by the DoH and the Regional Health Authorities (RHAs).

2.0 INTRODUCTION – *continued*

2.2 Purpose

The purpose of the NB Blood Shortage Plan is to maximize the effectiveness of a provincial response to a crisis that impacts the blood supply in New Brunswick, and the NB Blood Shortage Plan will do so by providing a framework to ensure a consistent, coordinated response within the province. The NB Blood Shortage Plan provides tools to assist all levels of the health care sector in appropriate decision-making. As a provincial framework, the NB Blood Shortage Plan induces the activation of provincial networks that will respond to a crisis based on national and provincial inventory levels and threats to this inventory.

2.3 Scope and Key Stakeholders

The NB Blood Shortage Plan is provincial in scope and is intended to provide guidance to the RHAs to enable the respective facilities to develop their Blood Emergency Management Plans (BEMPs). The NB Blood Shortage Plan also delineates roles and responsibilities for all the relevant blood-system stakeholders: the BSAG, the Provincial Emergency Blood Management Committee (PEBMC), the DoH, RHAs, and Canadian Blood Services (CBS).

2.4 Audiences

The NB Blood Shortage Plan is primarily intended for all relevant blood-system stakeholders as indicated above. The executive summary is intended to provide an overview/a frame of reference so as to enable officials in public health and other government sectors that do not have a strong knowledge of the blood system to understand the structure, format and operational components of the NB Blood Shortage Plan.

2.5 Document Structure

This document is structured to provide a practical framework. The NB Blood Shortage Plan begins with an Executive Summary, followed by an Introduction and Background. The Planning Assumptions and Principles inherent in the NB Blood Shortage Plan are discussed. The Overview presents the structure of the NB Blood Shortage Plan, the roles and responsibilities of stakeholders and outlines the actions for activation. Trigger thresholds and action items are also identified during each Phase of the NB Blood Shortage Plan.

3.0 BACKGROUND

Blood components are a vital resource supporting health care in Canada. In a system of voluntary donation, these resources are often limited in quantity. The potential for shortages of blood components due to such occurrences as delays in product release, public health threats, disasters/emergency measures and extremes of weather is a reality that must be proactively addressed through NB Blood Shortage Plan.

Previous experience with blood inventory shortages demonstrates that merely restricting orders for blood components is not an effective or comprehensive approach to managing shortages in the blood supply. The development of the NB Blood Shortage Plan ensures a consistent and coordinated response for the appropriate utilization of scarce blood components and is critical to ensuring appropriate transfusion support for patients in New Brunswick.

3.0. BACKGROUND – *continued*

In 2010 The NB Blood Shortage Plan was developed to function as a stand-alone plan in the event that the blood supply is impacted and also as a companion to *The Plan* and The Emergency framework for rationing of blood for massively bleeding patients during a red phase of a blood shortage. (www.nacblood.ca).

The Plan was revised in January 2012 and October 2015 .The NB Blood Shortage Plan was reviewed and revised in 2014 (V 2.0) and 2016 (V 3.0) to align with the changes and incorporate recommendations from simulation exercises held in NB.

3.1 Initiation of the NB Blood Shortage Management Plan

The Plan established that each jurisdiction develop a Provincial Emergency Blood Management Committee (PEBMC).The DoH supported the establishment of the PEBMC as a mechanism to review emergent threats to the blood supply. The PEBMC is comprised of members from Canadian Blood Service (CBS), Blood System Advisory Group (BSAG), Regional Health Authorities (RHAs) and Department of Health (DoH).

The NB Blood Shortage Plan will evolve as documents and tools are developed to support it and its' users.

4.0 ETHICS, PLANNING PRINCIPLES AND ASSUMPTIONS

The NB Blood Shortage Plan is based on a number of principles. Foremost, it is based on the planning principle that shortages in blood inventories may be avoided or mitigated by appropriately reducing usage. It is also crucial to its success to have a plan which affords the opportunity for risk assessment and flexibility to utilize blood products, as appropriate, when an issue or crisis arises.

In a shortage, the basic premise is that there are more people who will require blood, than there is blood available to treat them. Consequently some people will be denied blood transfusion.

When evaluating the decision to transfuse, two questions need to be considered:

1. How much blood will this patient require?
2. How likely is this patient to survive with a good overall prognosis?

On a spectrum of need, based on the principle of "greatest good for greatest number", the patient who requires the least amount of blood to provide a good outcome should be treated first. The patient, for whom large volumes of blood may or may not result in a good outcome, should not be treated as a priority, in order to conserve for the patients who will have a better prognosis. In a true shortage, if transfusion is not necessary to maintain life, it can and should, be deferred.

This would seem to contradict the blood use tables found on page 26 & 27 of this document, but in actual fact, those criteria suppose that there is a limited supply with recovery timelines determinable. In those types of crises, decisions will likely be made along the lines indicated in the table. It is when the situation becomes direr that the truly difficult decisions will need to be made and will require a paradigm shift in the process of providing blood products for the treatment and care of patients.

To that end, each RHA must develop strategies for massive use of blood and blood products as well as protocols to determine when transfusion support therapy should be discontinued. It is expected that each RHA will work together to ensure that the model adopted is implemented in each facility in a timely fashion.

4.0 ETHICS, PLANNING PRINCIPLES AND ASSUMPTIONS – *continued*

In October 2012, The National Advisory Committee on Blood Products developed an *Emergency Framework for rationing of blood for massively bleeding patients during a red phase of a blood shortage*. 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.

The end goals of the NB Blood Shortage Plan are:

- A consistent and coordinated response during a blood shortage
- An effective communication plan to minimize delay in implementing the appropriate response to a blood shortage in NB
- Compliance with CSA Z902 Blood and Blood Components, CSA Z15189 Medical Laboratories - Particular Requirements for Quality and Competence, and the AABB's' Standards for Blood Banks and Transfusion Services.
- Minimizing the mortality and morbidity rates that will result from a lack of blood products for use.

The inherent terminal values associated with the end goals are stewardship, evidence, and trust/fidelity. These terminal values shape both the procedural and the substantive values.

The NB Blood Shortage Plan utilizes CBS national inventory levels as a planning principle; the nature and extent of a blood supply shortage will be determined by CBS in consultation with other pertinent parties. CBS national inventories are also comprised of manufactured blood products (e.g., IVIG, Albumin) and these are not reflected in phasing matrices. However, when shortages of manufactured blood products occur, the concepts and structure of the NB Shortage Plan will be followed. Shortages may only affect specific blood groups /components/ products, or may affect all blood groups /components/ products. Thus, the (potential) extent of the impact to inventories will determine the NB Blood Shortage Plan phase initiated. Uniform guidelines of transfusion practice in New Brunswick should be developed and adhered to. The presence of guidelines will reduce the potential for each physician to have to design and defend individual strategies for individual cases and will ensure consistency in practice, which is pivotal for transparent and equitable treatment of New Brunswick patients.

There are three key planning assumptions embedded in the NB Blood Shortage Plan:

1) RHAs have established Blood Emergency Management Groups that shall produce Blood Emergency Management Plans (BEMPs) that encompass all four phases contained in the NB Blood Shortage Plan

2) RHAs are implementing actions to optimize appropriate transfusion through utilization activities in compliance with the CSA Z902 Blood and Blood Components Standards and

3) That upon declaration of an Amber or Red Phase by the PEBMC, all RHAs shall invoke their BEMPs simultaneously, thereby ensuring a timely and coordinated response.

Blood conservation strategies should be implemented at the hospital/RHA level as a means to mitigate a more serious blood component inventory situation. Blood conservation strategies should include any or all of the following: erythropoiesis-stimulating agents, thrombomimetics, intravenous/oral iron, antifibrinolytics, intraoperative cell salvage, interventional radiologic procedures, autologous blood donation for elective surgical procedures, rapid access to endoscopy, and non-invasive surgeries.

5.0 PLAN STUCTURE - OVERVIEW

5.1 Phases of Inventory Availability

The NB Blood Shortage Plan is composed of the following four phases, which are defined according to CBS national inventory levels. Each phase is designed to be independent of the next, as threats or potential threats will have varying impacts on blood components inventories. It is conceivable to invoke a Red Phase directly from a Green Phase dependent on the real or perceived impact to blood components inventories.

5.1.1 **Green Phase** implies that normal blood component inventory levels exist and supply generally meets demand. This phase includes a broad range of inventory levels ranging from an ideal inventory to temporary shortages that occur periodically and can be managed with existing CBS /RHA/hospital actions.

- **Green Advisory Phase** implies that CBS inventory levels are low with respect to a particular blood component and that all hospitals need to determine their inventories and the likelihood of crossing into Amber or Red Phase.

5.1.2 **Amber Phase** implies that blood inventory levels are insufficient to continue with routine transfusion practice and hospitals/RHAs will be required to implement specific measures to reduce blood usage.

5.1.3 ***Red Phase** implies that blood inventory levels are insufficient to ensure that patients with non-elective indications for transfusion will receive the required transfusion(s). Red Phase also implies a continuation of the measures begun in the Amber phase and the understanding that some emergent situations with poor outcomes may be denied blood.

5.1.4 **Recovery Phase** implies that blood component inventories have begun to increase and are expected to be maintained at a level which would enable the return from Red to Amber and subsequently to Green Phase, or from Amber to Green Phase.

***Note:** The National Advisory Committee on Blood and Blood Products developed an Emergency Framework for rationing of blood for massively bleeding patients during a red phase of a blood shortage. 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.

The NB Blood Shortage Simulation Exercise held in February 2016 tested the decision making process during a red phase shortage. The importance of a triage team, or targeted group, who will triage, was highlighted during this simulation. The need for the team to have a lead, designated person to document decisions and be educated to the Emergency Framework document prior to a Red phase shortage were recommendations resulting from the simulation exercise. Having a Trauma Nurse and Trauma Physician Lead on the Team would also be beneficial.

5.1 PHASES OF INVENTORY AVAILABILITY- *continued*

A synopsis of this emergency framework document is attached as Appendix D. The full document is included as a supplement to *The Plan* and is available at www.nacblood.ca. A comprehensive section on the Triage Committee and its membership, responsibilities and implications can be found in this document

NATIONAL INVENTORY LEVELS TO DEFINE PHASES

Approximate inventory levels held at Canadian Blood Services that could lead to the declaration of Amber or Red Phase if sustained are shown in the following tables.The numbers below are acurate as of October 11, 2016. Updates to these numbers are provided at http://www.nacblood.ca/resources/shortages-plan

RBC Inventory Level	*CBS Days On Hand*	*CBS # Units on Hand*
Green Phase (minimal decrease to optimal)	>72 hours	**>8,322**
Amber Phase (serious)	48 – 72 hours	**5,548 – 8,322**
Red Phase (critical)	< 48 hours	**<5,548**

RBC Inventory Level	*CBS Days On Hand*	*CBS # Units on Hand*	
Green Phase (minimal decrease to optimal)	>72 hours	**O pos: >3,135**	**O neg: >924**
		A pos: >2,442	**A neg: >576**
		B pos: >762	**B neg: >198**
		AB pos: >207	**AB neg: >78**
Amber Phase (serious)	48 – 72 hours	**O pos: 2,090-3,135**	**O neg: 616-924**
		A pos: 1,628-2,442	**A neg: 384-576**
		B pos: 508-762	**B neg: 132-198**
		AB pos: 138-207	**AB neg: 52-78**
Red Phase (critical)	< 48 hours	**O pos: <2,090**	**O neg: <616**
		A pos: <1,628	**A neg: <362**
		B pos: <508	**B neg: <132**
		AB pos: <138	**AB neg: <52**

NATIONAL INVENTORY LEVELS TO DEFINE PHASES – *continued*

*Platelet Inventory Level**	*% of National Requirement*	*CBS # of Units*
Green Phase (minimal decrease to optimal)	80 – 100% of daily national requirement	**>259**
Amber Phase (serious)	25 – 79% of daily national requirement, recovery NOT expected within 12-24 hours	**81-259**
Red Phase (critical)	< 25% of daily national requirement, recovery NOT expected within 12-24 hours	**<81**

*As platelets only have a shelf life of 5 days and CBS routinely does not have more than a 1.5 day inventory on hand at any time, platelet inventory levels are expressed as a percentage of the daily national requirement rather than "days on hand".

Frozen Plasma Inventory Level (Groups 0, A and B only)	*CBS Days On Hand*	*CBS # Units on Hand*
Green Phase (minimal decrease to optimal)	>7 days	**>1,954**
Amber Phase (serious)	3 – 7 days	**837-1,954**
Red Phase (critical)	< 3 days	**<837**

Group AB Frozen Plasma Inventory Level	*CBS Days On Hand*	*CBS # Units on Hand*
Green Phase (minimal decrease to optimal)	>14 days on hand	**>634**
Amber Phase (serious)	6 – 14 days	**272-634**
Red Phase (critical)	< 6 days	**<272**

NATIONAL INVENTORY LEVELS TO DEFINE PHASES – *continued*

Cryoprecipitate Inventory Level	*CBS Days On Hand*	*CBS # Units on Hand*
Green Phase (minimal decrease to optimal)	>14 days on hand	**>2,742**
Amber Phase (serious)	6 – 14 days	**1,175-2,742**
Red Phase (critical)	< 6 days	**<1,175**

CBS inventory levels represent only a part of the total inventory within the blood system, as a large part (and likely the majority) of the total inventory at any one time is already in storage in hospital/RHA blood banks. The information above reflects the "days on hand" inventory cut-offs for CBS which should be reflected in hospital/RHA ordering practices for the same phase.

The national TOTAL blood product inventories are derived from hospitals entering their inventory using the CBS Blood Component and Product Disposition System. Until all hospitals can readily share disposition data by blood group, the inventory index calculations will be limited to totals only.

An enhanced indicator, such as inventory index, which refers to the red cell demand base index, is needed to monitor regional, provincial and national red cell supply and demand.

In consultation with the NEBMC and the P/T Emergency committees, CBS will be allocating actual blood inventory on the basis of the inventory indices and average daily red cell demand (ADRD) to allow "leveling" of the inventory indices across the country in times of blood component restraint

5.2 Key Stakeholder Roles and Responsibilities

This section outlines the roles and responsibilities of the following parties as they relate to blood components/blood products only.

5.2.1 Department of Health (DoH)

The DoH holds overall responsibility for the performance of the health system, while RHAs are responsible for the delivery of health services and optimal utilization of blood products. Representatives from the DoH have been designated as members of PEBMC. The DoH's representatives on PEBMC are responsible for communicating PEBMC's recommendations to the BSAG, the RHAs, EBMC and the DoH itself. The responsibility for the maintenance of the NB Blood Shortage Plan rests with the DoH as well, in collaboration with the PEBMC to monitor the level of compliance within hospitals and RHA's.

5.2.2 Canadian Blood Services (CBS)

CBS, as the blood operator, is responsible for the recruitment of donors, collections, testing, production and distribution of blood components and distribution of plasma protein products. CBS manages the national blood inventory (except for Québec) and has detailed its' operational

5.2 KEY STAKEHOLDER ROLES AND RESPONSIBILITIES- *continued*

framework to deal with blood shortages in *The Plan* which describes its' communication processes and Business Continuity Plan.

With respect to The Plan, following consultation with NEBMC and consideration of its advice, CBS has the ultimate responsibility for declaring various phases based on shortages and recovery from shortages as well as determining inventory distribution. CBS follows its' internal processes to communicate issues with or affecting inventory levels.

5.2.3 New Brunswick Blood System Advisory Group (BSAG)

BSAG advises the Department of Health (DoH) on matters related to the development and operation of a safe, effective and affordable blood system.

With respect to the NB Blood Shortage Plan, the BSAG will be advised by the PEBMC of urgent or emergent threat(s) to the provincial blood supply.

BSAG members shall be standing members on their respective RHA EBMC

5.3 Emergency Blood Management Committees

This section describes the blood emergency management committees at the national, provincial/territorial and hospital/RHA levels that will be necessary to facilitate information flow and decision making.

The activities of these various committees are meant to be collaborative but in the setting of local or regional shortages, there may not be activation of higher level committees such as the National Emergency Blood Management Committee. This does not preclude the activities of the Provincial or Hospital Committees from occurring to manage the local shortage situation.

5.3.1 The NEBMC

The National Emergency Blood Management Committee (NEBMC) ensures the implementation of *The Plan*.

Their mandate and membership is described in the NEBMC Terms of Reference, derived from *The Plan* as well as Appendix B of this document.
The membership and terms of reference of the NEBMC were developed taking into consideration the need for all regions to share information and have input into decision-making, while acknowledging the challenge of convening a large committee in a timely manner.

Prior to the convening of the entire NEBMC, a small group may discuss the inventory situation and bring forward a number of strategies and next steps for consideration and discussion by the NEBMC, should it be determined that the NEBMC be convened. The members of this small group will include:

- CBS Chief Supply Chain Officer
- NAC Chair
- CBS Chief Medical & Scientific Officer
- NAC BSWG Chair
- Lead Province Ministry of Health Official

During a Provincial Blood shortage communication will occur either via CBS/PT with the Chair of the NEBMC as well as the chair of the Blood Shortage Working Group under the auspices of NAC. No further action would be required from NEBMC's perspective as it is a Provincial Shortage.

5.3 EMERGENCY BLOOD MANAGEMENT COMMITTEES- *continued*

5.3.2 The Provincial Emergency Blood Management Committee (PEBMC)

PEBMC is the equivalent to what is described in *The Plan* as the Provincial/Territorial Emergency Blood Management Committee (P/TEMBC).
It is the responsibility of the Ministries of Health of each province or territory to establish a Provincial (or Territorial) Emergency Blood Management Committee (P/TEBMC) and its terms of reference. The Terms of Reference and recommended membership for PEBMC are located in Appendix A.

New Brunswick hospitals receive the majority of their blood inventory from Dartmouth, therefore in the event of a blood shortage the chair of the PEBMC or a designate will be the liaison between the Nova Scotia Blood Emergency Response Team (BERT) and the PEBMC.

5.3.3 The RHA Emergency Blood Management Committee (RHA EBMC)

The RHA EBMC is equivalent to what is described in *The Plan* as Hospital/RHA Emergency Blood Management Committee (H/REMBC).

Each RHA has a responsibility to establish an Emergency Blood Management Committee (EBMC). A recommended membership, as per *The Plan* with amendment specific for New Brunswick membership, is located in Appendix C. The EBMC's mandate is to implement and maintain a Blood Emergency Management Plan (BEMP) encompassing all four phases of the NB Blood Shortage Plan.

5.3.4 The Zone/Facility EBMC,

When established, may have the Transfusion committee members as the membership**.**

6.0 OPERATION OF THE PLAN

The operation of the NB Blood Shortage Plan is a responsibility shared between the Department of Health, the PEBMC, the BSAG and the RHA EBMCs. The cornerstone of the NB Blood Shortage Plan is built on a series of sequential operational procedures, as determined by the roles and responsibilities of key stakeholders and the extent of the shortage. These sequential operational procedures include:

1) Identification, communication and response of the issue
2) Recovery from the issue.

6.1 Identification, Communication and Response of the Issue

Identification of an issue may occur at a national, provincial or local (facility specific) level, resulting in activation of the NB Blood Shortage Plan in conjunction with *The Plan*. National activation may be the result of a provincial event and provincial activation may be the result of a local event. Any event that impacts inventory should be reported to CBS who assesses overall inventory impact.
There are three potential scenarios that would trigger the activation of the NB Blood Shortage Plan:

I. **Local:** A minor, temporary shortage associated with normal fluctuations in blood component/blood product inventories. CBS would communicate this to the lead contact within each RHA and facility, for example, the laboratory blood transfusion service

II. **Provincial:** A real, perceived or anticipated moderate or severe threat; such as severe weather, major disaster, public health emergency, which could have implications to the blood supply could be identified by the DoH and/or the CBS. In such a circumstance CBS would inform the Chair of NAC and discuss the necessity to convene NEBMC. Should the NEBMC be convened, it will be determined as to whether PEBMCs must be convened.

III. **National:** The possibility of a significant blood component shortage is identified within CBS. The chair of NAC is contacted by CBS or a provincial Ministry via the Lead Province regarding the possibility of a significant blood component shortage. During the NEBMC teleconference a response plan will be developed. The P/T Representative and NAC member of the NEBMC are also members of New Brunswick's PEBMC which provide the communication link between the national and provincial committees.

6.2 Recovery from the Blood Issue

I. **Local:** The RHAs and facilities in conjunction with CBS assess, communicate and implement response(s) until CBS notifies them of a complete recovery.

II. **Provincial:** PEBMC in conjunction with CBS assess, communicate and implement response(s) until CBS notifies them of a complete recovery.

III. **National:** NEBMC, which includes representation from CBS, assess, communicate and implements response(s) until CBS notifies them of a complete recovery.

7.0 SPECIFIC PARTICIPANT ACTIONS

7.1 GREEN PHASE

Green Phase implies that normal blood component inventory levels exist and supply generally meets demand. This phase includes a broad range of inventory levels ranging from an ideal inventory to temporary shortages that occur periodically and can be managed with existing Canadian Blood Services/hospital actions.

During the Green Phase, actions will focus on ensuring that plans to address potential shortages are developed and that blood components and blood products are used safely and appropriately, as described below.

7.1.1 Canadian Blood Services

- Confirm support for *The Plan* including the policy, legal, and ethical implications of the plan.
- Develop a comprehensive disaster preparedness plan

7.1 GREEN PHASE -*7.1.1 Canadian Blood Services– continued*

- Manage the inventory nationally, including daily monitoring of the inventory and distribution of inventory across the country as appropriate.
- Ensure that mechanisms are in place for rapid sharing of inventory between Canadian Blood Services and Héma-Québec. Recognizing that this sharing will remain subject to availability.
- Develop internal strategies to respond to periodic requirements to increase blood donations.
- Coordinate the functioning of internal emergency response committees with the NEBMC activities/recommendations
- Participate in mock drills to evaluate internal and external responses to blood shortages.
- Provide leadership for the use of the Blood Component Disposition Report to monitor component outdates and to implement measures to decrease such outdates.
- Assist hospitals/RHA in determining their green phase (i.e. optimal), amber phase (i.e. serious), and red phase (i.e. critical) inventory levels.
- Assist hospitals/RHAs and liaise with provincial partners in "leveling" inventory indices across the country by facilitating sharing of best practices.
- Develop communication strategies and plans to inform hospitals, Health Canada, and provincial/territorial Ministries of Health of changes in inventory levels, including both decreases below optimum levels and recovery to normal levels.
- Work with P/T Ministries and hospitals/RHA to establish systems for transparent sharing of information pertaining to hospital/RHA blood component inventories and blood component utilization, including sharing of information among hospitals/RHA and with CBS.
- Participate in the Communications Sub-Committee.

7.1.2 Province of New Brunswick

- Confirm support for both the NB Shortages Plan and *The Plan* including the policy, legal, and ethical implications of both plans.
- Identify and empower a government program/agency or committee charged with the development of provincial/territorial blood component shortage management plans.
- Establish Provincial/Territorial Blood Emergency Management Committees.
- Actively encourage all hospitals/RHA to follow the Plan's guidelines and monitor their compliance in doing so, particularly with respect to the following activities:
  - Development of transfusion committees as per the CSA standard Z902-04 Section 4.4
  - Implementation of transfusion guidelines
  - Participation in blood component disposition and inventory reporting to Canadian Blood Services
  - Establishment of systems for transparent sharing of information pertaining to hospital/RHA blood component inventories and blood component utilization, including sharing of information among hospitals/RHA and with Canadian Blood Services
  - Development of blood redistribution programs and other methods/programs to minimize blood component outdating
  - Implementation of H/REBMC.
  - Determine a process as well as, determination of the responsible party/hospital for reporting daily inventory, by blood group and component within a specific daily timeframe, to CBS during an Advisory Green Phase, Red Phase and/or Recovery Phase, as requested.

7.1 GREEN PHASE-*7.1.2 Province of New Brunswick-continued*

- Liaise with CBS to facilitate "leveling" of inventory indices across the country by sharing of and/or incorporating best practices
- Support CBS inventory reporting by ABO type.
- Ensure communication plans are developed and implemented in Hospitals/RHAs.
- Determine the "red line" inventory in rural sites. Need to consider how "holding inventory sites" that are for safety / emergency stock which has variable demand would be managed in green advisory, amber and red phase scenarios. Considerations include the risk of holding units for "just in case" scenarios versus refusing blood to a patient in another facility because no units are available there.

7.1.3 Hospitals/RHA

- Confirm support for both the NB Shortages Plan and *The Plan* including the policy, legal, and ethical implications of both plans
- Ensure that there is a functional Hospital/RHA Transfusion Committee (HTC). (In most hospitals/RHA the HTC will oversee the activities listed below.)
- Develop and implement transfusion guidelines. These should address both appropriate indications and appropriate dosing of blood components and should include guidelines for situations when particular components are not available, e.g. CMV seronegative RBCs/platelets, ABO/Rh identical components, etc.
- Monitor adherence to transfusion guidelines, including the performance of transfusion audits.
- Exercise scrutiny of orders that are outside hospital/RHA guidelines.
- Ensure application of available blood conservation methodologies.
- Develop and implement a strategy for perioperative blood inventory management**,** either a maximum blood ordering schedule (MBOS) or an alternate strategy**.**
- Develop processes for inventory management including guidelines for efficient inventory utilization and acceptable levels of outdating blood components.
- Ensure that inventory index is optimized by implementing or sharing best practices from other facilities.
- Participate in Blood Component Disposition by ABO versus totals only for reporting to Canadian Blood Services.
- In collaboration with Canadian Blood Services and provincial partners, determine the hospital/RHA inventory levels or green (optimal), amber (serious) and red (critical) levels, by blood group and component.
- Develop a mechanism for the redistribution of product between hospitals/RHA.
- Establish a Hospital/RHA Emergency Blood Management Committee with a mandate to develop, implement and maintain a blood shortage plan that encompass all four phases of this Plan.
- Develop a documentation process for release or non-release of blood components in Amber or Red Phase.

7.1 GREEN PHASE -*7.1.3 Hospitals/RHA- continued*

- Notify Canadian Blood Services of situations that could result in increased demand or reduced availability of blood components
- Have ongoing discussions regarding risk management strategies so that the front line medical staffs are aware.
- Ensure that all hospitals have their average daily red cell demand, inventory indices and minimal inventory level calculations and that this has been communicated to the front line medical staff.
- Determine a process as well as determination of the responsible party/hospital for reporting daily inventory, by blood group and component within a specific timeframe, to CBS during an advisory green phase, amber phase, red phase and/or recovery phase, as requested

7.2 AMBER PHASE

Amber Phase implies that blood inventory levels are insufficient to continue with routine transfusion practice and hospitals/RHA will be required to implement specific measures to reduce blood usage

During the Amber Phase, the following actions will be taken

7.2.1 Canadian Blood Services

- Implement the communications plan as per discussions with NEBMC and PEBMC.
- Activate internal plans appropriate for Amber Phase.
- In collaboration with the NEBMC and PEBMC decrease blood component issues to hospitals to levels determined appropriate to the situation
- Provide PTs with the percentage capture of inventory reporting.
- Provide PTs with the provincial ADRD and inventory index
- Monitor hospital/RHA inventory requests to evaluate compliance with the Plan and P/TEBMCs recommendations and report possible instances of non-adherence to the appropriate P/T Blood Representative(s).
- Provide any other appropriate/necessary information to provinces/territories to assist them to coordinate their communication to Hospitals/RHA and the public.

7.2.2 Province of New Brunswick

- Activate appropriate Internal Plans for Amber Phase- local or national.
- In collaboration with Canadian Blood Services, implement communications plan appropriate to the existing situation.
- Notify senior management of hospitals/RHA of the requirement to defer elective medical and surgical procedures which have a greater than 10% chance of requiring the affected blood components.

  - Elective procedures are considered to be all procedures which are not urgent or emergency procedures. Urgent procedures are those for which a patient is likely to have major morbidity if procedure is not performed within the next one to 28 days. Emergency procedures are those that need to be performed within 24 hours in order to prevent the patient's death (or major morbidity such as paralysis).
  - (Medical procedures may be as simple as the administration of a blood component)
- Monitor hospital compliance with and implementation of the actions required in Amber Phase. This can be assessed during regular debriefs with involved parties; CBS, CBS NB Hospital Customer Liaison and P/TEBMCs.

7.2.3 Hospitals/RHA

- Activate internal plans appropriate for Amber Phase-local or national
- Convene the Hospital/RHA Emergency Blood Management Committee to monitor and control utilization of the affected blood components.
- Implement communications plans as set forth from CBS, NAC chair, BSWG chair and P/TEBMCs.
- Adjust inventory levels of affected components to levels consistent with those previously determined appropriate for Amber Phase.
- Request inventory from CBS based on Amber Phase requirements.
- Defer/cancel elective surgical procedures requiring the affected blood components.
  - Elective surgical procedures are considered to be all surgical procedures which are not urgent or emergency procedures. Urgent surgical 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 surgical procedures are those that need to be performed within 24 hours in order to prevent the patient's death (or major morbidity such as paralysis).
- Defer/cancel elective medical procedures requiring the affected blood components (Medical procedures also include administration of a blood component.).
- For RBC transfusions, follow guidelines for Amber Phase as outlined in Table 1
- For platelet transfusions, follow guidelines for Amber Phase as outlined in Table 2
- For frozen plasma and cryoprecipitate transfusions, ensure strict adherence to guidelines established in Green Phase. (The decrease in elective procedures should lead to a decrease in the use of these components.)
- Refer all requests for the affected blood components that do not fulfill pre-determined acceptance criteria to the Blood Bank Medical Director or designate prior to issuing product.
- Implement the documentation process for release or non-release of blood components. See the NB Blood Shortages Plan- Toolkit for sample forms. Appendix G.
- Report inventory (frequency determined by NEBMC), by blood group and component within a specific timeframe, to CBS

7.3 RED PHASE

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

Red Phase implies all actions begun in Amber Phase (assuming that the Red Phase is preceded by an Amber Phase) will be continued. In particular, ongoing communications as described in the communications plan (Section 9.0.) remain vitally important. In addition, the following actions will be taken.

7.3.1 Canadian Blood Services

- Implement the communications plan as per discussions with NEBMC and PEBMC.
- Activate internal plans appropriate for Red Phase.
- Decrease blood component issues to hospitals to levels determined appropriate to the situation and in consultation with the NEBMC and the PEMBC.
- Monitor hospital/RHA inventory requests to evaluate compliance and the P/TEBMCs recommendations and report possible instances of non-adherence to the appropriate P/T Blood Representative(s).
- Collect data on hospital use of blood and total (i.e. CBS plus hospital) blood inventories on daily basis and provide it to provinces/territories.
- Provide any other appropriate/necessary information to provinces/territories to assist them to coordinate their communications to hospitals/RHA and the public.

7.3.2. Province of New Brunswick

- Activate appropriate Internal Plans for Red Phase- local or national
- Implement the communications plan as per discussions with NEBMC and PEBMCs.
- Advise the NB Trauma Program and Ambulance NB of the situation.
- Notify senior management of hospitals/RHA of the requirement to defer all medical and surgical procedures requiring the affected blood components with the exception of emergency procedures.
    - Emergency surgical procedures are those that need to be performed within 24 hours in order to prevent the patient's death (or major morbidity such as paralysis)
    - Emergency medical procedures are those in which a transfusion of the affected blood component would be required within 24 hours in order to prevent the patient's death (or major morbidity)
- Monitor hospital compliance with and implementation of the actions required in Red Phase during teleconferencing debriefs.

7.3.3 Hospitals/RHA

- Activate internal plans appropriate for Red Phase- local or national.
- Convene the Hospital/RHA Emergency Blood Management Committee to monitor and control utilization of the affected blood components.

7.3 RED PHASE -*7.3.3 Hospitals/RHA- continued*

- Implement pre-established communications plans.
- Adjust inventory levels of affected components to levels consistent with those previously determined appropriate for Red Phase.
- Request inventory from CBS based on Red Phase requirements
- Defer/cancel all medical/surgical procedures requiring the affected components with the exception of emergency surgical procedures.
    - Emergency surgical procedures are those that need to be performed within 24 hours in order to prevent the patient's death (or major morbidity such as paralysis).
- To the extent possible, defer haematopoietic stem cell transplantation and chemotherapy treatments and any other medical treatments requiring ongoing need for the affected blood components.
- For RBC transfusions, follow guidelines for Red Phase as outlined in Table 1.
- For platelet transfusions, follow guidelines for Red Phase as outlined in Table 2.
- For frozen plasma and cryoprecipitate transfusions, ensure strict adherence to guidelines established in Green Phase. (The restriction of procedures to emergency procedures only procedures should lead to a decrease in the use of these components.)
- Refer all requests for the affected blood components that do not fulfill pre-determined acceptance criteria to the Blood Bank Medical Director or designate prior to issuing product.
- Implement the documentation process for release or non-release of blood components
- Collect data on total blood inventory on a daily basis by blood group and component and provide it to the province and territories as necessary
- Collect data on hospital utilization of blood as necessary.
- Report inventory (frequency determined by NEBMC), by blood group and component within a specific timeframe, to CBS. Provide daily inventory numbers to CBS/responsible party

7.4 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 resumption of transfusion activities

The Recovery Phase implies that blood inventory levels have begun to increase and are expected to be maintained at a level that would facilitate resumption of transfusion activities through a graded return from Red to Amber and subsequently to Green, or from Amber to Green Phase. However, the recovery of hospital transfusion activity and restoration of optimal inventories must be cautious and gradual to ensure that the overall blood inventory levels – or those of a particular blood product- do not cause return to shortage levels.

It is this phase that has the highest capacity for conflicting messaging and it is critical that all participants in the blood contingency plan act consistently and cautiously as recommended by the PEBMC/CBS. Even if the phase is upgraded to Green – this does not imply business as usual for front line operations. Many elective medical and surgical transfusions will be permitted to proceed but may be limited in terms of the number of procedures or units allotted per procedure. There is a significant chance that a rapid increase

7.4 RECOVERY PHASE - - *continued*

in demand of blood products as a response to the backlog of postponed transfusion related procedures will result in a return to the previous shortage stage or worse.

7.4.1 Canadian Blood Services

- Maintain continued contact with Provincial and Regional / Hospital EBMCs to facilitate restoration of internal activity.
- Maintain standard communications with consistent key messages at all levels/stages of the recovery – containing key messages recommended by the CBS/PEBMC.
- Slowly adjust inventory levels / fill rates of affected components to levels consistent with those previously determined as appropriate for effective recovery
- Slowly or partially replace emergency stocks to sites that had inventory redistributed
- Participate in debriefing activities within 4-6 weeks following the event to review and revise internal policies and procedures of CBS as well as the various National, Provincial and Hospital plans as a process of continued improvement

7.4.2 Province of New Brunswick

- Maintain continued contact with CBS and Regional / Hospital EBMCs to direct restoration of internal activity.
- Maintain standard communications with consistent key messages at all levels/stages of the recovery – containing key messages recommended by the NEBMC.
- Participate in debriefing activities within 4-6 weeks following the event to review and revise Provincial and Hospital plans as a process of continued improvement

7.4.3 Hospitals/RHA

- Maintain continued contact with CBS, Provincial and Regional / Hospital EBMCs to direct restoration of internal activity.
- Maintain standard communications with consistent key messages at all levels/stages of the recovery – containing key messages recommended by the NEBMC.
- Slowly adjust inventory levels of affected components to levels consistent with those previously determined as appropriate for effective recovery.
- Slowly reinstitute medical /surgical procedures / transfusions on the basis of urgency on advice provided by the responsible EBMC
    - It will be critical to review documentation of patients who did not previously meet criteria for release of blood products to determine those patients of higher urgency for transfusion
    - Continue to refer all requests for affected blood components that do not meet predetermined criteria to the Transfusion Medicine medical director or designate before issue of product
    - Continue to document the release or non-release of blood products
- Slowly or partially replace emergency stocks to sites that had inventory redistributed
- Provide daily inventory numbers to CBS
- Participate in debriefing activities within 4-6 weeks following the event to review and revise internal policies and Hospital Plans as a process of continued improvement

During or shortly after the recovery phase, it is critical to debrief, review and revise the various internal policies and procedures as well as the Provincial and Hospital Plans as a process of continued

7.4 RECOVERY PHASE - - *continued*

improvement. There should be ongoing implementation of improved utilization of blood component strategies that have resulted as part of the blood shortage to help prevent future shortages.

7.5 Determination of the Allocation of Blood Components from CBS to Hospitals/RHA in Amber and Red Phases

The way in which decisions for the allocation of blood components from CBS to hospitals/RHA in Amber or Red Phase will be made cannot be determined definitely *a priori*. However the following 4 possible methods could be considered and, in an actual shortage situation, it may be that a combination of these 3 methods would be used.

1. The first and ideal scenario would be that, in Green Phase, every hospital/RHA would optimize its blood use according to the Green Phase recommended activities and would have predetermined the amount of blood required to support the restricted activities permitted in Amber and Red Phases. In that ideal scenario CBS would then issue to each hospital/RHA the amount of blood requested and these amounts would correspond to the restricted Amber or Red Phase activities. This Plan recommends that hospitals/RHA served by CBS begin to strive now to reach this goal.

However, in practice, all hospitals/RHA may not have completed this work at the time of a blood shortage. In that case, actual blood component allocations during times of severe shortage will be determined by CBS in consultation with the NEBMC and where appropriate (e.g. in the case of a regional disaster) selected P/TEBMC, using either one or a combination of the following methods

2. Blood component issues from CBS could be determined using the percentage of blood normally going to each province - if the whole country was equally effected by the situation then the percentages would be what they currently are; if provinces were not affected equally by the underlying situation then it could be decided that blood allocation would not be the same as under normal conditions. However this method has the potential disadvantage of making equal cuts to provinces whose hospitals/RHA have strived to optimize blood use in Green Phase as those that have not made any such efforts; this would have to be taken into account as far as possible.

3. Blood component issues from CBS could be decreased to an equivalent number of units per capita in all provinces. This method of allocation would have to be adjusted to consider the number of emergency procedures likely to performed in more populous provinces versus those with smaller populations and less intensive medical or surgical procedures. However it would have the advantage of not further penalizing provinces where extensive efforts had been made to optimize blood utilization

4. Blood component issues from CBS could be 'levelled' by the inventory index across the country. This method of allocation is most suitable when red cell demand is the most reliable indicator for monitoring and assessment of the blood system based on the best available disposition data and participation rates for reporting.

For any of the latter 3 scenarios, each province would direct CBS as to the precise distribution of components in its provinces (e.g. an equivalent decrease to all hospitals or relatively smaller or larger decreases to selected institutions such as hospitals in remote areas or hospitals performing relatively more emergency procedures who might receive relatively smaller decreases). Each hospital/RHA

7.5 Determination of the Allocation of Blood Components from CBS to Hospitals/RHA in Amber and Red Phases-*continued*

would determine the distribution of components to individual patients or categories of patients within its institution(s), while respecting the transfusion guidelines described above and presented in Tables 1 and 2.

The "red line" inventory in rural sites-will need to have some risk management discussions at the hospital and provincial committee levels. Need to consider how "holding inventory sites: that are for safety/ emergency stock which has variable demand would be managed in green advisory, amber and red phase scenarios.

In addition, as described above, it will be important for each Ministry, in conjunction with CBS, to monitor the compliance of hospitals/RHA with the Plan and for the Ministry to intervene, if necessary, in situations where non-compliance is identified

8.0 DECISION MAKING

8.1 Triage Teams

It is recommended in *The Plan*, and demonstrated in NB simulation exercises, that if disaster triage should be utilized, a multidisciplinary triage committee should be set up in each institution to assist with decision-making re: to prioritize and allocate blood components. A committee will ensure that all departments/services are treated fairly and that the decision-making process is transparent.

To assist with disaster triage, the NAC in conjunction with a working group of experts has developed the Emergency Framework for Rationing of Blood for Massively Bleeding Patients during a Red Phase of a blood Shortage (Emergency Framework), which is included as a supplement to *The Plan*. For detailed guidance the complete document is available on www.nacblood.ca and an Emergency Framework-Synopsis for Triage Team can be found as Appendix D. This document also outlines the membership and responsibilities of the Triage Team. All Triage Team members should be educated to this document.

If the situation warrants the Hospital/RHA Health Emergency Management (HEM) representative can assist with emergency transportation of blood and blood products.

It is recommended in *The Plan* that uniform guidelines of transfusion practice are developed and adhered to. Such guidelines will reduce the potential for each physician to have to design and defend strategies for individual cases and will ensure consistency in practice and standardized decision making. In addition to the forms found in the Emergency Framework Document the ones found in the Toolkit (Appendix G) may serve as a record to review the decision making processes thus allowing a retrospective review of the process for adequacy and efficacy.

8.2 Transfusion decision making guidelines for Green, Amber and Red phase

Guidelines for the use of RBC and Platelet transfusions in children and adults in shortage situations based on the National Plan for the Management of Shortages of Labile Blood Components can be found in Table 1 and 2

TABLE 1: GUIDELINE FOR THE USE OF RBC TRANSFUSIONS IN CHILDREN AND ADULTS IN SHORTAGE SITUATIONS

Green Phase	*Amber Phase*	*Red Phase*
Major Hemorrhage	**Major Hemorrhage**	**Major Hemorrhage**
Follow your hospital/RHA guidelines	Follow your hospital/RHA guidelines	Follow your hospital/RHA guidelines Follow triage/rationing allocation framework if instructed by NEBMC [1]
Surgery/Obstetrics	**Surgery/Obstetrics**	**Surgery/Obstetrics**
Follow your hospital/RHA guidelines	Urgent [2] and emergency [3] surgery in consultation with H/RBEMC. Peri/post-partum hemorrhage. For all situations, the minimal number of units to stabilize patient should be used.	Emergency situations in consultation with H/RBEMC Follow triage/rationing allocation framework if instructed by NEBMC [1]
Non-Surgical Anemias [4]	**Non-Surgical Anemias [4]**	**Non-Surgical Anemias [4]**
Follow your hospital/RHA guidelines	All requests for RBC transfusion in patients with a Hb level > 70 g/L must be reviewed by designated medical personnel. For patients with hypoproliferative anemias, single unit transfusion should be provided if significant symptoms associated with anemia but reassessment of severity of symptoms after each unit is required.	All requests for RBC transfusion in patients with a Hb level > 60 g/L must be reviewed by designated medical personnel. For patients with hypoproliferative anemias, single unit transfusion should be provided if significant symptoms associated with anemia but reassessment of severity of symptoms after each unit is required.

[1] These guidelines are available on http://www.nacblood.ca/resources/shortages-plan/index.html
[2] Urgent surgery – patient likely to have major morbidity if surgery not performed within the next one to 28 days
[3] Emergency surgery – patient likely to die (have major morbidity) with 24 hours without surgery
[4] Includes anemia following trauma, surgery and delivery

Notes

- Given the relatively small volumes/numbers of units required, transfusions for neonates (i.e. patients less than 4 months of age) and intrauterine transfusions would be given according to usual guidelines (i.e. would not be restricted even in times of shortage). However measures to share units among neonates or between neonates and larger patients should be used to the extent possible.
- In Red or Amber phases, the hospital/RHA blood bank director, in consultation with the patient's physician, may consider the use of a blood component which has passed its Health Canada approved storage period. In such cases the justification for the use of an outdated product must be documented by the responsible physician in the patient's chart, and every effort must be made to obtain, specific patient consent.

TABLE 2: GUIDELINE FOR THE USE OF PLATELET TRANSFUSIONS IN CHILDREN AND ADULTS IN SHORTAGE SITUATIONS

Green Phase	Amber Phase	Red Phase
Major Hemorrhage		
Immune thrombocytopenia and life- or limb-threatening bleeding maintain PC >10 x 10^9/L. For head trauma or CNS bleeding maintain a PC >100 x 10^9/L Other significant bleeding, or acute promyelocytic leukemia at acute presentation, maintain a PC >50 x 10^9/L.	For head trauma or CNS bleeding maintain a PC > 80 x 10^9/L.	Same as Amber phase
Invasive procedures/ surgery		
For non-surgical invasive procedures maintain a PC >20 x 10^9/L (central venous catheter insertion, paracentesis, thoracentesis) For lumbar maintain a PC>50 x 10^9/L For CNS surgery maintain a PC>100 x 10^9/L	Urgent [2] and emergency [3] surgery in consultation with H/RBEMC In presence of active bleeding or surgical procedure maintain a PC > 50 x 10^9/L or if CNS trauma/surgery a PC > 80 x 10^9/L For non-surgical invasive procedures (other than bone marrow aspiration or biopsy) maintain a PC > 10 x 10^9/L with image guidance. For lumbar puncture, maintain a PC >20 x 10^9/L	Emergency surgery in consultation with H/RBEMC All requests for platelet transfusion must be reviewed by designated medical personnel
Bone marrow failure/ hematopoietic stem cell transplantation/ chemotherapy		
Adhere to a maximum threshold PC of 10 x 10^9/L for prophylactic platelet transfusions.	Adhere to a maximum threshold PC of 10 X 10^9/L for prophylactic platelet transfusions; consider lowering this threshold for routine prophylactic transfusions to 5 x 10^9/L Transfuse patients undergoing autologous stem cell transplant only if symptoms of bleeding. All requests for a platelet transfusion in non-bleeding patients with a PC >10 x 10^9/L must be reviewed by designated medical personnel. Split PC doses and use half doses in non-bleeding patients if necessary.	Eliminate all prophylactic transfusions. All requests for platelet transfusions in non-bleeding patients must be reviewed by designated medical personnel

Notes

- PC = Platelet Count
- Given the relatively small volumes/numbers of units required, transfusions for neonates (i.e. patients less than 4months of age) and intrauterine transfusions would be given according to usual guidelines (i.e. would not be restricted even in times of shortage). However measures to share units among neonates or between neonates and larger patients should be used to the extent possible
- Follow the same guidelines for cancelling/performing surgery as described in Table 1
- Split doses of platelets (apheresis or buffy coat) should be considered if available. Health Canada advises that splitting doses of platelets is considered aliquotting and is not a processing activity which requires registration. CBS has validated the process of aliquotting smaller volumes of platelets for pediatric platelet transfusions
- Lower PC thresholds for platelet transfusions for surgical bleeding or special procedures (such as ECMO) should be used
- In Red or Amber phases, the hospital/RHA blood bank director, in consultation with the patient's physician, may consider the use of a blood component which has passed its Health Canada approved storage period. In such cases the justification for the use of an outdated product must be documented by the responsible physician in the patient's chart, and every effort must be made to obtain, specific patient consent.

9.0 COMMUNICATION

Effective and timely communication is critical in attempts to mitigate a national blood shortage, while in a shortage situation and afterwards during recovery efforts. The principal organizations involved in managing a Provincial blood shortage are CBS, the Chair of NAC, the P/T Ministries of Health and hospitals/Regional Health Authorities. Each organization is independent, has its own communication infrastructure, procedures and complexities. However different they may be, a common course of action is required by these partners to promote alignment, consistency and collaboration during a crisis or potential crisis.

The NB Shortage Plan is congruent with:

- The Communication Guiding Principles set forth in *The Plan*
- The Overarching Communication Objectives set forth in *The Plan*

Appendix E – Communications Plan of *The Plan* (www.nacblood.ca) provides the overarching and general principles and key messages, and outlines a high level communications flow. This document provides direction on our communication needs throughout each phase.

9.1 Provincial Communication Plan

9.1.1 Key Audiences:

Key Audiences may vary from phase to phase, and each organization will have its own specific key internal stakeholders to address. It is assumed for the purpose of this plan, that CBS, the PT BLC, NAC, NEBMC, PEBMC and Hospital /RHA EBMCs are all mutual key audiences

The following is a list of other shared key audiences that are likely to be impacted or concerned about a blood Shortage

Internal Audience

- Staff and physicians directly involved in blood banking
- Ministry of Health Senior Staff
- Hospital/RHA Senior Management (in particular Medicine, Critical Care and Surgery portfolios
- NB Trauma Program
- Ambulance NB
- Risk Management
- Ethics offices
- Other staff, physicians and volunteers

External Audiences

- Referring physicians and primary caregivers
- High use patient groups (e.g. auto-immune diseases, sickle cell, thalassemia, haemophilia, etc.)
- Other patient groups/associations
- Other stakeholder groups (e.g. CBS/PT BLC, Regional Liaison Committees, Canadian/ Provincial Medical Association, Canadian Nurses Association)
- Emergency Medical /Paramedics services
- Individual patients requiring blood and /or their loved ones
- Government and Elected Officials
- Health Canada and Public Health Agency of Canada
- News Media
- General Public

9.0 COMMUNICATION - 9.1 PROVINCIAL COMMUNICATION PLAN- *continued*

9.1.2 Recommended Spokespersons

Appropriate spokespersons will need to be identified at each phase of the shortage, based on location and escalation. The following potential spokespersons may be called upon to speak on behalf of CBS:

National:

- Chair, CBS National Emergency Response Team (Chief Supply Chain Officer or alternate)
- Chair NAC / NEBMC)
- Lead Province Ministry of Health (or other PT representative)

Provincial:

- P/T Ministry of Health Communication Specialist(designate)
- Provincial NAC Member

Regional:

- CBS Medical Directors, Public Affairs (or delegate)
- Hospital/RHA spokesperson

Stakeholders/Partners:

- Depending on the length and severity of the shortage, it may be appropriate to identify stakeholders or partners who may be available and/or willing to publicly support the contingency plan and to appeal to Canadians for donations.

9.1.3 Tactics

Communication tactics will vary from phase to phase and use a variety of existing internal and external communications channels that each partner has at its disposal. The nucleus for all communications must be a common set of key messages that have been developed and endorsed by CBS and the NEBMC.

9.2 Communication Phase

Once the NB Blood Shortage Plan is activated, the communication phase of the Provincial Emergency Blood Management Committee (PEBMC) must also be initiated. The purpose of the communication phase is to ensure all participants are aware of the role they play in the management of the blood shortage. The nucleus for all communications must be a common set of messages and each party will speak to their area of responsibility and expertise.

The PEBMC will be given approximately 8 hours (exact time to be determined by the NEBMC) to cascade information, after which CBS will begin outreach to external stakeholder groups, donors and the media (if appropriate)

A high priority email message will be sent from the PT representative to the Provincial Emergency Blood Management Committee (PEBMC) members to alert them to the details of the teleconference which will be held to determine the appropriate provincial response to the shortage. A meeting invitation will also be sent in Outlook to all PEBMC members and their alternates. In the event of a Red Phase the NB Trauma Program as well as Ambulance NB will also be notified.

9.0 COMMUNICATION - 9.2 COMMUNICATION PHASE-*continued*

A high priority email will be sent from the PT representative to the senior management teams of the Department of Health, Horizon Health Network, and Vitalité Health Network to alert them that the National Blood Shortage plan has been put into effect and that the PEBMC will meet and determine the recommended actions. In the event of an Amber Phase the NB Trauma Program and Ambulance NB will also be advised. Following this meeting, a brief update will be provided and then further updates will come through the appropriate assigned committee members.

The Provincial Territorial Blood Liaison, or alternate, will set up a conference call according to New Brunswick Department of Health procedures (sample follows) to allow dissemination of the information from the NEBMC meeting.

At the teleconference, actions to be taken regarding the phases and messages will be coordinated and distribution of approved, agreed upon messages determined. Decisions will be made based on the following steps.

Step 1- Impact Analysis:

- Information from NEBMC will be communicated to the PEBMC who will determine the provincial course of action.
- The Health Emergency Management committee member will assess the situation to determine if or when the Emergency Operations Committee will convene
- Message templates from CBS will be reviewed and supportive messaging from NB will be added
- The Communication sub-committee will disseminate as directed by the PEMBC.

Step 2 - Needs Analysis:

- Based on information from both CBS and the RHAs, determine a suitable provincial response to the NEBMC Advisory.

Step 3 – Resources Analysis:

- Determine what resources, if any, will need to be repositioned to mitigate the impact of the Advisory

Step 4 - Plan:

- Tailor the response plan as determined by the preceding analyses.

The frequency of PEBMC meetings during the shortage will be determined by the PEBMC chair, and will depend on the nature of the shortage. At the very least, the PEBMC will meet going into and out of each phase of this plan, and weekly in between.

9.0 COMMUNICATION -9.2 Communication Phase-*continued*

The following chart summarizes the difference between operational and informational communications. Once the Regional Emergency Blood Management Committees have been provided with the provincial approach to the shortage, the focus shifts to operational activities for which the regional EBMCs are responsible.

<table>
<tr><th colspan="2">Operational Communications</th><th colspan="2">Informational Communications</th></tr>
<tr><td colspan="2">CBS contacts NEBMC Chair</td><td colspan="2">CBS contacts NEBMC Chair</td></tr>
<tr><td colspan="2">It should be noted that in situations of anticipated shortage, it is likely that CBS would already, while still in Green Phase, have communicated with hospitals and P/T Departments of Health about impending shortages prior to actually activating this communication network.</td><td colspan="2">It should be noted that in situations of anticipated shortage, it is likely that CBS would already, while still in Green Phase, have communicated with hospitals and P/T Departments of Health about impending shortages prior to actually activating this communication network.</td></tr>
<tr><td colspan="2">Chair convenes NEBMC (NB NAC & P/T Rep sits on NEBMC)
Decisions made:
Determination of Phase
Level of inventory for distribution
Timing and mode of communication with hospitals
Frequency of future meetings of NEBMC</td><td colspan="2">Chair convenes NEBMC (NB NAC & P/T Rep sits on NEBMC)
Decisions made:
Communications subcommittee activated
Consistent coordinated messaging approach to internal audiences and the public</td></tr>
<tr><td>PEBMC convened:
(Members of REBMC sit on this committee)
Decisions made:
Activation of the NB Plan
Recommend reduction in blood usage as predetermined by the phase chart</td><td>Ideally initial communication of Amber/ Red alerts will come from CBS through the DH P/T liaison
CBS Regional offices will notify, with the appropriate inventory message,
Hospital Blood Banks
Designated key personnel (TBD)</td><td>PEBMC convened:
Decisions made:
Activation of the NB Plan
Communication appropriate to REMBC re: NEBMC decisions
Consistent coordinated messaging approach to internal audiences and the public</td><td>Ideally initial communication of Amber/Red alerts will come from CBS through the DH P/T liaison
CBS Communication Subcommittee will notify, with consistent messages
Designated key personnel (TBD)</td></tr>
<tr><td colspan="2">REBMC Convened
Regional /Facility Plans activated
Front line Blood Bank personnel may have to communicate with physicians in emergent situations based on operational requirements</td><td colspan="2">REBMC Convened
Regional /Facility Plans activated
Consistent coordinated messaging approach to internal audiences and the public.</td></tr>
</table>

9.3 PEBMC Communication Subcommittee:

The Provincial Emergency Blood Management Committee resolved to appoint a Communication Sub-committee to facilitate effective communication between the stakeholders during a blood shortage. This committee will set guidelines for media access to information, monitor print/electronic media to manage rumour control; ensure there is an expert spokesperson available for validity and credibility and ensure bilingual capabilities.

The PEBMC in collaboration with the communication subcommittee will ensure that all messages delivered to New Brunswick stakeholders; (internal/hospital and external/public); are coordinated with the Canadian Blood Services (CBS) established messages; but delivered with supportive messaging from NB.

Membership of the PEBMC Communication subcommittee will consist of the:

1. NB P/T Blood Liaison
2. Communication Lead from NB Department of Health(DoH)
3. Communication Lead Horizon Health Network
4. Communication Lead Vitalité Health Network
5. CBS Communication Liaison –Regional Manager CBS Public Affairs

All communication from CBS will be filtered through the PT Blood Liaison and the DoH Communication Lead.

Roles of the members of this committee:

1. **NB P/T Blood Liaison**
   - P/T representatives will facilitate the dissemination and implementation of NEBMC recommendations within their respective ministries of health and to their P/TEBMC.
   - Ensure that all contact information is updated annually or when personnel changes are made.
   - Initiate teleconference calls during the shortage, as directed by the PEBMC chair
   - Initiate email correspondence during the shortage, as directed by the PEBMC chair
   - Facilitate the exchange of information between the PEBMC ,CBS and Hospital/RHAs

2. **Communication Lead for Department of Health**
   - Provide and update a list of all New Brunswick media contacts
   - Ensure that PEBMC/REBMC knows that **operational** activities begin but that communication activities originate with the CBS Communication Department as channelled through the PEBMC communication subcommittee.
   - Issue statements/messages, as directed by the Chair of the PEBMC, in consideration of the NB DoH perspective.
   - Coordinate with CBS communication lead, all messages, regarding the blood shortage.
   - To prevent confusion, the Communication leads for DoH and the RHA's will jointly issue a message of cooperation and reassurance to the public**.**
   - Ensure the messages delivered to all stakeholders represent the NB perspective as determined by the PEBMC.

9.3 PEBMC Communication Subcommittee-*continued*

3. Communication Leads Horizon/Vitalité Health Networks

- Issue statements/messages as directed by the Regional Emergency Blood Management Committee (REBMC) in conjunction with the NB Department of Health perspective.

Decision critical information or action items will be disseminated to the following groups and then aligned with the Regional EBMC plans.

- Horizon Executive Management Team
- Vitalité Senior Management Team
- Executive Management Team - Department of Health

Information and action issues will return, via email or telephone, to the PEMBC Chair or designate for dissemination back to the NEBMC and CBS.

If the NB Health Emergency Operations Committee (EOC) is required to convene, meetings and messaging will be synchronized with those of the PEBMC.

As a part of the information exchange process PT Liaison, and NAC member will remain in contact with the NEBMC as required.

When the determination has been made to return to Green Phase, the communication subcommittee will prepare a detailed analysis of the effectiveness of the communication plan and recommendations for improvements and submit to the PEMBC for review.

9.4 Notification of Teleconference Procedure

1. An email detailing the teleconference particulars will be sent by the PT Blood Liaison within 60 minutes of the notification from the National Emergency Blood Management Committee meeting. “This email is to notify you that the National Emergency Blood Management Committee has activated the National Plan for Management of Labile Blood Components. We will convene by teleconference at [*date, time and call information]*. A meeting invitation in Outlook will be sent to all PEBMC members and their alternates. If the Advisory is a Red Phase, the NB Trauma Program and Ambulance NB will also be invited.

2. An email message will be sent by the PT Blood Liaison to Health Network and NB Senior/Executive Management Teams, and the Executive Management Team of the Department of Health to inform them that a blood shortage has been declared and the committee responsible for dealing with the issue has been convened. If the Advisory is an Amber Phase, the NB Trauma Program and Ambulance NB will also be advised. Once direction has been confirmed, a brief follow up will be sent to notify them that action has been taken and they will be kept informed via the senior management representatives on the Provincial Emergency Blood Management Committee.

9.4 NOTIFICATION OF TELECONFERENCE PROCEDURE- *continued*

3. In the event computer notification system is not active, the telephone fan out list will be used to alert individuals. Once the PEMBC members have been notified, the PT Liaison will telephone the:

a) Department of Health Executive Management Team

b) Horizon Executive Management Team

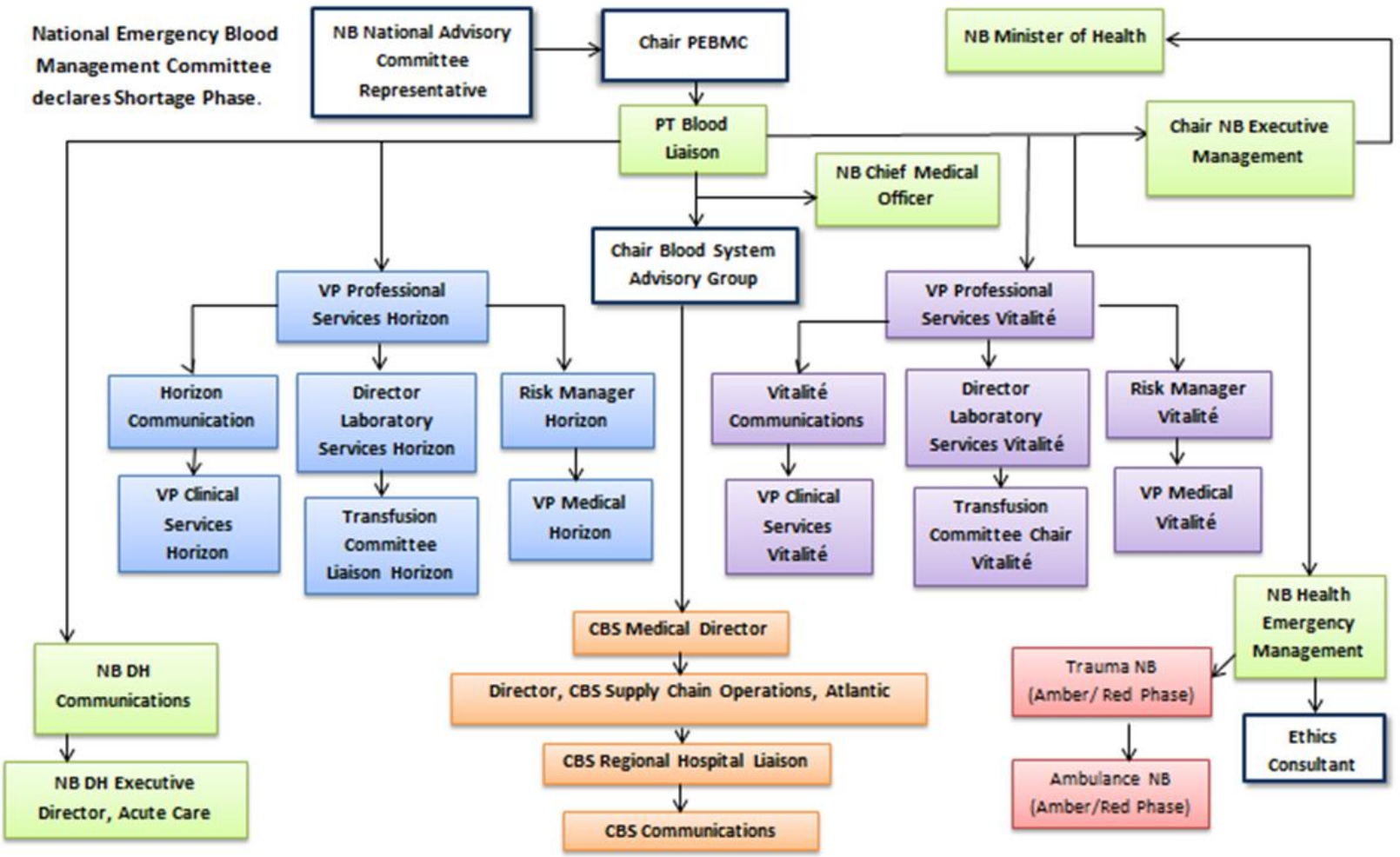
c) Vitalité Senior Management Team

4. If there is no acceptance of the invitation to the teleconference within 60 minutes, the follow up calls will be made to whomever has not responded; using the following generic message. "This call is to notify you that the National Emergency Blood Management Committee has activated the National Plan for Management of Labile Blood Components. We will convene by teleconference at [*date, time and call information]*. Details of teleconference have been sent by email."

5. For committee members who cannot be reached by telephone, and for whom it is possible, the following voice mail message will be left. "This is (*name*) from the Provincial Emergency Blood Management Committee. We are (*date and time*). This is to inform you that the National Plan for Management of Labile Blood Components has been activated. A conference call has been arranged for [*date, time and call information*]. You will also be receiving email instructions shortly regarding the teleconference."

All committee members will be contacted within 90 minutes from notification by the NEBMC

TELEPHONE COMMUNICATIONS FAN OUT LIST



Telephone Communications Fan out list

The purpose of this chart is to list the order of notification in the event the Provincial Emergency Blood Management Committee is convened. An email will be sent to all members. In the event computer notification system is not active this flow chart will be used to alert members. Committee members will determine a strategy and communicate it along the Regional Emergency Blood Management Committee chain which is part of the Regional Emergency plan strategy. Operational activities will be conducted along PEBMC guidelines by the Regional EBMC.

10.0 REVISION HISTORY

Date	Section	Changes
November 2013	Title	Title revised to The New Brunswick Blood Shortage Management Plan
November 2013	3.0	Inserted reference to The Emergency Framework for rationing of blood for massively bleeding patients during a red phase of a blood shortage Triage Document
November 2013	5.0	Combined the National Inventory Charts for RBC, Platelets, Plasma, Cryoprecipitate into one.
November 2013		Removed reference to Ongoing work through CBS supply chain to enhance production targets
November 2013	7.5	Inserted Recovery Phase Plans
November 2013	8.0	Updated Table 1 and 2 as per The National Plan. Added reference to the triage document
November 2013	9.0	Removed information that is currently in the National Communications Plan Appendix E of the National Plan and referenced the plan
November 2013	9.1	Removed the need to notify Ambulance NB
November 2013		Updated Telephone Communications Fan out list
November 2013	10.0	Inserted Revision History
November 2013	Appendix A	Inserted current terms of reference for PEBMC
November 2013	Appendix B	Inserted current terms of reference for NEBMC
November 2013	Appendix D	Appended the Synopsis for Triage Team
November 2013	Appendix G	Appended the New Brunswick Blood Shortage Plan Toolkit

10.0 REVISION HISTORY *(CONTINUED)*

June 2017		• Document revised to align with October 2015 revision of *The Plan* and incorporation of recommendations from the simulation exercises held in NB. • Inclusion of Green Phase Advisory • Term "Alert" changed to "Advisory" General formatting
June 2017	Section 5.0	• Added as a recommendation from the Feb 2016 simulation exercise the importance of a Triage Team, or targeted group, who will triage during a shortage and the need to be educated to the Emergency Framework Allocation document. • National Inventory levels used to define phase's charts updated to include DOH by blood group and current levels. • Included the concept of inventory index and average daily red cell demand (ADRD) • Included concept of convening EBMC for local shortage situations. • Added Chair of PEBMC or designate to be liaison with NS BERT
June 2017	7.0	• Updated participant actions through all phases to include ○ ADRD, Inventory indices and minimal inventory calculations ○ Processes for daily reporting of inventory ○ Enhanced communications ○ Risk management assessments for "holding" facilities ○ Include the need to determine "red line" inventory in rural sites.
June 2017	8.0	• Added that all triage team members should be educated to the Emergency Framework document • Table 1 and 2 (Guidelines for Red Cell and Platelet Transfusions) updated as per *The Plan* • Added the provision to have HEM aid with emergency transport.
June 2017	9.0	• Addition of NB Trauma Program and Ambulance NB as key audiences • Addition of 8 hr timeframe given to PEBMC to cascade information before CBS will reach out to external stakeholders. • Addition of a meeting invitation to be sent in Outlook to all PEBMC members and their alternates as well as the email notification. • In the event of a red phase the NB Trauma Team and ambulance NB will be notified.
June 2017	Appendices	• Terms of reference for PEBMC and NEBMC updated • FAX Notification Inventory Advisory Samples- updated. • NB Shortage Plan Toolkit- Revised.

APPENDIX: A PEBMC

Provincial Emergency Blood Management Committee (PEBMC)

Terms of reference

I. MANDATE:

The Provincial Emergency Blood Management Committee (PEBMC) represents provincial stakeholders of the New Brunswick blood supply. The PEBMC will respond to critical blood component shortages by developing recommendations and the respective documentation for the New Brunswick Department of Health (DH) and Regional Health Authorities (RHAs) in order to manage the impact of a blood component/blood product shortage to the New Brunswick health care system.

II. RESPONSIBILITIES:

- To maintain a response plan to manage the provincial/territorial impact of blood shortages;
- To work in accordance with the guidelines outlined in The National Plan for the Management of Shortages of Labile Blood Components *(The Plan*);
- To ensure the recommendations of the National Emergency Blood Management Committee (NEBMC) and resulting national decisions are appropriately communicated within its jurisdiction;
- To solicit feedback on implementation of The Plan from the Regional Emergency Blood Management Committees (REBMC's);
- To provide the conduit for communications/feedback between the NEBMC and REBMCs;
- To establish a process to monitor adherence to The Plan in times of blood shortages;
- To establish recommendations to manage non-adherence to The Plan in times of blood shortages.

III. MEMBERSHIP:

Membership to include a minimum of 9 people including the chair; this can be expanded as warranted. Equal representation from each Regional Health Authority would be sought. The committee will nominate its chair from within the group.

- Membership to include:
  - ◊ Provincial / Territorial (P/T) Blood Liaison
  - ◊ Provincial National Advisory Committee on Blood and Blood Products
  - ◊ (NAC) New Brunswick member
  - ◊ Representative of Chief Medical Officer of Health (CMOH)
  - ◊ Chair of the Blood System Advisory Group (BSAG)
  - ◊ Representation from the Communications Branch Department of Health
  - ◊ Representation from the Communications Branch from each RHA
  - ◊ Provincial Health Emergency Management representative
  - ◊ Vice President of Professional Services from each RHA
  - ◊ Vice President Medical/ Medical Director from each RHA
  - ◊ Transfusion Services Medical Director from each RHA
  - ◊ Laboratory Administrative Director from each RHA
  - ◊ Risk Manager from each RHA
  - ◊ Nursing Administration Representative from each RHA
  - ◊ Representative of respective Transfusion Medicine Committee from each RHA

APPENDIX A: PEBMC -*CONTINUED*

- ◊ Ethics Representative from each RHA
- ◊ Public Representative
- ◊ Other individuals as designated by the committee

Non-voting members

- ◊ Medical Director, Canadian Blood Services Director,
- ◊ CBS Supply Chain Operations, Atlantic
- ◊ Hospital Liaison Specialist , Canadian Blood Services
- ◊ Representation from the Communications Branch of CBS

IV. TERM:

The Chair shall hold office for a period of two years and then a nomination process will take place.

VI. ACCOUNTABILITY:

The PEBMC will develop recommendations and provide advice through the Executive Director, Acute Services, to the Assistant Deputy Minister of Health,; and the Regional Health Authorities to support a consistent and coordinated and justifiable response to critical blood shortages in New Brunswick. The PEBMC will work collaboratively as required with the NEBMC and the REBMCs.

VII. FREQUENCY:

PEBMC will hold regular meetings (minimum of 2, 1 face to face and 1 teleconference), emergency simulation meetings and meetings convened at the time of shortages. Face to face meetings will be held in Fredericton. Meetings may be conducted by video or teleconference.

VIII. QUORUM:

There will be no requirement for quorum; the decisions will be made by consensus. Consensus is defined as 80% (or greater) agreement of the members present. CBS members will be non-voting members. When consensus is reached, the Chair will share the decisions with the two REBMCs and the NEBMC. If consensus cannot be reached, the chair, or designate, of the PEMBC will seek advice from the NEBMC core committee.

IX. WORKING GROUPS AND SUBCOMMITTEES:

The PEBMC may create working groups and appoint members, as is required to carry out the work of the committee.

X. AMENDMENTS TO THE TERMS OF REFERENCE:

The Terms of Reference may be amended from time to time by the Executive Director, Acute Services, after consultation with the PEBMC.

XI. RESOURCES:

The Department of Health will provide dedicated staff support to ensure the PEBMC can carry out its work. These positions will work closely with the PEBMC.

APPENDIX B: NEBMC

The National Emergency Blood Management Committee (NEBMC)

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 as to whether or not to implement triage and rationing guidelines for massively bleeding patients in a red phase;
- 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) (P/TEBMC).

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 Supply Chain Director
  - Chief Medical & Scientific Director
  - Director, Supply Chain Operations Planning
  - Regional Director, Supply Chain Operations
  - Director, Medical Utilization
  - Medical Officer(s)
  - Director, Government Relations
  - Director Communications
- All NAC members
- All P/T Blood Representatives

APPENDIX B: NEBMC- *CONTINUED*

- Québec Ministry Representative (Ex-Officio)()
- Hema-Québec Representative (Ex-Officio)
- 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 that receives blood components.

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

Note: Potential Shortages could be brief situations where, while the overall inventory is in Green Phase, a particular blood type or component may be in limited supply and require CBS to issue a Green Advisory. Most of these situations will be brief, and CBS will communicate temporary inventory adjustments to hospitals through “business-as-usual” channels. Should the situation persist, prior to going to a public media appeal for donors, or to discussing the potential of an Amber phase, the CBS CSCO will consult with the NEBMC Chair to convene the NEBMC (within 24-48 hrs) to determine if there are any changes to hospital inventory management practice can assist with and/or improve the situation internally.

Regular meetings and emergency simulation meetings will be extremely important to ensure that the committee can effectively function in times of potential shortages or shortages and will be convened at the call of the Chair of the NEBMC, twice per year.

The first of these 2 meetings would be used for reviewing the Plan to maintain currency and the second would be used for a blood shortage exercise with the purposes of increasing NEBMC comfort in handling such events. The meetings should be scheduled two years out by Canadian Blood Services acting as the secretariat to the NEBMC.

A “job aid” has been developed by the Blood Shortage Working Group to support members during an actual blood shortage. This job aid summarizes the mandate of the NEBMC, describes the shortage phases and implications for transfusion, and provides a high-level summary of how communications would unfold once the NEBMC reached decisions. Refer to Appendix F

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 Supply Chain 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 Supply Chain Officer will make the decisions using knowledge of current and future CBS inventories and considering the advice received from the NEBMC.

APPENDIX B: NEBMC- *CONTINUED*

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.

EVALUATION

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.

APPENDIX C: H/REBMC

HOSPITAL /RHA EMERGENCY BLOOD MANAGEMENT COMMITTEE

Membership

H/REBMC membership will vary from facility to facility; the following outlines potential membership:

- Representative of hospital/RHA senior or executive management
- Medical Director, Blood Transfusion Service
- Head, Department of Internal Medicine (or in larger centres could be Heads of Critical Care Medicine and Haematology/Oncology)
- Head, Department of Surgery
- Head, Department of Anesthesiology
- Head, Emergency Department
- Head, Obstetrics/Gynecology Department
- Chair of the Blood Transfusion Committee
- Director of Nursing
- Transfusion Service Laboratory Manager
- Transfusion Safety Officer
- Hospital/RHA Risk Manager
- Director, Communications/Public Affairs
- Ethics
- NB Blood System Advisory Group representative
- Other members as deemed appropriate by the Hospital/RHA Blood Transfusion Committee.

APPENDIX D: SYNOPSIS FOR TRIAGE TEAM

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

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 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):

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 -
role in ensuring the best care for the community of patients that they serve, rather than the needs of individual patients.

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;

- re-evaluation 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 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

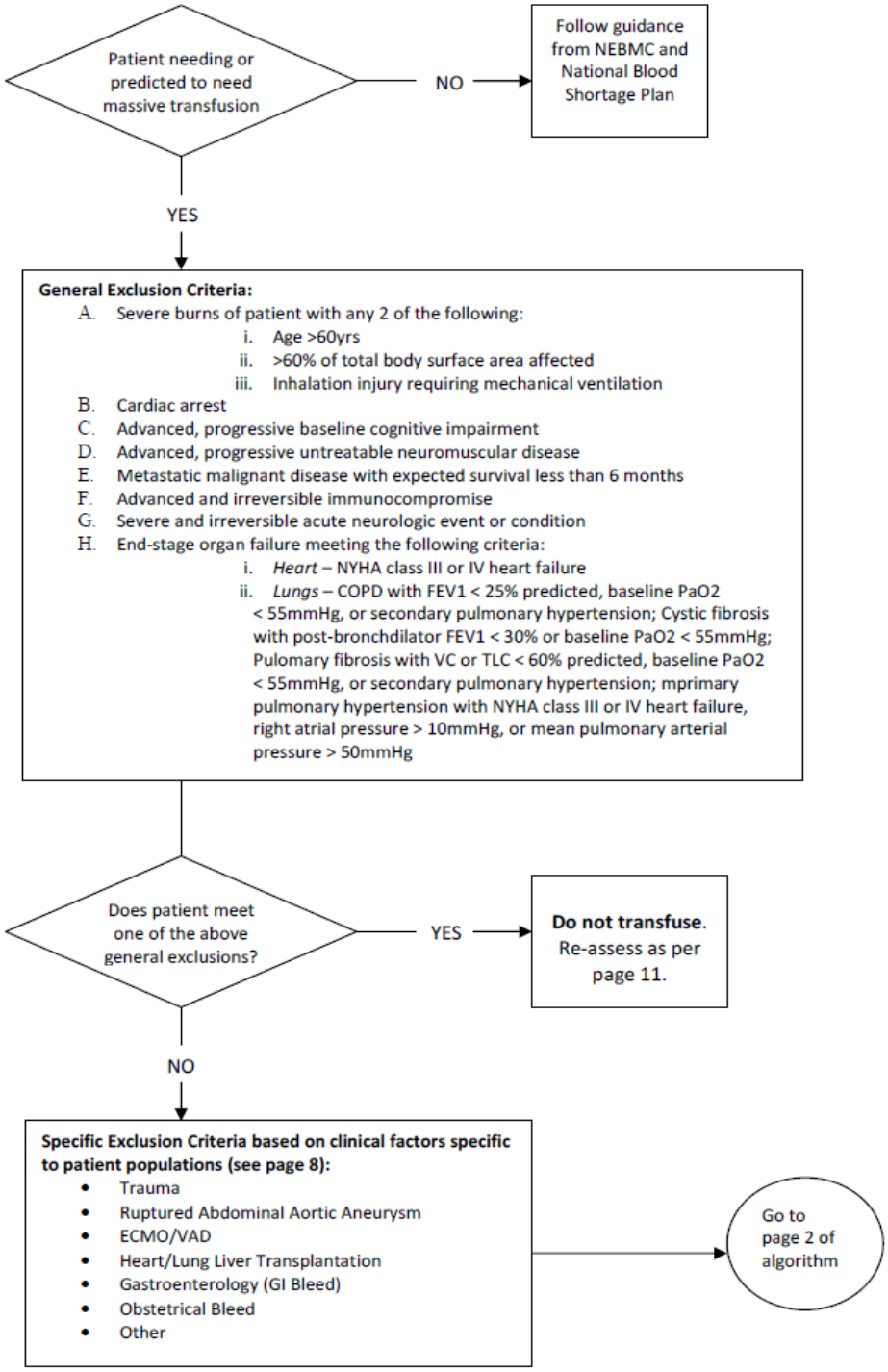
Clear and complete documentation will be essential for a complete patient record and for evaluation after the red phase. In the patient chart, the triage team shall document the following: phase of blood shortage, triage decision, reason for exclusion if applicable, date/time of next planned re-evaluation, 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.

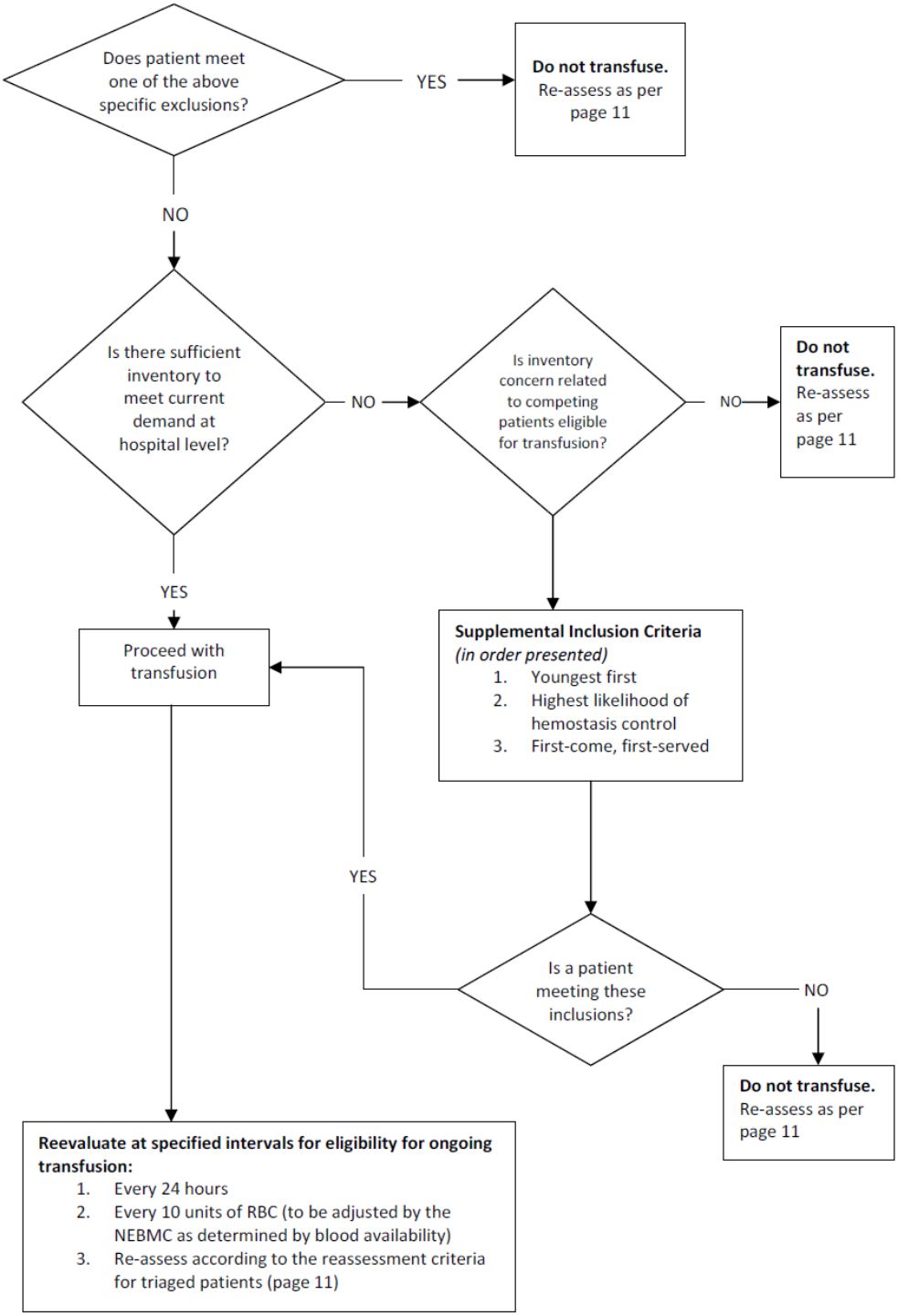
The Framework

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

-*Figure 1 – Algorithm for the Triage Team (page 1)*



-***Figure 1 – page 2***



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 transfusion 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

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
   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.

Appendix A – Documentation Tools and Clinical Scoring

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

Tracking Number	Medical Record Number	Last Name	First Name	Location	Blood Group
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
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37					
38					

FORM HAS BEEN REVISED

SEE TOOLKIT

Also located as Appendix G in The Plan for Management of Shortages of Labile Blood Components. National Blood Shortage Plan

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

Patient Tracking Number	Hospital	
Reason for Massive hemorrhage	Date of Triage	Time of Triage
Predicted to need >10 units in the next 24 hours ☐ Yes ☐ No(if no refer to standard tracking tool) Has patient received product in the previous 24 h? ☐ Yes ☐ No If yes, list produ	Age Hemoglobin Platelet	Blood Group pH
Meets any excl ☐ Yes ☐ No If yes, which or		
Meets any spec ☐ Yes ☐ No If yes, which or		
Decision made to administer blood? ☐ Yes ☐ No	Date/Time	Number of units & products transfused
Patient outcome at 24 hours	Date/Time	Re-assessment Decision
Comments by Triage Team	Comments regarding patient and family concerns	
Triage Documentation completed by	Signature	
Triage Officer Name	Signature	
Follow-up		
Patient Outcome at Discharge	Patient Outcome at 6 months	

FORM HAS BEEN REVISED

SEE TOOLKIT

Also located as Appendix G in The Plan for Management of Shortages of Labile Blood Components. National Blood Shortage Plan

Glasgow Coma Scale

Teasdale G, Jennett B. Assessment of coma and impaired consciousness. A practical scale.Lancet. 1974 Jul 13;2(7872):81-4.

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

Eye opening	Spontaneous	4
	To speech	3
	To pain	2
	None	1
Best verbal response	Orientated	5
	Confused	4
	Inappropriate	3
	Incomprehensible	2
	None	1
Best motor response	Obeying	6
	Localising	5
	Withdraws	4
	Flexing	3
	Extending	2
	None	1

Rockall Score

As described by T A Rockall, R F A Logan, H B Devlin, T C Northfield, and the steering committee and members of the National Audit of Acute Upper Gastrointestinal Haemorrhage. Gut. 1996;38:316-321.

Rockall Score	0	1	2	3
Age	< 60 years	60 – 79 years	> = 80 years	
Shock	'No shock', systolic BP > = 100, pulse < 100	'Tachycardia', systolic BP > = 100, pulse > = 100	'Hypotension', Systolic BP < 100	
Comorbidity	No major comorbidity		Cardiac failure, ischaemic heart disease, any major comorbidity	Renal failure, liver failure, disseminated malignancy
Diagnosis	Mallory-Weiss tear, no lesion identified and no SRH	All other diagnoses	Malignancy of upper GI tract	
Major SRH	None of dark spot only		Blood in upper GI tract, adherent clot	

Child Pugh Score

Pugh RN, Murray-Lyon IM, Dawson JL, Pietroni MC, Williams R Transection of the oesophagus for bleeding oesophageal varices. Br J Surg. 1973 Aug;60(8):646-9.

Clinical and Biochemical Measurements	Points Scored for Increasing Abnormality		
	1	2	3
Encephalopathy (grade)	none	1 and 2	3 and 4
Ascites	Absent	Slight	Moderate
Bilirubin (mg per 100 ml)	1 - 2	2 - 3	> 3
Albumin (g per 100 ml)	3.5	2.8 – 3.5	< 2.8
Prothrombin time (sec. prolonged)	1 - 4	4 - 6	> 6
For primary biliary cirrhosis – Bilirubin (mg per 100 ml)	1 - 4	4 - 10	> 10

MELD Score

As per Kamath P.S, et al. A model to predict survival in patients with end-stage liver disease. Hepatology. 2001; 33(2): 464-470.

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

An online calculator is available: http://www.mayoclinic.org/meld/mayomodel6.html

SOFA Score

The SOFA score as described by Vincent JL, Moreno R, Takala J, Willatts S, De Mendonca A, Bruining H, et al. The SOFA (sepsis-related organ failure assessment) score to describe organ dysfunction/failure. on behalf of the working group on sepsis-related problems of the european society of intensive care medicine. Intensive Care Med. 1996 Jul;22(7):707-10.

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

APPENDIX E FAX NOTIFICATION: NATIONAL INVENTORY ADVISORY

Sample- CBS Temporary Inventory Adjustment Template (Green Phase)

Canadian Blood Services
it's in you to give

URGENT: Immediate Action Required

Sample

To: ALL HOSPITAL SITES
From: National Emergency Blood Management Committee*
Subject: National Inventory Advisory

FAX NOTIFICATION: National Inventory

Date of Issue	<Date>
Inventory Availability Phase	GREEN
Product(s)	O Rh Negative, A Rh Negative RBCs
Description	Canadian Blood Services inventory for *(Specify Blood Group(s)* is at critical levels but are still in Green Phase according to the Plan. We are advising you that order fill rate will be reduced by (X)%. We will work closely with our hospital customers to assess individual needs. *(Specify Site or National)* We are importing some from other Blood Centres. We will continue to keep you updated on any changes to the current situation. We anticipate that we should recover by < >. If you have any concerns please feel free to contact me.
Impact on hospitals	Please include your Hospital Inventory Levels by blood group for ALL requests; this will greatly assist our Blood Product Management Staff in processing and triaging all requests to our hospitals.
From:	<Insert Name> Site Manager, Production, <Insert Site> Canadian Blood Services E. <Insert e-mail address> T. (Insert telephone #> <Insert Name> Hospital Liason Specialist Canadian Blood Services E. <Insert e-mail address> T. <Insert telephone #>

*The National Emergency Blood Management Committee is comprised of the National Advisory Committee on Blood and Blood Products, Provincial Territorial Blood Liason representatives and key Canadian Blood Services personnel. This group will develop recommendations and provide advice to the P/T Ministries of Health, hospitals and regional health authorities, and Canadian Blood Services to support a consistent and coordinated response to critical blood shortages in Canada.

For information about the National Blood Shortages Plan, please see:
http://www.nacblood.ca/resources/shortages-plan/index.html

Ref: The Plan for the Management of Labile Blood Components October 2015

APPENDIX F FAX NOTIFICATION: NATIONAL SHORTAGE ADVISORY

Sample: National Inventory Shortage Advisory Template (Amber Phase)

Canadian Blood Services
It's in you to give

URGENT: Immediate Action Required

Sample

To: ALL HOSPITAL SITES
From: National Emergency Blood Management Committee*
Subject: National Inventory Advisory

FAX NOTIFICATION: National Inventory

Date of Issue	<Date>
Inventory Availability Phase	AMBER
Product(s)	Platelets (all groups)
Description	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 called an Amber Phase of the Blood Shortages plan. Both HémaQuébec and Canadian Blood Services are attempting to secure bags from another vendor, but it may be a few weeks until supplies can be replenished.
Impact on hospitals	Follow directives in the "Amber Phase" section of The Plan/ Provincial / RHA or Hospital blood shortage plan.
From:	<Insert Name> Site Manager, Production, <Insert Site> Canadian Blood Services E. <Insert e-mail address> T. (Insert telephone #> <Insert Name> Hospital Liason Specialist Canadian Blood Services E. <Insert e-mail address> T. <Insert telephone #>

*The National Emergency Blood Management Committee is comprised of the National Advisory Committee on Blood and Blood Products, Provincial Territorial Blood Liason representatives and key Canadian Blood Services personnel. This group will develop recommendations and provide advice to the P/T Ministries of Health, hospitals and regional health authorities, and Canadian Blood Services to support a consistent and coordinated response to critical blood shortages in Canada.

For information about the National Blood Shortages Plan, please see:
http://www.nacblood.ca/resources/shortages-plan/index.html

Ref: The Plan for the Management of Labile Blood Components October 2015

The New Brunswick Blood Shortage Management Plan

Toolkit

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INTRODUCTION:

Careful record-keeping of decisions made during the implementation of The New Brunswick Blood Shortage Management plan is essential to maintain transparency and provide evidence of decisions made.

The following tools have been designed to support regional and zone plans for use during a blood shortage. These tools can be customized for your facility to ensure the necessary details are incorporated.

ACKNOWLEDGMENTS:

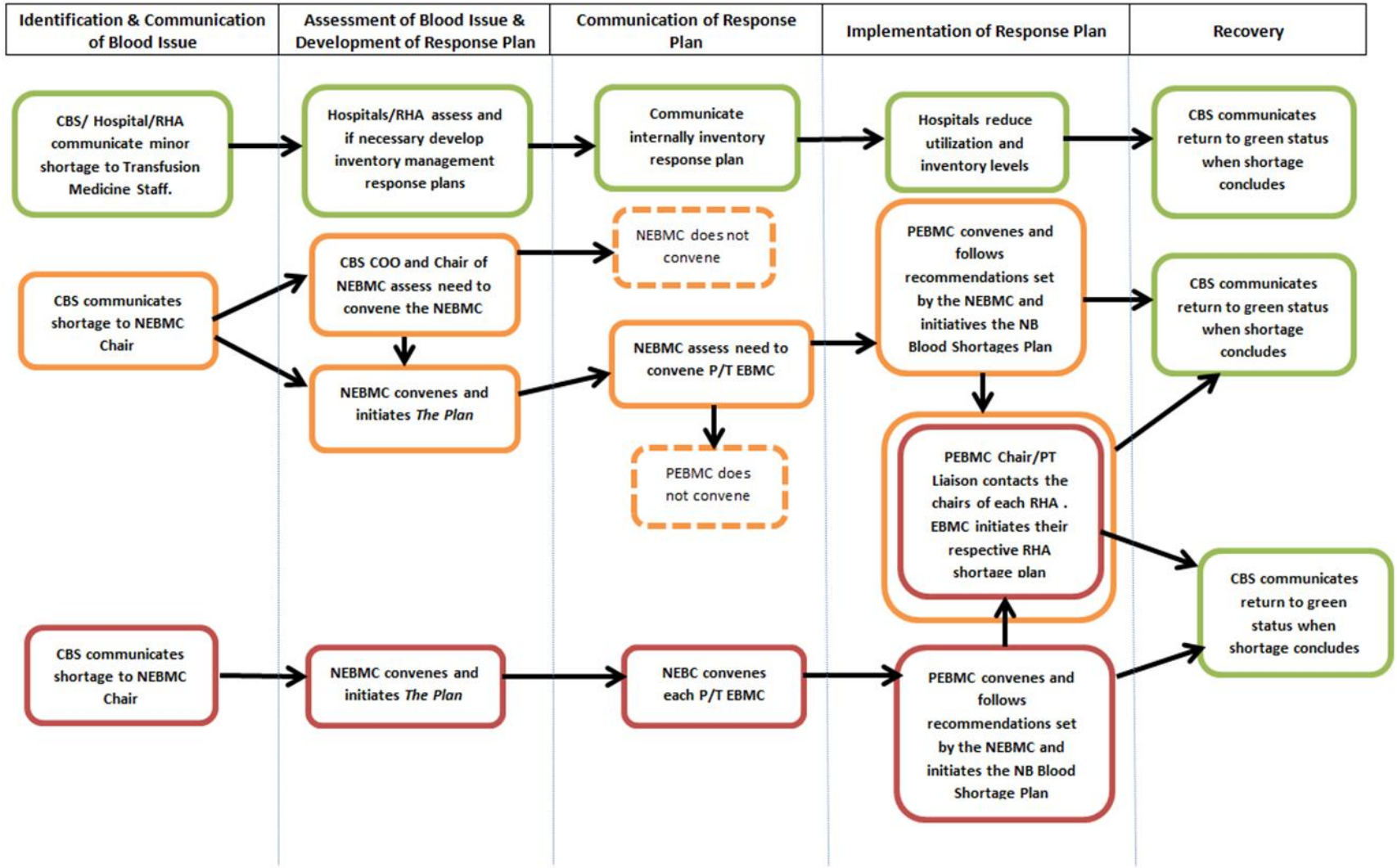
The New Brunswick Department of Health would like to acknowledge the Nova Scotia Provincial Blood Coordinating Program, for granting permission to use The Nova Scotia Provincial Blood Contingency Plan as a reference document for New Brunswick. The New Brunswick Department of Health would also like to acknowledge the Newfoundland/Labrador Provincial Emergency Blood Management Plan and the Ontario Regional Blood Coordinating Network, which also shared information and planning tools with New Brunswick. The development of the NB Blood Shortage Plan is based on the principles as put forward in the National Plan for the Management of Shortages of Labile Blood Components (hereafter called *The Plan*) which was developed by the National Advisory Committee (NAC) on Blood and Blood Products and Canadian Blood Services (CBS)

ROLES AND RESPONSIBILITIES DURING THE PHASES OF THE EMERGENCY BLOOD MANAGEMENT PLAN

Phase	Hospital	NB Emergency Blood Management Committee	Canadian Blood Services
Green Optimal inventory > 72 hours (>3 days supply on hand)	• Normal utilization activities • Report hospital inventory to Canadian Blood Services via the Blood Component and Product Distribution System. • Develop Hospital Emergency Blood Management Plan (EBMP) for use during shortages	• Maintain, review and disseminate provincial blood contingency plan • Support development of Hospital EBMP	• Inventory requests filled as routine practice • Effective management of national blood product inventories • Maintain plans to be used during shortages
Green Advisory **(serious but non critical shortage)**	• Reduce hospital inventory as per direction from CBS	• Notify PEBMC/BSAG of situation on a FYI basis	• Notify Hospital Transfusion Services of temporary inventory adjustments.
Amber **48 – 72 hrs** **(2-3 days' supply on hand)**	• Notify Transfusion Service Medical Director/ Designate • Hospital will activate EBMP Amber Phase including communication plan. • Convene Hospital/RHA EBMC to monitor and control utilization. • Report hospital inventory to Canadian Blood Services • Reduce site inventory • Triage urgent blood order requests. Defer /cancel elective surgical procedures requiring affected components. if necessary. • Refer all requests that do not fullfill pre-determined criteria to TM Medical Director or designate prior to issuing product • Perform Inter Hospital Transfer where necessary	• Convene PEBMC • Notify senior management of RHA's and Department of Health • Monitor and review correspondence from CBS and NEBMC • Coordinate communications and media announcements regarding impact of blood supply on provincial health services • Provide assistance to CBS as needed, • Liaise with NS BERT and other branches of the Department of Health as required	• Notify Hospital Transfusion Services by fax of Amber Phase status (fill rate may be less than 100% of request) • Communicate regularly with NB EBMC and hospital transfusion service via teleconferences and written communications to indicate phase, anticipated recovery time (if known), or increasing severity of shortage towards more critical levels • Coordinate and oversee all media announcements regarding the blood supply and / or call for donors.
Red **< 48 hrs** **(Less than 2 days' supply on hand)**	• Notify Transfusion Service Medical Director Designate • Hospital will activate EBMP Red Phase • Implement communication plans • Convene Hospital/RHA EBMC to monitor and control utilization (NEBMC will make recommendation as to whether or not to implement the triage and rationing guidelines for massively bleeding patients in a red phase) • Hospitals must have a defined internal plan to reduce blood utilization • Critical that ALL hospitals report blood product inventory levels to CBS • Triage all urgent blood order requests Defer/cancel all medical /surgical procedures requiring affected components with the exception of emergency surgical procedures. • Refer all requests that do not full fill pre-determined criteria to TM Medical Director or designate prior to issuing product • Perform Inter Hospital Transfer where necessary	• As per Amber Phase above. • Ensure communications from NEBMC as to implement the emergency allocation framework for rationing massively bleeding patients is disseminated to the appropriate personnel (Triage Committee, HEBMC etc.)	• Notify Hospital Transfusion Services by fax of Red Phase status • Reduce fill rates by defined percentage depending on severity and anticipated length of time of the shortage • Communicate regularly with NB EBMC and hospital transfusion service via teleconferences and written communications to indicate phase, anticipated recovery time (if known), or increasing severity of shortage towards more critical levels and take action as per Hospital EBMP • Coordinate and oversee all media announcements regarding the blood supply and or call for donors as appropriate.
Recovery	• Hospitals will increase blood usage activity slowly and gradually increase inventories • Scheduling of elective procedures should be gradual as blood inventory levels may be vulnerable during the recovery period.	• Monitor and review customer letters and correspondence from Canadian Blood Services • Provide assistance to the Canadian Blood Services as needed • Review event and report to Minister of Health	• Notify hospital Transfusion Services via fax when inventories have returned to optimal levels • Slowly increase order fill rate to allow hospital inventories to return to optimal levels.

NEW BRUNSWICK BLOOD SHORTAGE MANAGEMENT PLAN CHART

New Brunswick Blood Shortage Management Plan Chart



Emergency Blood Management Plan Checklist for Hospitals

Preparedness for Responding to Blood Inventory Shortages

Green Phase: Step 1

Inventory levels can be maintained at optimal levels.

Prepare Emergency Blood Management Plan (EBMP):

- ☐ Establish Emergency Blood Management Committee (EBMC).
- ☐ Develop Regional / Hospital Emergency Blood Management Plan for managing blood shortages:
  - □ Define blood conservation methods
  - □ Identify surgeries associated with high blood loss
  - □ Define stepwise reduction of blood use to occur upon activation of plan
  - □ Identify stakeholders to be notified upon activation of plan
  - □ Develop communication templates to be used for notification
- ☐ Ensure Emergency Blood Management Plan is integrated into Emergency preparedness plan.
- ☐ Provide training on the contents of the plan and the communication strategy related to blood shortages.
- ☐ Schedule a mock disaster to trial the EBMP

Practice good blood utilization / management

- ☐ Ensure that 'best practices' in inventory management of blood components and blood products are in place.
- ☐ Participate in Blood Component Disposition by ABO for reporting to CBS
- ☐ "On hand" inventory levels should be determined and made available indicating the number of days on hand based on historical data and represented by the following levels: optimal – greater than 3 days average daily use or minimal – less than 1 day average daily use.
- ☐ Practice routine strategies to ensure blood component/product outdating is minimized.
- ☐ Establish relationships with other nearby hospitals and develop a plan to share inventory in the event of a shortage.
- ☐ Adopt guidelines for the use of blood components to ensure effective utilization (through Transfusion Committee or Medical Advisory Committee). E.g. Maximum Surgical Blood Order Schedule (MSBOS) and/or protocol for review of blood ordering practice by physicians using 'Best Practice' parameters.

Amber Phase: Step 2

Specific measures are required to reduce inventory levels and blood usage.

Amber phase of facility plan should:

- ☐ Ensure that Canadian Blood Services will be notified by calling the 24 hour call line, of a local situation that could affect blood supply (e.g. equipment failure or multiple traumas).
- ☐ Define response to notification of a blood shortage if received from CBS
- ☐ Ensure that internal hospital notification is issued (in writing) to Division Chiefs of Surgery, Anaesthesia, Critical Care, Trauma/Emergency, Hematology and Medicine, Directors of Laboratory Services, Diagnostic Services and Nursing, Chair of Transfusion Medicine Committee(or its equivalent) and Emergency Blood Management.
- ☐ Include notification of the Medical Director of Transfusion Service and Chairperson of Transfusion committee and / or Emergency Blood Management Committee to determine if additional communication and/or actions are required to further conserve use of existing blood inventory:
  - □ Pre-approved contact list and communication template should be available
  - □ Prioritization list of areas where reduction of blood will occur
- ☐ Develop communication template and list of contact names/numbers of those to be notified in Amber phase (include pager numbers, fax numbers, email addresses).
- ☐ NOTE: It is also important to prepare a communication to notify patients and their families to explain the need for possible deferral of their treatment should it become necessary.
- ☐ Include contact information for other nearby sites if a need is identified for inter-hospital transfer of blood components/products (list of available transport options with contact numbers should be available).
- ☐ Give direction to reduce red cell stock (if shortage applies to this component) to keep on hand by 25% and reinforce NOT to stockpile inventory.
- ☐ Identify one person to act as a main contact with CBS to communicate any inventory needs, status of inventory at Canadian Blood Services and to attend regular conference calls held by CBS providing updates on the inventory status. This person/position should be determined beforehand and documented to ensure everyone understands who is responsible for this role.
- ☐ If necessary, institute pre-approval of requests for blood components prior to releasing. The person/position assigned to perform pre-approvals and what criteria will be used, should be determined beforehand.
- ☐ Ensure that all requests for the affected blood components that do not fulfill re-determined acceptance criteria be referred to the TM Medical Director or designate prior to releasing product.

- [ ] Include the need to Defer/cancel elective medical procedures requiring the affected blood components.
- [ ] Indicate to follow guidelines for Amber phase as outlined in Table 1 and 2 for RBC and Platelet Transfusions as per the National Plan for Management of Shortages of Labile Blood Components.
- [ ] Include the requirement to report Inventory by blood group and component within a specific timeframe to CBS.

HOSPITAL CHECKLIST: RED PHASE

Red Phase: Step 3

Inventory shortage predicted to be long term and/or severe

Red phase of plan should include:

- [ ] Ensure that internal hospital notification is issued (in writing) to Division Chiefs of Surgery , Anaesthesia, Critical Care, Trauma/Emergency, Haematology and Medicine, Directors of Laboratory Services, Diagnostic Services and Nursing, Chair of the Transfusion Medicine Committee (or its equivalent) Emergency Blood Management Committee and Triage Team members.
    - □ Pre-approved contact list and communication template should be available
    - □ EBMC and Triage Team members should be identified, contact list should be available
- [ ] Communication should include pre-determined modification (developed in Green phase) to ordering practices to be used in order to conserve blood component inventory to ensure availability of product to treat critical and life threatening situations. The Medical Director of the Transfusion Service or delegate shall review all orders that fall outside these parameters. That the EBMC / Triage Team should be convened to monitor and control utilization of the affected blood components.
- [ ] Include that the NEBMC will make recommendations as to whether or not to implement the triage and rationing guidelines for massively bleeding patients in a Red Phase.
- [ ] Include the need to defer/cancel all medical/surgical procedures requiring the affected components with the exception of emergency surgical procedures.
- [ ] That blood component stock kept on hand should be reduced to minimum levels (1 days equivalent daily use based on historical use).
- [ ] Reinforce - Do not issue blood to 'stock' fridges such as operating room or trauma room.
- [ ] Reinforce - DO NOT stockpile product to safeguard local needs as this will result in increasing the overall risk to patients at other institutions.

- ☐ Include direction to work with CBS Medical Director to determine priority inventory needs in region should be included in the plan. CBS will communicate internally within CBS to ensure discussions with hospitals are not in isolation of each other.
- ☐ To follow the guidelines for Red phase as outlined in Table 1 and 2 for RBC and Platelet Transfusions as per the National Plan for Management of Shortages of Labile Blood Components.
- ☐ Implementing the documentation process for release or non-release of blood components
- ☐ Reporting of Inventory by blood group and component within a specific timeframe to CBS

HOSPITAL CHECKLIST: RECOVERY PHASE

Recovery Phase:

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

Recovery phase of plan should include:

- ☐ Notification of recovery of blood inventory stocks should include a template, approved distribution list and contact information.
- ☐ Notification should be sent, in writing, to Division Chiefs of Surgery , Anaesthesia, Critical care, Trauma/Emergency, Haematology and Medicine, Directors of Laboratory Services, Diagnostic Services and Nursing, Chair of the Transfusion Medicine Committee (or its equivalent) Emergency Blood Management Committee and Triage Team members.
- ☐ Requests for blood components/products shall continue to be monitored and reviewed until CBS has notified the hospital of a return to the Green Phase

ATTACHMENT A: BLOOD COMPONENT REQUEST/SCREENING LOG- MEDICAL PATIENTS

Blood Component Request / Screening Log to be used during a Blood Shortage - Medical Patients

Facility:_____ **Phase:**_____ **Product (s):**_____ **Affected Group(s):** _____

Date/Time	MRN #/ Initials	Tech	# & ABO Requested	Clinical Indication	Indices	# & ABO Issued	Ordering Physician / Reviewing Physician Comments - Adverse events - outcomes – length of delay, etc
	Blood Group: _____		RCC _____ PLT _____ FP _____ Other: ✓if G&S __		**PRE** Hgb ___ PLT ___ **POST** Hgb ___ PLT ___	RCC _____ PLT _____ FP _____ Other:	Ordering Dr: _____ Notified ☐Yes ☐No Reviewing Dr: _____ Decision ☐Approve ☐Modify ☐Defer ☐Cancel *Comments/Rationale* Signature:_____Date:_____
	Blood Group: _____		RCC _____ PLT _____ FP _____ Other ✓if G&S __		**PRE** Hgb ___ PLT ___ **POST** Hgb ___ PLT ___	RCC _____ PLT _____ FP _____ Other:	Ordering Dr: _____ Notified ☐Yes ☐No Reviewing Dr: _____ Decision ☐Approve ☐Modify ☐Defer ☐Cancel *Comments/Rationale* Signature:_____Date:_____
	Blood Group: _____		RCC _____ PLT _____ FP _____ Other: ✓if G&S __		**PRE** Hgb ___ PLT ___ **POST** Hgb ___ PLT ___	RCC _____ PLT _____ FP _____ Other:	Ordering Dr: _____ Notified ☐Yes ☐No Reviewing Dr: _____ Decision ☐Approve ☐Modify ☐Defer ☐Cancel *Comments/Rationale* Signature:_____Date:_____

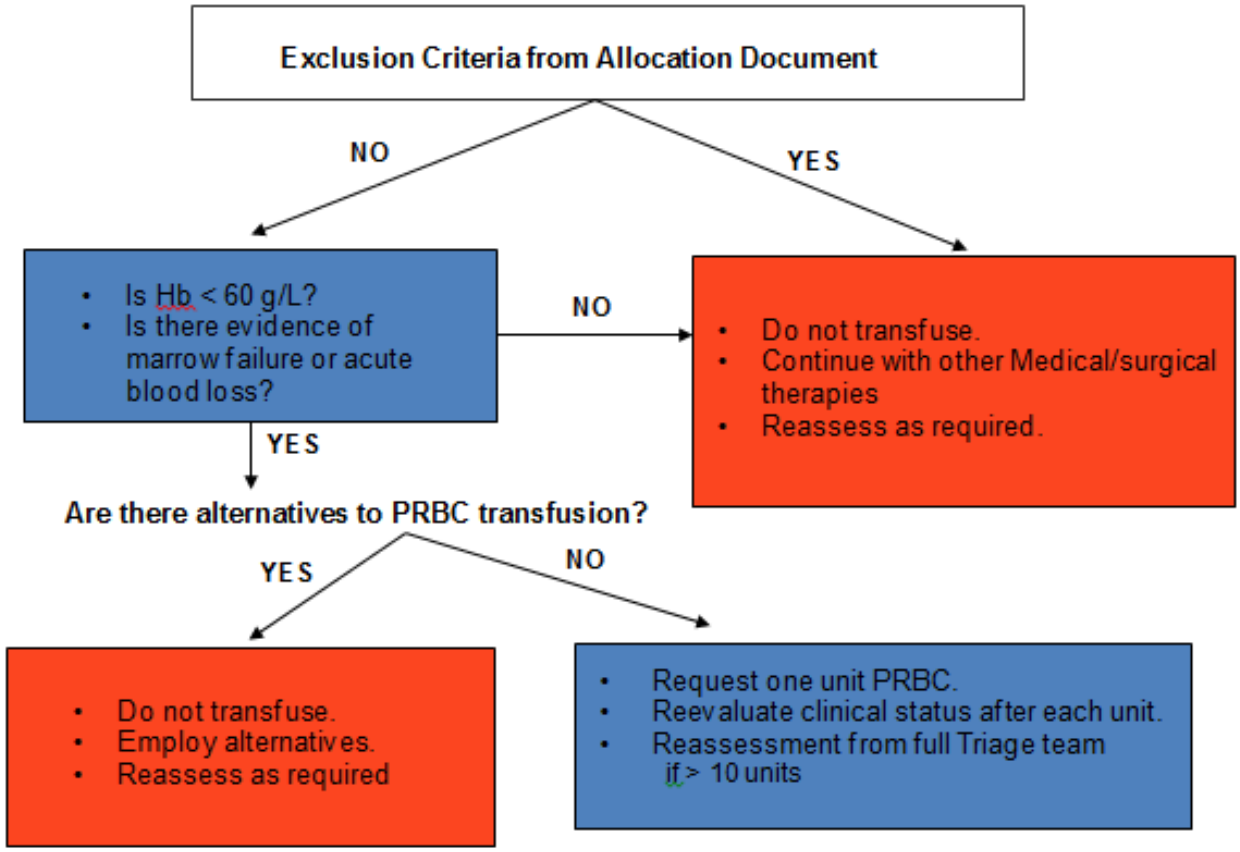
ATTACHMENT B: BLOOD COMPONENT REQUEST/SCREENING LOG- SURGICAL PATIENTS

Blood Component Request / Screening Log to be used during a Blood Shortage - Surgical Patients

Facility:_____ **Phase:**_____ **Product (s):**_____ **Affected Group(s):** _____

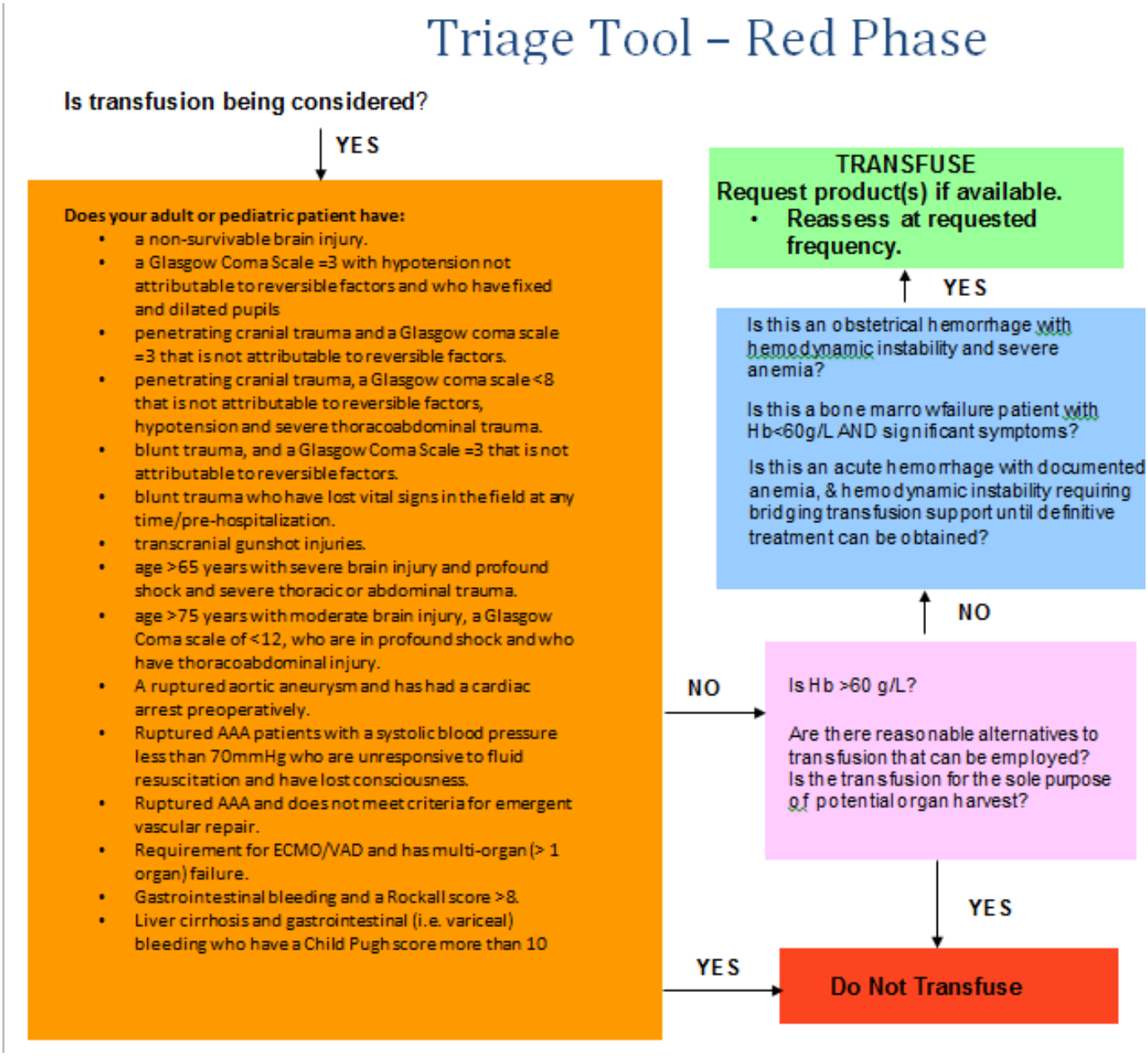
Date/Time	MRN #/ Initials	Tech	# & ABO Requested	Surgery Type	Indices	# & ABO Issued	Ordering Physician / Reviewing Physician Comments - Adverse events - outcomes – length of delay, etc
	Blood Group: _____		RCC _____ PLT _____ FP _____ Other: ✓if G&S __		**PRE** Hgb ___ PLT ___ **POST** Hgb ___ PLT ___	RCC _____ PLT _____ FP _____ Other:	Ordering Dr: _____ Notified ☐Yes ☐No Reviewing Dr: _____ Decision ☐Approve ☐Modify ☐Defer ☐Cancel *Comments/Rationale* Signature:_____Date:_____
	Blood Group: _____		RCC _____ PLT _____ FP _____ Other ✓if G&S __		**PRE** Hgb ___ PLT ___ **POST** Hgb ___ PLT ___	RCC _____ PLT _____ FP _____ Other:	Ordering Dr: _____ Notified ☐Yes ☐No Reviewing Dr: _____ Decision ☐Approve ☐Modify ☐Defer ☐Cancel *Comments/Rationale* Signature:_____Date:_____
	Blood Group: _____		RCC _____ PLT _____ FP _____ Other: ✓if G&S __		**PRE** Hgb ___ PLT ___ **POST** Hgb ___ PLT ___	RCC _____ PLT _____ FP _____ Other:	Ordering Dr: _____ Notified ☐Yes ☐No Reviewing Dr: _____ Decision ☐Approve ☐Modify ☐Defer ☐Cancel *Comments/Rationale* Signature:_____Date:_____

Triage Tool – Red Phase



Information excerpted from the 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 http://www.nacblood.ca/resources/shortages-plan/synopsis-triage-team.pdf. Presented by: Susan Nahirniak MD, FRCPC : 2015 Blood Matters Conference

ATTACHMENT C TRAIGE TOOL- RED PHASE FLOW CHART



Information excerpted from the 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 http://www.nacblood.ca/resources/shortages-plan/synopsis-triage-team.pdf. Presented by: Susan Nahirniak MD, FRCPC : 2015 Blood Matters Conference

ATTACHMENT D TRIAGE TOOLS: PATIENT RECORD - SAMPLE

Massive Transfusion Record for Patient: Emergency Disposition of Blood during Red Phase Blood Shortage

Section A:To be completed by TMS Technologist		
Patient Initials/Tracking Number :	Hospital Number:	Patient location:
Reason for Massive hemorrhage:	Date of Triage :	Time of Triage:
Predicted to need >10 units in the next 24 hours ☐ Yes ☐ No(if no refer to standard tracking log) Has patient received product in the previous 24 h? ☐ Yes ☐ No If yes, list products:	Age:_____ Hemoglobin:_____ Platelet:_____ INR:_____ PTT:_____ Fibrinogen:_____ Product Requested	Blood Group:_____ pH:_____ Lactate:_____ Temp:_____
Section B: Forward to TMS Director/Triage Team to complete		
Meets any exclusion criteria ☐ Yes ☐ No If yes, which one(s)?	Date/Time of assessment:	SOFA score:
Meets any specific exclusion criteria ☐ Yes ☐ No If yes, which one(s)?	Date/Time of assessment:	SOFA score:
Decision made to administer ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	Date/Time:	Number of units & products transfused:
Patient outcome at 24 hours:	Date/Time:	Re-assessment Decision:
Comments regarding patient/family completed by Triage Team:		
Triage Documentation completed by:	Signature:	
Triage Officer Name:	Signature:	
Follow-up:		
Patient Outcome at Discharge:	Patient Outcome at 6 months:	

Excerpted from The Plan for Management of Shortages of labile Blood Components Attachment G

ATTACHMENT E: TRIAGE TOOLS: TRIAGE TRACKING LOG - SAMPLE

Triage Tracking Log – Emergency Disposition of Blood

Is Patient needing or predicted to need massive transfusion? ☐ Y ☐ N
If yes, go to "Massive Transfusion Record for Patient" If no, complete line below.

Date:_____ Facility:_____ Units Affected:_____

Is Patient needing or predicted to need massive transfusion? ☐ Y ☐ N If yes, go to "Massive Transfusion Record for Patient" If no, complete line below.

Patient Initials/Tracking Number	Patient MRN	Age	ABO /D	Ordering Physician	Indication (Not Bleeding = NB Bleeding = B Unknown = U In the OR = O)	Hgb /Plt	# of Components Ordered	# of Components Issued	Surgery Cancelled? Yes	Surgery Cancelled? No	# of units saved by following Protocol

Comments:_____

Is Patient needing or predicted to need massive transfusion? ☐ Y ☐ N If yes, go to "Massive Transfusion Record for Patient" If no, complete line below.

Patient Initials/Tracking Number	Patient MRN	Age	ABO /D	Ordering Physician	Indication (Not Bleeding = NB Bleeding = B Unknown = U In the OR = O)	Hgb /Plt	# of Components Ordered	# of Components Issued	Surgery Cancelled? Yes	Surgery Cancelled? No	# of units saved by following Protocol

Comments:_____

Is Patient needing or predicted to need massive transfusion? ☐ Y ☐ N If yes, go to "Massive Transfusion Record for Patient" If no, complete line below.

Patient Initials/Tracking Number	Patient MRN	Age	ABO /D	Ordering Physician	Indication (Not Bleeding = NB Bleeding = B Unknown = U In the OR = O)	Hgb /Plt	# of Components Ordered	# of Components Issued	Surgery Cancelled? Yes	Surgery Cancelled? No	# of units saved by following Protocol

Comments:_____

Excerpted from The Plan for Management of Shortages of labile Blood Components Attachment G

ATTACHMENT F: HOSPITAL INVENTORY (MANUAL CONTINGENCY FORM)

Report Date:_____ **Facility**_____

RCC	Available	Cross Matched	Total (includes all units)	Expiring within 5 days
O Rh Positive				
A Rh Positive				
B Rh Positive				
AB Rh Positive				
O Rh Negative				
A Rh Negative				
B Rh Negative				
AB Rh Negative				

Platelets (doses)	Total (Includes all units)	Expiring at 23:59
O Rh Positive		
A Rh Positive		
B Rh Positive		
AB Rh Positive		
O Rh Negative		
A Rh Negative		
B Rh Negative		
AB Rh Negative		

Plasma	Expiring within 1 month	Total (includes all units)
Group O FP		
Group O FFP Apheresis		
Group A FP		
Group A FFP Apheresis		
Group B FP		
Group B FFP Apheresis		
Group AB FP		
Group AB FFP Apheresis		
Cryoprecipitate (all groups)		

To Complete Form: Only the products which are in the **"phase indicated in the shortage announcement"** need to be reported to CBS. **Example:** if platelets are the product indicated as "red phase" short supply, you do not need to report the red cells available. If it is red cells, than you do not need to report any of the other products.

Notes:

Return by Fax to 1-855-305-6904

ATTACHMENT G: SAMPLE AMBER PHASE NOTIFICATION MEMO

Notification of
Blood Component Shortage

Hospital Name Here

Memo

To: [Enter name of Chiefs of Surgery, Anesthesia, Critical Care, Trauma, Emergency, Hematology, Medicine, Obstetrics and Gynecology, Directors of Laboratory Services, Diagnostic Services and Nursing, Quality Management, Risk Management, Chairpersons of Transfusion Medicines Committee, Emergency Blood Management Committee]

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

CC: [Enter name of Transfusion service Manager / supervisor]

Date: [Enter date]

Re: **Notification of Blood Component Shortage – *Amber Phase***

We have received recent notification from Canadian Blood Services (CBS) that they are currently experiencing a national shortage of [Enter name of blood component / product here]. The shortage is the result of [Enter the reason for the shortage here as stated in messaging from CBS]. As a result, blood inventory levels may be reduced in order to conserve product for critical cases. The following modifications to blood ordering will be implemented:

- **ordering of the product in short supply will comply to ordering parameters as defined in the attachment provided with this communication**
- **inventory levels for this product will be reduced by up to 50% in efforts to conserve**
- **it may be necessary to consider deferral of elective transfusions and/ or of elective surgical procedures associated with the affected blood components.**

Note: Until you receive further notification, you will be asked to follow the hospital operating procedure for Emergency Blood Management – Amber phase. Once inventory levels have stabilized, you will receive further notification of entry into recovery phase procedures.

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

ATTACHMENT H SAMPLE RED PHASE NOTIFICATION MEMO

Notification of
Blood Component Shortage

Hospital Name Here

Memo

To: [Enter name of Chiefs of Surgery, Anesthesia, Critical Care, Trauma, Emergency, Hematology, Medicine, Obstetrics and Gynecology, Directors of Laboratory Services, Diagnostic Services and Nursing, Quality Management, Risk Management, Chairpersons of Transfusion Medicine Committee, Emergency Blood Management Committee and Triage Team members]

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

CC: [Enter name of Transfusion service Manager / supervisor]

Date: [Enter date]

Re: **Notification of Blood Component Shortage – **Red Phase ****

We have received recent notification from Canadian Blood Services (CBS) that they are currently experiencing a severe shortage of [Enter name of blood component / product here]. The shortage is the result of [Enter the reason for the shortage here]. To conserve product for critical and life-threatening cases only, the following modifications to blood ordering will be implemented:

- □ **ordering of the product in short supply will comply to ordering parameters as defined in the attachment provided with this communication**
- □ **inventory levels for this product will be reduced to a minimum (25%) in efforts to conserve product**
- □ **defer/ cancel all medical/surgical procedures requiring the affected components with the exception of emergency surgical procedures.**
- □ **to the extent possible, defer stem cell transplantation and chemotherapy treatments and any other medical treatments requiring ongoing need for the affected blood components.**

Note: You will be asked to strictly follow the hospital operating procedure for Emergency Management of Blood – Red phase. Communication will be ongoing with Canadian Blood Services. Once CBS inventories regain stability, you will receive further notification indicating when a gradual return to normal blood ordering practice may be resumed.

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

ATTACHMENT I SAMPLE RECOVERY PHASE NOTIFICATION MEMO

Notification of
Blood Component Shortage

Hospital Name Here

Memo

To: [Enter name of Chiefs of Surgery, Anesthesia, Critical Care, Trauma, Emergency, Hematology, Medicine, Obstetrics and Gynecology, Directors of Laboratory Services, Diagnostic Services and Nursing, Quality Management, Risk Management, Chairpersons of Transfusion Medicine Committee, Emergency Blood Management Committee and Triage Team members]

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

CC: [Enter name of Transfusion service Manager / supervisor]

Date: [Enter date]

Re: **Notification of Blood Component Shortage – *Recovery Phase***

We have received recent notification from Canadian Blood Services (CBS) that national inventory levels for [Enter name of blood component / product here] have improved sufficiently and have now reached a stable level. As a result, critical blood product conservation strategies may be lessened. Inventory levels on site will improve over the next few days back up to optimal levels.

- ☐ **Transfusions and medical/ surgical procedures deferred as a result of the blood inventory shortage may begin to be recalled in a controlled and gradual way in order to reduce the possibility of de-stabilizing the recovery of blood inventory levels.**

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

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

ATTACHMENT J REVISION HISTORY

Date	Section	Changes
November 2013	Toolkit	Initial Toolkit implementation derived from draft Simulation Toolkit 2011
January 2014	Toolkit	• Revised DOH for Phases on Roles & Responsibilities Chart during Phases of the Emergency Blood Management Plan to reflect those of *The Plan*. • Added: NB Blood Shortage Plan Chart • Added: Hospital Checklists for each phase of the plan • Revised Hospital Inventory form • Updated sample CBS Inventory Alert Fax Notifications to Dartmouth Forms • Added sample Memo notification for Amber, Red and Recovery Phases • Added References • Added Revision History
February 2014	Hospital Inventory Form	• Added expiry date to platelets • Added Dartmouth Fax number
June 2017	Roles and Responsibilities Chart	• Added Green Advisory • Updated as per Oct 2015 version of *The Plan*
June 2017	Hospital Checklist	• Updated as per Oct 2015 version of *The Plan*
June 2017	Attachments	• Revised Forms • Added Triage Tool Flow Chart • Added Revised Triage Tool Forms as per Attachment G of *The Plan* • Removed PPP Inventory from Manual Contingency Inventory Form. • Removed sample FAX notification from CBS • Revised sample Notification of Blood Component Shortage letters • Revised references
June 2017	References	• Revised date of *The Plan* • Added Emergency Framework document reference

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2. National Plan for the Management of Shortages of Labile Blood Components, National Advisory Committee on Blood and Blood Products, October 2015.
3. Ontario Contingency Plan for Management of Blood Shortages, Jan.29, 2008 and Contingency Planning Toolkit, Mar.31,2008, Ministry of Health and Long Term Care, Ontario Blood Coordinating Network.
4. Nova Scotia Provincial Blood Contingency Plan, Draft, Feb.8, 2008 v36, Nova Scotia Provincial Blood Coordinating Program.
5. Newfoundland Labrador Emergency Blood Management Plan for Blood Component Shortages, Version 1, 2009-11-01, NL PBCP
6. Blood Contingency Project Plan, British Columbia Provincial Blood Coordinating Office, Nov.7, 2007
7. Disaster Operations Handbook – Hospital Supplement, Coordinating the Nation's Blood Supply During Disasters and Biological Events, American Association of Blood Banks, Bethesda, Maryland, 2003.
8. CBS Blood Inventory Management Best Practices Guide, http://www.bloodservices.ca/CentreApps/Internet/UW_V502_MainEngine.nsf/resources/ResourceLibrary/$file/Blood_Inventory.pdf
9. Ethical Issues in Transfusion Medicine. Macpherson CR, Domen RE, Perlin T. AABB Press, Bethesda, Maryland, 2001.
10. Emergency Framework for rationing of blood for massively bleeding patients during a red phase of a blood shortage-Synopsis for Triage Team.