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

* 1. Blood components and products are supplied directly to hospitals from Canadian Blood Services (CBS). In the event that CBS is unable to fill inventory requests for blood components or blood products at requested levels, hospitals shall have a policy and procedure in place to adjust their usage in response. The degree of reduction to blood use required will be dependent on the severity and expected length of the shortage. It is critical that stockpiling of the component/product in shortage does not occur. Note: a reduction in inventory may be limited to one blood group, one blood component, all blood components or a specific blood product supplied by CBS.
  2. Blood shortages will be categorized into four phases to help define the required level of response/ reduction at the hospital level:
     1. Green Phase: No blood shortage exists. CBS is able to fill the majority of hospital requests to optimal inventory levels. Hospitals practice routine strategies to minimize product wastage.

Green Phase Advisory: CBS inventory is low for a particular blood component. Hospitals will be directed to report their available inventory to aid in the assessment of the need to cross into an Amber or Red Phase.

* + 1. Amber Phase: CBS is unable to fill hospital requests as submitted to maintain an optimal inventory level. The shortage may result from a short term imbalance between the supply and demand. Hospital action will be required to reduce inventory levels on hand and may be required to reduce usage of blood component(s)/product(s) affected by the shortage in order to ensure conservation for use in urgent treatments.
    2. Red Phase: CBS will declare a Red Phase when blood component/product inventory is at a critically low level nationally and is not expected to improve for a prolonged period of time. In this situation, hospital demand will continue to outpace available inventory. Hospital action is required to reduce inventory levels on hand to minimum levels and will be required to reduce usage of the blood component(s)/product(s) affected by the shortage in order to conserve blood for use in critical and life threatening treatments only.
    3. Recovery Phase: When inventory begins to rise again in relation to demand, CBS will communicate to hospitals. It is critical that hospital use does not resume at normal operating rates immediately. Blood use reductions should remain in place until CBS indicates that inventory has reached a stable level to allow for increased usage. Following this notification, hospitals must gradually increase usage in a controlled manner to ensure the improved inventory level can be maintained and a return to a shortage is avoided.

#### Scope/Related Policies

* 1. Stock inventory levels defined (by blood component/blood product including optimal as well as emergency/critical levels)
  2. Redistribution/transfer of blood to/from another facility
  3. Maximum Surgical Blood Order Schedule (MSBOS)
  4. Existing practice guidelines for use of blood components in use at facility

#### 3.0 Specimen

Not applicable

#### 4.0 Materials

Not applicable

#### 5.0 Safety

Not applicable

#### Records/Forms/Documents

* 1. Communication memo templates for internal notification of medical, nursing and laboratory personnel and patients
     1. Amber Phase memo
     2. Red Phase memo
     3. Patient notification memo
     4. Recovery Phase memo
  2. Communication forms relating to CBS
     1. Blood component/product order forms
     2. Form to record CBS conference calls on inventory status
  3. Practice guidelines for blood component / blood product use (adopted by facility)
  4. Contact list of personnel to send notification memo
  5. Documentation logs for recording decisions relating to reduction of blood use (reduction, deferral or cancellation)

#### 7.0 Quality Control

Not applicable

#### 8.0 Procedure

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| Phase | Action |
| 8.1 Green Phase: Normal operations, preparation phase | * + 1. Follow standard operating procedures under normal blood inventory (optimal) levels     2. Prepare facility to ensure ability to respond to a notification of blood shortage * Train staff on contents of the blood shortage plan and communication strategy * Consider holding exercise to test plan and staff competency   + 1. Green Phase Advisory – Report available inventory to CBS, monitor CBS communication for further direction, notify TM Manager and Medical Director, reduce target inventory levels for re-order as requested by CBS |
| 8.2 Amber Phase: Initiate internal communication | * + 1. Upon notification of Amber Phase of blood shortage from CBS, notify internal personnel as follows via phone call or page as well as in writing (refer to Amber memo template): * manager/supervisor responsible for transfusion service * medical director responsible for transfusion service * chairperson of transfusion committee * chairperson of Hospital Emergency Blood Management Committee (HEBMC)   + 1. Assign key point person to liaise with CBS regarding inventory status     2. Document communication between hospital and CBS relating to inventory status/levels |
| 8.3 Amber Phase: Implement reduction of inventory levels targeted to hold on site | * + 1. Reduce desired inventory target (on hand inventory levels) to defined Amber level     2. Reduce or recall inventory held in satellite storage locations (trauma room, operating room)     3. Report hospital inventory levels to CBS as requested (using blood.ca web based disposition reporting system) |
| 8.4 Amber Phase: Implement review of orders for the blood component(s)/ product(s) that the shortage applies to | * + 1. Transfusion service technologist(s) review all blood orders against facility adopted guidelines (for relevant component(s)/product(s))     2. Transfusion service physician or designate reviews each request that does not comply with guidelines and makes a decision on approval and document the decision     3. Ensure all orders for blood requested for surgical use comply with the facility MSBOS as applicable     4. Reduce holding period post operatively for any blood not required during surgery |
| 8.5 Amber Phase:  If shortage continues, review elective transfusions scheduled | * + 1. Designated medical personnel (HEBMC or transfusion committee) reviews all impending elective surgery for potential blood use and consider deferral if it can be safely deferred. (NOTE: if surgeries will be deferred, patients must be notified - refer to patient notification memo template)     2. Document decisions on approved log sheet     3. Encourage use of patient blood management practices where feasible including: autologous donation, use of erythropoietin, oral and/or intravenous iron, use of medication to reduce blood loss, and peri-operative blood salvage where applicable |
| 8.6 Red Phase: Initiate internal notification | * + 1. Upon notification of Red Phase of blood shortage from CBS, notify internal personnel as follows via phone call or page as well as in writing (refer to Red memo template): * manager/supervisor responsible for transfusion service * medical director responsible for transfusion service * chairperson of transfusion committee * chairperson of HEBMC * medical chief of staff, Chief Executive Officer * directors of Nursing, Laboratory, Anesthesia, Surgery, Hematology, Oncology, Emergency, Intensive Care Unit (ICU) * risk manager * public relations * patient relations officer   + 1. Assign a key point person to liaise with CBS regarding inventory status     2. Document communications between hospital and CBS relating to inventory status/levels |

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| Phase | Action |
| 8.7 Red Phase: Implement reduction of inventory levels targeted to hold on site | * + 1. Reduce desired inventory target (on hand inventory levels) to defined Red level     2. Refrain from holding any inventory in satellite storage locations (trauma room, operating room)     3. Report hospital inventory levels to CBS as requested using blood.ca web based disposition reporting system |
| 8.8 Red Phase: Implement review of all orders for the blood component(s) / product(s) that the shortage applies to | * + 1. Designated triage physician will review all blood orders received     2. Base approval on individual clinical evaluation and whether the need is deemed to be life threatening (refer to NAC Emergency Framework for additional guidance)5     3. Document decisions to release or not on approved log sheets     4. The blood component(s) in short supply should not be held or reserved for any patient |
| 8.9 Red Phase:  If shortage continues, review elective transfusions scheduled | * + 1. HEBMC will review all elective transfusion deferrals (surgical\* or non-surgical) NOTE: if transfusions are deferred, patients must be notified (refer to patient notification memo template) and decisions must be documented   \*Note: deferral of elective surgery will be completed in consultation with Chief of Surgery following existing hospital policy/procedure   * + 1. Increase patient blood management practices where feasible including: use of erythropoietin, oral and/or intravenous iron, and medication to reduce blood loss and peri-operative blood salvage, where applicable |
| 8.10 Red Phase: Communicate with other nearby facilities | 8.10.1 The designated medical person will communicate with other nearby hospital facilities (local CBS Medical Director may be involved) to determine if inter- hospital transfer of product is required to support patients in critical need of blood component(s)/product(s) that are at critical levels |
| 8.11 Red Phase: Consider options of splitting blood component(s)/ product(s) that is in critical supply | * + 1. Consider splitting components to increase available options for treatment if feasible |
| 8.12 Red Phase: Implement NAC Emergency Framework | 8.12.1 Implement the NAC Emergency Framework for rationing blood in massively bleeding patients in a Red Phase if directed by NEBMC |
| 8.13 Recovery Phase: Initiate internal communication | 1. Upon notification of Recovery Phase from blood shortage by CBS, notify internal personnel as follows via phone call or page as well as in writing (refer to Recovery Phase memo template):   \_ manager/supervisor responsible for transfusion service  \_ medical director responsible for transfusion service  \_ chairperson of Transfusion Committee  \_ chairperson of HEBMC  \_ medical chief of staff, CEO  \_ directors of Nursing, Laboratory, Anesthesia, Surgery, Hematology, Oncology, Emergency, ICU  \_ risk manager  \_ public relations  \_ patient relations officer |
| 8.14 Recovery Phase: Maintain inventory levels targeted to hold on site at reduced levels | * + 1. Maintain inventory at Amber level until notified by CBS that national inventory has reached stability   8.14.2 Refrain from holding inventory in satellite storage locations (trauma room, operating room) until fully back to Green Phase  8.14.3 Continue to report inventory to CBS as requested |

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| Phase | Action |
| 8.15 Recovery Phase: Review of orders for the blood component(s) / product(s) that the shortage applies to | * + 1. Transfusion service technologist(s) continue to prospectively screen all blood orders against facility adopted guidelines (for relevant component(s))     2. Transfusion service physician or designate will review each request from that does not comply with facility adopted guidelines and make approval decisions or discuss request with ordering physician     3. Ensure all orders for blood requested for any urgent surgical use comply with the facility MSBOS where applicable     4. Continue to minimize holding period post operatively for any blood not required during surgery |
| 8.16 Recovery Phase: Review elective transfusions scheduled | * + 1. HEBMC or transfusion committee will continue to review all elective transfusion deferral decisions. NOTE: if transfusions will be deferred, patients must continue to be notified (refer to patient notification memo template) and decisions must be documented     2. Continue to encourage patient blood management where feasible including: use of erythropoietin, oral/intravenous iron, and use of medication to reduce blood loss     3. As inventory improves, gradually resume elective transfusion, beginning with non-surgical patients or based on prioritization of need as determined by the HEBMC or designated triage officer/ team |
| 8.17 Recovery Phase: Return to green phase | * + 1. Once communication from CBS is received that blood inventory for the component(s)/product(s) that was in short supply has recovered, gradually increase the inventory held on site to optimal levels     2. Return to normal operations     3. Hold meeting to review the event and assess adequacy of hospital response |

#### 9.0 References

1. Canadian Standards Association Standards for Blood and Blood Components CSA Z902-15. Canadian Standards Association. Dec 2015.
2. Institute for Quality Management in Healthcare (IQMH) Centre for Accreditation. Accreditation Requirements Version 7.0. Dec 2016.
3. Ontario Contingency Plan for the Management of Blood Shortages (Version3). Ontario Provincial Blood Programs Coordinating Office, Ministry of Health and Long-Term Care 2016.
4. The National Plan for the Management of Shortages of Labile Blood Components. National Advisory Committee on Blood and Blood Products & Canadian Blood Services. October 7, 2015.
5. Emergency Framework for Rationing of Blood for Massively Bleeding Patients during a Red Phase of a Blood Shortage. Working Group on Emergency Disposition of Blood during a Red Phase Blood Shortage: National Advisory Committee on Blood and Blood Products. April 14, 2012.