

# Exercise Red Snow Evaluation

March 3, 2011 British Columbia Blood  
Contingency Simulation Exercise



BC Transfusion Medicine  
Advisory Group



## **Abbreviations**

BC EBMC	British Columbia Emergency Blood Management Committee
CBS	Canadian Blood Services
HA	health authority
NEBMC	National Emergency Blood Management Committee
PBCO	BC Provincial Blood Coordinating Office
RBC	red blood cell
TBI	Transparent Blood Inventory system
TM	transfusion medicine
TMAG	Transfusion Medicine Advisory Group
TRG	Technical Resource Group for Transfusion Medicine
WIC	Wireless Incident Command

## Contents

1	Background .....	4
2	Exercise Description .....	4
2.1	Exercise Objectives .....	4
2.2	Exercise Scope.....	4
2.3	Scenario .....	5
2.4	Timing .....	6
2.5	Communications.....	6
2.5.1	Pre-Exercise .....	6
2.5.2	During Exercise.....	7
2.6	Timeline.....	7
3	Exercise Evaluation .....	8
3.1	BC EBMC Teleconferences .....	8
3.2	Participating Sites' Feedback .....	9
3.2.1	Evaluation Teleconference .....	9
3.2.2	Evaluation Questionnaire Responses .....	10
3.3	Non-Participating Sites Feedback .....	11
4	Recommendations.....	12
4.1	For Health Authorities/Hospitals.....	12
4.2	For Canadian Blood Services .....	13
4.3	For PBCO .....	13
5	Conclusion .....	14
	Appendix A: Blood Contingency Working Group Members .....	15
	Appendix B: Blood Contingency Exercise Planning Subcommittee Members.....	16
	Appendix C: Exercise Announcement PowerPoint .....	17
	Appendix D: Exercise Announcement Memo .....	18
	Appendix E: Exercise Reminder Memo .....	19
	Appendix F: Memo to Provincial Emergency Services.....	20
	Appendix G: Exercise Start Memo .....	21
	Appendix H: Exercise Recovery Phase Memo .....	22
	Appendix I: Exercise Finished Memo .....	23

## 1 Background

As part of the *British Columbia Blood Contingency Plan*,<sup>1</sup> BC health authorities/hospitals are expected to develop their own blood contingency plans and to participate in periodic mock drills to practice and test those plans.

At its October 27, 2010 meeting, the BC Blood Contingency Planning Working Group<sup>2</sup> agreed to conduct a BC blood contingency simulation exercise in early 2011 and formed a subcommittee<sup>3</sup> to plan the exercise.

The subcommittee met six times between December 2010 and March 2011, and also held a meeting with the full Blood Contingency Planning Working Group in January 2011. The subcommittee refined the exercise objectives and scope, developed the exercise scenario, selected the participating hospitals, planned the exercise timeline, developed and circulated the exercise communications and forms, and conducted the exercise evaluation. Early in the planning phase, the subcommittee decided to call the simulation “Exercise Red Snow.”

In planning the exercise, the subcommittee drew on the lessons learned from an Ontario blood shortage simulation exercise held March 10, 2010 and on the material prepared for a Nova Scotia blood shortage simulation exercise held January 11, 2011.

## 2 Exercise Description

### 2.1 Exercise Objectives

The objectives of the BC blood contingency simulation exercise were to:

- 1) increase BC hospital awareness, especially for non-transfusion professionals, of the possibility of a blood shortage requiring activation of an amber or red phase in the *BC Blood Contingency Plan*;
- 2) enable participating stakeholders to test and assess the current state of their preparedness for such a blood shortage;
- 3) encourage hospitals to develop and/or review facility-specific blood contingency plans; and
- 4) test the communications provisions in the *BC Blood Contingency Plan*.

### 2.2 Exercise Scope

The exercise scope was to:

- 1) involve Canadian Blood Services BC&Yukon, Canadian Blood Services Calgary, Canadian Blood Services Edmonton,<sup>4</sup> the BC Provincial Blood Coordinating Office (PBCO), the BC Emergency Blood Management Committee (BC EBMC) and at least one hospital of each size (small, medium, large) from each health authority in BC;
- 2) entail activation of the Red phase of the *BC Blood Contingency Plan*; and

---

<sup>1</sup> The plan, which was originally released in October 2009, is periodically reviewed and updated by the BC Blood Contingency Planning Working Group. The latest version is available at [www.pbco.ca](http://www.pbco.ca).

<sup>2</sup> See Appendix A for a list of members.

<sup>3</sup> See Appendix B for a list of members.

<sup>4</sup> Several hospitals on the eastern side of BC receive their blood and blood products from the Canadian Blood Services centres located in Alberta.

- 3) simulate a province-wide shortage of all blood groups of red blood cells (RBCs).

Although initially the Blood Contingency Planning Working Group had requested simulation of an Amber phase scenario, after consideration the subcommittee recommended that a Red phase be simulated, because not much additional hospital action is required in Amber phase and hospitals already tend to have experience with this scenario. This change was agreed to by the Blood Contingency Planning Working Group.

Initially the Blood Contingency Planning Working Group had suggested that the selection of hospitals could be random and could take place as late as the morning of the exercise. The subcommittee determined that it was preferable to select hospitals in advance because of the need for Canadian Blood Services BC&Yukon to program in advance (as a group) the fax numbers and email addresses of the participating sites, and thus minimize delays in communication on the day of the exercise.

Hospitals did not know in advance of the exercise which sites had been selected to participate. The transfusion service technical leaders from each health authority were asked to provide lists in advance of different groups of hospitals that would work well together (e.g. because of shared blood inventories). One health authority requested that all its sites be invited to participate; this request was accommodated. In the end, 47 sites were invited to participate – including at least two (where applicable) of each size from each BC health authority and a site in Yukon. Although participation of the selected hospitals was strongly encouraged, the exercise organizers recognized that patient care was the priority and that, due to workload, some hospitals might not be able to fully complete the exercise. The hope in selecting a relatively large number of hospitals was that it would result in a representative sample even if some invited sites were not able to fully participate.

## 2.3 Scenario

The subcommittee developed the following exercise scenario:

A large snowstorm has hit the Lower Mainland and Vancouver Island, as well as the eastern edge of the province. CBS vehicles are unable to leave Vancouver and all regular external couriers used by CBS BC&Yukon (Air Canada cargo, Dynamex, DHL, Greyhound, etc.) are shut down. Regularly scheduled flights in and out of Lower Mainland are not operating. CBS BC&Yukon is not able to send samples to Calgary for testing. The highways across the border to Alberta are also shut down so CBS Calgary and CBS Edmonton cannot supply the BC sites that they normally provide blood to. BC was already in Amber phase for two days prior to the storm, due to lower than expected collections during a bad flu season, and the storm has pushed BC into the Red phase for all RBCs (all blood groups). The snow began in the late afternoon of the preceding day, is continuing in the morning, and there is no indication of when the storm will end and transportation routes will reopen.

In the interests of simplicity and of making all the text fit on a single page (to limit fax time), the scenario was abbreviated to the following in the message that was sent to hospitals on the day of the exercise:

The BC red blood cell (RBC) inventory is in “Red Phase” due to a severe snowstorm that has closed airports and major transportation routes. In this SIMULATION, delivery of RBCs to BC hospitals from any Canadian Blood Services Centre (including those in Calgary and Edmonton) is not anticipated for at least 3 days.

Because of the complexity of transportation routes across the province, the organizers decided not to specify whether specific provincial highways were open or ferries were operating. It was agreed that hospitals could interpret the accessibility of local transportation routes as they wished and if they wanted to explore the possibility of getting blood from a nearby hospital during the simulation this would be fine.

## 2.4 Timing

The Blood Contingency Planning Working Group requested that the exercise be held on a Wednesday, Thursday or Friday sometime in February or March 2011. The subcommittee chose Thursday, March 3, as the exercise date, aiming to avoid both a planned PBCO move (which was then scheduled for mid-February) and BC schools' spring break (mid-late March, when hospital employees with school-aged children were more likely to be on holiday).

Stakeholders were told that the exercise would take place in March 2011, but the specific date was not shared outside of subcommittee members (except with a very small number of PBCO and CBS employees who needed to know for exercise planning purposes), since the Blood Contingency Planning Working Group wanted the simulation to be as "real" (i.e. as unexpected) as possible. As Murphy's Law would have it, in February the PBCO office move was rescheduled for March 3. Because of the considerable planning that had already been based on a March 3 exercise date, it was agreed not to reschedule the exercise; instead, PBCO's inaccessibility for part of the day became part of the scenario tested.

## 2.5 Communications

### 2.5.1 Pre-Exercise

All BC hospital transfusion medicine services received advance notice of the exercise, as follows:

- On January 27 and 28 the exercise was announced and discussed at the respective meetings of the BC Technical Resource Group for Transfusion Medicine, the Canadian Blood Services and BC & Yukon Hospitals Communication Forum and the BC Transfusion Medicine Advisory Group. The PowerPoint presentation used at these meetings (Appendix C) was subsequently emailed to all BC and Yukon hospital transfusion services.
- On January 31 an announcement memo (Appendix D) was faxed to all BC and Yukon hospital transfusion services and emailed to the medical director and charge technologist of each hospital transfusion service.
- On February 16 a reminder memo (Appendix E) was faxed and emailed to all hospital transfusion services.

Health authority emergency managers and the following provincial emergency services were also emailed advance notice of the exercise (Appendix F).

- Provincial Emergency Program
- BC Emergency Management
- Ministry of Health Emergency Management Unit;
- Public Health Agency of Canada, Emergency Preparedness and Response, Regional Coordinator BC & Yukon
- BC Ambulance Service.

The chair and secretariat of the National Emergency Blood Management Committee (NEBMC) were provided with advance notice of the exercise on February 9.

## 2.5.2 During Exercise

On the day of the exercise (March 3), the following formal communications took place:

- 9h30 BC EBMC advised via teleconference that the exercise was starting
- 10h00 Exercise start memo (Appendix G) faxed to the transfusion service of all invited participants and emailed to the medical directors and charge technologists of those hospitals
- 14h00 Recovery phase memo (Appendix H) faxed to the transfusion service of all invited participants and emailed to the medical directors and charge technologists of those hospitals
- 15h00 Exercise end memo (Appendix I) faxed and emailed to all BC and Yukon hospitals (not just participating sites).

## 2.6 Timeline

The exercise timeline is shown below.

Activity/Milestone	Assigned to	Date Completed
<b>Design and Development Phase</b>		
Initial planning meeting	Subcommittee	Dec. 2, 2010
Define scenario	Subcommittee	Dec. 9
Develop draft list of hospital participants	CBS/PBCO	Dec. 9
Second planning meeting	Subcommittee	Dec. 16
Identify actions expected to result from scenario	Subcommittee	Dec. 23
Finalize list of hospital participants	CBS/PBCO	Jan. 6, 2011
Identify document templates required for exercise	Subcommittee	Jan. 6
Third planning meeting	Subcommittee	Jan. 6
Develop exercise memos	PBCO	Jan. 13
Fourth planning meeting	Subcommittee	Jan. 13
Update BC Blood Contingency Plan & Toolkit (including new forms)	PBCO	Jan. 17
Blood Contingency Planning Working Group Meeting	Working Group	Jan. 19
Circulate updated BC Blood Contingency Plan & Toolkit to all health authorities and post on PBCO website	PBCO	Jan. 24
Notify Technical Resource Group for Transfusion Medicine (TRG)	PBCO	Jan. 27
Notify CBS/BC&Y Hospitals Communication Forum	PBCO	Jan. 27
Notify TMAG	PBCO	Jan. 28
Send first exercise announcement memo to all BC hospitals	CBS	Jan. 31
Notify health authority emergency planners	PHSA	Feb. 9
Notify NEBMC	PBCO	Feb. 9
Fifth planning meeting	Subcommittee	Feb. 9
Send exercise announcement reminder to all BC hospitals	CBS	Feb. 16
Sixth planning meeting	Subcommittee	Feb. 23
Notify provincial emergency services	PHSA	Feb. 24
Ensure all documents required for day of exercise are ready	CBS/PBCO	Feb. 25
<b>Conduct Phase</b>		
Convene CBS local emergency response team	CBS	9h00*
Initiate BC EBMC teleconference	CBS	9h10*
Conclude BC EBMC teleconference	CBS	10h00*
Fax and email exercise start memo to all invited hospitals	CBS	10h00*
Record inventory levels received from hospitals	CBS	10h30ff*

Activity/Milestone	Assigned to	Date Completed
Email submitted inventory levels to PBCO	CBS	12h00*
Post inventory levels on TBI website	PBCO	12h10*
Initiate BC EBMC teleconference	CBS	13h00*
Conclude BC EBMC teleconference	CBS	13h30*
Fax and email recovery phase memo to all invited hospitals	CBS	14h00*
Fax and email exercise finished memo to all BC and Yukon hospitals	CBS	13h00*
<b>Evaluation Phase</b>		
Debriefing teleconference with participating sites	CBS	March 4
Obtain relevant feedback/documents/records from participating sites	CBS/PBCO	April 1
Evaluation report	PBCO	TBD
Review by Working Group, TMAG, TRG, BC EBMC	PBCO	TBD

\* Scheduled Pacific Standard Time. As the hospitals in eastern BC are on Mountain Standard Time, they received all communications one hour later.

## 3 Exercise Evaluation

### 3.1 BC EBMC Teleconferences

Two BC EBMC teleconferences were held during the exercise – an initial one at the start of the exercise and another one half-way through. Fifteen of 16 members/designates were present. At the first teleconference, BC EBMC members were advised that the exercise was happening that day and details of the scenario, planned schedule for the day and anticipated actions were outlined. At the second teleconference, a number of issues that had arisen during the morning were discussed and the following recommendations made:

- The Wireless Incident Command (WIC) broadcast messaging system message used to convene a BC EBMC teleconference should be modified to ensure the actual teleconference number is listed before the prompt to press 1 is given, as there were difficulties with members accessing the teleconference directly (by pressing 1) when they received the message on a mobile phone.
- As the faxes from CBS took a long time to reach all participating sites, CBS should review the order in which the faxes are sent and determine if the “top twenty” (i.e., the 20 largest users of blood components) BC hospitals can be notified first.
- All involved parties (hospitals, CBS and PBCO) should be prepared to use more than one fax machine for communications, if available.
- For accuracy of all communications, do not use acronyms for hospital names – e.g. VGH can refer to either Vancouver General or Victoria General, and with over 85 hospitals receiving blood or blood products it is impossible for staff at all sites to know all the acronyms.
- Regarding the Transparent Blood Inventory (TBI) system operated by PBCO:
  - reduce the password security requirements so that the time before a password expires is lengthened;
  - discuss with TMAG whether a password is even necessary for TBI;
  - confirm the capacity in TBI for the number of hospitals submitting data;
  - graph the inventory information received during a contingency and shade the graph red/amber/green to match the levels that have been reported;
  - discuss with TMAG which graphs would be most useful during a contingency.
- TMAG, hospitals and PBCO should work together to establish red/amber/green levels of inventory at all BC hospitals for all blood groups.
- The process at hospitals to screen orders should begin immediately after a contingency has been declared and should take precedence over submitting inventory to TBI.

- Physicians should plan ahead how they would manage if a contingency occurred outside of regular business hours and the screening workload was too large for the physician on call.

## 3.2 Participating Sites' Feedback

### 3.2.1 Evaluation Teleconference

The organizers held a two-hour debriefing teleconference with participating sites the morning after the exercise. This was a non-judgmental opportunity for participating sites and the exercise organizers to learn from each other. Representatives attended from all but two of the participating sites (three health authorities sent regional representatives to speak for all of their participating sites). Participants were asked to respond to two questions:

- 1) What were two strengths or accomplishments for your site or health authority during the exercise?
- 2) What were two challenges or areas for improvement identified by your site or health authority during the exercise?

Common strengths listed included the following:

- The exercise raised awareness of the possibility of a blood contingency, and of the provincial and regional blood contingency plans. Having the *BC Blood Contingency Plan* and toolkit available online was very helpful.
- Sites generally felt prepared. A number of health authorities/regions held meetings prior to the exercise, and there were benefits in having everyone aware of what to do on the day of the exercise.
- In general, regional and local communications worked well. Many sites had used the opportunity to update their local contact lists and phone fan out procedures in advance of the exercise.
- Preparation for the exercise, and the exercise itself, served as a useful opportunity for making improvements in regional and local contingency plans.

Challenges listed included the following:

- A number of emails bounced back to CBS as being undeliverable, suggesting that the CBS email contact list is not entirely up to date.
- Faxes took a long time to go out from CBS (the first one-page memo took 45 minutes to send to all 47 sites; the second three-page recovery-phase memo took 1 hour and 49 minutes to fax; the final memo to all hospitals took 3 hours).
- Since the CBS fax machine was occupied with outgoing faxes, many sites got a busy signal when they tried to fax their inventory back to CBS. Some assumed their fax machine would keep trying to send it, but the fax machine timed out.
- Some sites filled out the inventory form online, but did not save the PDF before emailing, so it arrived blank at CBS.
- For smaller sites in particular, there was difficulty receiving the email and fax notices. In some cases only one tech was available and that person was on the bench. Some sites share a fax machine with other areas of the lab or hospital, and the fax was not seen until much later in the day. In some cases the person to whom the email was sent was away for the day, or not even normally on site at that hospital.
- Because the faxes had the PBCO logo in the upper left corner and contained a lot of text, they did not stand out as being urgent.
- Many sites had difficulties accessing TBI due to expired passwords and the inability to quickly obtain/reset passwords.
- It was time-consuming to fill out TBI forms when inventory levels could more quickly be sent as print-outs from the lab information systems.

- Communication outside the lab (i.e. with other hospital departments) was difficult for a number of sites
- Some found the medical and surgical screening forms in the toolkit cumbersome to use; in addition important fields such as patient age and location were missing. For busy sites, it was too time-consuming and laborious to transcribe patient information onto the screening form
- In a real contingency, sites would need to be able to track ongoing inventory and would need another form to be able to manage that.
- Some sites did not receive any requests for blood so were not able to simulate screening requests.

### 3.2.2 Evaluation Questionnaire Responses

Attached to the Recovery Phase memo was an evaluation questionnaire, which participating sites were asked to complete and send back to the organizers. Of the 47 participating sites, 43 submitted a completed evaluation questionnaire. One health authority provided a combined response for all its sites (16) – this has been counted as 16 in the tallied responses below. The survey response rate for the participating sites was 91%.

Question	Response (%)
Did your site know in advance that a blood contingency simulation exercise was going to be held in March?	Yes = 98%
If “Yes” what action(s) – if any – did your site take to prepare for the exercise?	Common responses included: - advising staff of impending exercise - reviewing the BC and/or HA or hospital blood contingency plan and related tools - local or regional staff meetings/teleconferences Some sites: - updated contact lists/numbers - prepared forms and memos for use during the exercise.
On the day of the exercise, how did you receive the initial notification that your site had been selected to participate?	Fax & email = 32%      Fax only = 39% E-mail only = 26% Don't know = 3%
What time (hh:mm) did you receive the initial notification?	Fax received – range of 10:10 – 10:51 PST Email received – range of 10:07 – 10:30 PST (some sites did not read fax/email until later)
What would be the best way to notify your site of a real blood contingency?	Fax & email & phone = 6% Fax & email = 16% Fax & phone = 9% Fax = 25% Phone = 25% Fax, email, phone & other = 15% A number of respondents recommended phoning a regional hub; the hub would then be responsible for contacting local sites.
Does your site have a blood contingency plan.	Yes = 65%      No = 19%      Don't know = 0% Work In Progress = 13%
Did you consult a plan during the exercise?	Yes = 78%      No = 16%      Don't know = 3% Blank = 3%
If “Yes,” which plan did you consult?	Hospital = 8%      HA = 38%      BC plan = 21% HA & BC plan = 29%

Exercise Red Snow Evaluation

Question	Response (%)		
Were the following notified as part of the exercise?			
Hospital/HA EBMC and/or Transfusion Committee	Yes =55% Blank = 6%	No =16%	Don't know = 23%
Hospital/HA emergency management staff	Yes = 26% Blank = 3%	No = 45%	Don't know = 26%
Hospital CEO	Yes = 26% Blank = 13%	No =52%	Don't know = 9%
Hospital/HA communications dept.	Yes = 13% Blank = 6%	No = 58%	Don't know = 23%
Other staff outside the lab (e.g. OR, ICU, emergency)	Yes =39% Blank = 6%	No = 52%	Don't know = 3%
Did you send a count of your inventory to CBS?	Yes = 90%	No =10%	Don't know = 0%
During the exercise, did your site screen medical/surgical procedures requiring RBCs and simulate the prioritization of blood use according to need?	Yes = 71% Blank = 3%	No = 23%	Don't know =3%
Did you simulate limiting the use of blood for an individual patient?	Yes = 55% Blank = 6%	No = 39%	Don't know = 0%
During a real blood shortage, how would patients be notified of a delay or cancellation of transfusion?	Most indicated that the patient would be notified through the ordering physician.		
Does your site have a process for sharing (interhospital exchange) blood components?	Yes = 94%	No = 6%	Don't know = 0%
To what extent did this exercise encourage your site to develop and/or review its blood contingency plans?	A lot = 84%	A little =16%	Not at all = 0%
To what extent did this exercise help test and assess your site's preparedness for a blood shortage?	A lot = 58%	A little =39%	Not at all = 3%
To what extent did this exercise increase awareness within the lab of the possibility of a blood shortage requiring activation of the blood contingency plan?	A lot = 74%	A little =26%	Not at all = 0%
To what extent did this exercise increase awareness outside the lab of the possibility of a blood shortage requiring activation of the blood contingency plan?	A lot = 19% Blank = 3%	A little =48%	Not at all =29%
Additional comments or suggestions?	In general sites were pleased that the exercise had been conducted and wanted to see future exercises held at least once a year.		

55% of the participated sites submitted their medical and 39% of the participated sites submitted their surgical screening logs used during the exercise. Patient - identifying information were blocked out. Overall, 63 medical and 35 surgical patients were screened. The screening process reduced the number of units required during the contingency.

A total of 134 RBC units were ordered for the medical patients; (of these, 82 units would not have been issued in a real contingency) only 52 units were issued due to screening. A total of 65 units were ordered for the surgical patients, of these, (44 units would not have been issued in a real contingency.) only 21 were issued due to screening.

### Non-Participating Sites Feedback

Sites that did not participate in the exercise were sent a shorter form of the questionnaire. 28 sites submitted a completed questionnaire. The survey response rate for non-participating sites was 68%. The responses are summarized in the table below.

Question	Response (%)
Did your site know in advance that a blood contingency simulation exercise was going to be held in March?	Yes =96%      No =0%      Don't know =4%
What would be the best way to notify your site of a real blood contingency?	Fax & email & phone = 4% Fax & email = 15% Fax & phone = 10% Fax = 57% Phone = 10%
Does your site have a blood contingency plan.	Yes =47%      No =21%      Don't know = 11% Blank = 21%
If "no" are you aware that there is a <i>BC Blood Contingency Plan</i> and toolkit available at <a href="http://www.pbco.ca">www.pbco.ca</a> ?	Yes = 67%      No =33%      Don't know =0%
During a real blood shortage, how would patients be notified of a delay or cancellation of transfusion?	Most indicated that the patient would be notified through their ordering physician.
Does your site have a process for sharing (interhospital exchange) blood components?	Yes =89%      No =7%      Don't know =4%
To what extent did this exercise encourage your site to develop and/or review its blood contingency plans?	A lot =64%      A little =28%      Not at all =4% Blank = 4%
To what extent did this exercise help test and assess your site's preparedness for a blood shortage?	A lot =36%      A little =46%      Not at all =14% Blank = 4%
To what extent did this exercise increase awareness within the lab of the possibility of a blood shortage requiring activation of the blood contingency plan?	A lot =57%      A little =35%      Not at all =4% Blank = 4%
To what extent did this exercise increase awareness outside the lab of the possibility of a blood shortage requiring activation of the blood contingency plan?	A lot =21%      A little =21%      Not at all =54% Blank = 4%
Additional comments or suggestions?	The response varies from hospital to hospital. Some indicated that regional exercise would be helpful. Some would like some kind of in-service from CBS and PBCO while others indicated that an annual exercise would be helpful.

## 4 Recommendations

### 4.1 For Health Authorities/Hospitals

- 1) Ensure that CBS has a complete, up-to-date contact list for your site. Advise CBS whenever anything on the list needs to be changed.
- 2) Determine the best way for CBS to communicate with sites in your health authority (i.e. who to advise of contingencies and how; include redundancies to ensure that someone receives the notification).
- 3) Ensure that the fax machine is monitored regularly.
- 4) Leave a detailed out-of-office message if away from phone or email for the day, including who to contact in your absence.
- 5) Identify alternative routes of communication with CBS (e.g. if fax is tied up).

- 6) The process of screening orders should begin immediately after a contingency has been declared and should take precedence over submitting inventory to TBI.
- 7) Physicians should plan ahead how they would manage if a contingency occurred outside of regular business hours and the screening workload was too large for the physician on call.

## 4.2 For Canadian Blood Services

- 1) During a contingency, notify one or more pre-identified individuals at pre-identified “hub” site(s) in each health authority by both phone and/or fax and/or email; these individuals would then be responsible for notifying other sites within their health authority.
- 2) If faxing communications, fax the “hub” sites (or top 20 blood users) first, then fax the other hospitals.
- 3) Investigate whether using a broadcast messaging system would increase the speed of faxes going out.
- 4) If asking for inventory to be faxed back, ensure that more than one fax machine is available to alleviate fax congestion.
- 5) Have in place back-up methods of communication (e-mail, website, manual – i.e. sending messengers to Lower Mainland hospitals) when phone/fax lines are not working.
- 6) Include a tick box on the fax sheet for hospital staff to indicate that the fax has been seen and acted upon.
- 7) Make the fax clean and simple with the “Urgent” and “Red Phase” very large, and list the required actions right at the top.
- 8) Put the time (not just the date) on faxes and emails.
- 9) Consider alternate ways of faxing back inventory. For example, consider having a toll-free phone line through which sites could enter their inventory by phone (e.g. an automated message could prompt the caller to key in the number of each blood group; the results could be automatically uploaded to a spreadsheet).
- 10) Consider having health authorities submit a regional inventory instead – in some cases this would be easier and faster than having individual sites submit inventory.
- 11) Recognize that screening orders is a higher priority for hospitals than submitting inventory levels.
- 12) Do not use acronyms for hospital names.
- 13) Hold similar simulation exercises at least once a year.

## 4.3 For PBCO

- 1) Modify the WIC message used to convene a BC EBMC teleconference to ensure the actual teleconference number is listed before the prompt to press 1 is given.
- 2) Discuss with TMAG whether a password should be necessary to access TBI;
- 3) If a TBI password is necessary, have a common password for all users, or for all users at a site.
- 4) Reduce the TBI password security requirements so that the time before a password expires is lengthened.
- 5) Confirm the capacity in TBI for the number of hospitals submitting data;
- 6) Graph the inventory information received during a contingency and shade the graph red/amber/green to match the levels that have been reported.
- 7) Discuss with TMAG which TBI graphs would be most useful during a contingency.
- 8) Have a common password that everyone can use.
- 9) Reword the TBI form to make clearer how it can be used in a contingency (e.g., currently the form says to submit once a week).
- 10) Work with hospitals to improve the medical and surgical screening forms and consider alternatives to the form (e.g. working from a copy of the requisition) to reduce transcription time.
- 11) Work with hospitals and CBS to find a means of tracking ongoing inventory during a contingency.

- 12) Do not use acronyms for hospital names.
- 13) Hold similar simulation exercises at least once a year.

## 5 Conclusion

Exercise Red Snow was a successful simulation exercise that largely achieved its four objectives, namely to:

- 1) increase BC hospital awareness, especially for non-transfusion professionals, of the possibility of a blood shortage requiring activation of an amber or red phase in the *BC Blood Contingency Plan*;
- 2) enable participating stakeholders to test and assess the current state of their preparedness for such a blood shortage;
- 3) encourage hospitals to develop and/or review facility-specific blood contingency plans; and
- 4) test the communications provisions in the *BC Blood Contingency Plan*.

The one area in which it succeeded less well was in raising awareness outside of the laboratory (i.e., for non-transfusion professionals) of the possibility of a blood shortage requiring activation of an amber or red phases. A future blood contingency simulation exercise should be planned in a way that directly addresses this objective.

## Appendix A: Blood Contingency Working Group Members

<b>Organization</b>	<b>Participant</b>	<b>Title</b>
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	Assistant 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
Northern Health Authority	Jameel Khan	Quality Resource Technologist
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
	Cathy Lee	Regional Technical Coordinator
Yukon	Chad Milford	Chief Technologist, Transfusion Services, Whitehorse General Hospital

## Appendix B: Blood Contingency Exercise Planning Subcommittee Members

<b>Organization</b>	<b>Participant</b>	<b>Title</b>
BC Provincial Blood Coordinating Office	Shannon Selin (Chair)	Manager, Utilization Management
	Stephanie Bowen	Utilization Management Program Coordinator
	Susanna Darnel	Utilization Management Technical Coordinator
Canadian Blood Services, BC & Yukon	Haleh Bahrami	Site Manager, Production
	Janet Unrau	Hospital Liaison Specialist
Interior Health Authority	Maureen Wyatt	Acting Section Head, Technologist, Transfusion Medicine Services, Kelowna General Hospital
Northern Health Authority	Pam Danesin	Charge Technologist, Transfusion Medicine Services, University Hospital of Northern BC
Provincial Health Services Authority	Doreen Myers	Corporate Director, Emergency Management & Business Continuity

# Appendix C: Exercise Announcement PowerPoint

## Exercise Red Snow!

- One-day province-wide blood contingency simulation exercise in March 2011
- Objectives:
  - Increase hospital awareness (especially non-transfusion professionals) of the possibility of a blood shortage requiring activation of Amber or Red phase
  - Enable participants to test and assess their state of preparedness
  - Encourage hospitals to develop and/or review their blood contingency plans
  - Test communications provisions in BC plan

8 

---

---

---

---

---

---

---

---

## Exercise Red Snow!

- January 31 – notice faxed and emailed to all Tvlabs in BC
- February 16 – reminder notice
- March - 38 sites selected – will find out on day of exercise
- Selected sites will receive a fax and email telling them what the scenario is and what to do
- DO NOT CANCEL SURGERY OR RESTRICT THE ISSUING OF BLOOD
- Preface all communications with "Exercise Red Snow" (3x)
- All hospitals will receive notice that exercise is over
- Day after – debriefing teleconference
- Participating sites submit evaluation questionnaire + logs

9 

---

---

---

---

---

---

---

---

## How to prepare?

- Make sure all staff in your region know exercise will be happening
  - BC EBMC members: make sure your designees know
- Review updated BC Blood Contingency Plan and toolkit
  - at minimum, know where to find it! [www.pbco.ca](http://www.pbco.ca)
  - Recovery phase added
  - Procedures updated
  - New logs (TBI form, communication log, medical/surgical logs)
- Prepare/Update HA/hospital contingency plan and train staff
  - At minimum, make sure they know where to find it
- Think about communications
  - Preface with "Exercise Red Snow" (3x)

10 

---

---

---

---

---

---

---

---

## Appendix D: Exercise Announcement Memo



### BC Provincial Blood Coordinating Office

A program of the Provincial Health Services Authority



Canadian Blood Services  
*it's in you to give*

**To: Blood Transfusion Service/Laboratory  
Blood Transfusion Service Medical Director**

**Date: 31 January 2011**

**Subject: ANNOUNCEMENT - Exercise Red Snow! Exercise Red Snow!  
Exercise Red Snow! Blood Contingency Simulation Exercise  
Happening in March**

The BC Blood Contingency Planning Working Group, in partnership with Canadian Blood Services and the BC Provincial Blood Coordinating Office (PBCO), will be conducting a one-day exercise in March 2011 to simulate a provincial blood contingency. The objectives of "Exercise Red Snow" are:

- 1) to increase BC hospital awareness, especially for non-transfusion professionals, of the possibility of a blood shortage requiring activation of an Amber or Red phase in the *BC Blood Contingency Plan*;
- 2) to enable participating stakeholders to test and assess the current state of their preparedness for such a blood shortage;
- 3) to encourage hospitals to develop and/or review facility-specific blood contingency plans; and
- 4) to test the communications provisions in the *BC Blood Contingency Plan*.

A cross-section of BC hospitals (approximately 38 sites, including some sites supplied by Canadian Blood Services Calgary or Edmonton) will be chosen to participate. If your hospital is selected to participate, you will be contacted on the day of the exercise, not before.

Canadian Blood Services will send a clearly marked fax to selected hospitals asking them to:

- 1) Fax or email a count of their RBC inventory to Canadian Blood Services.
- 2) Simulate the initiation of their hospital blood contingency plan.
- 3) Following the exercise, participate in a debriefing teleconference and submit an evaluation form regarding actions taken during the exercise.

**During the exercise, DO NOT CANCEL SURGERY OR RESTRICT THE ISSUING OF BLOOD.**

In preparation for Exercise Red Snow, you may wish to review your hospital's blood contingency plan and/or the *BC Blood Contingency Plan* and toolkit. The latter two documents have recently been updated and are available on the PBCO website at [www.pbco.ca](http://www.pbco.ca). If you have not already done so, it may be helpful to keep a hard copy of the plan and related material in a clearly designated place, for easy access during a contingency.

Thank you for helping BC to be better prepared for a blood shortage. If you have any questions, please contact:

Shannon Selin Manager, Utilization Management Provincial Blood Coordinating Office 604-806-8840 sselin@pbco.ca	Haleh Bahrami Assistant Manager, Production Canadian Blood Services BC&Yukon 604-707-3549 haleh.bahrami@blood.ca	Janet Unrau Hospital Liaison Specialist Canadian Blood Services BC&Yukon 604-707-3516 janet.unrau@blood.ca
--	--	--

## Appendix E: Exercise Reminder Memo



### BC Provincial Blood Coordinating Office

A program of the Provincial Health Services Authority



Canadian Blood Services  
*it's in you to give*

**To: Blood Transfusion Service/Laboratory  
Blood Transfusion Service Medical Director**

**Date: 16 February 2011**

**Subject: ANNOUNCEMENT - Exercise Red Snow! Exercise Red Snow!  
Exercise Red Snow! Reminder of Blood Contingency  
Simulation Exercise Happening in March**

This is to remind you that the BC Blood Contingency Planning Working Group, in partnership with Canadian Blood Services and the BC Provincial Blood Coordinating Office (PBCO), will be conducting a one-day exercise in March 2011 to simulate a provincial blood contingency. The objectives of "Exercise Red Snow" are:

- 1) to increase BC hospital awareness, especially for non-transfusion professionals, of the possibility of a blood shortage requiring activation of an Amber or Red phase in the *BC Blood Contingency Plan*;
- 2) to enable participating stakeholders to test and assess the current state of their preparedness for such a blood shortage;
- 3) to encourage hospitals to develop and/or review facility-specific blood contingency plans; and
- 4) to test the communications provisions in the *BC Blood Contingency Plan*.

A cross-section of BC hospitals (approximately 38 sites, including some sites supplied by Canadian Blood Services Calgary or Edmonton) will be chosen to participate. If your hospital is selected to participate, you will be contacted on the day of the exercise, not before.

Canadian Blood Services will send a clearly marked fax to selected hospitals asking them to:

- 1) Fax or email a count of their RBC inventory to Canadian Blood Services.
- 2) Simulate the initiation of their hospital blood contingency plan.
- 3) Following the exercise, participate in a debriefing teleconference and submit an evaluation form regarding actions taken during the exercise.

**During the exercise, DO NOT CANCEL SURGERY OR RESTRICT THE ISSUING OF BLOOD.**

In preparation for Exercise Red Snow, you may wish to review your hospital's blood contingency plan and/or the *BC Blood Contingency Plan* and toolkit. The latter two documents have recently been updated and are available on the PBCO website at [www.pbco.ca](http://www.pbco.ca). If you have not already done so, it may be helpful to keep a hard copy of the plan and related material in a clearly designated place, for easy access during a contingency.

Thank you for helping BC to be better prepared for a blood shortage. If you have any questions, please contact:

Shannon Selin  
Manager, Utilization Management  
Provincial Blood Coordinating Office  
604-806-8840  
sselin@pbco.ca

Haleh Bahrami  
Assistant Manager, Production  
Canadian Blood Services BC&Yukon  
604-707-3549  
haleh.bahrami@blood.ca

Janet Unrau  
Hospital Liaison Specialist  
Canadian Blood Services BC&Yukon  
604-707-3516  
janet.unrau@blood.ca

## Appendix F: Memo to Provincial Emergency Services

24 February 2011

Dear Colleagues,

The BC Blood Contingency Planning Working Group, in partnership with Canadian Blood Services and the BC Provincial Blood Coordinating Office (PBCO), will be conducting a one-day exercise in March 2011 to simulate a provincial blood contingency. The objectives of "Exercise Red Snow" are.

- 1) to increase BC hospital awareness, especially for non-transfusion professionals, of the possibility of a blood shortage requiring activation of an Amber or Red phase in the *BC Blood Contingency Plan* (available at [www.pbco.ca](http://www.pbco.ca));
- 2) to enable participating stakeholders to test and assess the current state of their preparedness for such a blood shortage;
- 3) to encourage hospitals to develop and/or review facility-specific blood contingency plans; and
- 4) to test the communications provisions in the *BC Blood Contingency Plan*.

A cross-section of BC hospitals (approximately 47 sites) will be chosen to participate. Although all BC hospitals have been provided with advance notice of the exercise, none have been told the precise date - those hospitals selected to participate will be contacted on the day of the exercise, not before.

The exercise will last from approximately 9 a.m. to approximately 3 p.m. During the exercise, hospital transfusion services will simulate the initiation of their local blood contingency plan. **Communications will emphasize that surgery should not be cancelled nor should blood issuing be restricted as part of this exercise.** There should be no impact on BC Ambulance Service or other emergency services, although local emergency personnel may receive a call from a hospital as part of the test of local communications procedures during the exercise.

A post-exercise evaluation will be conducted, identifying lessons learned and any recommendations for change, which we will share with you.

If you have any questions, please contact me or one of the following:

Haleh Bahrami Assistant Manager, Production Canadian Blood Services, BC&Yukon 604-707-3549 haleh.bahrami@blood.ca	Janet Unrau Hospital Liaison Specialist Canadian Blood Services, BC&Yukon 604-707-3516 janet.unrau@blood.ca
---	---

Best regards,  
Shannon

### Shannon Selin

Manager, Utilization Management

#### BC Provincial Blood Coordinating Office Provincial Health Services Authority

Suite 310 - 1190 Hornby Street  
Vancouver, BC, V6Z 2K5 Canada  
604-806-8840 Phone | 604-682-2344 Ext. 63053 Direct | 604-806-8824 Fax  
<mailto:sselin@pbco.ca>  
<http://www.pbco.ca>

Province-wide solutions.  
Better health.

## Appendix G: Exercise Start Memo



### BC Provincial Blood Coordinating Office

A program of the Provincial Health Services Authority



**To: Blood Transfusion Service/Laboratory  
Blood Transfusion Service Medical Director**

**Date: 03 March 2011**

**Subject: ACTION - Exercise Red Snow! Exercise Red Snow! Exercise Red Snow! Urgent: Your hospital has been selected to participate in the BC Blood Contingency SIMULATION EXERCISE STARTING NOW**

---

**THIS IS NOT A REAL BLOOD SHORTAGE. IT IS A SIMULATED SHORTAGE DESIGNED TO TEST HOSPITALS' BLOOD CONTINGENCY PREPAREDNESS**

#### **Simulation Scenario:**

The BC red blood cell (RBC) inventory is in "Red Phase" due to a severe snowstorm that has closed airports and major transportation routes. In this SIMULATION, delivery of RBCs to BC hospitals from any Canadian Blood Services Centre (including those in Calgary and Edmonton) is not anticipated for at least 3 days.

#### **Actions Required:**

- 1) Ensure the Laboratory Manager (or designate) and Medical Director (or designate) review this communication.
- 2) Using the Transparent Blood Inventory form, send a count of your RBC inventory to CBS BC&Yukon at fax # 604-707-3484 or e-mail [bcyukondistribution@blood.ca](mailto:bcyukondistribution@blood.ca). If you do not have the form, get it from the *Toolkit for the Implementation of the BC Blood Contingency Plan* at [www.pbco.ca](http://www.pbco.ca).
- 3) Simulate the initiation of your hospital blood contingency plan for "Red Phase." If you do not have a plan, consult the *BC Blood Contingency Plan* and toolkit at [www.pbco.ca](http://www.pbco.ca).
- 4) **DO NOT CANCEL SURGERY OR RESTRICT THE ISSUING OF BLOOD.**
- 5) Proceed with your communication fan out. Document communications using a communications log developed by your own facility or the one in the provincial toolkit. **DO NOT NOTIFY PATIENTS AS PART OF THIS SIMULATION EXERCISE.**
- 6) Document what actions would be taken IF this were a real blood shortage, using the forms/logs developed by your own facility or those in the provincial toolkit.
- 7) Have a representative from your site participate in a debriefing teleconference tomorrow at 10:00 a.m. PST, which will be hosted by Canadian Blood Services BC&Yukon. Teleconference #: 1-866-752-7690. Conference ID: 2271474#
- 8) Further communication, including notification of the end of the exercise, will be coming by fax and email later today. Following the end of this exercise, you will be asked to complete an evaluation form regarding actions taken during the exercise.

We recognize that due to immediate patient care priorities, some hospitals may not be able to fully complete this exercise. We strongly encourage you to participate to the extent that you are able, and thank you in advance for helping to improve BC's preparedness for a real blood contingency. If you have any questions, please contact Haleh Bahrami (Assistant Manager, Production, 604-707-3549, [haleh.bahrami@blood.ca](mailto:haleh.bahrami@blood.ca)) or Janet Unrau (Hospital Liaison Specialist, 604-707-3516, [janet.unrau@blood.ca](mailto:janet.unrau@blood.ca)) at Canadian Blood Services BC&Yukon.

## Appendix H: Exercise Recovery Phase Memo



### BC Provincial Blood Coordinating Office

A program of the Provincial Health Services Authority



**To: Blood Transfusion Service/Laboratory  
Blood Transfusion Service Medical Director**

**Date: 03 March 2011**

**Subject: ACTION - Exercise Red Snow! Exercise Red Snow! Exercise Red Snow! Urgent: Now in RECOVERY PHASE of BC Blood Contingency Simulation Exercise**

---

**THIS IS NOT A REAL BLOOD SHORTAGE. IT IS A SIMULATED SHORTAGE DESIGNED TO TEST HOSPITALS' BLOOD CONTINGENCY PREPAREDNESS**

#### **Simulation Scenario:**

The BC red blood cell (RBC) inventory is now in "Recovery Phase." Airports have re-opened, roads have been cleared, and delivery of RBCs to BC hospitals from their usual Canadian Blood Services Centre is anticipated to happen by the end of the day.

#### **Actions Required:**

- 1) Ensure the Laboratory Manager (or designate) and Medical Director (or designate) review this communication.
- 2) Simulate the initiation of your hospital blood contingency plan for "Recovery Phase." If you do not have a plan, consult the *BC Blood Contingency Plan* and toolkit at [www.pbco.ca](http://www.pbco.ca).
- 3) Proceed with your communication fan out.
- 4) Ensure all documentation logs used in this exercise have been completed.
- 5) Complete the evaluation questionnaire attached to this communication.
- 6) Send the completed questionnaire, along with your site's completed exercise communication log and screening (medical and surgical) logs with patient names removed to the address noted on the bottom of the questionnaire.
- 7) Have a representative from your site participate in a debriefing teleconference tomorrow from 10:00 a.m. to 12:00 noon PST, which will be hosted by Canadian Blood Services BC&Yukon. Teleconference #: 1-866-752-7690. Conference ID: 2271474#

Thank you for participating in this exercise. The information gathered will be reviewed by the BC Blood Contingency Planning Working Group and the BC Emergency Blood Management Committee (BC EBMC). All hospitals will receive a summary of the findings and any recommendations for improvement. If you have any questions, please contact:

Haleh Bahrami  
Assistant Manager, Production  
Canadian Blood Services BC&Yukon  
604-707-3549, [haleh.bahrami@blood.ca](mailto:haleh.bahrami@blood.ca)

Janet Unrau  
Hospital Liaison Specialist  
Canadian Blood Services BC&Yukon  
604-707-3516, [janet.unrau@blood.ca](mailto:janet.unrau@blood.ca)

## Appendix I: Exercise Finished Memo



### BC Provincial Blood Coordinating Office

A program of the Provincial Health Services Authority



**To: Blood Transfusion Service/Laboratory  
Blood Transfusion Service Medical Director**

**Date: 03 March 2011**

**Subject: ANNOUNCEMENT - Exercise Red Snow! Exercise Red Snow!  
Exercise Red Snow! Blood Contingency Simulation Exercise  
is Now Complete**

---

On behalf of the BC Blood Contingency Planning Working Group, we would like to inform you that earlier today an exercise to simulate a provincial blood contingency was held. Forty-seven hospitals across BC were contacted this morning to inform them that their site was selected to participate in an RBC "Red Phase" simulation. A short while ago, these sites received notification that the simulation is now in "Recovery Phase."

We thank everyone who has participated in this exercise. We greatly appreciate your time and commitment to help develop robust provincial, health authority and hospital plans to manage blood contingencies. Holding simulation exercises such as this one is a very useful way to increase awareness of roles and responsibilities during a blood shortage, and to help participants better prepare for real shortages.

Following the evaluation of "Exercise Red Snow," a final report on the exercise will be shared with all BC hospitals.

If you have any questions, please contact:

Shannon Selin  
Manager, Utilization Management  
Provincial Blood Coordinating Office  
604-675-3991  
sselin@pbco.ca

Haleh Bahrami  
Assistant Manager, Production  
Canadian Blood Services BC&Yukon  
604-707-3549  
haleh.bahrami@blood.ca

Janet Unrau  
Hospital Liaison Specialist  
Canadian Blood Services BC&Yukon  
604-707-3516  
janet.unrau@blood.ca