



Alberta Blood Contingency Plan

*Contingency plan for the management of LABILE
BLOOD PRODUCT SHORTAGES in Alberta*

January 2015

Copies of this document can be obtained from:

www.health.alberta.ca/services/blood-office.html

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

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Acknowledgements

The Ministry of Health and Alberta Health Services acknowledges the contributions of the Alberta Blood Office Steering Committee and Transfusion Medicine Integration Network for their participation in the development, maintenance and dissemination of the Alberta Blood Contingency Plan.

Abbreviations

AHS	Alberta Health Services
CBS	Canadian Blood Services
CSA	Canadian Standards Association
EMS	Emergency Medical Services
EBMC	Emergency Blood Management Committee
HEBMC	Hospital Emergency Blood Management Committee
HTC	Hospital Transfusion Committee
MBOS	Maximum Surgical Blood Ordering Schedule
NAC	National Advisory Committee on Blood and Blood Products
National Plan	National Plan for the Management of Shortages of Labile Blood Products
NEBMC	National Emergency Blood Management Committee
P/T	Provincial / Territorial
P/T BLC	Provincial / Territorial Blood Liaison Committee
PEBMC	Provincial Emergency Blood Management Committee
PLT	Platelets
RBC	Red Blood Cells
STARS	Shock Trauma Air Rescue Service
TM	Transfusion Medicine
TMNET	Provincial Transfusion Medicine Network
ZEMBC	Zone Emergency Blood Management Committee

Executive Summary

Blood and blood products are a vital resource supporting health care in Canada. Since CBS collects and distributes the labile blood components for all of Canada excluding Quebec, the blood inventory is considered national even though Alberta is a net exporter of blood. This national supply, and subsequently the supply for Albertans, could be compromised by a number of scenarios - labour disruptions, endemic disease outbreaks, extreme weather disturbances or disruptions in transportation systems (see table below). Any of the scenarios which result in shortages of blood components could present a significant challenge to the provision of health care in Alberta and the rest of Canada. To prepare for such a challenge, a National Plan for the Management of Shortages of Labile Blood Components (hereafter called the National Plan) has been developed and endorsed by all of the Deputy Ministers of Health and CBS. To be successful the National Plan must align with Provincial, Zone and Hospital level contingency plans.

Causes of Blood Contingencies*

Event	Potential for Demand Surge	Potential for Decreased Supply
Natural disasters: e.g., hurricane (tropical cyclone), severe windstorm (tornado), winter storm, wildfire, earthquake, flood, tsunami	✓	✓
Man-made hazards: e.g., industrial accident (fire, building collapse, hazardous material spill), chemical event, biological event, radiological event, nuclear event, explosive event	✓	✓
Pandemic outbreak	Unlikely	✓
Wide-area power outage		✓
Workplace violence	✓	✓ (if at CBS or hospital)
Mass casualty/multiple trauma	✓	
Massive transfusion of one patient	✓	
Inventory stockpiling	✓ (artificial demand)	✓ (blood not where required)
Manufacturing or testing failures/delays		✓
Product contamination/recall		✓
Labour disruption		✓
Transportation disruption		✓
Seasonal influence: e.g. increase in trauma; decrease in donations	✓	✓
Changes in donor deferral criteria		✓

*Adapted from Alberta Blood Contingency Project Final Report (Draft), November 2007

The National Plan addresses four phases of inventory availability – Green, Amber, Red and Recovery. These will need to be mimicked in the plan for Alberta.

Green Phase (optimal to minimal decrease): implies that normal blood 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 within the scope of existing Canadian Blood Services and hospital/ ZONE actions.

Amber Phase (serious): implies that blood inventory levels are insufficient to continue with routine transfusion practice and hospitals/ ZONE will be required to implement specific measures to reduce blood usage.

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

Recovery Phase: implies that blood inventories have begun to increase and are expected to be maintained at a level that would enable hospitals to move from Red to Amber and subsequently to the Green Phase, or from Amber to Green Phase.

The purpose of the Alberta Contingency Plan for Management of Shortages of Labile Blood Products (hereafter called the Alberta Plan) is to provide the framework for the province of Alberta to deal with a blood shortage while maintaining congruency with the National Plan. Similar to the National Plan, the Alberta Plan will maximize the effectiveness of response to any crisis which impacts the adequacy of the provincial blood supply. The optimal management of a severe blood shortage will depend upon the commitment of all stakeholders in the blood system, not just those restricted to Alberta, to work collaboratively to assure that scarce resources are used in a fair and equitable manner. It is nevertheless recognized that lessons will be learned in each shortage situation and it is anticipated that both the National Plan and the Alberta Plan will undergo modification following each situation in which it is activated.

The roles and responsibilities are outlined in the following framework for Ministry of Health, AHS, Alberta's Provincial Emergency Blood Management Committee, and the various zones/hospital facilities within AHS.

1. Introduction

1.1 Purpose

The Alberta Plan provides a framework for a rapid and effective response to a local or widespread shortage of blood products in Alberta. It is an advisory document intended to guide organizations, committees and individuals responsible for or associated with the management, supply and utilization of blood and blood products in Alberta. As well, the organizations or individuals who need to include blood in their emergency plans. The objectives of this plan are to:

- Improve awareness for appropriate preparation in the event of blood shortages within the health care system in Alberta.
- Ensure that the Alberta response is consistent and integrated with the National Plan prepared by the NAC and Canadian Blood Services (CBS).
- Ensure a consistent and coordinated approach across the province during blood shortages.
- Provide strategies for medical and technical deviations that may need to be initiated when extreme blood shortages occur.
- Ensure that access to safe and adequate blood transfusion is maintained for as many patients as possible during a blood shortage.
- Provide a means to enable the equitable allocation of blood during a blood shortage.
- Integrate the blood contingency plan into existing provincial emergency preparedness plans to ensure that blood-related activities are part of a coordinated response in the event of an emergency.
- Formalize guidelines for activation of hospital blood redistribution, and identify transportation partners that may be used for non-routine shortages.
- Provide guidance to zones and /or hospitals within AHS for elements that should be included during the development of their own blood contingency plans and provide reference materials that may be used as appendices or job aides.

1.2 Scope

This plan primarily addresses labile blood components – red blood cells, platelets, plasma and cryoprecipitate - however, may be extrapolated to fractionated or recombinant plasma proteins. It is intended to deal with non-routine shortages, and does not address the activities that will be undertaken by CBS to increase the adequacy of supply, as these are addressed by the National Plan and CBS specific documents. It will focus on the elements of the National Plan that impact the province of Alberta and activities that can be taken within the province to reduce demand and optimize allocation of the limited blood supply.

1.3 Plan Development

This plan was built upon Appendix A of the *Alberta Blood Contingency Plan (Final Draft 2007)* commissioned by Ministry of Health, introducing elements of the National Plan (www.nacblood.ca) and existing blood contingency plans from British Columbia (www.pbco.ca), Ontario (www.transfusionontario.org) and Nova Scotia (www.gov.ns.ca/health/nspbcp) as well as details from the contingency/disaster plans in existence within the former Calgary and Capital Health Regions.

1.4 Key Participants and Stakeholder

It is intended that the Alberta Plan will be used by key blood system participants including Ministry of Health, AHS and CBS. The Alberta Blood Office Steering Committee, the TMNET, and the network of Transfusion Safety Coordinators across the province will play a key role in the implementation of the Alberta Plan.

Stakeholders for the Plan are considered to be the participants, as well as others potentially affected (or representing those potentially affected) by the Alberta Plan such as patient/blood recipient societies, health care professional societies, and the National Advisory Committee as well as out of province facilities serviced by either Edmonton or Calgary CBS Centres.

2. Overview of Plan Structure

2.1 Principles

During a blood shortage, difficult decisions must be made about the appropriate allocation and rationing of blood products. This plan is based on the following ethical principles:

- All patients in Alberta will have equal access to the available blood on the basis of need. No zone or hospital will stockpile blood for their patients when there is a greater need elsewhere.
- When available resources are exceeded, the focus must shift to the public health goal of doing the greatest good for the greatest number while balancing obligations to the individual needs.
- Transparency in managing blood inventory is critical. The Alberta PEBMC and decision makers provincially and nationally need to know what inventory is available in each jurisdiction, regardless of whether it is stocked at the blood supplier or hospital based.
- All affected hospitals are accountable for taking a consistent and transparent approach to blood utilization management during a shortage. Decision makers must be able to trust that others in similar positions are adhering to the same ground rules.

The rationale behind these principles and the ethical framework used to create them are provided in more detail in the National Plan (www.nacblood.ca).

2.2 Assumptions

The assumptions used in the development of the Provincial Plan are the same as those listed in the National Plan.

3. Emergency Blood Management Committees

This section describes the blood emergency management committees at the national, provincial, zone and hospital levels that are necessary to facilitate information flow and decision making.

3.1 National Emergency Blood Management Committee

NEBMC is necessary to ensure the implementation of the National Plan. It is this committee that declares the phase of the shortage and determines how the national inventory will be allocated between the various jurisdictions. Further information on the membership, mandate and terms of reference for this committee can be found in the National Plan.

3.2 Provincial Emergency Blood Management Committee

The National Plan states that it is the responsibility of the Ministries of Health of each province or territory to establish a PEBMC and its terms of reference, which should include the responsibilities.

Refer to Appendix 1 for the PEBMC membership and terms of reference.

3.3 Hospital/Zone Emergency Blood Management Committee

AHS has a responsibility to establish the ZEBMC, with the mandate to develop a Blood Shortages Management Plan in accordance with the guidelines outlined in this Alberta Plan, and to ensure that these plans are appropriately communicated and adhered to in times of blood shortages. This committee function may be served by the Zone Transfusion Medicine Committee if existing. These transfusion medicine/emergency blood management committees will serve as the communication conduit to the PEBMC. Dependant on the structure of the Zone's Transfusion Service, there may also be a need to establish and maintain HEMBC with the same mandate but communication conduits through the ZEMBC to the PEBMC.

The Z/HEBMC membership may vary in the different zones of AHS and may also vary from facility to facility within a zone. The following outlines potential membership representation:

- Hospital/zone senior or executive management
- Chair of the Blood Transfusion Committee
- Medical Director, Transfusion Medicine Service
- Head, Department of Internal Medicine / Hematology or Critical Care Medicine
- Head, Department of Surgery

- Head, Department of Anesthesiology
- Head, Emergency Department
- Head, Obstetrics/Gynecology Department
- Patient Care Practice Lead
- Transfusion Service Laboratory Manager or Lab Site Manager
- Transfusion Safety Officer
- Hospital/Zone Risk Manager
- Zone Director, Communications/Public Affairs
- Other members as deemed appropriate by the Zone / Hospital Blood Transfusion Committee.

4. Phases of Inventory Availability

Consistent with other published blood contingency plans, both the National Plan and Alberta Plan have four phases of inventory availability, identified as green, amber, red and recovery. An inventory availability phase may apply to a single blood component (e.g., platelets), to a particular blood group of a component (e.g., O negative red blood cells), or involve multiple blood components. Different components may be in different phases (e.g., at a given time red blood cells inventory availability is at Amber Phase while that of platelets is at Red Phase). The phase of the shortage will typically be assigned by the NEBMC and communicated to Alberta's PEBMC to initiate the required activities.

CBS inventory levels represent only a part of the total inventory within the blood system. The majority of the inventory at any one time is already stored in hospital transfusion services. Optimal management of blood shortages requires information on total blood inventories within the province.

The inventory information is obtained by:

1. A CBS Customer Letter for inventory advisory and request for hospital inventory reporting will be sent to hospital transfusion services.
2. Transfusion Services will be required to report inventory levels daily through the CBS Blood Component and Product Disposition system.
3. The information will be summarized and shared with members of the Alberta PEBMC. This will greatly assist CBS and the NEBMC in deciding on inventory challenge phase declaration and duration.

Table 1: CBS Inventory Levels Corresponding to Contingency Plan Phases

Phase	CBS Inventory Level (hours/days on hand)			
	RBCs	Platelets	Frozen Plasma	Cryoprecipitate
Green	> 72 hours	50-100% of daily national inventory (DNI)	> 10 days	> 20 days
Amber	48-72 hours	25-50% of DNI. Recovery expected within 12 hours	3-10 days	6-20 days
Red	<48 hours	<25% of DNI. No recovery expected within 12 hours	<3 days	<6 days

4.1 Actions According to Phase of Inventory

This section of the Alberta Plan provides action recommendations for blood system participants during the four phases of the plan.

Each of the participants should have developed general emergency response/ business continuity plans; these plans will be activated as required in addition to the plan specific to blood shortages.

4.1.1 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 CBS/hospital actions.

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

Phase	Provincial (Ministry of Health + AHS) Activities	Hospital / Zone Activities
Green	<p>Verify support for this Plan including the policy, legal and ethical implications of the Plan.</p> <p>Ensure standardized equipment, policies and protocols across the zones for the transportation of blood components to enable redistribution of products.</p> <p>Identify and empower a program or committee to maintain the Alberta Plan.</p> <p>Develop and maintain the PBEMC Terms of Reference and ensure that current representation and contact information is correct.</p>	<p>Inventory requests will be filled as per routine practice by CBS / zonal inventory supplier</p> <p>Hospitals should report their available inventory back to blood supplier as required by CBS hospital customer liaison agreements.</p> <p>Establish/ maintain a Hospital/Zone EBMC with a mandate to develop, implement and maintain a blood shortage plan that encompass all four phases of this Plan.</p> <p>Other activities should proceed to:</p> <ul style="list-style-type: none"> Develop processes for inventory management including guidelines for efficient inventory utilization and acceptable levels of outdated blood components.

<p>Green</p>	<p>Develop and maintain the communication strategies and templates that will be used during activation of the plan.</p> <p>Actively encourage all hospitals and zones to follow the Plan's guidelines and monitor their compliance in doing so, particularly with respect to the following activities:</p> <ul style="list-style-type: none"> • Develop transfusion committees as per the CSA standard Z902 • Implementing transfusion guidelines – national, provincial and local • Participating in blood component disposition and inventory reporting to CBS • Establish systems for transparent sharing of hospital blood component inventories and utilization with hospitals/ zones and CBS • Further develop redistribution programs and other methods/programs to minimize outdated in rural and urban settings • Assist in developing and maintaining zone and/or hospital EBMC. <p>Develop and implement Simulation exercises to test and improve the Plan</p> <p>Develop policies and procedures for transportation of blood products with patients to other facilities in consultation with AHS provincial trauma and AHS emergency medical services (air and ground).</p>	<ul style="list-style-type: none"> • In collaboration with CBS, determine the hospital/zone inventory levels for green, amber and red levels, by both blood group and component. (I.e. Blood Utilization Management Program) • Develop and implement transfusion guidelines which address both appropriate indications and dosing of blood components. As well as guidelines for situations when particular components are not available, (e.g., product switching, washing, irradiation, CMV seronegative) <p>Monitor adherence to transfusion guidelines, including the performance of transfusion audits.</p> <p>Ensure application of available blood conservation methodologies.</p> <p>Develop and implement a strategy for perioperative blood inventory management, either a maximal surgical blood ordering schedule (MSBOS) or an alternate strategy.</p> <p>Maintain, or develop, mechanisms for the redistribution of product between hospitals/zone</p> <p>Develop and implement a documentation process with templates for release or non-release of blood components in Amber or Red Phase (Examples in Appendix 2).</p> <p>Notify CBS of situations that could result in increased demand or reduced availability of blood components.</p>
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4.1.2 Amber Phase

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

During the Amber Phase, the following actions will be taken.

Phase	Provincial (Ministry of Health + AHS) Activities	Hospital / Zone Activities
Amber	<p>Reiterate support for this Plan including the policy, legal and ethical implications of the Plan.</p> <p>The P/T or NAC provincial representatives shall convene the PEBMC within 48 hours of a NEBMC call and at regular intervals during the shortage situation.</p> <p>Implement the communications plan in collaboration with CBS.</p> <p>Notify senior management of hospitals/zones of the requirement to defer elective medical and surgical procedures which are likely to require the affected blood components.</p> <p>Notify senior management of hospitals/zones of the requirement to defer elective medical and surgical procedures which are likely to require the affected blood components.</p> <ul style="list-style-type: none"> • 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. 	<p>Convene the Hospital/Zone EBMC to monitor and control utilization of the affected blood components.</p> <p>Implement pre-established communications plans.</p> <p>Adjust inventory levels of affected components to levels consistent with those previously determined appropriate for Amber Phase and activate blood utilization management program.</p> <p>Recall emergency stocks in non-laboratory satellite refrigerators to transfusion service.</p> <p>Evaluate inventory to determine excess that could be shared with other affected sites within the province</p> <p>Request inventory from CBS based on Amber Phase requirements.</p> <p>Defer/cancel elective surgical procedures requiring the affected blood components.</p> <p>For RBC transfusions, follow guidelines for Amber Phase as outlined in Table 2. For platelet transfusions, follow guidelines for Amber Phase as outlined in Table 3.</p>

Amber	<ul style="list-style-type: none">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).	For frozen plasma and cryoprecipitate transfusions, ensure strict adherence to guidelines established in Green Phase.
	Monitor hospital compliance with and implementation of the actions required in Amber Phase.	Refer all requests for the affected blood components that do not fulfill pre-determined acceptance criteria to the Transfusion service Medical Director or designate prior to issuing product.
	Review logistical process changes that may alleviate impact of shortage while in amber phase (Appendix 3)	Implement the documentation process for release or non-release of blood components – see toolbox for sample forms.
		Review logistical process changes that may alleviate impact of shortage. (Appendix 3)

4.1.3 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).

During the Red Phase 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 communication plan remain vitally important. In addition, the following actions will be taken.

Phase	Provincial (Ministry of Health + AHS) Activities	Hospital / Zone Activities
Red	<p>Reiterate support for this Plan including the policy, legal and ethical implications of the Plan.</p> <p>The P/T or NAC provincial representatives shall convene the PEBMC within 48 hours of a NEBMC call and at regular intervals during the shortage situation.</p> <p>Implement the communications plan in collaboration with CBS.</p> <p>Notify senior management of hospitals/zones of the requirement to defer all medical and surgical procedures likely to require the affected blood components with the exception of emergency procedures.</p> <ul style="list-style-type: none"> 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). <p>Monitor hospital compliance with and implementation of the actions required in Red Phase.</p> <p>Ensure that Provincial Trauma, Critical Care, Transplant and Emergency services are aware of the National Plan appendix: The Allocation of Blood for Massive Transfusion during Critical Blood Shortages.</p>	<p>Convene the Hospital/Zone Emergency Blood Management Committee to monitor and control utilization of the affected blood components.</p> <p>Implement pre-established communications plans.</p> <p>Adjust inventory levels of affected components to levels consistent with those previously determined appropriate for Red Phase.</p> <p>Recall all emergency stocks not held in laboratory. Evaluate inventory that can be redistributed to sites of higher need. Request inventory from CBS based on Red Phase requirements.</p> <p>Defer/cancel all surgical procedures requiring the affected components with the exception of emergency surgical procedures.</p> <p>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.</p>

	<p>For RBC transfusions, follow guidelines for Red Phase as outlined in Table 2.</p> <p>For platelet transfusions, follow guidelines for Red Phase as outlined in Table 3.</p> <p>For frozen plasma and cryoprecipitate transfusions, ensure strict adherence to guidelines established in Green Phase.</p> <p>Refer all requests for the affected blood components that do not fulfill pre-determined acceptance criteria to the Transfusion service Medical Director or designate prior to issuing product. Implement the documentation process for release or non-release of blood components</p>
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Table 2: Guideline for the use of RBC transfusions in shortage situations

Green Phase	Amber Phase	Red Phase
Major Hemorrhage	Major Hemorrhage	Major Hemorrhage
Follow hospital/zone guidelines	Follow hospital/zone guidelines	Follow hospital/zone guidelines. Follow triage/ rationing allocation framework if instructed by NEBMC (framework available on www.nacblood.ca)
Surgery/Obstetrics	Surgery/Obstetrics	Surgery/Obstetrics
Follow hospital/zone guidelines	Urgent ¹ and emergency ² surgery in consultation with H/ZEBMC. Post/Peripartum bleed.	Emergency surgery in consultation with H/ZEBMC. Post /Peripartum bleed. Follow triage/ rationing allocation framework if instructed by NEBMC .
Non-Surgical Anemias	Non-Surgical Anemias	Non-Surgical Anemias
Follow hospital/zone guidelines	All requests for RBC transfusion in a patient with a Hb level > 70 g/L must be reviewed by designated medical personnel.	Consideration should be given to lowering the RBC transfusion triggers established for the amber phase depending on clinical situation. All requests for RBC transfusion in a non-bleeding patient must be reviewed by designated medical personnel.

¹ Urgent surgery – patient likely to have major morbidity if surgery not performed within the next one to 28 days

² Emergency surgery – patient likely to die (have major morbidity) with 24 hours without surgery

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/zone transfusion service 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 on a unit by unit basis as long as no evidence of hemolysis is present in the unit. 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 3: Guideline for the use of platelet transfusions in shortage situations

Green Phase		Amber Phase		Red Phase	
Major Hemorrhage		Major Hemorrhage		Major Hemorrhage	
Follow	hospital/zone guidelines	Follow	hospital/ zone guidelines	Follow	hospital/zone guidelines
Invasive procedures/ surgery		Invasive procedures/ surgery		Invasive procedures/ surgery	
Follow	hospital/zone guidelines	Urgent and emergency surgery in consultation with H/ZEBMC. Platelets may be provided when active bleeding or surgical procedure if a $PLT < 50 \times 10^9/L$ or if CNS trauma/surgery the $PLT < 100 \times 10^9/L$ in standard or low dose. For non-surgical invasive procedures (other than bone marrow aspiration or biopsy) - review with designated medical personnel.		Emergency surgery in consultation with H/ZBEMC All requests for platelet transfusion must be reviewed by designated medical personnel	
Bone marrow failure/ hematopoietic stem cell transplantation/ chemotherapy		Bone marrow failure/ hematopoietic stem cell transplantation/ chemotherapy		Bone marrow failure/ hematopoietic stem cell transplantation/ chemotherapy	
Follow	hospital/ ZONE guidelines	All requests for a platelet transfusion in non-bleeding patients must be reviewed by designated medical personnel Consideration may be given to lowering maximum threshold PLT for routine use of prophylactic transfusions to $5 \times 10^9/L$.		Eliminate all prophylactic transfusions. All requests for platelet transfusions must be reviewed by designated medical personnel	

Notes

- Issuing of lower doses of pooled or apheresis platelets may be used (i.e., split doses). Mechanisms to obtain split doses will need to be discussed at the PEMBC and Z/HEMBC levels.
- Lower PLT thresholds for platelet transfusions for surgical bleeding or special procedures (such as ECMO) should be used but threshold should be determined by PEMBC or Z/HEMBC.

In red or amber phases, the hospital/zone transfusion service 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. The length of this extension would be evaluated on a unit by unit basis considering platelet swirling, culture results and clarity as additional factors. In such cases the justification for use of 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.

4.1.4 Recovery Phase

Recovery of hospitals' blood inventory and return to normal activities (transfusions) should be slow and gradual to ensure the overall blood inventory does not return to shortage levels. Prioritization of need will continue until inventory levels are maintained such that there is a return to normal activities and usage can be approved.

Phase	Provincial (Ministry of Health + AHS) Activities	Hospital / Zone Activities
Recovery	The P/T or NAC provincial representatives shall convene the PEBMC within 48 hours of a NEBMC call and at regular intervals during the recovery process.	Convene the Hospital/Zone EBMC to monitor and control utilization of the affected blood components to protect vulnerable inventory.
	Continuation of the communications plan with CBS.	Implement pre-established communications plans.
	Notify senior management of hospitals/zones of the requirement to gradually increase medical and surgical procedures that were deferred during the shortage situation.	Adjust inventory levels of affected components to levels consistent with those previously determined appropriate for effective recovery.
	Ongoing monitoring of hospital compliance with and implementation of the actions recommended by the NEBMC and PEBMC to prevent lapse back to red or amber phase.	Slowly redistribute emergency stocks not held in laboratory. Request inventory from CBS based on criteria set forth by the PEBMC.
	Debrief, review and revise Provincial Blood Contingency Plan	Slowly reinstitute surgical / medical procedures that were deferred or cancelled due to the blood product shortage. Refer all requests for the affected blood components that do not fulfill pre-determined acceptance criteria to the Transfusion service Medical Director or designate prior to issuing product. Implement the documentation process for release or non-release of blood components
		Debrief, review and revise Blood Shortage Plan, Policies and Procedures.

5. Communication

Strong communication coordination will be necessary to achieve optimal management of a severe blood shortage. Two distinct types of communications need to be considered:

- a) Operational communications between and among various bodies or organizations and groups of health care professionals that need to occur for the necessary actions to be taken (small “c” communications); and
- b) Informational communications with internal (staff) and external (public/media) audiences (big “c” communications).

In times of severe blood shortages these two types of communications will be occurring nearly simultaneously, thus need to be well-coordinated and consistent between the National documents, those from the health ministry and from the health authority. Advance planning on developing this coordination strategy is essential. This section provides a basic overview of the communications approach on both fronts. For more detailed information, refer to the relevant appendix in the National Plan.

5.1 Information Flow from the NEBMC to the PEBMC and the H/ZEBMC

As stated previously, all P/T Blood Representatives and all NAC member(s) (or their respective designates) would be members of both the NEBMC and their respective PEBMC and in that way would provide the communication links between the national and their provincial committee. Following a meeting of the NEBMC, each P/T Blood Representative would then immediately (or in an appropriately timely manner) convene a meeting of their PEBMC in order to ensure that timely and accurate communications and actions occur in each province or territory. If a decision is made to move to an Amber or Red Phase (or recovery from such a phase) this would be communicated to the PEBMC and decisions made as to how best to communicate this information to hospitals in their jurisdictions, preferably according to a predetermined plan. Each H/ZEBMC would be convened according to the pre-established provincial or territorial plan.

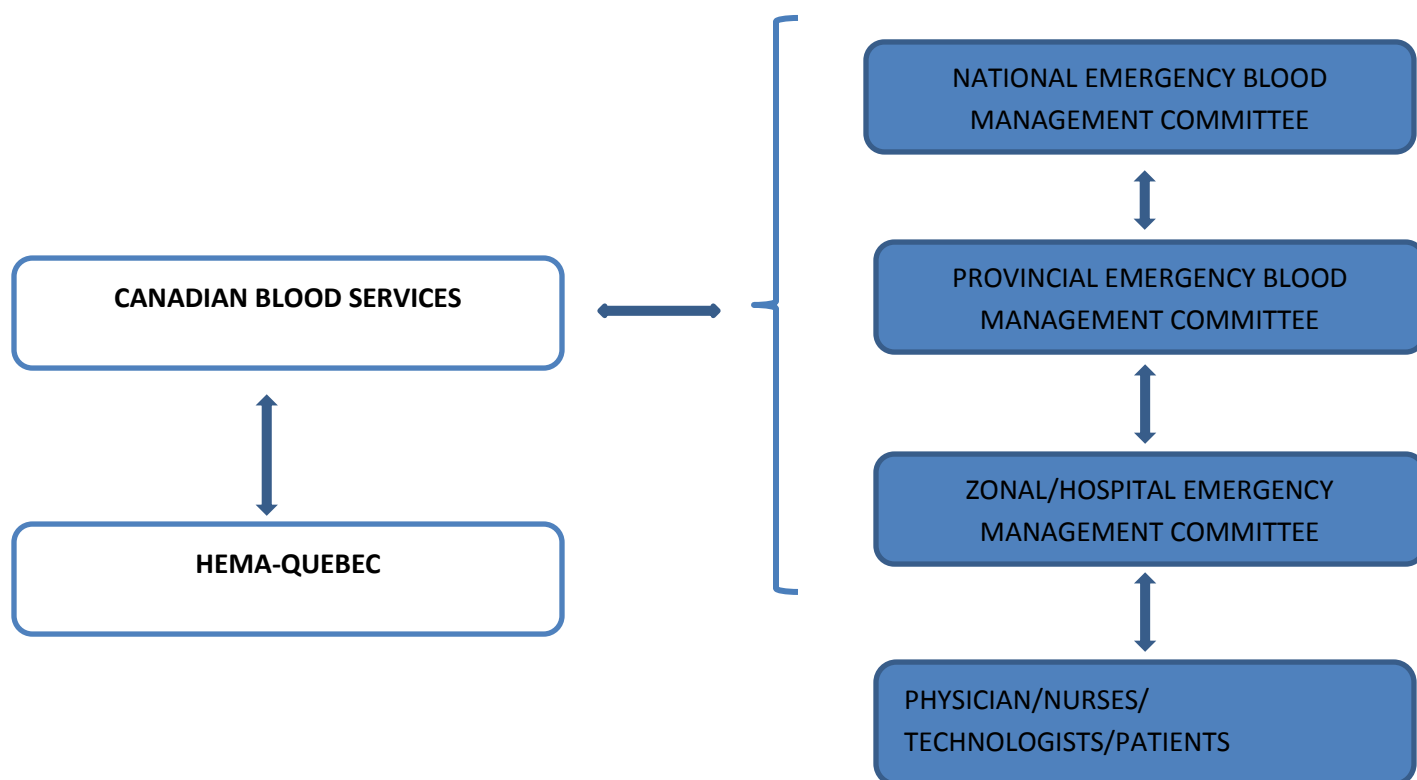
It will be extremely important that communications to the hospitals/zones from various sources be coordinated and consistent. Communications to hospitals/zones will occur via two communication chains: direct communication from CBS to hospitals/ zones and communications via the PEBMC. Therefore, it is essential that the persons responsible for communications to hospitals in CBS, the Ministry of Health, and the PEBMC be in constant and close contact.

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 the hospitals and the provincial/territorial

MOH about the impending shortages prior to actually activating this communication network.

When an Amber or Red Phase is declared attempts should be made to have the initial communication to this effect come from the PEBMC and/or the Ministry of Health; however, if this is not possible, in agreement with the Ministry of Health an initial communication may come directly from CBS. Following the declaration of an Amber (or Red) Phase and communication of this to hospitals, CBS would communicate on a regular (likely daily) basis with hospitals/zones concerning blood inventories and blood issues to hospitals; the PEBMC would communicate with hospitals/zones according through the representative members on the PEBMC and using standard template communications.

All members of the NEBMC would be copied on all communications sent from CBS. All PEBMC communications to hospitals/zone in their jurisdictions should be sent to the NEBMC secretariat at CBS who would, in turn, ensure that all NEBMC members received copies of these communications. Where time permits, the NEBMC should receive such communications prior to it being sent to the hospitals/zones. However, this may not always be possible.



APPENDICES

Appendix 1 Provincial EBMC Terms of Reference and Membership

Appendix 2 Sample Templates

- Request for Blood Products during a Shortage
- Blood Component Screening Log for Use during a Blood Shortage
- Status Report for Red Blood Cell Shortages
- Status Report for Platelet Shortages

Appendix 3 Logistic Process Decision Trees

Appendix 4 Sample Communication Templates

Appendix 5 Hospital Sites Stocking Blood Components and Products

Appendix 1

Provincial EBMC Terms of Reference and Membership

Purpose

The Alberta Emergency Blood Management Committee (AB EBMC) will lead and coordinate the response to potential and actual blood contingencies in, or affecting, Alberta. The AB EBMC will provide advice, direction, and recommendations on transfusion services as outlined in the Provincial Blood Contingency Plan (The Plan).

Principal Responsibilities

1. Develop a response plan to minimize the provincial impact of blood shortages;
2. Work in accordance with the guidelines outlined in the National Plan;
3. Ensure that the AB EBMC recommendations, and those of the NEBMC are appropriately communicated to all key provincial stakeholders to allow activation of the plan;
4. Provide the conduit for communications/feedback between the NEBMC, the AB EBMCs, hospitals, and provincial emergency management groups;
5. Ensure the Plan is integrated with provincial emergency plans and that provincial emergency response teams understand the response phases of the Plan;
6. Establish a process to monitor adherence to the National and Provincial plans in times of blood shortages;
7. Establish recommendations to manage non-adherence to the National and Provincial plans in times of blood shortages;
8. Conduct reviews of blood contingency events (real or mock) on an annual basis and report findings to Alberta Health, AHS, NAC and CBS;

9. Ensure that the zone and hospital blood contingency plans are congruent with the National and Provincial plans;
10. Identify risks which hinder transfusion service emergency blood management, and work to develop mitigation strategies;
11. Identify and share learning opportunities to promote blood shortage preparedness and encourage collaboration with other emergency/contingency planning groups;
12. Advise on the transfusion service component of public communications during Red, Amber and Recovery phases;
13. Prepare resources/templates which can be used across zones for different stakeholders including the public;
14. Review and update where required, at least every two (2) years, the Alberta Plan.

Meetings

The PEMBC will meet as often as deemed necessary by the chair(s) or by a CBS Medical Director. Meetings may be by tele/video-conference and/or face to face.

Members assume the responsibility to attend all meetings (in person or by tele/video-conference).

Agenda items will be determined by the Chair(s) with input from the members.

A Record of Decision/Actions of meetings and teleconferences will be prepared and distributed to the membership. The Record of Decision/Actions will be kept by the Chair. This information will be shared with others as appropriate.

Membership

To provide the link with the NEBMC the following individuals must be included as Core team members for the PEBMC:

- P/T Blood Representative
- Provincial NAC member(s)

Representation	Name	Other Position(s)
NEBMC Representatives		
P/T Blood Representative	Glenna Laing* [#]	Alberta Health
Provincial NAC member	Dr. Meer-Taher Shabani Rad* [#]	Calgary Lab Services Transfusion Medicine – Medical Director
Provincial NAC member	Dr. Susan Nahirniak* [#]	AHS Edmonton – Co Medical Director, Transfusion
Provincial TM Integration Network Representatives (also includes individuals marked with *)		
Chair	Dr. Leland Baskin [#]	Medical Director & Vice President of Medical Operations, Calgary Lab Services
Co-Chair	Trevor Richardson [#]	AHS Laboratory Services - Transfusion Medicine Lead
	Karen Williams	AHS Laboratory Executive
	Not yet appointed	AHS North Zone – Medical Director TM
	Astrid Maguire	AHS North Zone – Alternate to Med. Director
	Denise Stewart	AHS North zone –Zone TM Tech III
	Kathy Hamacher	AHS Edmonton – Zone TM Tech III
	Dr. Tony Morris	AHS- Central zone TM Medical Director
	Carole Ann LaGrange [#]	AHS- Central zone TSO / alternate to Medical Director
	Monica Phillips [#]	CLS Transfusion Medicine – Zone supervisor
	Dr. David Lyon	AHS South – TM Medical Director
	To be determined	AHS South - TSO / alternate to Medical Director
	Valerie Burton	Covenant – Rural Technical Rep.
	Brenda Luntz	Covenant – Urban Technical Rep.
	Lisa Denesiuk	DynaLife Dx – Business and Technology
	Dr. Charles MacAdams	Calgary RTC Chair - Cardiovascular Anaesthesiology,
	Drs. Ritchie and Bergstrom	Edmonton RTC Chair -Hematology / Oncology
Canadian Blood Services		
Hospital Liaison Specialist	Rachel Brace* [#]	CBS – Calgary & Edmonton
Medical Officer	Dr. Dale Towns* [#]	CBS – Calgary
Medical Officer	Dr. Judy Hannon*	CBS - Edmonton
Product Distribution	Gary Lam	CBS - Edmonton
Product Distribution	Rita Burkard	CBS - Calgary
Alberta Health		
Chief Medical Officer of Health Office Representative	Annette Lemire [#]	Alberta Health

Director, Transfusion and Transplantation Unit	Glenna Laing [#]	Alberta Health
Manager, Transfusion and Transplantation Unit	Samantha Cassie [#]	Alberta Health
Alberta Health Services		
AHS Laboratory Executive	Tammy Hofer [#]	
AHS Executive VP Medicine	Verna Yiu	
AHS Leader Collaborative Practice, Nursing and Health Professions	Deb Gordon	
AHS Risk Management representative	To be determined	
AHS Corporate Business continuity representative	Mike Hillier	
AHS Communications representative	Tadra Boulton	
AHS Corporate Ethics representative	To be determined	

ABO Steering Committee members are marked with#.

The “action arm” of the PEBMC will be the Provincial Transfusion Medicine Network but other PEBMC members include (Note some individuals in this list may already be represented through their role on the PTMN):

- Chief Medical Officer of Health
- ABO Steering Committee members
- Medical Officers, Canadian Blood Services – Calgary & Edmonton
- Directors of Product & Hospital Services, CBS –Calgary & Edmonton,
- Hospital Liaison Specialist, Canadian Blood Services
- AHS Executive VP Medicine
- AHS Leader Collaborative Practice, Nursing and Health Professions
- AHS Enterprise Risk Management representative
- AHS Corporate Business continuity representative
- AHS Communications representative
- AHS Corporate ethics representative

In the event the situation warrants, the core team members could also be expanded to include the following (if not already captured in membership above):

- AHS Laboratory Medicine Executive Director
- AHS Zone Representatives for Laboratory Clinical Department Heads
- AHS Medical / Scientific Directors – Calgary, Edmonton and Rural
- AHS Zone designates for:
 - Laboratory Managers
 - Risk Managers
 - Transfusion Safety Officers
 - Quality Specialists
 - Patient Care administrators
 - Executive management representatives
 - Physician user group representatives
 - Blood recipient representative(s)
 - Other representatives as identified by the PEBMC

Appendix 2: Sample Templates

1. Request for Blood Products during a Shortage
2. Blood Component Screening Log for Use during a Blood Shortage
3. Status Report for Red Blood Cell Shortages
4. Status Report for Platelet Shortages



REQUESTS FOR BLOOD PRODUCTS DURING A SHORTAGE

Phase:	<input type="checkbox"/>	Amber	<input type="checkbox"/>	Red
Facility:				

Component(s) Requested:

RED CELLS # _____ PLATELETS # _____ PLASMA # _____

Date/Time required: _____

Requested by: _____

Reason for request:

Laboratory Data: Hgb: _____ Plt: _____ INR: _____

Comments:

Quality Assurance

Review of existing processes _____

Recommendation for change _____



Blood Component Screening Log for Use During a Blood Shortage

Phase: Amber ☐ Red ☐

Facility: _____

Date: 20 / / at 0800 hr to 20 / / at 0800 hr

Time	ULI#	Last Name	Product Requested	Physician Requesting	Clinical Indication	Products Available	Decision	Pathologist reviewing
			Red Cells, # _____ Platelets, # _____ Plasma, # _____			Red Cells, # _____ Platelets, # _____ Plasma, # _____		
			Red Cells, # _____ Platelets, # _____ Plasma, # _____			Red Cells, # _____ Platelets, # _____ Plasma, # _____		
			Red Cells, # _____ Platelets, # _____ Plasma, # _____			Red Cells, # _____ Platelets, # _____ Plasma, # _____		
			Red Cells, # _____ Platelets, # _____ Plasma, # _____			Red Cells, # _____ Platelets, # _____ Plasma, # _____		
			Red Cells, # _____ Platelets, # _____ Plasma, # _____			Red Cells, # _____ Platelets, # _____ Plasma, # _____		

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Status Report for Red Blood Cell Shortage

Date of Report:

Blood Group	O Positive	O Negative	A Positive	A Negative	B Positive
Status					
# of units available					
% of reduction from normal levels					
Status Level Supported					

Determined by: _____

Status Levels:

Green = normal levels

Amber = reduced availability for short/prolonged period

Red = severe, prolonged shortages

<i>Green Phase</i>	<i>Amber Phase</i>	<i>Red Phase</i>
Major Hemorrhage	Major Hemorrhage	Major Hemorrhage
Follow hospital guidelines	Follow hospital guidelines	Follow hospital guidelines unless national triage plan initiated
Surgery / Obstetrics	Surgery / Obstetrics	Surgery / Obstetrics
Follow hospital guidelines	Urgent and emergency surgery	Emergency surgery
Non-Surgical Anemias	Non-Surgical Anemias	Non-Surgical Anemias
Follow hospital guidelines	All requests for RBC transfusion in patients with a Hgb level > 70 g/L must be reviewed by designated medical personnel	Consideration should be given to lowering the RBC transfusion triggers established for the amber phase. All requests for RBC transfusion in non-bleeding patients must be reviewed by designated medical personnel.



Status Report for Platelet Shortages

Date of Report:

Blood Group	O Pools	O Apheresis	A	A Apheresis	AB
Status					
# of doses available					
% stock reduction from Normal					
Status Level supported					

Determined by: _____

Status Levels:

Green = normal levels

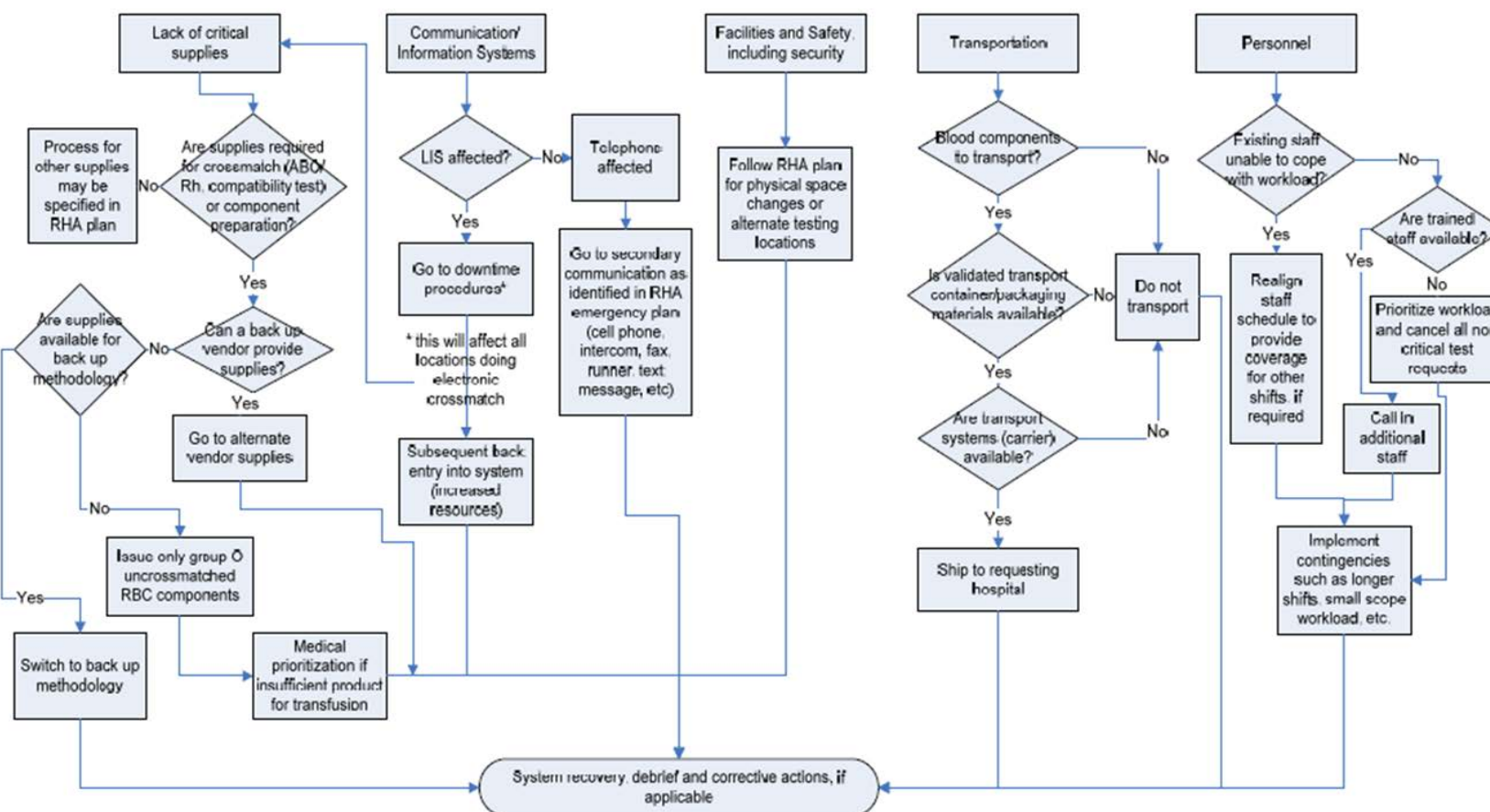
Amber = reduced availability for short/prolonged period

Red = severe, prolonged shortages

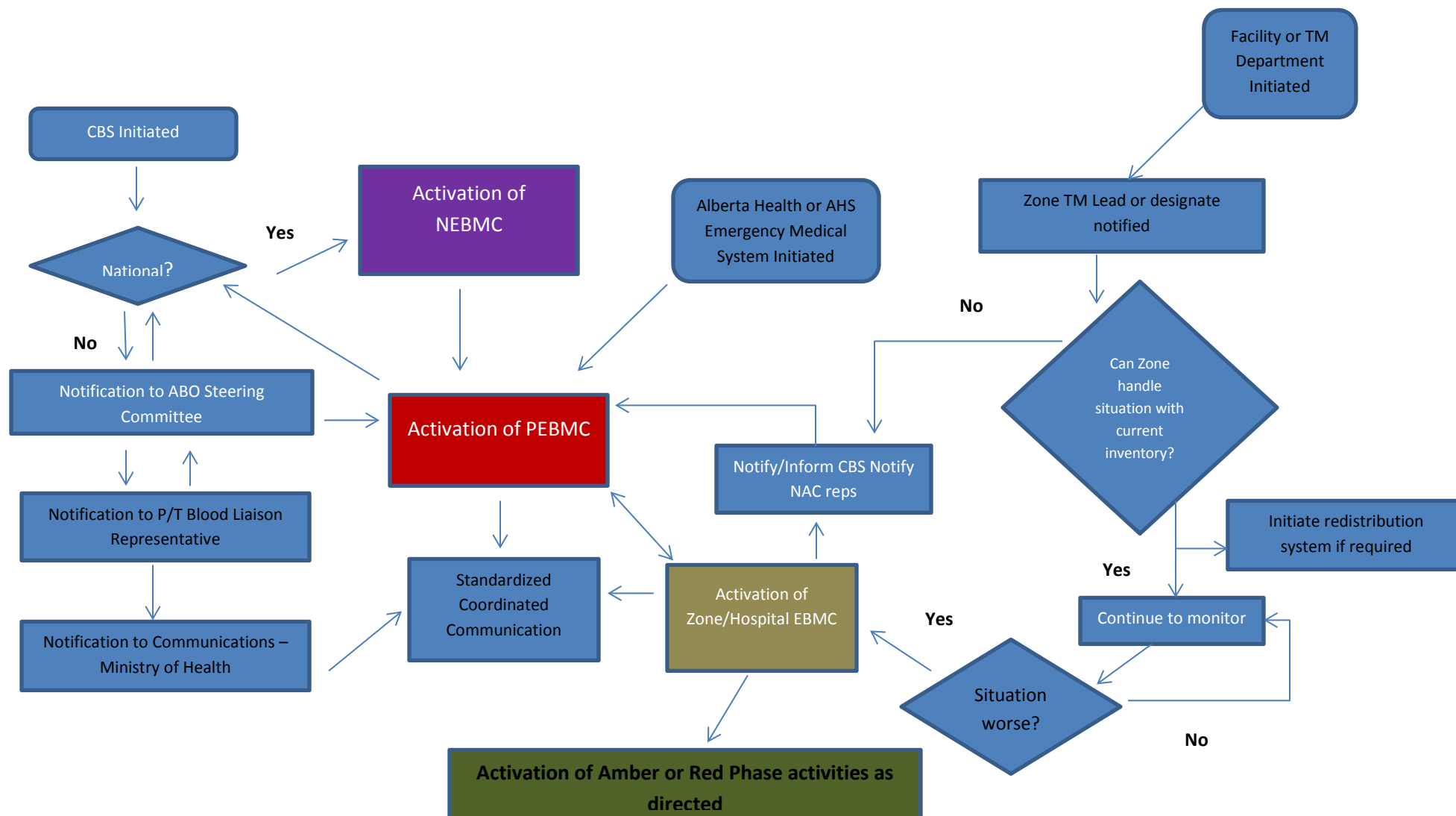
Green Phase	Amber Phase	Red Phase
Major Hemorrhage	Major Hemorrhage	Major Hemorrhage
Follow hospital guidelines	Follow hospital guidelines	Follow hospital guidelines unless national triage plan initiated.
Invasive procedures/surgery	Invasive procedures/surgery	Invasive procedures/surgery
Follow hospital guidelines	In presence of active bleeding or surgical procedure maintain a $PLT > 50 \times 10^9/L$ or if CNS trauma/surgery a $PLT > 100 \times 10^9/L$ For non-surgical invasive procedures (other than bone marrow aspiration or biopsy) maintain a $PLT > 30 \times 10^9/L$	In presence of active bleeding or invasive surgical procedure - consideration of low dose platelet transfusion in consultation with designated medical personnel. No platelets provided to non-surgical invasive procedures.
Bone marrow failure/ hematopoietic stem cell transplantation/chemo-therapy	Bone marrow failure/ hematopoietic stem cell transplantation/chemotherapy	Bone marrow failure/ hematopoietic stem cell transplantation/chemo-therapy
Follow hospital guidelines	Adhere to maximum threshold for prophylactic platelet transfusions of $10 \times 10^9/L$, consider low dose transfusion. All request for a platelet transfusion in non-bleeding patients with a $PLT > 10 \times 10^9/L$ must be reviewed by designated medical personnel.	Eliminate all prophylactic transfusions. All requests for platelet transfusions in non-bleeding patients must be reviewed by the Emergency Blood Management Committee

Appendix 3: Logistic Processes Decision Trees

Logistic Processes Applicable to Blood Transfusion Laboratories



Alberta Blood Contingency Plan Activation Process



Appendix 4: Sample Communication Templates

Appendix 4.1 – National Inventory Shortage Alert template



National Advisory Committee
on Blood and Blood Products

Comité consultatif national sur
le sang et les produits sanguins

National Inventory SHORTAGE Alert

Date and time of issue	2010-Feb-15 09:00 EST
Inventory Availability Phase	AMBER
Product(s)	Apheresis platelets (all groups)
Description	Following a massive recall of platelet collection bags from CompanyX, the availability of platelets has been seriously compromised. The National Emergency Blood Management Committee has called an Amber Phase of the National 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	<ul style="list-style-type: none"> Follow directives in Amber section of your National / Provincial / RHA or Hospital blood shortage plan
For more information	Key messages enclosed with this Shortage Alert. For additional info, contact: John Smith Hospital Liaison Specialist – CBS Region X Canadian Blood Services (416) 123-4567

Appendix 4.2 – Provincial Inventory Shortage Alert Template



Provincial Inventory SHORTAGE Alert

Date and time of issue	2010-Feb-15 09:00 EST
Inventory Availability Phase	AMBER
Product (s)	Apheresis platelets (all groups)
Description	<p>Following a massive recall of platelet collection bags from CompanyX, the availability of platelets has been seriously compromised.</p> <p>The National Emergency Blood Management Committee has called an Amber Phase of the National Blood Shortages plan.</p> <p>Canadian Blood Services is attempting to secure bags from another vendor, but it may be a few weeks until supplies can be replenished.</p>
Impact on hospitals	<ul style="list-style-type: none">• Follow directives in Amber section of the Provincial and Hospital/Zone blood shortage plan.• Activation of Hospital/Zone Emergency Blood Management Committees should commence.
For more information	Key messages enclosed with this Shortage Alert. For additional info, contact your local representative of the Provincial TM Integration Network

Appendix 5: Hospital Sites Stocking Blood Components and Products

A complete list of hospital sites stocking blood components and blood products can be found on the Alberta Health Services website at:

<http://www.albertahealthservices.ca/LabServices/wf-lab-alberta-blood-bank-contact-and-stock-info.xls>