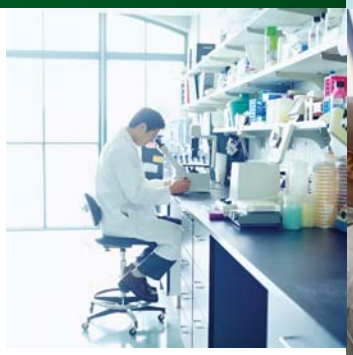
British Columbia Blood Contingency Plan



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BC Transfusion Medicine Advisory Group

Provincial Health Services Authority
Province-wide solutions. Better health.

BC Provincial Blood Coordinating Office

A program of the Provincial Health Services Authority

Abbreviations

BC EBMC	British Columbia Emergency Blood Management Committee
BCERMS	British Columbia Emergency Response Management System
CBS	Canadian Blood Services
CCG	Central Coordination Group
CTR	Central Transfusion Registry
HA	health authority
Hb	hemoglobin
HEMC	Health Emergency Management Council
MDEC	Ministers-Deputies Emergency Committee
MoHS	BC Ministry of Health Services
MSBOS	maximal 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 Components (developed by the NAC and CBS)
NEBMC	National Emergency Blood Management Committee
PBCO	BC Provincial Blood Coordinating Office
PECC	Provincial Emergency Coordination Centre
PEP	Provincial Emergency Program
PREOC	Provincial Regional Emergency Operations Centre
P/T	provincial/territorial
RBC	red blood cell
TM	transfusion medicine
TMAG	Transfusion Medicine Advisory Group
TRG	Technical Resource Group
NRG	Nursing Resource Group

Contents

Executive Summary

The availability of blood and blood products is essential to the provision of emergency, surgical and medical care in British Columbia. In a blood system based on voluntary donation and in which BC imports 10-15% of its blood supply, the potential for blood shortage is an ongoing risk. A number of emergency scenarios, including natural or man-made disasters, pandemic outbreak, terrorism and/or extremes of weather, could contribute to extremely low blood inventory levels.

The purpose of this document is to provide a framework for a rapid and effective response to a localized or widespread blood shortage in BC. It is an advisory document for those involved with the management, supply and use of blood in BC. The aim is to ensure that access to safe blood transfusion is maintained for as many patients as possible during a blood shortage, and to provide a means to enable the equitable allocation of blood in such situations, on the basis of need.

The plan is based on the *National Plan for the Management of Shortages of Labile Blood Components* and includes Green, Amber and Red phases, each of which corresponds to a level of blood inventory availability as follows.

- Green phase: Normal blood component inventory levels exist and supply generally meets demand.
- Amber phase: Blood inventory is not sufficient to continue with routine transfusion practices and hospitals will be required to implement specific measures, as outlined in this plan, to reduce blood use.
- Red phase: Blood inventory is insufficient to ensure that patients with non-elective indications for transfusion will receive the required transfusion(s).

Roles and responsibilities are outlined for each of Canadian Blood Services, the National Emergency Blood Management Committee, the BC Ministry of Health Services, the BC Provincial Blood Coordinating Office, the BC Emergency Blood Management Committee, and Health Authorities/hospitals. Appendix E summarizes the responsibilities of the latter during each phase. Communications and transportation considerations are also addressed.

The plan was developed by a provincial working group whose members are listed in Appendix A. The plan will be reviewed on a regular basis and updated as necessary.

1 Introduction

1.1 Purpose

The purpose of this plan is to provide a framework for a rapid and effective response to a localized or widespread blood shortage in British Columbia. It is an advisory document intended to guide organizations and individuals involved in or associated with the management, supply and use of blood and blood products in BC, and by organizations who need to include blood in their emergency plans. The objectives are to:

- improve awareness of, and encourage appropriate preparation for, the impact of blood shortages on the health sector;
- ensure a consistent and coordinated approach across the province during blood shortages;
- ensure that access to safe blood transfusion is maintained for as many patients as possible during a blood shortage, and provide a means to enable the equitable allocation of blood in such situations, on the basis of need;
- ensure that the BC response is consistent with the *National Plan for the Management of Shortages of Labile Blood Components* prepared by the National Advisory Committee on Blood and Blood Products (NAC) and Canadian Blood Services (CBS);
- ensure that blood contingency planning is integrated into existing emergency preparedness plans in the province, and that blood-related activities are part of a coordinated response in the event of an emergency; and
- provide guidance to health authorities and hospitals in developing their own blood contingency plans.

1.2 Scope

This plan addresses labile blood components collected, produced and distributed by CBS, namely red blood cells, platelets, frozen plasma and cryoprecipitate. However, many of the principles are also applicable to a shortage of fractionated or recombinant plasma protein products.

This plan addresses measures to be taken within BC to reduce demand for blood and optimize allocation of the existing supply. It does not address measures to increase the volume of blood supplied by CBS, as these are addressed by CBS in other documents.

This plan is intended to deal with all blood contingencies, regardless of the cause, geographic extent or duration.

1.3 Plan Development

This plan was developed by a provincial working group consisting of representatives from the BC Provincial Blood Coordinating Office (PBCO), CBS BC & Yukon, the Transfusion Medicine Advisory Group (TMAG), BC health authorities and Yukon. See Appendix A for a list of members. The group acknowledges and builds upon the blood contingency planning work done by the NAC and CBS, the Nova Scotia Provincial Blood Coordinating Program (NSPBCP), the Ontario Blood Programs Coordinating Office (BPCO) and Ontario Regional Blood Coordinating Network (ORBCoN), the Alberta Ministry of Health, the United Kingdom National Blood Service, the Australian National Blood Authority and the American Association of Blood Banks (AABB).

2 The Basics of Blood Contingency Planning

2.1 Causes of Blood Contingencies

A contingency is an event – often an emergency – that may, but is not certain to, occur. A blood contingency is an event that results in a blood shortage.

The two broad causes of blood contingencies are events that result in a significant surge in demand for blood and events that result in a substantial decrease in the available supply of blood. Additional variables affecting blood contingencies include, but are not limited to, the size and capability of the hospital, the hospital's geographic location, and the hospital's distance from the blood supplier.

Table 1 lists the type of events that can result in a blood contingency. Because CBS manages the blood supply as a single national inventory (outside Quebec), events in other provinces can result in a blood shortage in BC.

Table 1: 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

2.2 Lessons Learned from Past Contingencies

Based on previous disasters in the United States, the American Association of Blood Banks (AABB) Interorganizational Task Force on Domestic Disasters and Acts of Terrorism has identified five overarching lessons for the blood community. Adapted for the BC context, they can be summarized as follows.

1) The need to ensure that facilities are prepared for contingencies at all times in all locations.
2) The need to control collections in excess of actual need in response to a contingency.
3) The need for a clear and consistent message to the blood community, donors and the public regarding the status of the blood supply (both locally and nationally) during a contingency.
4) The need for continuous contingency planning, including participation in disaster drills and close coordination with local, provincial and federal response agencies.
5) The need for overall inventory management within the province, including a unified approach to communication among facilities and transportation of blood and blood components during a contingency.[1]

A lesson learned from past blood shortages within BC is the critical importance of frequent and clear communications and collaboration among CBS, hospitals, TMAG and PBCO.

3 Plan Overview

3.1 Principles

During a blood contingency, difficult decisions need to be made about how to ration blood products. This plan is based on the following principles.

- All patients in British Columbia should have equal access to the available blood on the basis of need. No hospital should stockpile blood for "its" patients when there is a greater need elsewhere.
- When available resources are exceeded, the focus will shift from doing the best for the individual patient to the public health goal of doing the greatest good for the greatest number while balancing obligations to individuals and individual needs.
- Blood inventory transparency is essential in a shortage. Decision makers need to know what inventory is available in the province, regardless of whether it is at CBS or hospitals.
- All affected hospitals are accountable for taking a consistent and transparent approach to blood utilization management during a contingency. Decision makers must be able to trust that others in similar positions are adhering to similar ground rules.

The rationale behind these principles, and the values guiding ethical decision-making in a blood shortage, are discussed in more detail in the *National Plan*.

3.2 Assumptions

This plan is based on the following assumptions.

[1] Adapted from American Association of Blood Banks. *Disaster Operations Handbook: Coordinating the Nation's Blood Supply During Disasters and Biological Events*, v.2.0, September 2008, p.9.

- This plan applies to situations in which the supply of blood is insufficient to meet current or anticipated demand, despite ongoing efforts by CBS to increase the available supply.
- During a blood shortage, blood use will be triaged to ensure the most urgent cases receive the available supply. Depending on the severity of the shortage, this may include suspension of prophylactic transfusions and elective procedures requiring blood to allow provision of emergency treatments. This may also involve cessation of transfusion support in terminal or moribund patients.
- During a blood shortage, CBS and hospitals will fully share inventory information about the affected component(s) in a timely manner.
- Measures to ensure appropriate blood use and reduce waste during non-shortages contribute significantly to blood contingency preparedness. It is assumed that BC hospitals are aware of the following "best practice" measures and are striving to undertake them:
    - implementing the TMAG transfusion guidelines;
    - monitoring adherence to the transfusion guidelines, including through performance of transfusion audits;
    - scrutinizing orders that are outside the guidelines;
    - ensuring application of available blood conservation methods;
    - implementing a strategy for perioperative blood inventory management: either through a maximal surgical blood ordering schedule (MSBOS) or an alternate strategy;
    - implementing a massive blood transfusion policy/algorithm to aid in managing situations where large blood needs may exist;
    - ensuring that "best practices" in inventory management of blood components and blood products are in place, including processes for efficient inventory utilization and means to minimize outdating;
    - participating in blood redistribution programs if appropriate and
    - recording the hospital's RBC inventory level on the CBS Blood Component Order Form when submitting a routine blood order, as per the hospital's routine order schedule.
- Depending on the nature and severity of the event that resulted in the blood shortage, the health emergency management response structure may be activated at the request of the affected health authority. See Appendix C for more information.

3.3 Phases of Inventory Availability

The model on which this plan is based was originally developed in the United Kingdom, subsequently adopted by Nova Scotia and Ontario, and then incorporated into Canada's national blood shortage plan. It is based on three phases, each of which corresponds to a level of inventory availability.

1) **Green**: 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/hospital actions.
2) **Amber**: Blood inventory is not sufficient to continue with routine transfusion practices and hospitals will be required to implement specific measures, as outlined in this plan, to reduce blood use.
3) **Red**: Blood inventory is insufficient to ensure that patients with non-elective indications for transfusion will receive the required transfusion(s).

3.4 CBS Inventory Levels

It is not possible for CBS to define precise national inventory levels that would automatically trigger the declaration of an Amber or Red phase. Critical levels vary according to component, to blood group and

to the anticipated length of any given shortage. Table 2 shows how the CBS red blood cell (RBC) and platelet inventory levels correspond approximately to the phases of this plan. Note that each component can be in a different phase at any given time – for example, there could be an Amber or Red phase situation for RBCs but not for platelets. The declaration of an Amber or Red phase would depend as much on the predicted ability of CBS to increase blood inventories through increased collections as on the actual inventory on any one day; i.e., such a declaration would be made only if CBS were forecasting a sustained decrease in inventory levels.

Table 2: 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 requirement	> 10 days	> 20 days
Amber	48 – 72 hours	25-50% of daily national requirement, recovery expected within 12 hours	3 – 10 days	6 – 20 days
Red	< 48 hours	< 25% of daily national requirement, no recovery expected within 12 hours	< 3 days	< 6 days

*As platelets have a shelf life of only 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 hours/days on hand.

3.5 Total Inventory Levels

CBS inventory levels represent only part of the total inventory within the blood system, as a large part of the total inventory at any given time is in storage at hospital blood banks. The inventory levels corresponding to a phase definition may vary depending on whether one looks at total CBS inventory, CBS BC&Yukon Centre inventory or total provincial inventory (CBS BC&Yukon plus hospitals).

Optimal management of blood shortages requires that decision-makers have information about total blood inventory, including inventories in hospitals.

4 Roles and Responsibilities

4.1 Canadian Blood Services BC & Yukon

For the purposes of this plan, CBS BC & Yukon is responsible for:

- Development and maintenance of its own contingency plan, including plans to maintain operations in the event of a disaster affecting the BC & Yukon Centre and/or CBS transportation routes.
- Ensuring that the CBS contingency plan is fully integrated with provincial, regional and local emergency plans.
- Alerting the BC Emergency Blood Management Committee (BC EBMC) in a timely manner to potential and actual blood contingencies that affect BC.
- Declaring the various phases of labile blood component shortages and recovery from such shortages in BC, in consultation with the BC EBMC.

- Determining the distribution of blood components within BC in accordance with the contingency plan phase, in consultation with the BC EBMC.
- Coordinating communications regarding donor and supply issues.

4.2 National Emergency Blood Management Committee

For the purposes of this plan, the NEBMC -- which consists of representatives from CBS, provincial and territorial ministries of health, the NAC, Quebec, Health Canada and patients -- is responsible for:

- Providing advice to CBS National with respect to the appropriateness of declaring an Amber or Red phase at the national level, and recovery from these situations.
- Providing recommendations on the national distribution of blood components in national Amber and Red phases.
- Providing recommendations on previously unforeseen circumstances related to critical national blood shortages.
- Providing recommendations concerning the communication of national shortages to key stakeholders.
- Ensuring the necessary communication between the NEBMC and BC EBMC.

4.3 BC Ministry of Health Services

For the purposes of this plan, the BC Ministry of Health Services (MoHS) is responsible for:

- Endorsing and supporting implementation and maintenance of the *BC Blood Contingency Plan*.
- Participating in the NEBMC and BC EBMC and facilitating communication between the two committees.
- Facilitating the implementation of NEBMC and BC EBMC recommendations.
- Liaising with other BC government ministries, departments, agencies and health authorities to ensure that appropriate attention is given to blood contingency planning issues.
- Communicating relevant BC contingency planning information to other provincial and territorial blood representatives.
- Coordinating communications with the public and media regarding implications of the blood contingency for patient care.

4.4 BC Provincial Blood Coordinating Office

For the purposes of this plan, the PBCO is responsible for:

- Providing the secretariat for the BC EBMC, including facilitating communications and documenting recommendations, as appropriate.
- Developing and maintaining the *BC Blood Contingency Plan* and supporting tools.
- Communicating relevant BC contingency planning information to other provincial blood offices.

4.5 BC Emergency Blood Management Committee

The BC EBMC consists of the following or their designates:

- Provincial/Territorial Blood Representative (Director, Blood and Lab Services, Ministry of Health Services)

- Provincial Director, PBCO
- Medical Director, PBCO
- Medical Consultant, CBS BC&Yukon
- Site Manager, Production, CBS BC&Yukon
- Customer Liaison Specialist, CBS BC&Yukon
- Regional Transfusion Medicine Director, Fraser Health Authority
- Regional Transfusion Medicine Director, Interior Health Authority
- Regional Transfusion Medicine Director, Northern Health Authority
- Regional Transfusion Medicine Director, Provincial Health Services Authority
- Regional Transfusion Medicine Director, Vancouver Coastal Health Authority
- Regional Transfusion Medicine Director, Vancouver Island Health Authority
- Medical Leader, Transfusion Medicine, Providence Health Care
- Chair, Transfusion Medicine Advisory Group (if not one of the above)
- Transfusion Medicine Representative, Yukon
- Communications Specialist, Public Affairs Bureau, MoHS.

Contact information for the committee is provided in Appendix B.

The BC EBMC is responsible for:

- Leading and coordinating the response to potential and actual blood contingencies in or affecting BC.
- Ensuring that its recommendations, as well as those of the NEBMC, are appropriately communicated during blood contingencies.
- Supporting individual Transfusion Medicine Directors in dealing with blood contingencies in their health authorities.
- Providing input to the MoHS Public Affairs Bureau on communications with the public and media regarding implications of the blood contingency for patient care.
- Communicating with the MoHS Emergency Management Unit during blood contingencies.
- Ensuring that the *BC Blood Contingency Plan* is integrated with provincial emergency plans and that provincial emergency response teams understand the response phases of the blood contingency plan.

The BC EBMC will meet annually or more frequently, as required. A meeting of the BC EBMC can be called by any of the CBS Medical Director, the PBCO Medical Director, an HA Transfusion Medicine Director, the TMAG Chair or the Provincial/Territorial Blood Representative. There will be no requirement for quorum and decisions will be made by consensus. Consensus is defined as 80% (or greater) agreement of the BC EBMC members present.

4.6 Health Authorities/Hospitals

Health Authorities/hospitals are responsible for:

- Developing and maintaining a Health Authority/health service delivery area/hospital blood contingency plan that delineates lines of responsibility, decision-making processes, and effective

lines of communication to enable appropriate response during a contingency. The plan should be guided by the framework provided in the *BC Blood Contingency Plan*.

- Ensuring that all hospitals within the health authority are aware of/compliant with the HA plan and have their own plans as required.
- Ensuring that the HA/hospital blood contingency plan is integrated with HA/hospital emergency plans, that regional and local emergency response teams understand the response phases of the blood contingency plan and that health authority emergency management personnel are kept informed about blood contingencies when they happen. Contact information for health authority emergency management personnel is included in Appendix C.
- Implementing recommendations of the BC EBMC as appropriate.
- Ensuring that communications with staff, the public and media are consistent with the communications of CBS, the BC EBMC and the MoHS.

5 Communications

5.1 Identification and Communication of Blood Contingency

5.1.1 Contingencies Identified by CBS National and/or Originating Outside BC

In cases where the possibility of a contingency that could lead to the declaration of an Amber or Red phase is first identified within CBS National and/or outside BC, the NEBMC will meet in accordance with the process outlined in the *National Plan*. Final decisions as to the measures to be taken will be made by the CBS Chief Operating Officer using knowledge of current and future inventories and considering advice received from the NEBMC. These decisions will include:

- determination of the phase, i.e. a declaration of Amber or Red phase or a decision to remain in Green;
- the level of inventory CBS will distribute to each province or territory;
- the timing and mode of communications to hospitals/health authorities; and
- determination of the frequency of future meetings of the NEBMC.

CBS or one of the BC representatives on the NEBMC will then immediately (or in an appropriate timely manner) convene a meeting of the BC EBMC to assure appropriate communications and actions in BC.

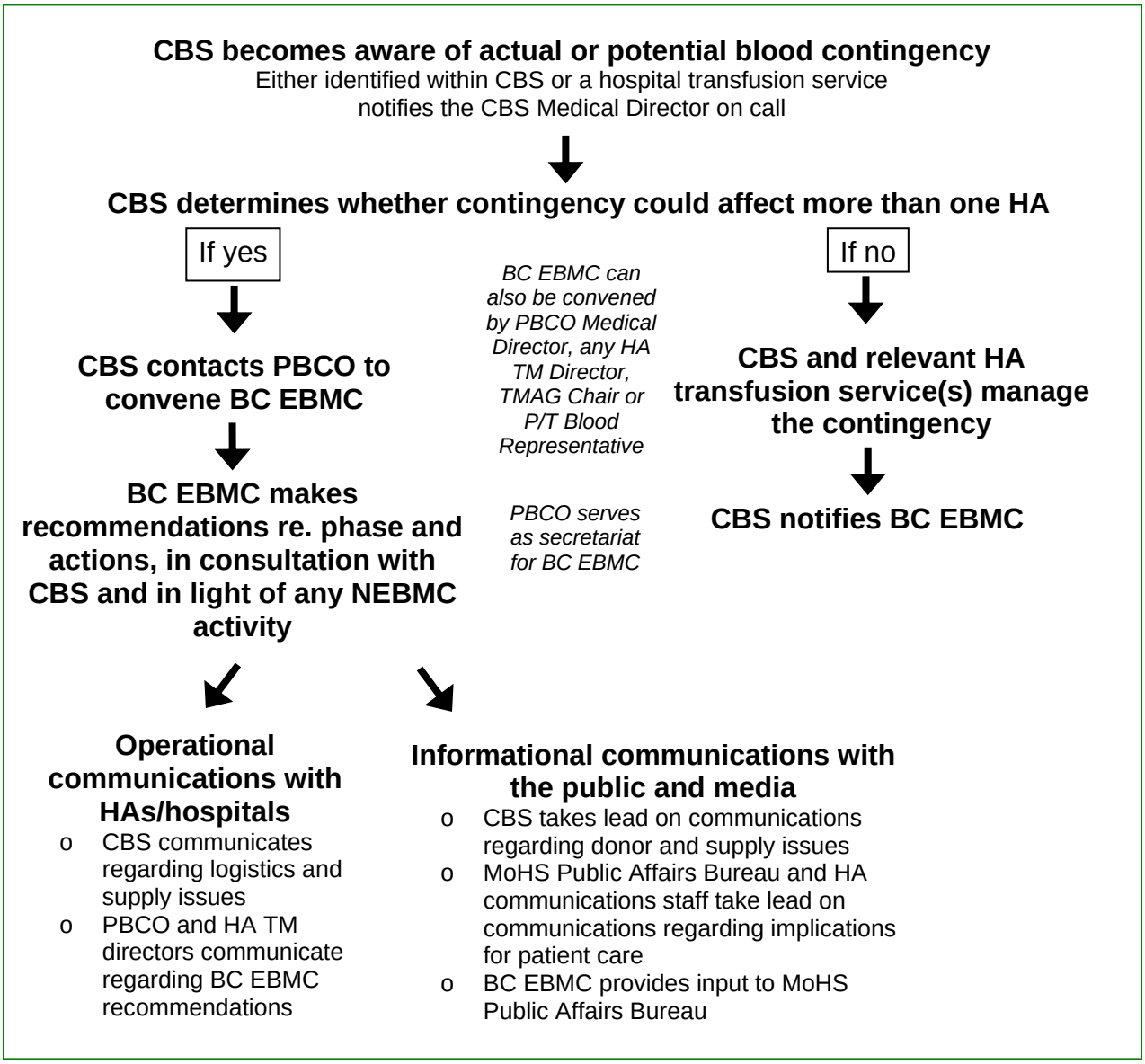
5.1.2 Contingencies Identified Within BC

In cases where the possibility of a blood contingency is first identified by a BC hospital, health authority or other stakeholder outside of CBS, the stakeholder should contact the Medical Director on call at the CBS BC & Yukon Centre as soon as possible. BC hospitals supplied by the Calgary or Edmonton CBS Centre should contact the Medical Director on call at the relevant Alberta Centre. The Calgary or Edmonton Centre will communicate with CBS BC & Yukon.

If CBS determines there is a potential for the contingency to affect more than one BC health authority, CBS will alert the BC EBMC, which will meet and, in consultation with CBS, will make decisions regarding the measures to be taken, including determination of the phase. The BC EBMC will communicate with the NEBMC. If CBS determines the contingency is localized, CBS and the relevant HA will manage the situation. CBS will advise the BC EBMC of the contingency.

Figure 1 summarizes the communication chain.

Figure 1: Identification and Communication of Blood Contingency



5.2 Operational Communication with Health Authorities/Hospitals

Communication with HAs/hospitals will occur via two routes:

1) CBS will communicate directly with hospitals regarding logistics and supply issues; and
2) the PBCO and the HA TM directors will communicate with hospitals regarding BC EBMC recommendations.

Updates will also be provided, as appropriate, on the PBCO website (www.pbco.ca).

The NEBMC will be copied on CBS and BC EBMC communications to HAs/hospitals.

5.3 Informational Communication with the Public and Media

Communications with the public and media should be timely, accurate and consistent. CBS will take the lead on communications regarding donor and supply issues. The MoHS Public Affairs Bureau and HA communications staff will take the lead on communications regarding implications for patient care. The BC EBMC will provide input to the MoHS regarding such communications. CBS, MoHS, the BC EBMC and HAs will work together to facilitate the consistency of external messaging and to ensure a coordinated approach to media relations.

Key messages will be developed according to the blood shortage phase, but in all phases messaging will need to:

- be honest and serious about the situation;
- be as reassuring as possible, considering the situation, regarding safety and supply issues;
- outline the actions that are being taken by the participants; and
- provide an opportunity for audience education about the blood system and the ongoing need for blood.

5.4 Summary of Communication Responsibilities

Communications between CBS, the PBCO, the MoHS and HA TM directors will occur through regular conference calls (or alternative means) of the BC EBMC. It is essential that communications originating from CBS, the PBCO, the MoHS and HAs be coordinated and consistent.

CBS BC & Yukon is responsible for:

- alerting the BC Emergency Blood Management Committee (BC EBMC) in a timely manner to potential and actual blood contingencies that affect BC;
- communicating information related to supply issues to hospital transfusion services and the BC EBMC; this includes providing timely updates on actual and anticipated CBS blood inventory levels;
- communicating the phase (i.e., whether it is Green, Amber or Red) to hospital transfusion services; and
- coordinating communication with the public and media regarding donor and supply issues.

The NEBMC is responsible for:

- communicating its recommendations to the BC EBMC.

The MoHS is responsible for:

- communicating with other BC government ministries, departments and agencies;
- communicating with other provincial and territorial blood representatives; and
- coordinating communications with the public and media regarding implications of the blood contingency for patient care.

The PBCO is responsible for:

- coordinating communications to and from the BC EBMC; and
- communicating with other provincial blood offices.

The BC EBMC is responsible for:

- communicating its recommendations to HAs/hospitals and the NEBMC; and
- providing input to the MoHS Public Affairs Bureau on communications with the public and media regarding implications of the blood contingency for patient care.

Health authorities/hospitals are responsible for:

- providing CBS with timely notice of potential and actual contingencies;
- providing CBS with timely updates on hospital blood inventory levels and requirements;
- informing practitioners and staff of the limits in blood availability and consequences for medical and surgical activity (appropriate to the phase);
- communicating with patients and families directly affected by the blood contingency;
- communicating with the HA director of emergency management and regional emergency response centre; and
- ensuring transfusion medicine input into local and regional communications with the public and media.

5.5 Communication Modes

The successful implementation of this plan depends on hospital transfusion services, CBS, the PBCO and the MoHS being able to communicate with each other during a blood contingency. In a disaster, routine communication channels are likely to fail or be overloaded. Each organization and facility participating in this plan should identify, prioritize and develop procedures for using redundant modes of communication. The procedures should include methods for establishing and maintaining communication with key internal and external contacts. The communication modes and procedures should be tested on a routine basis to ensure operability.

Below is a list of standard modes of communication in a suggested order of use.[2] Organizations/facilities should carefully evaluate each mode to determine what combination of redundancies works best for their situation. Alternative modes of communication should be easy to use with little or no user training, should build on or be compatible with the technology used by provincial and regional emergency planners, and should ideally have crisis conference call capability.

Voice Communication

1) Landline phones
2) Wireless (cell) phones
3) Two-way satellite radios (primarily for local use)
4) Voice Over Internet Protocol (VOIP) phones
5) Satellite phones
6) Amateur (ham) radio
7) Word of mouth (e.g. send messengers)

Electronic Communication

1) Fax
2) E-mail through a local area network (i.e., direct connection to internet)

[2] Modified from American Association of Blood Banks, *Disaster Operations Handbook: Coordinating the Nation's Blood Supply During Disasters and Biological Events*, v.2.0, September 2008, p. 18.

3) E-mail through a wireless connection (e.g., BlackBerry®; note that these devices support direct PIN-to-PIN messaging when e-mail networks are down)
4) Text messaging
5) Website (i.e. posting or receiving information through a website)

Additional strategies to consider include:

- use voice e-mail greeting to convey the status of the facility and tell staff what to do;
- use local radio and TV stations to broadcast messages on facility status;
- use a private website hosted outside the affected area;
- use external e-mail accounts (e.g. hotmail, yahoo) if the facility's e-mail servers are offline;
- use part of an existing emergency management system.

6 Transportation

6.1 Transportation Options

It is essential for CBS and hospitals to consider the availability and dependability of existing transportation modes and routes and to identify alternatives that could be used in a contingency. All available modes (road, water, air and rail) should be considered when looking at alternatives. In some cases, because of disaster-related effects on local infrastructure, the usual CBS Centre may not offer the most rapid means of transporting blood. In addition, it is important to consider that fuel may not be readily available.

CBS and hospitals should establish and maintain collaborative relationships with local law enforcement and emergency response organizations, as their assistance may be needed to transport (or allow CBS to transport) blood to hospitals in affected areas. This transportation option should be considered a back-up option, as emergency vehicles may be unavailable during a disaster. Provincial and regional emergency operations centres will be able to identify what resources are available and facilitate access to disaster routes.

These relationships should be established before a contingency occurs. It may be helpful to educate local authorities about the following:

- critical lifesaving nature of blood;
- high priority to get blood to hospitals;
- perishable nature of blood;
- temperature issues related to transporting blood;
- storage capacity issues – if refrigeration capacity is limited, blood may have to be transported to multiple locations for storage; and
- hazardous materials issues – blood components intended for transfusion are not considered biohazards.

Facilities should also have back-up plans for storage in case of sustained power outages (e.g., agreements with other facilities to store products, commercial refrigeration or mobile refrigeration with generator back-up and fuel).

7 Green Phase Actions

In a Green phase, 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/hospital actions.

During a Green phase, actions focus on ensuring that plans to address potential shortages are developed, and that blood is used safely and appropriately.

7.1 Canadian Blood Services BC & Yukon Actions

- In the context of the national blood system, manage the blood inventory provincially, including daily monitoring of the level and distribution of inventory across BC as appropriate.
- Develop internal strategies to respond to periodic requirements to increase blood donations.
- Develop communication strategies and plans to inform hospitals of changes to inventory levels, including both decreases below optimum levels and recovery to normal levels.
- Develop a comprehensive disaster preparedness plan, including development of alternative communication and transportation plans.
- Participate in mock drills to evaluate internal and external responses to blood shortages.

7.2 National Emergency Blood Management Committee Actions

- Maintain the *National Plan for the Management of Shortages of Labile Blood Components* to ensure it remains comprehensive and up-to-date.

7.3 Ministry of Health Services Actions

- Confirm support for the National and BC blood contingency plans, including the policy, legal and ethical implications of the plans.
- Ensure that other relevant branches of the provincial government are aware of the *BC Blood Contingency Plan* and its implications for their areas of responsibility.

7.4 Provincial Blood Coordinating Office Actions

- Establish and coordinate the BC Emergency Blood Management Committee.
- Maintain the *BC Blood Contingency Plan* and supporting tools to ensure they remain comprehensive and up-to-date.
- Encourage all health authorities to fulfill their responsibilities under the *BC Blood Contingency Plan*.
- Through the Central Transfusion Registry (CTR), report blood disposition to CBS BC & Yukon on behalf of hospitals.
- Manage the provincial RBC and factor concentrate redistribution programs to minimize outdating.

- Work with HAs/hospitals to identify alternative redistribution transport carriers and routes that could be used in the event of disruption to regular redistribution routes.
- Develop a PBCO disaster preparedness plan.

7.5 BC Emergency Blood Management Committee Actions

- Through TMAG, develop and maintain evidence-based transfusion guidelines that address both appropriate indications and appropriate dosing of blood components and cover situations when particular components are not available.
- Through TMAG, develop guidelines for assessing and managing hospital inventory, so that all hospitals are setting Green (optimal), Amber (serious) and Red (critical) phase inventory levels in a consistent fashion, and include the inventory management guidelines in the *Transfusion Medicine Medical Policy Manual*.
- Encourage all health authorities/hospitals to fulfill their responsibilities under the *BC Blood Contingency Plan*, including adherence to the TMAG guidelines.

7.6 Health Authority/Hospital Actions

Determine Green, Amber and Red Phase Blood Inventory Levels

- Determine the HA's/hospital's Green, Amber and Red inventory levels, by component and blood group. These levels should be determined based on historical blood component use, services provided at the facility(ies) and physical distance from the blood supplier or other large transfusion service, taking into account the availability and dependability of transport routes.
- Review the levels as needed.
- Consider designating one or more "hubs" for the purposes of inventory management and distribution during a contingency.
- Consider developing agreements with nearby HAs/hospitals to enable inventory sharing if necessary during a shortage. These agreements should outline the policies and procedures for the transport of blood and should ensure that requirements for maintaining blood in appropriate storage conditions, with appropriate documentation, are met.

Prepare a Blood Contingency Plan

- Establish ongoing relationships with HA/hospital emergency management personnel and local emergency response agencies and determine the nature and means of communication with these groups during a contingency.
- Work with CBS to develop alternative transportation plans in the event of a disruption to regular blood transportation routes.
- Through the HA/hospital transfusion committee, determine guidelines for limiting the use of blood for an individual patient.
- Develop, implement and maintain a blood contingency plan that is consistent with the provincial Blood Contingency Plan and incorporated into the HA's/hospital's overall emergency plan. The plan should include:
    - Steps to ensure that the relevant regional CBS Centre is immediately notified of a local situation that could result in increased demand for or reduced availability of blood. For most BC hospitals, this will be CBS BC&Yukon, but for some it will be CBS Edmonton or CBS Calgary.
    - A communications template and list of contact names/numbers of those to be notified in Amber and Red phases (including landline/pager/cell phone numbers, fax numbers, e-

mail addresses, BlackBerry® PINs if applicable) and a defined communications fan-out. Blood shortages (either current or imminent) must be communicated to professional staff outside of the Transfusion Service to ensure that a multidisciplinary and coordinated reduction of blood use is achieved.
    - Contact information for nearby facilities and a list of available transport options, including contact numbers and billing/payment information, for inter-hospital transfer of blood.
    - A communications strategy to notify patients and their families who may be affected by reduced blood inventory, and plans for counseling families affected by termination of treatment.
    - Defined notifications and actions for Amber and Red phases.
    - Defined and documented responsibilities and actions required by key individuals.
    - Plans for cross-training and staff redeployment and plans for possible modification of best practice standards.
    - Plans for documenting decisions made and actions taken during a contingency.
- The plan should ensure that all relevant individuals are fully aware of the need for inventory transparency and the requirement to not stockpile inventory.
- Ensure that the transfusion services' continuity of operations requirements (i.e., ability to ensure continued operation of essential functions in an emergency or disaster) are covered in the HA's/hospital's overall emergency plan.
- Develop a documentation process for release or non-release of blood components in a contingency. This should include a record of who requested the product, why it was requested, the patient's medical condition (pre-transfusion hemoglobin or platelet count), the reason for release/non-release, documentation of the conversation with the ordering physician, and what the inventory level was at the time. The details of this process should be discussed in advance of a contingency with the HA/hospital transfusion committee.
- Develop a physical and electronic quarantine procedure for expired blood components and a documentation process for use of components past their expiry date, including an informed consent step.
- Provide training on the contents of the plan and the communication strategy related to blood contingencies.
- Participate in periodic mock drills to practice and test the plan.

8 Amber Phase Actions

In an Amber phase, blood inventory levels are not sufficient to continue with routine transfusion practice and hospitals are required to implement measures to reduce blood use.

8.1 Canadian Blood Services BC & Yukon Actions

- If the contingency arises in or is specific to BC, make the decision to declare an Amber phase, in consultation with the BC EBMC.
- Activate internal plans appropriate for an Amber phase.
- Implement the predetermined communications plan.

- Decrease blood component issues to hospitals to levels determined appropriate to the situation, in consultation with the BC EBMC.
- Provide the BC EBMC with timely updates on CBS inventory levels and inventory issued to hospitals.
- Provide any other appropriate/necessary information to the BC EBMC to assist them in making recommendations and coordinating communications with HAs/hospitals, the public and media.

8.2 National Emergency Blood Management Committee Actions

For contingencies not arising in or specific to BC:

- Provide advice to CBS National regarding the appropriateness of declaring an Amber phase.
- Provide recommendations on the distribution of blood components.
- Provide recommendations on previously unforeseen circumstances.
- Provide recommendations concerning communications to key stakeholders.
- Assure the necessary communications between the NEBMC and BC EMBC.

8.3 Ministry of Health Services Actions

- Communicate with other BC government ministries, departments and agencies as necessary.
- Communicate with other provincial and territorial blood representatives as necessary.
- Coordinate communications with the public and media regarding implications of the blood contingency for patient care.

8.4 Provincial Blood Coordinating Office Actions

- Provide secretariat support for the BC Emergency Blood Management Committee.
- Facilitate communication and implementation of BC EBMC recommendations.
- Assure the necessary communications between the NEBMC and the BC EBMC.
- Activate internal plans appropriate for an Amber phase.
- In collaboration with CBS, implement the predetermined communications plan.
- Facilitate redistribution of the affected blood components to avoid outdating.

8.5 BC Emergency Blood Management Committee Actions

- If the contingency arises in or is specific to BC, make the decision, in consultation with CBS, to declare an Amber phase.
- Provide recommendations to CBS regarding the distribution of blood components within BC.
- Make recommendations as necessary regarding other issues related to the blood contingency and communicate these to the relevant parties.
- Provide input to the MoHS Public Affairs Bureau on communication with the public and media regarding implications of the blood contingency for patient care.

8.6 Health Authority/Hospital Actions

- Implement the predetermined Amber phase actions as per the HA/Hospital Blood Contingency Plan.
- Implement any relevant BC EBMC recommendations.
- Continue to place routine blood orders with CBS, recognizing that orders may be filled at reduced levels.
- Ensure that all relevant staff are aware of the need for inventory transparency and of the need to NOT stockpile product to safeguard local needs.
- Become more vigilant in screening medical procedures and elective surgical procedures requiring the affected blood components and consider actions to prioritize blood use according to need. See Appendix D for patient categories to assist in the prioritization of RBC transfusions.
- To the extent possible, defer hematopoietic stem cell transplantation, chemotherapy treatments and any other medical treatments requiring the affected blood components.
- For RBC transfusions, follow the transfusion guidelines for Amber phase outlined in Table 3.
- For platelet transfusions, follow the transfusion guidelines for Amber phase outlined in Table 4.
- For frozen plasma and cryoprecipitate transfusions, ensure strict adherence to guidelines established in the Green phase.
- Refer all requests for the affected blood components that do not fulfill predetermined 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.
- Transfer the affected blood components between sites as necessary to ensure the greatest patient needs are met.
- Redistribute the affected blood components to avoid outdating. If a facility is not part of a regular redistribution network, it can contact the PBCO for the necessary instructions and supplies.
- In the event of massive trauma, adhere to the following minimum safe identification for transfusion samples:
    - the patient's real name (first and last) or assigned alias

    AND

    - either an assigned medical records number (MRN) or a known birth date.

9 Red Phase Actions

In a Red phase, blood inventory levels are not sufficient to ensure that patients with non-elective indications for transfusion will receive the required transfusion(s).

9.1 Canadian Blood Services BC & Yukon Actions

- If the contingency arises in or is specific to BC, make the decision to declare a Red phase, in consultation with the BC EBMC.
- Activate internal plans appropriate for a Red phase.

- Decrease blood component issues to hospitals to levels determined appropriate to the situation, in consultation with the BC EBMC.
- Continue other actions listed under Amber phase.

9.2 National Emergency Blood Management Committee Actions

For contingencies not arising in or specific to BC:

- Provide advice to CBS National regarding the appropriateness of declaring a Red phase.
- Continue other actions listed under Amber phase.

9.3 Ministry of Health Services Actions

- Continue actions listed under Amber phase.

9.4 Provincial Blood Coordinating Office Actions

- Activate internal plans appropriate for a Red phase.
- Continue other actions listed under Amber phase.

9.5 BC Emergency Blood Management Committee Actions

- If the contingency arises in or is specific to BC, make the decision, in consultation with CBS, to declare a Red phase.
- Continue other actions listed under Amber phase.

9.6 Health Authority/Hospital Actions

- Activate internal plans appropriate for a Red phase.
- Continue to place routine blood orders with CBS, recognizing that orders may be filled at reduced levels and emergency blood orders will be given priority.
- Screen all medical and surgical procedures requiring the affected blood components and prioritize blood use according to need, as per Appendix D.
- Implement guidelines for limiting the use of blood for an individual patient. The designated medical personnel should be empowered to enforce these decisions. All such decisions must be documented.
- Consider retaining blood components that have passed their Health Canada approved storage period.
    - If expired components are retained, there must be both a physical and an electronic quarantine procedure for them.
    - Platelets should not be kept more than 24 hours beyond expiry, and even then only if the unit has been bacterially tested.
    - The HA/hospital transfusion medicine director, in consultation with the patient's physician, may consider the use of expired components. In such cases, the risks associated with the expired product should be explained to both the physician and the patient, the justification for the use of an expired product must be documented by the responsible physician in the patient's chart and, where possible, the written consent of the patient should be obtained.

- For RBC transfusions, adhere to the transfusion triggers outlined for Red phase in Table 3.
- For platelet transfusions, adhere to the transfusion triggers outlined for Red phase in Table 4.
- Continue other actions listed under Amber phase.

Table 3: Guidelines for RBC Transfusions in Children and Adults in Shortages[1]

Green Phase	Amber Phase	Red Phase
Major Hemorrhage	**Major Hemorrhage**	**Major Hemorrhage**
Follow HA/hospital guidelines	Follow HA/hospital guidelines	Follow HA/hospital guidelines
Surgery/Obstetrics	**Surgery/Obstetrics**	**Surgery/Obstetrics**
Follow HA/hospital guidelines	Become more vigilant in screening procedures requiring the affected component(s) and consider actions to prioritize blood use according to need (see Appendix D)	Screen all procedures requiring the affected component(s) and prioritize blood use according to need (see Appendix D)
Non-Surgical Anemias[2]	**Non-Surgical Anemias[2]**	**Non-Surgical Anemias[2]**
All requests for RBC transfusion in a non-bleeding patient with a Hb level > 90 g/L must be reviewed by designated medical personnel	All requests for RBC transfusion in a non-bleeding patient with a Hb level > 80 g/L must be reviewed by designated medical personnel	All requests for RBC transfusion in a non-bleeding patient with a Hb level > 70 g/L must be reviewed by designated medical personnel

1. Given the relatively small volumes/numbers of units required, transfusions for neonates (i.e. patients less than 4 months of age) and intrauterine transfusions can be given according to usual guidelines (i.e. will 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.
2. Includes anemia following trauma, surgery and delivery.

Table 4: Guidelines for Platelet Transfusions in Children and Adults in Shortages[1]

Green Phase	Amber Phase[2]	Red Phase[2]
Major Hemorrhage	**Major Hemorrhage**	**Major Hemorrhage**
Follow HA/hospital guidelines	All requests must be reviewed by designated medical personnel to ensure that HA/hospital guidelines are being adhered to	All requests for platelet transfusion must be reviewed by designated medical personnel
Invasive Procedures/Surgery	**Invasive Procedures/Surgery**	**Invasive Procedures/Surgery**
Follow HA/hospital guidelines	Become more vigilant in screening requests for platelet transfusion and consider actions to prioritize blood use according to need (see Appendix D) In presence of active bleeding or surgical procedure, maintain a platelet count > 50 x 10^9/L, or if central nervous system trauma/surgery a platelet count > 100 x 10^9/L For non-surgical invasive procedures (other than bone marrow aspiration or biopsy) maintain a platelet count > 30 x 10^9/L	All requests for platelet transfusion must be reviewed by designated medical personnel and prioritized according to need (see Appendix D) Lower platelet count thresholds for platelet transfusions for surgical bleeding or special procedures (such as extracorporeal membrane oxygenation) should be used.
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 HA/hospital guidelines	All requests for platelet transfusion in non-bleeding patients with a platelet count > 10 x 10^9/L must be reviewed by designated medical personnel Consideration may be given to lowering maximum threshold platelet count for routine use of prophylactic transfusions to 5 x 10^9/L	Eliminate all prophylactic transfusions. All requests for platelet transfusion must be reviewed by designated medical personnel

1. Given the relatively small volumes/numbers of units required, transfusions for neonates (i.e. patients less than 4 months of age) and intrauterine transfusions can be given according to usual guidelines (i.e. will 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.
2. Issuing of lower doses of platelets may be used (i.e. 1-2 units) or split doses of buffy coat platelets**.**

10 References

Alberta Blood Contingency Project Final Report, Draft, November 2007.

Australia National Blood Authority. *National Blood Supply Contingency Plan*. Version 1: April 2008.

American Association of Blood Banks. *Disaster Operations Handbook: Coordinating the Nation's Blood Supply During Disasters and Biological Events*, v.2.0. September 2008.

National Advisory Committee on Blood and Blood Products and Canadian Blood Services. *National Plan for the Management of Shortages of Labile Blood Components.* Draft, July 16, 2009.

Nova Scotia Provincial Blood Coordinating Program. *Nova Scotia Provincial Blood Contingency Plan*. Draft: February 8, 2008.

Ontario Blood Programs Coordinating Office. *Ontario Contingency Plan for Management of Blood Product Shortages*. Version Date: January 29, 2008.

Ontario Blood Programs Coordinating Office. *Ontario Contingency Plan for Management of Blood Product Shortages Toolkit*. Version Date: March 31, 2008.

United Kingdom National Health Service, *Development of an integrated blood shortage plan for the National Blood Service and hospitals*. December 2004.

Appendix A: Blood Contingency Working Group Members

Organization	Participant	Title
BC Provincial Blood Coordinating Office	Shannon Selin (Chair)	Manager, Utilization Management
	Dr. Louis Wadsworth	Medical Director
	Susanna Darnel	Utilization Management Technical Coordinator
Canadian Blood Services, BC &Yukon	Haleh Bahrami	Site Manager, Production
	Dr. Mark Bigham	Medical Consultant
	Angie Gaddy	Regional Communications Manager
	Robert Munro	Manager, Field Logistics
	Janet Unrau	Hospital Liaison Specialist
Fraser Health Authority	Dr. Doug Morrison	Medical Director, Transfusion Medicine Services
	Darlene Mueller	Lab Scientist
Interior Health Authority	Cathy Villar	Charge Technologist, Transfusion Medicine Services, Kelowna General Hospital
	Maureen Wyatt	Acting Section Head, Technologist, Transfusion Medicine Services, Kelowna General Hospital
Provincial Health Services Authority	Dr. Nick Au	Medical Director, Transfusion Medicine Laboratory, Children's and Women's Health Centre
	Doreen Myers	Corporate Director, Emergency Management & Business Continuity
Vancouver Coastal Health Authority	Dr. Kate Chipperfield	Regional Medical Leader, Transfusion Medicine Services
	Shelley Feenstra	Regional Blood Transfusion Clinician
	Dr. Nadia Medvedev	Medical Leader, Transfusion Medicine, Providence Health Care
Vancouver Island Health Authority	Dr. Brian Berry	Medical Director, Hematopathology
	Jan Galenza*/Cathy Lee**	Regional Technical Coordinator
Yukon	Chad Milford	Chief Technologist, Transfusion Services, Whitehorse General Hospital

*To June 2009 **From June 2009

Appendix B: BC Emergency Blood Management Committee Members

Updated December 2009

Canadian Blood Services, BC & Yukon

Haleh Bahrami, Site Manager, Production – Tel: 604-707-3549
Dr. Mark Bigham, Medical Consultant – Tel: 604-707-3505
Janet Unrau, Customer Liaison Specialist –Tel: 604-707-3516

Provincial Blood Coordinating Office

Patti Thorne, Provincial Director – Tel: 604-806-8840
Dr. Louis Wadsworth, Medical Director – Tel: 604-875-2939

BC Ministry of Health Services

Jane Crickmore, Director, Blood and Lab Services, Medical Services Division – Tel: 250-952-2878

Fraser Health Authority

Dr. Doug Morrison (Chair), Medical Director, Transfusion Medicine Services – Tel: 604-520-4273

Interior Health Authority

Dr. Jason Doyle,Consultant Pathologist – Transfusion Medicine for the Okanagan – Tel: 250-558-1200, ext. 1597

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Provincial Health Services Authority

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Dr. Nadia Medvedev, Medical Leader, Transfusion Medicine, Providence Health Care – Tel: 604-806-9355

Vancouver Island Health Authority

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Yukon

Chad Milford, Chief Technologist, Transfusion Services, Whitehorse General Hospital – Tel: 867-393-8927

Appendix C: BC Health Emergency Management Response Structure

10.1 Description

British Columbia has adopted a coordinated emergency management system called the British Columbia Emergency Response Management System (BCERMS) focused on providing for the safety and health of responders, saving lives, protecting property and preserving the province's infrastructure and economy. BCERMS ensures a coordinated and organized response and recovery to all emergency incidents and disasters in BC.

During large-scale emergencies, the emergency management structure is activated when a BC community or any significant infrastructure is threatened by an emergency or disaster which may overwhelm a local authority's ability to respond. There will be an increase in the activation level of Provincial Regional Emergency Operation Centres (PREOCs) and the Provincial Emergency Coordination Centre (PECC) to support local governments' emergency operations as required.

Additional assistance is provided by the Government of Canada if the emergency escalates beyond provincial resource capabilities. Requests from the province to the Government of Canada are managed through Public Safety Canada, which maintains close operational links with provincial and local emergency authorities and maintains inventories of resources and experts in various fields.

Within the health sector, the Emergency Management Unit of the Ministry of Health Services (MoHS) provides leadership and facilitates a process through the BC Health Emergency Management Council (HEMC) which is comprised of representatives from the Emergency Management Unit, emergency management leaders from each BC health authority and the BC Ambulance Service. In addition to managing key planning initiatives, the HEMC is responsible for being operationally integrated in response to a range of events throughout the province that have the potential to affect the continuity of health services or require an enhanced level of response from the health system. Transfusion services should keep their HA emergency management personnel informed about blood contingencies, so the health emergency management response structure can be activated if necessary. It is also the responsibility of the BC EBMC to keep the MoHS Emergency Management Unit informed about blood contingencies.

All actions of the health sector during an emergency will be undertaken within the framework of the integrated provincial response model, with appropriate health sector representation at each level of BCERMS. In this respect, the MoHS and the Ministry of Healthy Living and Sport will provide staff to PECC to provide the appropriate health expertise and input. Similarly, the health authorities will provide liaison to the appropriate PREOC(s).

Appropriate health representation will be provided to the Central Coordination Group (CCG), which is activated to ensure cross-government and multi-agency coordination of response activities. Co-chaired by the Provincial Emergency Program's Executive Director and the Public Safety Canada Regional Director, it provides strategic direction to the Director of the PECC and oversees the implementation of the BC government communications plan.

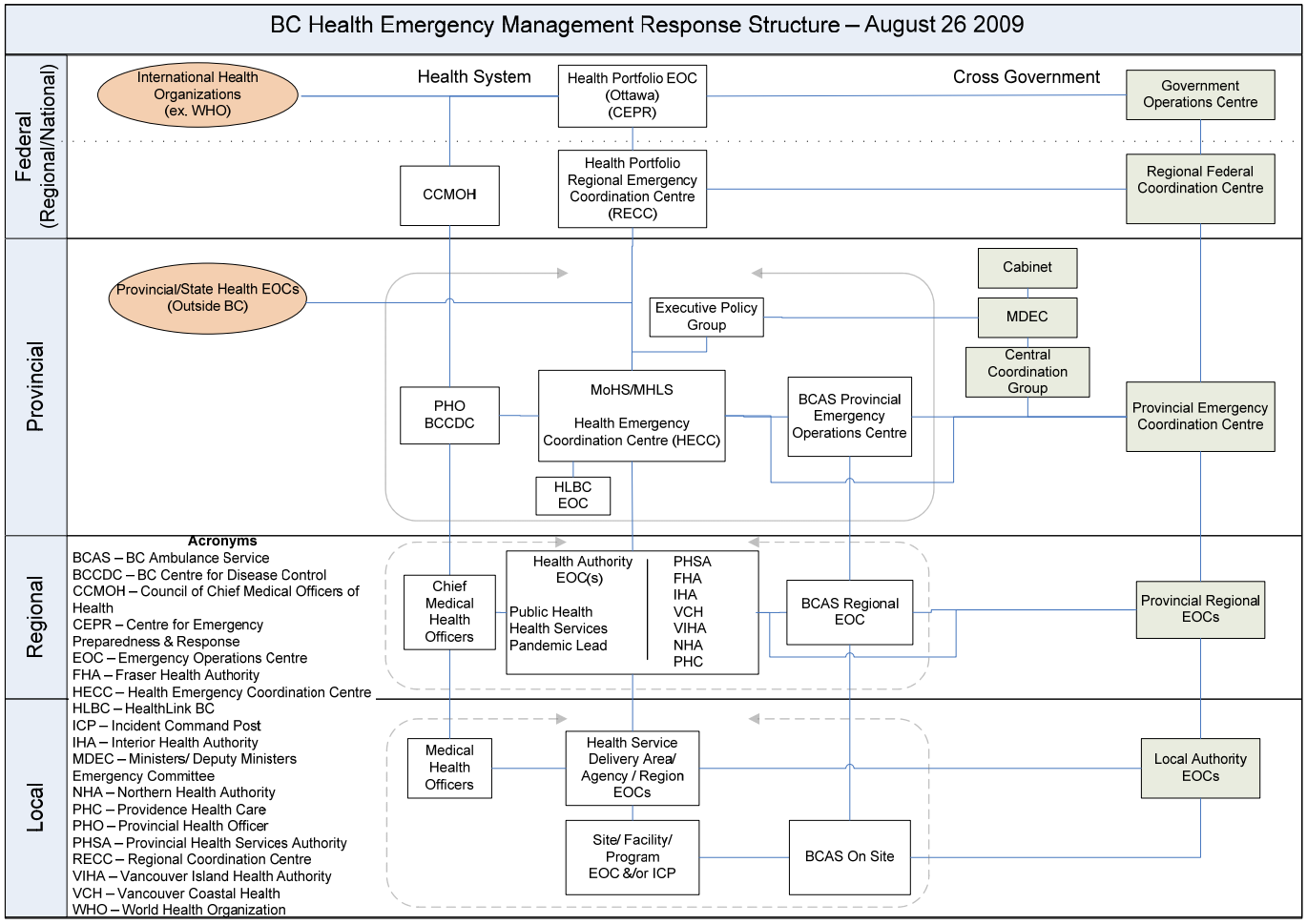
In the event of a major disaster, the Ministers-Deputies Emergency Committee (MDEC) may be convened. The MDEC consists of the key Ministers and Deputy Ministers involved in the management of the provincial response to an emergency. The MDEC provides high-level policy decisions and ensures

that the full complement of human and material resources, from all ministries, crown corporations and agencies, are committed in support of the overall government response.

The Deputy Ministers Steering committee, which includes the Deputy Ministers and Assistant Deputy Ministers from Health Services, Healthy Living and Sport, Public Safety and Solicitor General and the Public Affairs Bureau, will oversee and direct British Columbia's health and non-health response to pandemic influenza.

Figure 2 illustrates the relationship between the lead ministries, site support and site level partners during an activation of the health emergency management response structure.

Figure 2: BC Health Emergency Management Response Structure



Note: Connecting lines do not preclude any operations centre or organizations from communicating directly with another operations centre or organization.

10.2 Health Authority Emergency Management Contacts

Updated February 2009

Fraser Health Authority

Primary Contact	Don MacAlister (don.macalister@fraserhealth.ca) Director, Protection & Emergency Management
Location/Address	Support Services Facility 521 – 198A Street, Langley, BC V2Y 0A1
Telephone	604-455-1307 ext. 741262
Fax	604-455-1319

Interior Health Authority

Primary Contact	Patty Garrett (patty.garrett@interiorhealth.ca) Corporate Director, Risk Management
Location/Address	220-1815 Kirschner Road, Kelowna, BC V1Y 4N7
Telephone	250-870-4666
Fax	250-870-4670

Northern Health Authority

Primary Contact	Ray Taylor (ray.taylor@northernhealth.ca) Regional Manager, Business Continuity
Telephone	250-632-1491

Provincial Health Services Authority

Primary Contact	Doreen Myers (dmyers@phsa.ca) Corporate Director, Emergency Management
Location/Address	555 W 12th Ave, 400 City Square, Vancouver BC V6H 3V5
Telephone	604-877-6045

Vancouver Coastal Health Authority

Primary Contact	Jody Sydor-Jones (jody.sydorjones@vch.ca) Regional Director, Emergency Management
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Providence Health Care:

Primary Contact	Jeanette Beattie (jbeattie@providencehealth.bc.ca) Leader, Emergency Preparedness Program
Telephone	604-806-8806

Vancouver Island Health Authority

Primary Contact	Robert Bryan (robert.bryan@viha.ca) Director, Emergency Management
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Telephone	250-519-7071
Fax	250-519-7079

10.3 Provincial Emergency Program Contacts

Extracted from http://www.pep.bc.ca/contacts/contact.html. Last update: December 2 2008

To report an emergency anywhere in British Columbia, dial (toll-free):

1-800-663-3456

Connects to the PEP Emergency Coordination Centre, Victoria

Vancouver Island Region

Senior Regional Manager	Jim Price (jim.price@gov.bc.ca)
Regional Manager	Clare Fletcher (clare.fletcher@gov.bc.ca)
Regional Office Administrator	Christine Ritson (christine.ritson@gov.bc.ca)
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South West Region

A/Senior Regional Manager	Ian Cunnings (ian.cunnings@gov.bc.ca)
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A/Regional Manager	Andrew Morrison (andrew.morrison@gov.bc.ca)
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Central Region

A/Senior Regional Manager	Peter Prendergast (peter.prendergast@gov.bc.ca
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Regional Manager	Sue Saunders (sue.saunders@gov.bc.ca
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North East Region

Senior Regional Manager	Jim Price (jim.price@gov.bc.ca)
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Regional Manager	Michael Higgins (michael.higgins@gov.bc.ca)
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North West Region

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Regional Office Administrator	Sandy Miller (sandy.miller@gov.bc.ca)
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Fax	250.615.4817

Appendix D: Patient Categories to Assist in Prioritization of Red Blood Cell Transfusions

In some situations, it may be necessary to restrict transfusions to patients with the greatest need. In descending order of urgency, patients can be classified according to the priorities below, with patients in Blood Access Priority 1 having the highest priority for transfusion. All priority levels must consider:

- Alternatives to transfusion (e.g. erythropoietin, iron therapy, red cell salvage)
- A reduction in target post-transfusion hemoglobin.

Blood Access Priority 1

Resuscitation

- Resuscitation from life-threatening or ongoing blood loss from any cause, including major trauma and obstetric hemorrhage.

Surgical Support

- Emergency support (defined as patient likely to die within 24 hours without surgery), including cardiac and vascular procedures.
- Urgent surgery (defined as patient likely to have major morbidity if surgery not carried out)
- Organ transplantation that cannot be deferred.

Nonsurgical Anemia

- Life-threatening anemia, including patients requiring in utero support or in neonatal intensive care.
- Support for stem cell transplantation or chemotherapy that cannot be delayed.
- Patients with severe bone marrow failure, hemoglobinopathies or other conditions who cannot tolerate any delay in transfusion.

Blood Access Priority 2

Surgery and Obstetrics

- Semi-urgent surgery (defined as patient likely to have minor morbidity if surgery not carried out).
- Cancer surgery that cannot be deferred without risk to the patient.
- Symptomatic, but not life-threatening, postoperative or postpartum anemia.

Nonsurgical Anemia

- Symptomatic, but not life-threatening, anemia (including postoperative) of any cause that cannot be managed by other means.

Blood Access Priority 3

Surgery

- Elective surgery requiring cross-matched RBC support of two or more units of allogeneic blood.

Nonsurgical Anemia

- Other non-urgent medical indications for transfusion.

Source: Australia National Blood Authority. *National Blood Supply Contingency Plan*. Version 1: April 2008.

Appendix E: Blood Contingency Plan Checklist for Hospitals

Green Phase Checklist

Determine Green, Amber and Red Phase Blood Inventory Levels

- ☐ Determine the site's Green, Amber and Red inventory levels, by component and blood group. Indicate the number of days on hand represented by each level. Levels should be determined based on historical blood use, services provided at the site and physical distance from the blood supplier or other large transfusion service, taking into account the availability and dependability of transport routes.
- ☐ Review the levels as needed.
- ☐ Consider designating one or more "hubs" for the purposes of inventory management and distribution during a contingency.
- ☐ Consider developing agreements with nearby HAs/hospitals to enable inventory sharing if necessary during a shortage. These agreements should outline the policies and procedures for the transport of blood and should ensure that requirements for maintaining blood in appropriate storage conditions, with appropriate documentation, are met.

Prepare a Blood Contingency Plan

- ☐ Establish ongoing relationships with HA/hospital emergency management personnel and local emergency response agencies and determine the nature and means of communication with these groups during a contingency.
- ☐ Work with CBS to develop alternative transportation plans in the event of a disruption to regular blood transportation routes.
- ☐ Through the HA/hospital transfusion committee, determine guidelines for limiting the use of blood for an individual patient.
- ☐ Develop, implement and maintain a blood contingency plan that is consistent with the provincial Blood Contingency Plan and incorporated into the HA's/hospital's overall emergency plan. The plan should include:
    - Steps to ensure that the relevant regional CBS Centre is immediately notified of a local situation that could result in increased demand for or reduced availability of blood.
    - A communications template and list of contact names/numbers of those to be notified in Amber and Red phases (including landline/pager/cell phone numbers, fax numbers, e-mail addresses, BlackBerry® PINs if applicable) and a defined communications fan-out. Blood shortages (either current or imminent) must be communicated to professional staff outside of the Transfusion Service to ensure that a multidisciplinary and coordinated reduction of blood use is achieved.
    - Contact information for nearby facilities and a list of available transport options, including contact numbers and billing/payment information, for inter-hospital transfer of blood.
    - A communications strategy to notify patients and their families who may be affected by reduced blood inventory, and plans for counseling for families affected by termination of treatment.

  - Defined notifications and actions for Amber and Red phases (see Amber and Red phase checklists).
  - Defined and documented responsibilities and actions required by key individuals.
  - Plans for cross-training and staff redeployment and plans for possible modification of best practice standards.
  - Plans for documenting decisions made and actions taken during a contingency.
- The plan should ensure that all relevant individuals are fully aware of the need for inventory transparency and the requirement to not stockpile inventory.
- Ensure that the transfusion services' continuity of operations requirements (i.e., ability to ensure continued operation of essential functions in an emergency or disaster) are covered in the HA's/hospital's overall emergency plan.
- Develop a documentation process for release or non-release of blood components in a contingency. This should include a record of who requested the product, why it was requested, the patient's medical condition (pre-transfusion hemoglobin or platelet count), the reason for release/non-release, documentation of the conversation with the ordering physician, and what the inventory level was at the time. The details of this process should be discussed in advance of a contingency with the HA/hospital transfusion committee.
- Develop a physical and electronic quarantine procedure for expired blood components and a documentation process for use of components past their expiry date, including an informed consent step.
- Provide training on the contents of the plan and the communication strategy related to blood contingencies.
- Participate in periodic mock drills to practice and test the plan.

Amber Phase Checklist

- ☐ Implement the predetermined Amber phase actions as per the HA/Hospital Blood Contingency Plan.
- ☐ Implement any relevant BC EBMC recommendations.
- ☐ Continue to place routine blood orders with CBS, recognizing that orders may be filled at reduced levels.
- ☐ Ensure that all relevant staff are aware of the need for inventory transparency and of the need to NOT stockpile product to safeguard local needs
- ☐ Become more vigilant in screening medical procedures and elective surgical procedures requiring the affected blood components and consider actions to prioritize blood use according to need. See Appendix D for patient categories to assist in the prioritization of RBC transfusions.
- ☐ To the extent possible, defer hematopoietic stem cell transplantation, chemotherapy treatments and any other medical treatments requiring the affected blood components.
- ☐ For RBC transfusions, follow the transfusion guidelines for Amber phase outlined in Table 3.
- ☐ For platelet transfusions, follow the transfusion guidelines for Amber phase outlined in Table 4.
- ☐ For frozen plasma and cryoprecipitate transfusions, ensure strict adherence to guidelines established in the Green phase.
- ☐ Refer all requests for the affected blood components that do not fulfill predetermined 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.
- ☐ Transfer the affected blood components between sites as necessary to ensure the greatest patient needs are met.
- ☐ Redistribute the affected blood components to avoid outdating. If a facility is not part of a regular redistribution network, it can contact the PBCO for the necessary instructions and supplies.
- ☐ In the event of massive trauma, adhere to the following minimum safe identification for transfusion samples:
    - the patient's real name (first and last) or assigned alias

    AND

    - either an assigned medical records number (MRN) or a known birth date.

Red Phase Checklist

- ☐ Activate internal plans appropriate for a Red phase.
- ☐ Continue to place routine blood orders with CBS, recognizing that orders may be filled at reduced levels and emergency blood orders will be given priority.
- ☐ Screen all medical and surgical procedures requiring the affected blood components and prioritize blood use according to need, as per Appendix D.
- ☐ Implement guidelines for limiting the use of blood for an individual patient. The designated medical personnel should be empowered to enforce these decisions. All such decisions must be documented.
- ☐ Consider retaining blood components that have passed their Health Canada approved storage period.
    - o If expired components are retained, there must be both a physical and an electronic quarantine procedure for them.
    - o Platelets should not be kept more than 24 hours beyond expiry, and even then only if the unit has been bacterially tested.
    - o The HA/hospital transfusion medicine director, in consultation with the patient's physician, may consider the use of expired components. In such cases, the risks associated with the expired product should be explained to both the physician and the patient, the justification for the use of an expired product must be documented by the responsible physician in the patient's chart and, where possible, the written consent of the patient should be obtained.
- ☐ For RBC transfusions, adhere to the transfusion triggers outlined for Red phase in Table 3.
- ☐ For platelet transfusions, adhere to the transfusion triggers outlined for Red phase in Table 4.
- ☐ Continue other actions begun in Amber phase.